



# C O N S E R V A T I O N

# Current

[NMWCA site](#)

[calendar](#)

[subscribe](#)

[submissions](#)

[archive](#)

## THIS ISSUE

[Conserving water creates a brighter future for New Mexicans.](#)

[McKinley County celebrates 5th Annual Youth Water and Energy Awareness Day](#)

[NMOSE publishes guide to conducting water audits in restaurants](#)

[City of Rio Rancho offers lessons learned about water conservation rebates](#)

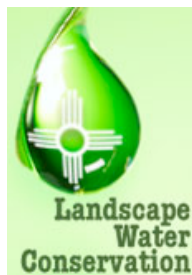
[Rio Rancho expands existing water reuse systems](#)

[Brackish groundwater facility to develop innovative desalination technologies](#)

**What's on the docket for the coming months? [Click here](#) for the latest list of water conservation events.**



The NMWCA is still updating its database of water conservation professionals.



Conserving water creates a brighter future for New Mexicans.

[More...](#)



McKinley County celebrates 5th Annual Youth Water and Energy Awareness Day.

[More...](#)



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[More...](#)



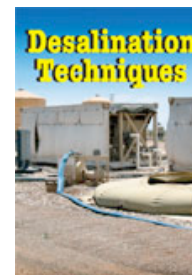
City of Rio Rancho offers lessons learned about water conservation rebates.

[More...](#)



Rio Rancho expands existing water reuse systems.

[More...](#)



Brackish groundwater facility to develop innovative desalination technologies.

[More...](#)

## Conserving Water Creates a Brighter Future for New Mexicans

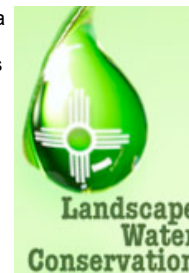
Conserving water in the landscape is not about creating yards with gravel and a yucca or two for shade. It's about creating a brighter future for citizens of New Mexico, allowing us to live in the place we call home because there will be water to sustain us and our children. As the first in a series of articles on water conservation in the residential landscape, this article gives a general overview of conservation. Later ones will explore specific topics in greater detail.

In a perfect world, every home is ideally located on its lot in such a manner that neither it nor neighboring homes have a negative impact on the environment. This means minimal disturbance to the landscape during the home's construction, precipitation that falls on the lot and is beneficially used, and beautifully landscaped property that keeps the home cool in summer and warm in the winter.

Unfortunately, the real world usually bears little resemblance to the ideal. The good news is that the average homeowner can greatly reduce the amount of water they use on their landscape without tremendous expense or effort.

In most cases, water-conserving landscapes, or xeriscapes, can save up to 50% of water used and reduce maintenance costs by 30%. By applying the following key principles, you can significantly reduce water use in the landscape:

- Store rainwater for watering
- Design the landscape to conserve water
- Prepare soil properly
- Select plants suited to the location
- Use mulches



Stay connected and communicate the latest in water conservation information. Register today!

If you are already registered, please take a minute to check your entry and bring it up to date. You can find the database at [wrri.nmsu.edu/wrdis/nmwca/database.html](http://wrri.nmsu.edu/wrdis/nmwca/database.html).

Thank you!

- Use efficient irrigation
- Take care of your landscape

Keeping rainwater on-site is the most critical element in water conservation for several reasons:

**First**, rainwater is free water.

**Second**, allowing rainwater to infiltrate the soil minimizes storm water runoff that otherwise requires expensive infrastructure to carry it away, to reduce erosion, and to treat the pollutants it carries.

**Third**, allowing infiltration of rainwater has the potential to re-charge our aquifers.

**Fourth**, it cools the environment.

Methods for keeping rainwater on the site include passive (or simple) techniques and active (or complex) techniques. Passive techniques deliver water from roofs and other impervious surfaces like patios, walks and driveways to the landscape, via gravity, through gutters, downspouts and rain chains and swales. These techniques require very little earth moving or equipment for storing water. Active techniques use a type of storage tank to collect some or all of the run-off water. Rain barrels and cisterns are the most common used for home landscapes.

## Design your landscape

The design of the landscape should serve its intended purpose. If the purpose is for athletic play, then a turf grass yard is an appropriate choice. If the purpose is to provide habitat, color, and texture, then groupings of native plants are appropriate. If providing fruit and vegetables is desired, then vegetable beds, fruit trees and shrubs are ideal. Combinations of all of the above are possible and appropriate if the lot is large enough. All of these options increase the value and beauty of a home. Consider the many options available rather than just plant turf grass out of habit.

## Prepare your soil

Proper soil preparation can have a marked influence on water retention. Soils are mixtures of organic matter, mineral particles and pore spaces. They are formed from rock and organic matter that break down over time from very fine clays to coarse sands and gravels. The amount of water your soil retains and is available to plants is determined by the amount and shape of pore spaces between the soil particles and how tightly the soil holds onto the water. Many times the ground around a home is so compacted from construction and foot traffic that it resembles concrete more than soil. When mixed into the soil, organic matter increases water retention and provides nutrients and air to plant roots. There are differences of opinion about soil amendments and what types should be used, if at all.

## Select the right plant

Selecting the right plant for the right place is a concept that takes getting used to for some people. Plants native to the area or a similar environment are able to thrive without much fuss. Plants that do well throughout New Mexico tend to tolerate alkaline soils, extremes in temperature, drought, and long hours of intense sun. There are many excellent plant resources like books, catalogs and nurseries that can help people learn what plants are available, where they might be planted, and ways in which to use them in a landscape. Several municipalities and water authorities have plant lists to help people with selecting the right plants.

## Use mulch

Using mulches can decrease water loss due to evapotranspiration. Mulches are organic (bark, nutshells, compost) or inorganic (gravels, tumbled recycled glass) that are applied in layers around plants and trees. They can reduce water use by set evaporation, cooling the soil and roots, and by decreasing weeds that compete for water. Organic mulches have the added benefit of increasing the organic content of soil as they decompose.

## Irrigate efficiently

Using efficient irrigation delivers the right amount of water to the right place at the right time. Because plants take in water through their roots, delivering water to the roots is the most efficient way to water. Plants can survive on far less water than most people think. Talk to a landscape/plant and irrigation specialist to help you determine your landscape watering needs. This can save water and help you keep from over- or under-watering. The best time to water is early morning or late evening. Plants need more water initially to become established - usually one growing season - then irrigation can be decreased. Also adjust your watering for the season. When plants go dormant, they need less water. New irrigation technology is being developed to increase water conservation, such as weather stations, ET monitors, central control systems, and improved water delivery devices.

## Maintain your landscape

Employing proper maintenance practices ensures the landscape and irrigation continue to function as

designed. Because landscapes are living entities, they are dynamic systems that have changing requirements. Plants need to be monitored for growth and pests, weeds need to be removed, and rain gutters and swales need to be kept free of sediment and debris. In addition, irrigation systems should be checked for proper operation and flushed seasonally. Watering schedules should also be adjusted so plants thrive and the landscape continues to conserve water.

[\[to top\]](#)

## McKinley County Celebrates 5th Annual Youth Water and Energy Awareness Days

How can a water festival serve more students in your community? Consider having an in-the-classroom event. This worked great for McKinley County, which just celebrated its 5th Annual Youth Water and Energy Awareness Days.

As we tell the McKinley County students, water education is critical for Gallup, which has no surface water and is located in the middle of the high southwestern desert. Our only precious source of water comes from aquifers over a half mile deep underground. One presenter noticed during the first festival in 2005 that most of the students had never had any water education before this event. For most elementary students attending, this was their first introduction to the wonderful and fascinating world of water and its importance.



In 2005, 300 students and teachers attended the first, one-day water festival. Over the four years since then, attendance has been 1,200 - 1,500 over the expanded two-day festival. Activity station topics have typically included the hydrologic cycle, water conservation, animals that live in water, water purification, watershed awareness, chemical and physical properties of water, and much more.

McKinley County Water Festival is unique because it reaches a variety of grade levels. The first day includes 4th and 5th grade elementary students. The second day brings in high school students. Miyamura High School principal, Frank Chipetti, has allowed us to use his large gymnasium and school to host this event from 2006 to present. However, the high school was going through construction so the first day of the festival was held at the Red Rock Park Auditorium where 4th and 5th grade classes attended.

Festival coordinator, Elizabeth Barriga, planned day two of the festival in 15 high school math and science classrooms. This way, the students and instructors could attend during their classes and rotate through each of the activities. Presentations were positioned close to each other with 5-minute intervals. Each activity lasted about 25 minutes, and each classroom was able to attend two activities an hour. This venue proved to be a great option. The site was free, teachers were able to patrol their students easily, background noise was reduced, and instructors felt comfortable in their usual setting.

This event is possible because of sponsors such as the City of Gallup, AIP Foundation, McKinley County SWCD, local sponsors, and professional presenters such as Bureau of Reclamation, Phoenix AZ; (NOAA) National Oceanographic and Atmospheric Administration; NM Game & Fish; Northern Arizona University; Navajo EPA; NTUA Laboratory Team; USDA NRCS Los Lunas Plant Materials Center; the City of Santa Fe; Gallup Solar; Cibola National Forest, Mt. Taylor Ranger District, Wildlife Rescue, Inc.; Smart Use, LLC; New Mexico Environmental Department; and Sandia Laboratories.

[\[to top\]](#)

## NMOSE Publishes Guide to Conducting Water Audits in Restaurants

The New Mexico Office of the State Engineer (NMOSE), through a grant from the U.S. Bureau of Reclamation (BOR), published a water audit training guide to food service establishments. The guide, *Food Services Industry Water Audits, Instruction Module*, is specifically designed for utilities to conduct water audits of restaurants and cafeterias within the utility's water supply system. It provides instructions, questionnaires, evaluations, examples, reporting information, and supplemental resources. The purpose is to guide the food service industry towards water conservation practices that save water and money.



New Mexico is a semi-arid state with limited water sources. These sources are subjected to increasing pressure from a growing population. Effective water demand management strategies, such as water conservation, can help stretch existing supplies. Commercial water use, which includes restaurants, can have a significant effect on local water demands, especially in New Mexico's popular tourist areas. For the drinking water supplier, targeting restaurants can have dual impact: It can save water within the commercial sector and provide educational opportunities to the public served. For the restaurants, water conservation can reduce business costs by reducing water use, wastewater and energy bills. For maximum effect, water suppliers can combine the

water audit program with other programs such as energy audits or commercial toilet rebates.

The BOR grant allowed NMOSE to pilot test water audit materials in three New Mexico utilities: Gallup, Rio Rancho and Los Alamos County. Testing took place between February 2008 and June 2009. Thirty food service establishments were audited during the pilot. Each participating establishment was offered a free low-flow, pre-rinse spray nozzle, which is expected to save approximately 50,000 gallons of water a year per establishment.

In addition to installing the spray nozzle, NMOSE provided each establishment with an audit report that has recommendations for saving water. The reports highlighted leaks found on-site, high volume water fixtures, such as older toilets, and any water wasting habits that were noted. Each problem was followed by a recommended action and a cost benefit analysis for taking the action. Several of the recommendations provided immediate water savings without any associated costs. Post audit data from the City of Gallup estimated these establishments saved approximately seven percent of their annual water use.

The *Instruction Module* combines the materials used and the lessons learned from the pilot programs into a free resource for New Mexico drinking water suppliers.

"The Food Services Module is the latest in the NMOSE water conservation series for drinking water suppliers," said Water Use and Conservation Bureau Chief, John Longworth, P.E. "This piece is designed to reduce water use in the commercial sector."

The *Food Services Industry Water Audits, Instruction Module* and reports from each pilot program are available on the NMOSE website at [http://www.ose.state.nm.us/wucp\\_pws.html](http://www.ose.state.nm.us/wucp_pws.html).

[\[to top\]](#)



## City of Rio Rancho Offers Lessons Learned about Water Conservation Rebates

The last day to turn in rebate requests to the City of Rio Rancho Water Conservation Office was December 31, 2008. There was a frantic surge the last 30 days, and the person doing data entry could hardly keep up with the requests. Rio Rancho toilet rebates began in 2000, clothes washer rebates in 2002 and hot water recirculation pumps in 2003.

Requests came in for several months after the end date. "Sorry you're out of luck" letters were sent in response. These letters initiated "it's not fair" and "I will talk to the mayor" types of calls. One caller claimed giving rebates is a federal law.

Because of this, we thought a "lessons learned" article would benefit utilities considering an end to their rebate programs. The table below shows what we did to inform the citizens of Rio Rancho and what we could have done better.

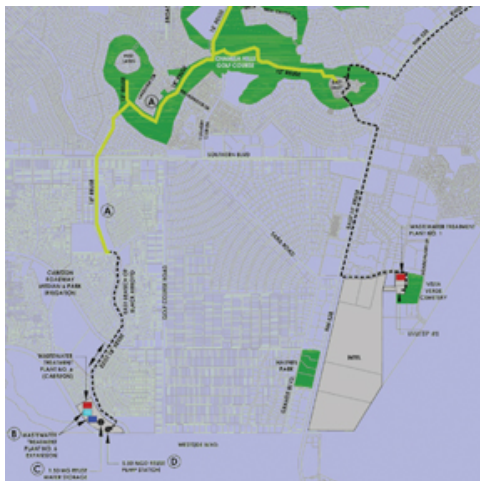


What we did	Lesson Learned
Informed citizens in two newsletters preceding the deadline date	Maybe a third newsletter
Put a notification on the city website one month before the deadline	Should have put notification on website much earlier, perhaps 6 months before the deadline
In November, contacted major appliance dealers in ABQ area to inform them of deadline. Contact was either in person or by phone, with a fax follow-up.	Should have started 4 to 6 months earlier
In November, phoned local plumbing companies and others that sold/installed toilets. Followed up with fax.	Should have started phone calls 4 to 6 months earlier
Placed radio ads on 94 ROCK, 100.3 The Peak, 102.5 The Coyote in early November, 2008. These three were selected to represent a variety of our citizens.	This was all we could afford to do with limited budget. With more money we would have started earlier and included a Spanish-speaking station. Recommend running ads for 6 months prior to deadline.
No TV ads	We had no money for TV ads. Recommend running for 6 months prior to deadline.
Had fliers at utility customer service and utility cashiers beginning November 2008.	Post fliers 6 months prior to deadline both at utility locations and at retailers' locations
No message in customer bills	Include message in bills 6 months prior to deadline

[\[to top\]](#)

## Rio Rancho Expands Existing Water Reuse System

The City of Rio Rancho is expanding existing reuse systems to sustain the local water supply. Initiated in 2001 (Governing Body Resolution 01-004), these efforts are partially in response to restrictive permit conditions imposed by the Office of the State Engineer for groundwater withdrawal and the U.S. EPA for wastewater discharges to the Rio Grande River (see Effluent Reuse Management Plan, June 2009).



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### Infrastructure Improvements

The widespread delivery of reuse water to strategic locations for irrigation and industrial uses and aquifer replenishment requires significant expansion of the existing infrastructure supporting reuse, including:

- **Increased Treatment Capacity**— The Cabezon Water Reclamation Facility (WRF), located along the southern edge of Rio Rancho, will be expanded from 0.6 to 3.0 million gallons per day (mgd) to produce New Mexico Environment Department defined Class IA quality water for unrestricted non-potable uses. The facility uses a highly effective membrane bioreactor (MBR) treatment process that has proven to produce superior water quality.
- **Reuse Pump Stations**— A 5.5 mgd pump station will be constructed to pressurize the transmission mains planned to route water throughout the reuse distribution system. A second pump station will be constructed at Wastewater Treatment Plant #2 (WWTP #2) to assist with the delivery of reuse water to customers.
- **Expanded Distribution**— The reuse transmission main will be routed north from the Cabezon WRF through Chamisa Hills Golf Course, the Rio Rancho Sportsplex and then eastward to WWTP #2. The 23,000 linear feet of new pipe will allow greater distribution to identified points of use. A separate reuse main will route water approximately 10,000 linear feet to above- and below-ground storage sites on Loma Colorado.
- **New Storage Tanks**— Additional storage will be constructed to meet peak reuse demands. Planned storage facilities include a tank (volume to be determined) at WWTP #2, a 1.5 million gallon tank at the Cabezon WRF, and a 6 million gallon tank on Loma Colorado.
- **Recharge Facilities**— A direct injection and groundwater monitoring system will be constructed on Loma Colorado on land owned by the city. Once fully operational, the facility will be able to replenish the groundwater system at a rate of 1 to 2 mgd. A second 0.6 mgd surface infiltration recharge system has been constructed to support the Mariposa WRF, once fully operational.

The planned improvements will provide considerable flexibility in operations and delivery of reuse water to end users, while also maximizing the beneficial use of all water supplies available to the community.

[\[to top\]](#)

## Brackish Groundwater Facility to Develop Innovative Desalination Technologies



On May 15, 2009, the New Mexico Water Conservation Alliance toured the Brackish Groundwater National Desalination Research Facility in Alamogordo. The tour was hosted by the Bureau of Reclamation (BOR).



As we all know, demand for fresh water in many regions of the world has already outstripped supply. The new research facility will attract outstanding researchers to develop cost effective, efficient desalination technologies that, when applied to brackish and impaired groundwater, result in new supplies of usable water for municipal, agricultural, industrial, and environmental purposes. The facility is dedicated to speeding the transfer of technologies to end users by bridging the gap between engineering and other sciences. BOR believes that improving the research and processes will help increase output and lower the costs of desalination brackish or saline groundwater.



A private company using the equipment in the research facility

The facility is located within the Tularosa Basin and consists of a central research building and external areas situated on a 40-acre fenced site. Located just east of Holloman Air Force Base and within the Alamogordo city limits, the facility was chosen to support national and international research on inland brackish groundwater desalination. Construction of the 16,000 square foot research building was completed in late May 2007.



Portable desalination equipment on display that was used in Biloxi Mississippi after Hurricane Rita

[\[to top\]](#)

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