

NISP Communities' Water Conservation Efforts

*A Key Component to Meeting
Future Water Needs*



Water Conservation is Part of the Mix

Water is a precious resource to the people who live, work and play in Northern Colorado.

Conservation is common sense to the 15 participating water providers in the Northern Integrated Supply Project, who all have active water conservation programs. And these programs are working. Since 1988, they have reduced water use by more than 22 percent.



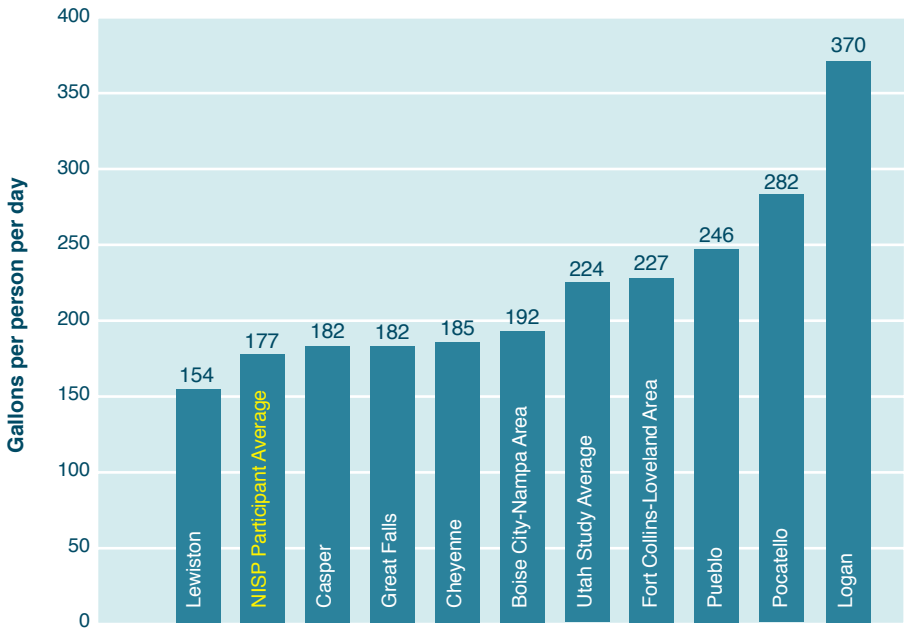
Today, NISP partners' water use, at 177 gallons per person per day, compares favorably to cities throughout the western U.S.

But new water demand far outstrips the ability to conserve. The 15 partners together face a doubled population within 20 years and nearly triple by 2060.

NISP partners know conservation savings alone cannot meet the expected demands. Ed Harvey, author of the *Water Supplies and Demands for Participants in the Northern Integrated Supply Project Report*, said, "Conservation plays an important role, but it is not going to meet the future demand" for water in Colorado. NISP will provide an additional 40,000 acre feet of reliable water annually. (One acre foot equals about 326,000 gallons, enough for two families of four annually.)

Even with NISP, the participants will continue to intensify conservation efforts as part of their overall water management strategy. Both conservation and new supplies are essential to meeting the communities' needs. This brochure outlines some of the programs NISP participants have in place to save water.

Average gallons per person per day for selected cities



Source: *Water Use and Residential Rate Structures in the Intermountain West*, Utah Economic and Business Review. Volume 65, March/April 2005.



NISP Participants' Conservation Programs

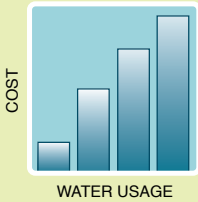
All of the NISP participants use meters to keep track of water use patterns and to charge customers for the water they consume.

Education and Outreach

Education and outreach are the foundation for NISP partners' water conservation programs. Information appears in websites, ads, videos, bill inserts, newsletters, and school programs. Following are some examples of NISP participants' programs:

- Erie sponsored a six-part local television series on water conservation.
- Fort Lupton monitors houses and is able to report concerns about leaks or overwatering to homeowners.
- The Central Weld County Water District is developing a library of water conservation materials for citizens to use.
- Lafayette hosts free classes on Xeric principles, planning and implementation, soil enhancement and efficient turf irrigation.
- The Fort Collins-Loveland Water District promotes voluntary upgrades to water-efficient fixtures, low water use landscaping and efficient irrigation in its newsletters and bill inserts.

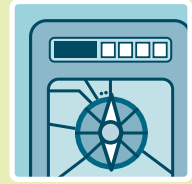
Conservation-friendly Rates



It's a matter of economics: Customers use less water when it costs more. Nearly all NISP partners communicate the importance of conservation through tiered billing, which sets an affordable rate for essential indoor use, a moderate rate for practical outdoor use and an aggressive rate for high use.

Watering and Landscaping Restrictions

Most NISP participants mandate or discourage residents from watering outside in the hottest summer hours – between 10 a.m. and 6 p.m. The Town of Severance, for example, allows homeowners to water lawns, wash cars and use water for recreation on either even or odd days, outside of 10 a.m. to 6 p.m.



Some participants have ordinances that limit the amount of turf and call for Xeriscaping, a practice of landscaping that reduces or eliminates the need for supplemental water.

Advanced Leak Detection



Leaks from old, corroded pipes can waste thousands of gallons a year. More than half of the NISP partners have invested in leak detection systems that measure flow and pressure, which indicate leak locations and potential repairs. They also regularly conduct flushing, testing and other maintenance activities that extend system lives. And

they regularly upgrade their water distribution systems through leak protection and pipe repair.

The Left Hand Water District's leak detection program has resulted in a 50 percent reduction in distribution system losses. (See the case study on pages 11-12). The Central Weld County Water District's advanced computer leak detection system monitors inflows and outflows every 2 ½ minutes, allowing engineers to rapidly detect and repair leaks.

Electronic Metering

What gets measured gets managed. Electronic metering is essential for accurate, real-time measurement of water consumption. Most NISP participants use the latest technology in meter testing and replacement.





Non-potable Water for Irrigation

NISP partners are finding the right water for the right use. The highest standards of green building call for using non-potable water for parks, golf courses and backyards. Several partners are advancing the use of non-potable water for outdoor irrigation:

- **Eaton requires** new residential developments to install dual-use irrigation systems, which bring treated water into houses, but use non-potable water for outdoor irrigation.
- **Evans' water conservation plan** calls for the use of non-potable water for irrigation in new developments.
- **Frederick encourages developers** to conserve by incorporating Xeriscape techniques and non-potable irrigation systems.
- **In Windsor, dual water systems** require the use of non-potable water for landscaping in new residential developments.

Water-efficient showerheads can save a household up to 750 gallons a month.

Rebates, Incentives and Codes

Financial incentives encourage customers to upgrade to water-efficient appliances. Among NISP communities, rebates are available for high-efficiency toilets, showerheads and clothes washers; rainfall and wind sensors; and irrigation efficiency devices.



A number of towns and cities have changed codes to require the installation of low-flow water appliances. Others require wind or rain sensors for business and open space irrigation.



Conservation in Action

FORT MORGAN: WATER CONSERVATION IN PARTNERSHIP WITH INDUSTRY

With a comprehensive and aggressive water conservation program in place, Fort Morgan counts industry partnership as a key success.

Water conservation is so important to the 11,000-person city of Fort Morgan that it's written into the city code.

Since 1996, this participant has embraced a range of conservation activities, such as aggressive leak detection and repair, Xeric park gardens, water-efficient landscaping on city property and widespread public education. It's even a violation of city code to waste water – one that can merit a ticket.

But with more than half of Fort Morgan's water going to industrial users, the city also wanted to ensure wise water use at dairy food processing and meat processing plants. The city found these businesses were doing their part to obtain the highest level of operation using the least amount of water.

Fort Morgan's largest industrial user, meat processor Cargill Meat Solutions, promotes water conservation awareness for all employees. The company recycles water for hide and pen washing, uses meters to monitor daily water use, and watches for leaks or unusual water use activity.

Another large industrial user, Dairy Farmers of America, conserves by reusing water extracted from milk processing for cleaning purposes.

And at Leprino Foods, one of the world's largest producers of mozzarella cheese, employee bonuses and profit sharing are tied into reducing overall water use at the plant. Between 2004 and 2006, water use dropped from 120 million gallons to 100 million gallons, and efforts are ongoing. Each year, the company strives to reduce water use by 1 to 2 percent.

Fort Morgan is proof that saving water is good business.

Since implementing conservation measures, Fort Morgan has saved more than 500 acre-feet of water – enough for 1,250 families for a year.



Leprino Foods Company, a Colorado Corporation, a world leader in premium-quality cheese manufacturing and the largest U.S. exporter of whey products, has a long history of continuous improvement in the consumption of water.



Xeriscape can reduce landscape water use by 60 percent or more.

NORTHERN WATER: GARDEN AS A LABORATORY AND SCHOOLHOUSE

Northern Water offers a free state-of-the-art conservation garden to visitors to demonstrate the latest water conservation techniques and the best technology.

One of every two gallons of municipal water is used to water landscapes.

Yet grass, plant and shrubs can thrive on limited water, not gallons of it. Although users with automatic sprinklers often think they are conserving, the average homeowner with this type of system overwaters by 25 percent.

So in 2004, Northern Water opened a formal conservation garden to teach lawn care and to study the best way to plant, irrigate and maintain landscapes.

Located behind Northern Water's headquarters in Berthoud, the Conservation Gardens contain more than 700 plants and 60 turf grasses, as well as eight Xeriscaped plots.

At any time, researchers run 10 to 12 studies, from measuring what types of soil amendments work best to which soil moisture sensors are most effective, to improving the efficiency of sprinkler heads and nozzles.

This laboratory displays landscapes designed to thrive on a minimum amounts of water. And the garden's scientists know exactly what that minimum is, because they've measured every drop of water applied.

Some 5,000 people have visited the Conservation Gardens since 2006, learning how to water carefully and raising awareness of conservation throughout NISP communities.

WINDSOR: COUNTRY NEIGHBORHOODS USE NATIVE WATER RIGHTS

Windsor requires new housing developments to retain longstanding agricultural water rights, saving energy and reducing future demand from new water projects.

Along the Northern Front Range, new houses sit atop former farmland.

In Windsor, those houses keep something of the farms with them. By law, developments must set up dual water systems, using non-potable, agricultural water for irrigation and landscaping. Ditch water is diverted from the Poudre River using 100-year-old structures below Fort Collins.

According to town data, during the hot summer months in 2010, houses that have dual systems used almost two-thirds less municipal treated water than their in-town counterparts. In the summer of 2011, water use in dual-system households was down by more than half.

Ditches transport and supply the non-potable, agricultural water to new communities. But even this water supply is limited. In heavy snowmelt years, ditches and irrigation ponds are full. But during light snowmelt years, these neighborhoods have far less water to use.

Not only does this 10-year-old policy keep native water rights on the land, but it also limits the amount of finished drinking water pumped through town, saving energy and chemicals. In the future, retaining native water rights will lower Windsor's demand for new water.

Water Valley housing development and golf course is one of the areas using dual systems to allow non-potable, agricultural water to be used for irrigation.



LEFT HAND WATER DISTRICT: CRACKING DOWN ON WATER LOSS

Left Hand Water District invested \$9.3 million to hunt down and repair water losses, saving thousands of gallons of water a year.



Water system losses have many causes. Following the adoption of its 1996 *Water Conservation Plan*, the Left Hand Water District discovered that 16.4 percent of its treated water was unaccounted for. This discrepancy was due to underground leaks, worn meters, and an underestimation in the amount of water used in the treatment process and system maintenance.

For some water-rich parts of the U.S., water providers consider it normal to have 10 percent to 20 percent of water go unaccounted for. But in the arid mountain West, such losses are more concerning and should be unacceptable. The district, which provides treated water to about 6,500 homes and businesses in Boulder and Weld counties, set up programs to find and fix the losses.

The district began by building a replacement fund for repairs. Next, engineers tracked reported leaks' locations to determine whether problems were neighborhood-wide or due to faulty transmission lines.

Left Hand's 2008 Water Conservation Plan goal was to reduce overall water use by 10.6 percent or by 714 acre-feet per year.





Fixing a leaky faucet can save 140 gallons a week.

The district put meters within the distribution system to pinpoint leaks. Because worn meters can underreport usage, the district set up a regularly scheduled meter replacement program.

All of these changes added up. The system water losses were reduced on average from the 16.4 percent identified during the development of the 1996 *Water Conservation Plan* to a 5-year average of 8.3 percent in its updated plan, approved by the Colorado Water Conservation Board in 2008. And the district's efforts are not finished – officials are planning additional measures, including electronic leak detection to better target areas for pipeline replacement in an effort to reduce losses to closer to 5 percent.

Best of all, because of planning ahead, the district has been able to fund these replacements – nearly \$10 million worth – by using base revenue, not increased assessments.



The district is also now offering free indoor residential audits to 550 households located in older subdivisions built prior to the use of water-wise fixtures. This, coupled with a commercial water audit program and no-cost replacement fixtures and continued leak detection and repairs, will support the district's goal of continued reduction of unaccounted water.

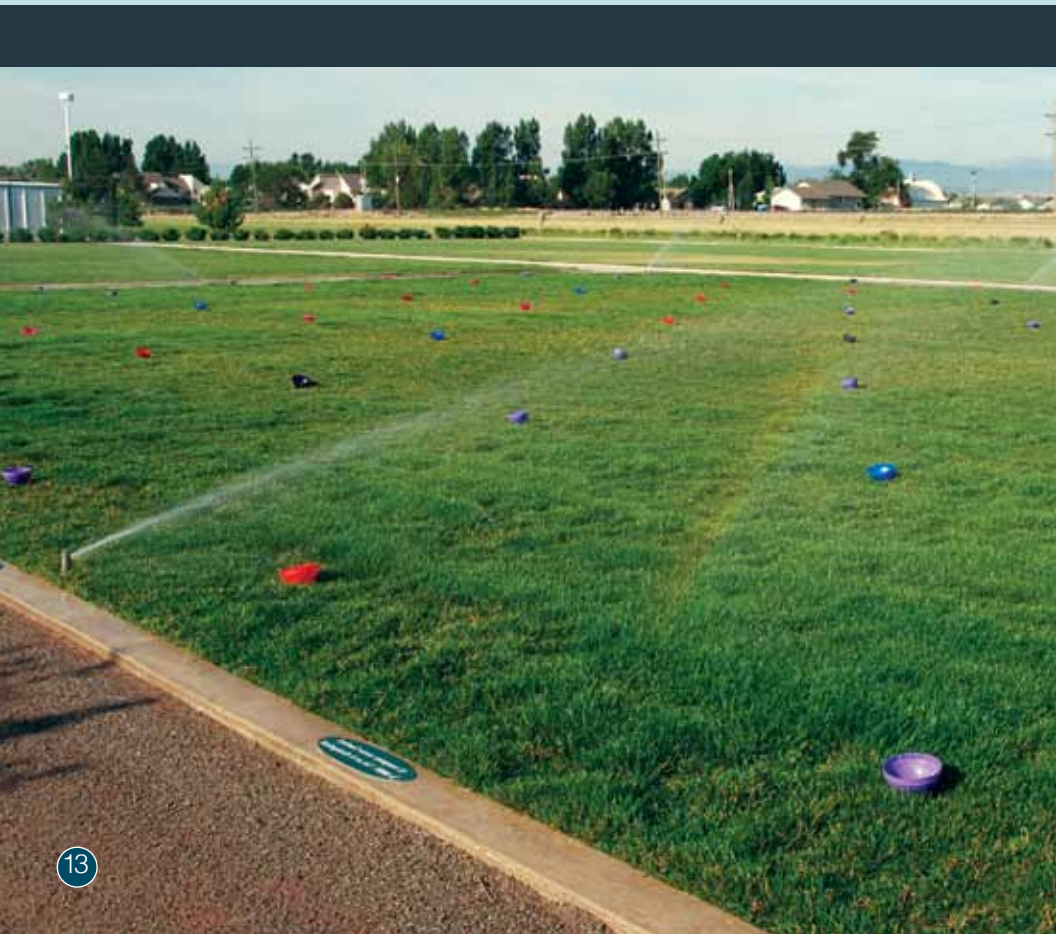
The Need for NISP



Conservation is an essential part of any water provider's portfolio. But it is not a silver bullet.

The *2010 Statewide Water Supply Initiative* determined that the state will need an additional 600,000 to 1 million acre feet of water by 2050 and that the gap between supply and demand will be between 190,000 to 630,000 acre feet depending on how many proposed projects get built.

To meet future demands, Colorado must continue to conserve, allow continued ag transfers, complete as many of the already-planned storage projects as possible, and develop additional new water supplies.





In the last few years, hundreds of thousands of acre feet of water escaped the state over and above legal requirements. That's surplus water we could have legally stored, but had no place to save it.

Our future is coming – quickly. Looking back 30 years, few would have predicted that the 15 NISP communities would grow from 76,000 people to 200,000 people, with an anticipated population of 400,000 by 2030. More people need more water, even when they use it carefully.

Conservation is in the best interest of our communities and the environment. But it's not enough. NISP is necessary because water conservation, through an assortment of best management practices, policies and educational efforts, must be supplemented with new storage.

NISP PARTICIPANTS

- Dacono
- Eaton
- Erie
- Evans
- Firestone
- Fort Lupton
- Fort Morgan
- Frederick
- Lafayette
- Severance
- Windsor
- Central Weld County Water District
- Fort Collins-Loveland Water District
- Left Hand Water District
- Morgan County Quality Water District



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