

Conservation Connection

The Water Conservation and Education Edition

Folsom Dam Celebrates its Golden Anniversary



Happy Anniversary to Folsom Dam! Folsom Dam has provided the Sacramento Valley with flood control, drinking and irrigation water storage, recreation, and hydroelectric power for 50 years.

Folsom Dam's history can be traced back to the late 1800's when Engineer William Hammond Hall proposed a Flood Control System for the Sacramento Valley. However, it wasn't until 1917, after several floods, that Congress finally approved the first Federal Flood Control Act. Construction of the Central Valley Project began in 1937, and the 1944 Flood Control Act authorized the Army Corps of Engineers to build Folsom Dam on the American River. Ground was broken on October 2, 1948, and construction was completed on May 9, 1956. The Army Corps of Engineers transferred ownership of Folsom Dam to the Bureau of Reclamation on May 15, 1956.

Fun Facts about Folsom Dam:


- Folsom Dam is a concrete gravity dam, made up of 1.03 million cubic yards of concrete. This is enough concrete to build a sidewalk from

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San Francisco to New York City, or a highway from Oregon to Bakersfield.

- The dam is 340 feet high and 1,400 feet long.
- The storage capacity is 977,000 acre feet of water.
- The dam's reservoir was filled in 1 week rather than the predicted 1 year due to massive storms.
- The reservoir, Folsom Lake, is operated by California State Parks and is the most popular year-round, multi-use facility in the State Parks system.

Join the Folsom Dam anniversary celebration by visiting its exhibit at the Folsom History Museum. The exhibit, "Floods and Flows, The Story of Folsom Dam," is open until July 9, 2006, and depicts the history of the dam. The exhibit also includes interviews with people who built the dam and a video of its construction. 



PCWA and UC Master Gardeners Team Up on Water Efficiency

By Harley Lukenbill

Placer County residents are taking advantage of valuable water use efficiency information made available through a partnership between Placer County Water Agency (PCWA) and the UC Cooperative Extension Service Placer County Master Gardener/Composter program (UCCE).

PCWA and UCCE created a three-part program that includes water efficient educational brochures, The Curious Gardeners' newsletter, and a landscape/gardening hot line. PCWA and a Reclamation Field Services Grant fund this project.

"We formed the partnership (PCWA and UCCE) in 2005 to educate and inform Placer County homeowners about water efficient landscape and garden practices," said PCWA Director of Customer Services John Kingsbury. "It has been a very successful collaboration that has enhanced the outreach efforts of both organizations."

WATER EFFICIENT EDUCATIONAL BROCHURE: This multi-page garden/landscape brochure provides information on micro/drip irrigation, mulching, soil amending/compost for water holding capacity, shade trees, and more. Also featured is a water efficient plant list for Placer County Zone 7. UCCE provided the technical information and graphics necessary for a homeowner friendly publication.

CURIOS GARDENER NEWSLETTER ARTICLES: Each quarterly issue of the Curious Gardener Newsletter includes an article on water efficient landscaping or garden water management. The newsletter mailing list includes approximately 1400 local residents, is emailed electronically, and is available on the UCCE web site. Copies of the newsletters are also used in educational workshops and at community events and demonstrations.

LANDSCAPE HOT LINE & OTHER RESOURCES: The Master Gardener Hot Line is available 24 hours a day via voice mail and is staffed a minimum of three mornings a week by Master Gardener volunteers. Funding for this project also provided additional reference materials (books, CD ROMs, subscriptions, etc.) and helps provide the materials needed to fulfill requests of callers.

In addition to the landscape hotline, PCWA Water Efficiency Staff are available to assist the Master Gardeners with home visits as needed. This is

extremely valuable since the Master Gardeners cannot answer all hot line questions over the telephone.

Both PCWA and the UCCE are planning workshops in 2006, which will cover irrigation controllers and water efficient plants. These workshops will expand upon the water efficiency outreach efforts of PCWA staff and the Master Gardeners.

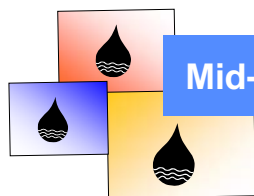
PCWA also participates in various regional water efficiency programs and works with several different organizations including the Regional Water Authority, Water Education Foundation WET Program, University of California Cooperative Extension, the Placer County Resource Conservation District, and the California Urban Water Conservation Council to enhance PCWA's efforts towards public outreach, school education, and irrigation management. PCWA's staff includes four certified Water Conservation Practitioners and three Landscape Irrigation Auditors that work directly with private sector landscapers, hardware and plumbing stores, nurseries and gardening service companies. In addition, PCWA provides water efficiency articles to customers through a bimonthly newsletter, maintains a water efficiency page on its web site, and produces periodic newspaper releases throughout the agency's service area.

For more information regarding PCWA's water efficiency activities and workshops, please visit <http://www.pcwa.net/> or call (530) 823-4850.

Pool Water Conservation Tips: Stay Water Wise in the Hot Summer Months

- Reduce evaporative loss by covering the pool when it's not in use. Pool covers can cut evaporation by 95%, thus saving approximately one inch of surface water per week.
 - Buy a new water-saving pool filter.
 - Reduce water splash by lowering the water level by an inch or two.
 - Check for leaks or cracks.
 - Use filter backwash to water lawns, bushes and flowers.
 - Avoid complete drainage.
- An average sized pool holds 20,000 gallons of water.





Mid-Pacific Region Highlights Water Conservation and Education

Conservation and Education

By Dennis Perkins

Why does Reclamation consider public education important to the water conservation program? I've heard that question from inside and out of the office. Let's start with the basics. Reclamation provides water through contracts to both agricultural and municipal water districts, The Reclamation Reform Act (PL 97-293 sec.210) directs Reclamation to "encourage the full consideration and incorporation of prudent and responsible water conservation measures" and the Central Valley Project Improvement Act further directs Reclamation to develop best management practices and criteria for water conservation planning (or water management). Education is just one of the "Best Management Practices" that is identified in the planning criteria.

Agricultural districts have a relatively small customer base, ranging from 40 – 3500 landowners that divert water for their fields. At agricultural water districts, water conservation efforts have concentrated on measurement and pricing, flow control systems (constant head for constant flow), real time monitoring and automation, and cooperative meetings on improving efficiency with instructors from Cal Poly, Chico State, the Farm Advisors (UC Davis) and Natural Resources (NRCS) field staff among others. Motivation for agricultural conservation tends to focus significantly on the value of water per unit (acre foot). For example, a single farmer of 500 acres needs on average approximately 3 acre feet of water per acre per year. At \$32.00 per acre foot, the farmer will pay \$48,000 per year for water. Small increases in water cost can significantly affect the financial future of this farm unit. In agricultural water management, major efforts have been made to improve delivery and irrigation efficiencies.

The inverse relationship exists with Municipal and Industrial (M&I) water suppliers. Large numbers of customers (3,000 – 50,000) use relatively small quantities of water compared to agricultural customers. The challenge is that a customer's M & I water bill may be as little as \$35.00-\$50.00 per month, and a 20% increase in water price adds just \$7.00 - \$10.00 per month. Although this small price increase may cause a flood of complaints from the water users, it will not cause much reduction in water use. Interestingly, an average M & I water supplier provides approximately 250 gallons of water per-person per-day, which results in an acre of homes consuming approximately the same amount of water as an acre of crops. However, the water provided to the home is treated both before and after use, increasing the cost of delivery and disposal or treatment for recycling.

Early in 1994 when I started working with public education, the most common perception of water conservation was to "shower with a friend" or "don't flush". The concepts of low flow clothes washers, efficient dishwashers, stop drips, low flow toilets, low flow showerheads and water conserving yards, were only considered during extreme droughts and then quickly forgotten once the rains came. Unfortunately, it wasn't common to get a lasting commitment to water conservation.

Re-visiting people's thinking on water conservation will help change the aforesaid perceptions. Rising water bills will get people thinking what conservation is and "why" conserve, but someone needs to provide the "how". That's where water conservation education comes into play. At every opportunity, including fairs, shopping malls, demonstrations, attachments to billings, **visitor centers**, and through education programs for children, the messages of 'what', 'why' and 'how' need to be delivered. People are generally not aware of their water uses and cannot change without the proper knowledge and education. Water education, stimulated by water shortages and rising costs, has started to turn the tide towards conservation. Water is finite and California is faced with an extremely difficult water balancing act between the rapidly growing population, the billion dollar Ag Industry, and our increasingly sensitive environment. Education is a key element in conservation, and conservation is the first step in making water a sustainable resource for all entities. It's our responsibility to ourselves, our kids and the future to continue pursuing stronger programs of education, conservation and resource development to make our water supplies stretch into the future.



Friant Water Education Center and Garden

By Dave Woolley



A view of the Friant Visitor Center's water wise garden which includes over 100 types of plants.

The Friant Water Education Center and Garden (Visitor Center), located 20 miles northeast of Fresno at the Friant Dam, was initially built in 2001, and since that time, has expanded on a yearly basis. Constructed by the Center for Irrigation Technology at Fresno State, and partnered with the U.S. Bureau of Reclamation, Millerton State Parks, and California Division of Forestry, the garden was designed as a self-guided tour for the public to view plants and landscaping options for this arid region of California. Tours are also conducted each spring by Park guides, emphasizing water conservation, water-wise uses, and water efficient plants. Tours meander through a beautiful garden which includes over 100 different varieties of low water use shrubs, rhizomes, perennials, trees, grasses and ground covers. Examples include Orange Monkey Flowers, Cherry Cheesecake Pacific Coast Irises, Woolly Blue Curls and Arizona Cypress Trees. The Visitor Center has an extensive database (see below) for all plants featured in the garden. The

database specifies the plants' common name, scientific name, type (perennial, annual, etc), water use, height, bloom color, season and sun/shade requirements.

Common Name	Plant Name	Type	Water Use	Height	Bloom Color	Season	Sun/Shade
Orange Monkeyflower	Mimulus aurantiacus	perennial	low	4ft	orange	spring summer	full to part shade
California Fuschia	Zauschneria californica	perennial	low to none	1-2 ft	pure white	summer fall	full
Moonshine Yarrow	Achillea 'Moonshine'	perennial	low to none	2ft	yellow grey green foliage	summer fall	full
Cherry Cheesecake Pacific Coast Iris	Iris PCH 'Cherry Cheesecake'	rhizome	low			spring	full to part shade
Pigeon Point Coyote Bush	Baccharis 'Pigeon Point'	shrub	low	2-3 ft	insignificant flowers		full
Foothill Needle Grass	Nassella cernua						
California Fescue	Festuca californica	grass	low to none	2-3 ft	flower stems to 5 ft	spring summer	full
Woolly Blue Curls	Trichostema lanatum	shrub	none	3-5 ft	blue arching	spring summer	full
Lanender Pacific Coast Iris	Iris PCH 'Lavender'	rhizome	low		lavender	spring	full to part shade
Emerald Carpet Marzanita	Arctostaphylos 'Emerald Carpet'	shrub	low	9-14 in	small pink not showy	spring	full
Arizona Cypress	Cupressus arizonica	tree	none	25-40 ft	golf ball size cones		full
Valley Oak	Quercus lobata	tree	low to none	to 70 ft			full
California Bay	Umbellularia californica	tree	none	to 75 ft	tiny yellowish clusters	spring	full to part shade
Rubies Pacific Coast Iris	Iris PCH 'Rubies'	rhizome	low			spring	full to part shade
Hearstorium Ceanothus	Ceanothus hearstorium	ground cover	low	6 in	medium blue clusters	spring	full

*A partial example of the garden's extensive database.

The Visitor Center also features a small exhibit house where school tours teach more about the water and environment in the San Joaquin River watershed. A Firescape exhibit is also included at the Center to assist foothill homeowners in selecting water efficient plants and effective landscaping for fire safe zones in foothill communities. Future plans for the Visitor Center encompass hands-on exhibits of irrigation systems, low-flow urban water uses, and general water conservation techniques.

For more information on the Visitor Center and garden, please contact Dave Woolley at dwoolley@mp.usbr.gov.



Another view of the Visitor Center's water wise garden and tour path.



American River Water Education Center

By Shana Avalos

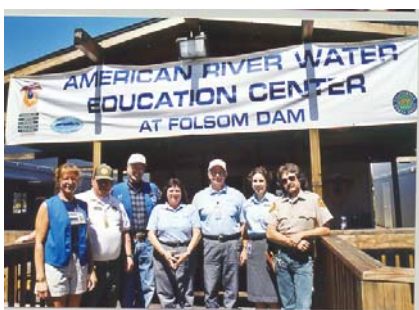
The American River Water Education Center (Center) at Folsom Dam has been welcoming visitors for over seven years. The primary purposes of the Center are to promote water conservation awareness, stimulate interest and increase knowledge of the American River watershed, thus promoting stewardship of resources. This is accomplished through interactive exhibits, tours, a water efficient garden and participation in public outreach.



An ARWEC school tour at the interactive flood exhibit.

The Center is open for school field trips and public visits. The Center offers guided tours and various hands-on learning activities in the classroom. Currently, dam tours are offered to elementary and middle school classes. This comprehensive program has been greatly praised by educators and is extremely popular with schools. Reservations are scheduled months in advance. The Center is also open to walk-ins after daily school programs are finished.

The Center is staffed with a full-time guide, visitor services assistant, and a natural resources specialist. Complimenting the full time staff, there is also



ARWEC staff and volunteers

one temporary, intermittent guide and multiple student aides. In addition to the Bureau of Reclamation staff, California State Parks seasonal aides also work part-time. Volunteers

make up the rest of the staff, adding to the quality program that is now expected.

For more information on the Center, please visit <http://www.usbr.gov/mp/arwec/> or call (916) 989-7150.

Turtle Bay Exploration Park

By Dennis Perkins

Turtle Bay Exploration Park (Turtle Bay) is a unique, interdisciplinary institution on the banks of the Sacramento River in Redding, California. Its mission is to serve as a regional interpretive center focused on the Sacramento River Watershed. Turtle Bay strives to create a visitor experience that deepens understanding about the natural and man-made, historic and contemporary world around us. Their 300 acre park and museum complex, straddling the banks of the Sacramento River, includes indoor and outdoor, permanent and temporary exhibitions.

Turtle Bay consists of a 34,000 square foot Turtle Bay Museum, a Visitor Center, Paul Bunyan's Forest Camp, the McConnell Arboretum and Gardens, and "Butterflies", a seasonal greenhouse exhibit featuring



Turtle Bay's interactive water conservation exhibit.

hundreds of live butterflies. Their staff continues to provide a wide variety of educational and cultural programs with annual visitation of over 150,000. Turtle Bay also has the unique and world famous Sun Dial Bridge that draws visitors from all over the country.

Turtle Bay and the City of Redding have worked with Reclamation for the past seven years to develop educational programs for the Redding area. Utilizing their local school visitation program, docent training, museum, and arboretum, Turtle Bay provides water conservation education programs and materials. Turtle Bay's Water Conservation education program offers displays and interactive educational activities, as well as a drought tolerant and xeriscape gardens, and demonstrations on micro and low flow irrigation methods.



A view of the xeriscape garden.

For more information on Turtle Bay, please visit www.turtlebay.org or call 1-800-887-8532.



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Placer Nature Center's Plunge into Watershed Education

By Linda Desai

Placer Nature Center (PNC) began its environmental education programming almost fifteen years ago when Leslie Warren and Linda Desai took an abandoned farm complex and turned it into a community resource. The abandoned farm's pig sty was transformed into an Exhibit Hall, the rabbit hutch a Discovery Room, and the chicken coop a WaterShed Learning Center. PNC is a non-profit organization; therefore, these transformations were made possible by community volunteers and federal, state, county and local granting agencies. Throughout the years, Bureau of Reclamation has supported numerous projects, helping us better meet our mission: To connect people to their environment through environmental awareness and education.

Initially, the main emphasis of our program was the flora and fauna of the foothill ecosystem. However, a vision formed to integrate water-related themes, and after several years of planning and securing funds from Reclamation and other grantors, the WaterShed Learning Center was built. The centerpiece of the Watershed Learning Center is an interactive, 3-D, 6' X 4' watershed model of the North and Middle Forks of the American River. The model also has two pull-out drawers: one drawer depicts the South Fork of the American River, and one

drawer maps the water flow from the American River all the way to the Pacific Ocean.

Even the floor of the WaterShed Learning Center is an exhibit in itself. Visitors "walk on water" as they enter the Center and follow the water flow from a mountain stream to a foothill stream to a valley river, meeting the "ocean" as it flows out the exit door. This mural reveals the changes of substrate and plant and animal species as the water flows through elevation changes in the watershed.

One of many PNC's outdoor exhibits is a drought tolerant display garden to exemplify water use efficiency in residential landscapes. Water conservation is demonstrated by selecting low water use plants and drip irrigation. Our visitors can see firsthand the beautiful plants that can enhance their landscapes and conserve water.



A school tour at the interactive 3-D Model of the American River.

The WaterShed Learning Center has curricula for Kindergarten thru 8th grade students that augment the numerous watershed exhibits. The *Watershed*

Explorations curricula are based on student grade level and associated science standards. The curricula are designed to challenge and engage students in hands on investigations and critical thinking about our water resources.

PNC also offers an outreach program, *Waterworks*, which identifies how living things are dependent on water, water use, and conservation. For the older students, *Learning from the Land* is another outreach program that is a day-long field investigation exploring stream ecology, grassland ecology, riparian area restoration, and cultural history stations that provide activities to build local environmental awareness.

PNC has evolved over the years to become an important regional resource on water education for our youth and community, educating more and more people every year. Environmental education is critical for California's future because "... **Our environment links everyone and everything and underpins our economy**" as stated by *Education and the Environment*, published by the California State Education Department. PNC builds environmental awareness and appreciation in our youth which matures into stewardship in our leaders of tomorrow.

For more information about PNC, please visit www.placernaturecenter.org or call (530) 878-6053.



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<i>Calendar of Events</i>	
<p>The Future of Agriculture: Science, Stewardship and Sustainability</p> <p>Sponsored by EPA and Kansas State University Sacramento, CA August 7-9, 2006</p> <p>For more information, visit www.dce.ksu.edu/dce/conf/ag&environment/</p>	<p>Designer/Manager School of Irrigation</p> <p>ITRC, Cal Poly, San Luis Obispo, CA August 14-25, 2006</p> <p>For more information, visit www.itrc.org/classes/desmgr.htm.</p>
<p>Supervisory Control and Data Acquisition Short Course</p> <p>ITRC, Cal Poly, San Luis Obispo, CA August 29-September 1, 2006</p> <p>For more information, visit www.itrc.org/classes/scada.htm.</p>	<p>21st Annual WaterUse Symposium</p> <p>Hollywood, CA September 10-13, 2006</p> <p>For more information, visit http://wateruse.org/2006Symposium/index.html</p>
<p>Sierra Watershed Tour August 3-4, 2006</p> <p>Northern California Tour September 13-15, 2006</p> <p><i>Presented by the Water Education Foundation</i></p> <p>For more information, please visit www.watereducation.org/tours.asp#watertours</p>	<p>4th Biennial CALFED Bay-Delta Program Science Conference</p> <p>Sacramento Convention Center, Sacramento, CA October 23-25, 2006</p> <p>For more information, visit http://science.calwater.ca.gov/conferences/conferences.shtml</p>

To feature your events or programs in our Newsletter, please contact Sheri Looper at 916-978-5219.



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**Conservation
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Address Correction Requested



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