Irrigation Leader

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Thomas W. Birmingham:
Finding Water Supply Solutions
Through Environmental Protection Law

The Importance of Infrastructure

By Kris Polly, editor-in-chief

"What the Army Corps of Engineers and the Bureau of Reclamation do, and do well, is infrastructure," said a civilian representative of the Army Corps of Engineers during his presentation before a joint meeting of Corps and Reclamation leadership in spring 2008. "However, what we do poorly is explain the importance of infrastructure," he continued.

What that gentleman said struck a chord with me and everyone else in the room. He was right. However, communicating the importance of infrastructure is not solely the responsibility of these federal agencies. The western water community as a whole must do more to explain its critical needs. It is human nature to forget about floods once dams are in place, and to take the water storage and power production they provide for granted. It is also easy to find fault with such structures when all the good they provide is forgotten.

Attending the Hoover Dam 75th anniversary celebration was a wonderful reminder that our country once committed to constructing engineering marvels through strong leadership and tremendous cooperation between government and the private sector. Hoover and all Reclamation projects are enduring monuments to a rich history of what is possible when people work together. Yet many of these projects are over 50 years old and require upgrades and refurbishment to enter the modern era.

For over 100 years in the 17 western states, Reclamation has helped answer the question: "Where will the water come from?" The bureau is still answering that question or, more accurately, trying to help answer that question. The reality is that Reclamation can only do what the law allows and what its funding provides. Restricted and underfunded, it is incumbent upon the western water community and Congress to help them help us.

As our water infrastructure ages and our water supplies become more strained, we need more funding and creative projects to increase our water storage and water reuse capacities. We need more water infrastructure, not less. There are existing programs, ideas, and laws that can help.

Congresswoman Grace Napolitano has long championed the water recycling Title XVI program as a way to stretch our existing urban water supplies and to reduce the pressure on agriculture. Congressman Adrian Smith introduced legislation to allow irrigation districts to install small hydroelectric generation turbines using their existing canals without the regulatory burden of seeking formal exemptions from the Federal Energy Regulatory Commission. His legislation would allow districts to quickly create new streams of revenue using their own money and at their own pace. This revenue can help districts pay their Reclamation contract obligations and maintain their projects.

Additionally, the loan guarantee program authorized by the Twenty-First Century Water Works Act (Title II, P.L. 109-451) and signed into law in 2006 permits the Interior Department to issue loan guarantees to assist nonfederal borrowers to finance rural water projects, perform extraordinary maintenance and rehabilitation of Reclamation project facilities, and construct improvements to infrastructure directly related to Reclamation projects. Such loan guarantee programs exist within other federal agencies. However, Reclamation's program has never been allowed to begin. Why? Simply put, the Office of Management and Budget disagrees with the program as passed by Congress and signed by the president into law.

Title XVI, the small hydroelectric generation legislation, and the loan guarantee program can provide infrastructure solutions on par with the benefits that Hoover Dam brought to the western landscape 75 years ago, but it will take a similar partnership between government and the private sector to make them happen. All will create jobs, build our economy, and add important and lasting water supplies to serve our country for years to come. Can such cooperation exist again? Are we still a nation of builders?

One need only stand on Hoover Dam and look up at the new bridge for those answers. It was built through the combined efforts of private companies in cooperation with the federal government to bypass the road running directly over the dam. Similar efforts will be necessary to sustain the western water supply for future generations and ensure that the work of previous generations of farmers and ranchers is not squandered. However, we cannot leave it to Reclamation alone to explain these needs. Infrastructure initiatives are not authorized without the unabashed support of their beneficiaries, Congress, and the Administration. To build that support, it is essential that, in our communications with Congress, our communities, and other groups, we do more to explain the importance of infrastructure.

Kris Polly is editor-in-chief of Irrigation Leader *magazine and president of Water Strategies, LLC, a government relations firm he began in February 2009 for the purpose of representing and guiding water, power, and agricultural entities in their dealings with Congress, the Bureau of Reclamation, and other federal agencies. He may be contacted by e-mailing Kris.Polly@waterstrategies.com.*

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Finding Water Supply **Solutions** Through Environmental Protection Law

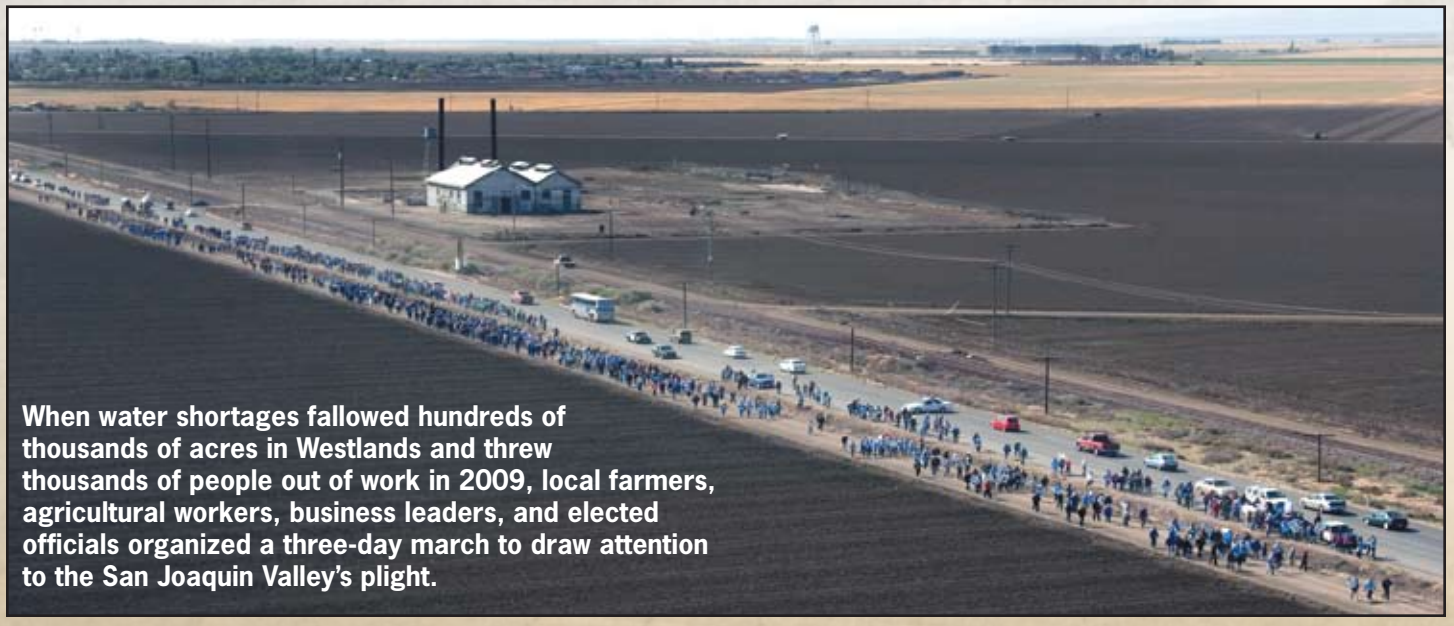
Westlands Water District is the largest irrigation district in the nation. It provides irrigation water to over 600,000 acres of farmland within an area that is 15 to 25 miles wide and 70 miles long. In recent years, Westlands Water District has had its water supply from the federal Central Valley Project severely reduced due to drought and the enforcement of federal restrictions adopted under the Endangered Species Act. Mr. Thomas W. Birmingham, general manager of the Westlands Water District, recently discussed how the very laws that initially shut down the district's water deliveries have been helpful in restoring some of those supplies. Below is the transcript of the September 27, 2010, interview by Kris Polly, editor-in-chief, Irrigation Leader *magazine.*

Kris Polly: How have the Endangered Species Act (ESA) and the National Environmental Protection Act (NEPA) helped Westlands Water District in the current controversy over water supplies in California?

Tom Birmingham: Neither the Endangered Species Act nor the National Environmental Policy Act is a bad law, but as in many other circumstances, the impact of those statutes depends entirely on how they are implemented. The U.S. Fish and Wildlife Service and NOAA Fisheries have been selective in their enforcement of the Endangered Species Act. They tend to ignore the provisions of the law that require that decisions be based on best scientific and commercial information available, and we have been able to use those provisions as a means to challenging jeopardy determinations and the imposition of restrictions that may reflect a federal biologist's best professional judgment but are not based on scientific data. I think the same is true for NEPA. Federal agencies have been selective in its application. However, NEPA doesn't exempt major federal actions that are proposed to protect the environment. To the contrary, it applies to all major federal actions. We have been successful in asserting that the impact on the human environment must be analyzed before the biological opinions are implemented. In this way, we have been able to use the two laws in the current controversy over water supplies in California to seek to have the laws fully implemented. And to date I believe we have had some success.

Kris Polly: What projects has Westlands undertaken to help resolve California's delta and water supply issues?

Tom Birmingham: The water supply for major areas of California is conveyed through the Sacramento and San Joaquin River Delta. Because of efforts to



When water shortages fallowed hundreds of thousands of acres in Westlands and threw thousands of people out of work in 2009, local farmers, agricultural workers, business leaders, and elected officials organized a three-day march to draw attention to the San Joaquin Valley's plight.

protect fish species in the delta, our water supply has been significantly curtailed. It's our view that there are many factors that limit the abundance of those species beyond the operations of the two water projects in California. Because there are many factors that limit the abundance of at-risk species in the delta, and because we need to better understand those factors in order to be able to restore our water supply, Westlands has put its money where its mouth is. Working with other public water agencies that depend on water supplies pumped through the delta, we have purchased approximately 3,500 acres of land in the delta and we are in the process of restoring approximately 2,000 acres to tidal marshland habitat. This will benefit native fish species that either inhabit the delta or rely upon the delta for part of their life cycle. Westlands has done other things, such as funding California game wardens, so that the Department of Fish and Game can go out and address such things as poaching and other violations of the fish and game code that affect those at-risk species.

Kris Polly: Westlands, the largest irrigation district, and the Metropolitan Water District of Southern California, the largest municipal water supplier, are working together to address some of the biggest water supply issues in California. In the past, these two agencies have sometimes been at cross purposes. How did this alliance come about and how is this relationship working out?

Tom Birmingham: Well, it is my view that the conflict between agricultural water agencies and urban agencies has been exaggerated. I don't mean to suggest there has not been conflict in the past. For example, when Congress was considering the enactment of the Central Valley Project Improvement Act in the early 90s, there certainly was a conflict between the Metropolitan Water District and Westlands Water District concerning the enactment of that legislation. However, I think that at least in California there is a recognition that urban agencies and agriculture agencies share much more in common than they have differences. That is the basis for the very good working, cooperative relationship between Westlands and Metropolitan. Over the course of the last seven or eight years, we have recognized that if we work together for common solutions, we will have a much greater chance of success than if we continue to have conflicts with each other. Westlands farmers have benefited from our relationship with Metropolitan. We have been able to implement a number of programs where we have utilized some of the flexibility that Metropolitan has in its water delivery system to address or to mitigate

America's supplies of fresh fruits and vegetables are at risk from federal environmental restrictions that have reduced California's water supplies by more than a third in the last three years.

some of the limitations that exist within the Central Valley Project. As an example, we share capacity in San Luis Reservoir with Metropolitan and we have actually borrowed water from Metropolitan to avoid the reduction of deliveries to Westlands during the peak of the irrigation season. This year we are implementing an exchange with Metropolitan that will allow us to bank our Central Valley Project water in Metropolitan's storage facilities in southern California in order to avoid losing that water under federal policies that make it likely the water will spill out of the San Luis Reservoir. So at least from our perspective, our relationship has been very, very beneficial, and it is our hope that Metropolitan's ratepayers have benefited as well.

Kris Polly: You are engaged in the development of a Bay Delta Conservation Plan that is intended to help restore the fisheries and other natural resources in the delta and, at the same time, restore the reliability of the water system itself for all the people who depend on it. What have you learned from that process that may be important to anyone else who is thinking of undertaking a major infrastructure development project?

Tom Birmingham: That is an incredibly difficult question. First, tenacity is a key. We engaged in the California Bay Delta conservation program because it became apparent to us that if we were going to implement programs or projects that have been on the drawing board for a number of years to improve our water supply, it would be necessary to develop a comprehensive solution to the problems that are affecting the delta. If we are going to be successful, that success will result from a genuine interest on the part of the public agencies and nongovernmental organizations to recover the species in the delta and the water supplies California needs. It has been a long, arduous process. I think the key is establishing realistic objectives and then insisting that a program be developed to achieve those objectives. We cannot lose sight of the objectives that were established early in the process.

Kris Polly: What are some of the issues that you are facing today in California that are likely to come up for the more than 600 irrigation district managers in the 17 western states who read *Irrigation Leader*? How would you advise them to address ESA and NEPA issues?

Leaders of the Latino communities in California's rural and urban areas were at the forefront of efforts to reform California's water laws and persuade the federal government to turn the water back on.

Tom Birmingham: First, hire a good lawyer. Beyond that, I think the simple answer to this question, in view of the increasing conflict between competing uses of water and environmental regulation, is to seek collaborative solutions.

My advice about hiring a good lawyer is only partly tongue-in-cheek. I think whether an irrigation district manager is dealing with the Endangered Species Act, NEPA, the Clean Water Act, or the Clean Air Act, there are provisions within the law that will help protect the interests of his or her district. For that reason, having the advice of a knowledgeable lawyer certainly will be valuable.

As an example, we have recently been involved in litigation concerning the implementation of federal laws that require the use of good science—in particular, the Information Quality Act. It is a little known federal law that sets standards for the type of scientific analysis that has to be done by federal agencies when they are making important decisions. Without the assistance of some very competent, knowledgeable lawyers, that law would not have ever come to our attention.

Beyond that, I think we have had as much success seeking collaborative solutions as we have had litigating. The key there is dealing with other agencies and nongovernmental organizations that are genuinely interested in finding solutions that will serve the interests of everyone involved. As an example, our district has recently been involved in the development of regulations by a state agency that are intended to protect ground water quality. We initially were very concerned that those regulations would only create tremendous conflict between the district and the state agency that was developing those regulations. But early on, we established a collaborative relationship. To our pleasant surprise, we have been able to work out most of the issues that were of concern to us with respect to those regulations.

I think the same is true in the application of the Endangered Species Act or NEPA. We have had tremendous success sitting down with the Fish and Wildlife Service, as an example, working together to find a means of improving our water supply or for reducing the impact of the Endangered Species Act on our water supply while at the same time enabling the service to fulfill its obligation under the Endangered Species Act. The key to achieving that kind of success is dealing with those people within the agency who recognize there may be alternatives that will serve the interests of both the irrigators and the species that the service is trying to protect.

The last piece of advice I would give applies in any area of federal environmental law, and that is to develop good science. Everyone wants to base decisions on good, sound science. The water users in California have invested a tremendous amount of money and other resources in the development of good scientific information and that has served us well. We have been able to use that scientific information in both the administrative arena as well as in litigation. Having good science available to us has enabled us to pursue solutions that ultimately help protect our water supply.

Federal water restrictions had a devastating effect on the environment as well as the economy. Here are just a few of the thousands of acres of almond orchards in Westlands that had to be uprooted and destroyed because there wasn't enough water to keep them alive.

Helping to Manage Water in the Golden State.

Growing high-value crops requires both key management skills and precise use of inputs – including irrigation water. The abundance of water and labor, along with innovative agronomic practices, were the keys to California's success.

Mark Twain was right – everyone talks about the weather, but no one does anything about it. That's why any discussion of increasing the water supply in California misses a more salient point: How can growers make better use of the water supply that *is* available?

The choice of irrigation type is critical to optimizing efficiency. Center Pivots need to be top of mind when discussing the trends that will shape the future of California agriculture, and how will they affect the demand for irrigation water.

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Water Solutions for the West:
Time to Expand Our Horizon and Develop a Sustainable Portfolio

By Congresswoman Grace Napolitano, chairwoman, Water and Power Subcommittee

"Searching for water solutions." That seems to be our new mantra in western water. For the last 100-plus years, we have met our water needs by capturing rivers with dams, moving water in large canals and pipelines, tapping into our ground water supplies and building a plumbing infrastructure that can move water from one part of the country to another. At the turn of the 20th century, our water resources were developed based on one key assumption, true enough at the time, that there was more than enough rain, snow, and ground water to meet our needs. Today we find ourselves in a quandary as we struggle with the challenges of growing demand from out continually expanding population, reduced available water supply, environmental and social water requirements, and the potential impacts on hydrological resources from climate change.

Today the headlines tell the story: "Drought Grips the Colorado River," "California Farmers are Being Strangled by Regulation," "A Future Without Water." The reporters are laying out various scenarios of what the leading edge of climate change will bring—water stress, either too little or too much. The changing water dynamics are forcing us to address our historic assumptions on water availability and use.

In Congress, our approach to water is based on one underlying philosophy—water is essential for our country's economic vitality, the public's health and well being, and our national security. We believe that water should be nonpartisan and all actions should work toward meeting the needs of the public. The process of how we get there and at what level it should be supported by the government is where the differences occur.

Our Water Role

Water in the United States, particularly in the West, is a precious and limited commodity, one that has been fought for, argued and litigated over more than any other resource. The states have historically held the primary role in determining water rights and water quality, with the federal government setting an overall national direction for protecting water quality while providing authorization and funding of regional and river basin water projects.

The Water and Power Subcommittee, which I chair, is tasked with three primary responsibilities: developing and guiding specific water and power legislation through the U.S. House of Representatives; overseeing the Bureau of Reclamation, U.S. Geological Survey, four Power Marketing Administrations and tribal water settlements; and addressing specific water issues important to the American public. Our geographic range for water development is primarily in the 17 western states, with additional emphasis on water management, international compacts, and water research programs, providing us an opportunity to work across the national and international water scene.

Developing a Water Portfolio

The days of building large regional water projects are behind us. The financial, social, and environmental cost of developing regional water projects is beyond the abilities of even the federal government. Meeting our water challenges requires a new philosophy and approach, one of developing a balanced water portfolio. As we have learned during this latest economic downturn, having all your financial eggs in one basket is not a good idea. The same can be said for water when preparing for drought, climate change, and supplying water where needed.

Addressing the water challenge facing the nation requires us to systematically and concurrently address policy issues, urban and agricultural water reform

and management, aging infrastructure, conservation, identifying and supporting appropriate hydrologic science, and working with the constraints of the environment.

Historically, water development focused around building a large project that could provide quantities of water from a single source. That approach worked for many years. However new sources of water had to be found as demand began to outstrip supply. The water supplies of tomorrow require diversity in source and location in order to meet the increasing demands. Components of a sustainable water portfolio should include: conservation; improved efficiency in use; rainwater and runoff capture; use of ground water aquifers for storage and treatment; improved water treatment; desalination; and, in my view, the most effective—the improvement and the development of Title XVI water.

Role of Title XVI, Ground Water, and Desalination

The Title XVI program is a direct result of developing an innovative approach to create a sustainable local water supply for southern California. The water recycling program was created in 1991 to help offset import reductions from the Colorado River Basin by providing limited federal support to stimulate the development of local water supply in southern California. The resulting program was a resounding success for California and was expanded to include the rest of the 17 western states in 1992 through the Title XVI program. The result has been that the demand for the program has outstripped the funding and technical support supplied by the Bureau of Reclamation. Beyond creating water for local use, Title XVI protects agricultural and environmental water by reducing the amount imported. The result is less reallocated water, less energy used to move the water, and protected economic sectors.

The popularity of the Title XVI program can be explained from several perspectives. One is that it provides local water sufficiency and control. Second, reclaimed water is not dependent on large, distant water projects. Third, the funding stream requires that 75 percent come from outside sources, creating natural partnerships between financial institutions and water districts. Fourth, recycled water provides a usable, additional supply for a water portfolio. Lastly, the cost per acre-foot of recycled water has become competitive with that of developed water, and will continue to improve as the value of water continues to climb. The downside of the program from Reclamation's perspective is that it is local, it is not the traditional concrete and rebar construction project, and is not dependent upon Reclamation staff for completion.

The Congressional Research Service has determined that there are approximately $620 million worth of Title XVI authorized projects currently backlogged at the Bureau of Reclamation. This is after the $126 million that was allocated to water recycling in the Obama Administration's stimulus program. The Bureau of Reclamation allocated $20 million in its 2011 budget, which means that at the current rate it will take over 30 years to process the backlog of wait-listed projects, assuming no new programs are authorized. I believe we need to change this dynamic by creating a $200 million revolving fund for Title XVI. This fund would perform two important functions: it would provide an incentive for local communities to look at water recycling as a component of their water portfolios, and it would show the financial world that the government is willing to step up and provide funding incentives for recycled water.

Title XVI water can be augmented with the increased production of our ground water resources. For years we have overpumped and polluted our ground water resources to the point that they have become unusable, dried up, or polluted. We need to look at the aquifers as viable reservoirs of future water supply, using them for storage of recycled water and as clean sources of water for citizens.

The final area of water collaboration should be on the development of desalination at a competitive cost. For years we have used reverse osmosis technology as the primary methodology to create potable water from the ocean and agricultural return flow. Reverse osmosis has worked, but at a tremendous cost in terms of both energy required and cost per acre-foot produced. We need to stimulate research and industry to work together to look at alterative technologies and methodologies to address the desalination challenge.

The Horizon Line

We are at a threshold with how we manage and protect our water supply, both nationally and internationally. Dr. Peter Gleick has recently asked if we have reached a point of "peak water"—the point at which demand has outstripped supply. Dr. Gleick's conclusion is that we have bypassed the threshold of renewable, nonrenewable, and ecological water. We are entering a period of water stress that we have not had to face before, when readily available sources of water will become increasingly scarce. The challenge is to continue our country's growth using less and less water.

Some would contend that the glory days of water development are behind us. I believe that in fact they are ahead of us as we tap into our ingenuity and expertise to develop our water portfolios both nationally and locally. The way in which we act to protect our water supplies will dictate the water legacy that we leave for our children and the future. We know that the traditional engineering approaches alone will no longer meet our needs. The opportunity is to stimulate and support the best and the brightest of the water profession, and recognize that the development of a diverse water portfolio will provide us the best water security for the future.

Small Hydropower Has Big Potential

By Congressman Adrian Smith

When most people think of hydropower, they think of huge dams powering entire cities. Very rarely does anyone think that an irrigation ditch, canal, or pipe also can provide cost-effective renewable hydropower.

The perception is changing in the West, thanks to the vision of many irrigation managers seeking to harness new energies. Hydropower is the original green energy and remains the largest source of non-carbon-emitting energy in the world. It provides low-cost electricity, helps reduce carbon emissions, and accounts for 67 percent of America's total renewable electricity generation.

Elephant Butte Irrigation district's bypass turbine box during construction.

For generations of western Nebraskans, dams and reservoirs have provided an affordable and reliable energy source. This ability to capture the power of moving water has paid tremendous dividends for our nation's agricultural economy. It is vital to ensure that future farmers and ranchers continue to enjoy this low-cost, renewable resource.

While we must promote our existing hydropower infrastructure, we also must recognize new efforts designed to produce more hydropower from smaller sources. The thousands of miles of irrigation canals, pipes, and ditches in the West create an ideal opportunity for new hydropower generation too good to pass on.

Congressman Adrian Smith (middle).

Hydropower produced in smaller, man-made water delivery systems does not consume or disrupt water deliveries and has no environmental effect on temperature or aquatic life. In addition, many irrigators are eager to use small projects to reduce electricity costs and generate much-needed revenue to repair aging facilities. Finally, irrigation water delivery services can continue while utilizing flows for clean, emissions-free energy production.

As a member of the House Subcommittee on Water and Power, I've had the chance to see the potential of this emerging technology. Using smaller water sources to generate power seems like an easy concept but, unfortunately, Federal Energy Regulatory Commission (FERC) permitting rules have stifled advancements and innovation in the small hydropower field.

For instance, during a Water and Power Subcommittee hearing, one witness stated, "Without a statutory change to the FERC process, low-head power will never be cost-effective enough" to be considered by a small irrigation district. As an irrigator from Nebraska told me, "Small hydropower is simply not feasible given the complexity of the FERC permitting process."

As a vivid example, one irrigation district spent $25,000 navigating FERC regulations and waited nine months for the federal agency to approve an exemption for a very small 12 kilowatt conduit project that had no environmental impact whatsoever.

Clearly, one-size-fits-all outdated federal regulations make small scale hydropower projects throughout the country financially prohibitive.

To solve this problem, I introduced the Small-Scale Hydropower Enhancement Act of 2010 (H.R. 5922). This legislation would stimulate the economy of rural America, empower local irrigation districts to generate revenue, and decrease reliance on fossil fuels—all at no cost to taxpayers.

My bill, which has been endorsed by the Family Farm Alliance and the American Public Power Association, would exempt any conduit-type hydropower project generating less than 1.5 megawatts from FERC jurisdiction. It also would require the Bureau of Reclamation to examine its facilities for more conduit-generation opportunities using existing funding and at no cost to irrigation districts.

Though large-scale hydropower will continue to play an important part in any all-of-the-above approach to our nation's energy policy, my bill will help irrigators tap into a local resource without any harm to the environment. In this case, it pays to think small.

Shannon McDaniel
An Irrigation Leader Retires

When Shannon McDaniel rejoined South Columbia Basin Irrigation District (SCBID) in central Washington as general manager in 1990, he did not anticipate the types of responsibilities he would eventually undertake. Though he had served as manager of another district for four years and had already worked at SCBID as an engineer and assistant manager earlier in his career, he did not foresee the increasing demands of his role.

"There has been a paradigm shift from what managers did 25 years ago to what they do now," he said, looking back on his career just prior to his retirement in October. "It used to be operations and maintenance, but in today's world its regulatory, it's statutory—just any type of impact you can imagine from state or federal agencies."

McDaniel took the regulatory challenges presented in stride and worked tirelessly to ensure the interests of SCBID's water users—stretched over 200,000 acres—were voiced. "You can't live in a vacuum," he said. "You've got to be able to develop relationships—and be there when someone needs you to be there on an issue."

He noted that it will be important for the next generation of water leaders to mine information to ensure that irrigation districts remain able to supply water to farmers and ranchers. "Stay informed and have good information resources—so you understand the legislative part of it and also how current court cases might impact you," he advised. "It's just a matter of protecting your water rights as best as you can."

"[McDaniel] is a leader amongst leaders," said long-time employee Darvin Fales, who now serves as secretary-manager of Quincy-Columbia Basin Irrigation District. "He's not shy to stand up for what he believes in."

McDaniel was a regular participant in industry associations at both the state and national levels and he encouraged SCBID's board of directors to follow that lead. "He made it easy to get involved in all the associations," said Board President Maury Balcom. "[As a result], we had a bigger picture of what was going on—that's kind of the way he worked it, you don't end up with that by accident."

However, McDaniel knows too well that regulatory threats are not the only challenges district managers face. In 2009, a massive landslide moved approximately 3 million cubic feet of material over a quarter-mile, interrupting service to water users in the area. "When thinking about those types of situations, you're looking at how to mitigate it so you don't have to deal with it again," he said, noting the district ultimately built a pumping plant to move water around the damaged area.

He also counts a number of internal initiatives as the district's greatest successes during his tenure. These include the implementation of an integrated vegetation management program to combat the growth of aquatic weeds, the development of a water quality program, and the creation of a geographic information system. Yet he believes the best way to measure a manager's success is the ability to get the right people to do a job and noted that he was lucky to have worked with a strong board of directors.

During his 20 years as general manager of SCBID, McDaniel enjoyed strong relationships with employees and the district's board. "He always did a good job of educating the board," Balcom said. "He knew if something was contentious to make sure all sides were presented and that everyone fully understood the consequences of their votes."

Though working with Reclamation sometimes presented challenges, McDaniel firmly believes it is composed of good people who understand the industry. In fact, his biggest concern is that the agency may be losing its historical knowledge as long-time employees retire and hopes new employees will get up to speed quickly.

Looking toward the coming decades of western irrigation, McDaniel believes district managers must remain nimble. "Be ready for change; when you walk in the door you will have a thick set of problems to deal with," he advised. "Try to stay ahead of the game to see how it is going to impact you."

Reclamation's Conservation Field Services Program:

A Manager's Perspective

By Dick Erickson

While modernization efforts and innovation are important components of a sustainable water management strategy, tried and true conservation techniques are an equally critical element of an irrigation district manager's arsenal. Continued funding of conservation projects through Reclamation's Water Conservation Field Services Program (WCFSP) is essential to ensuring water supply needs for future generations.

The program aims to encourage conservation practices in local districts receiving water from federal projects and has four areas of focus: water management planning, demonstration of innovative technologies, implementation, and education. It provides grants of no more than $100,000 in federal funding per project and typically requires at least a 50 percent cost share with the nonfederal sponsoring partner.

In 1986, East Columbia Basin Irrigation District (EBCID) in central Washington undertook a formal water conservation program using state grants and loans. Grant amounts generally covered between 15 and 30 percent of project costs, with district funds and water user cost sharing making up the difference.

However, the introduction of WCFSP a decade later allowed the district to accelerate its efforts. While we were only completing one to two projects per year in the 1980s and early 1990s, by the early 2000s we completed up to nine projects per year. From 1995 through 2005, EBCID completed 55 water conservation projects, many using WCFSP for partial funding. Projects included installing 3.4 miles of shotcrete canal lining and 17.3 miles of new pipe, which replaced unlined, open channels. Ultimately, these efforts contributed to an estimated water savings of 13,305 acre-feet per year.

WCFSP also provided funds to develop the district's current water conservation plan in 2007. The plan calls for 155 future projects, including additional canal lining and piping projects that will contribute to savings of 14,438 acre-feet per year at an estimated cost of $7.9 million, or $550 per acre-foot.

Backfilling high-density polyethylene (HDPE) pipe to bury an open-channel, unlined lateral near Warden, WA.

Constructing finished shotcrete canal lining to replace failed compacted earth lining, Potholes East Canal south of Othello, WA.

Although EBCID may have been able to fund some of these projects independently, the availability of federal cost-share funding through WCFSP allowed the district to better leverage local funding to maintain a steady water conservation effort. Federal cost-share funding motivates boards of directors to continue water conservation programs during difficult budget periods, and the district's conservation efforts often survived cost cuts impacting other aspects of its operations because outside funding was available.

Essentially, a continuing water conservation program becomes self-perpetuating. Once conservation becomes a regular activity, boards come to treat it as a given in each year's budget process. Planning activities then create little controversy and we actually experienced water users at board meetings complaining their area of the district was not receiving its fair share of water conservation projects.

The benefits of water conservation programs cannot be measured in water savings alone. Pipelines and lined canals generally require less maintenance than unlined, open channels. Additionally, there is less need for sediment removal and weed control, which ultimately contributes to enhanced water quality. Service also improves as water can be conveyed more quickly in pipelines than in open laterals. Furthermore, piped canals benefit adjoining landowners who can often farm over them, enabling on-farm irrigation improvements such as the introduction of center pivots. EBCID's current water conservation plan estimates that these on-farm irrigation improvements save an additional 108,000 acre-feet per year.

However, obtaining funding for water conservation efforts through WCFSP can be challenging. Initial applications can be tedious to complete and efforts are generally paperwork intensive—though the process becomes easier as successful applications can become a template for subsequent funding requests. Comprehensive planning in advance is essential. Additionally, continued participation often allows districts to establish a rapport with local Reclamation officials, an important consideration as WCFSP is funded at the regional office level and managed by area offices.

The federal budget cycle also presents challenges to the implementation of projects, particularly in northern states where the November-to-March construction season is often further limited by cold weather in December and January. Because the federal fiscal year does not begin until October and it takes time for Reclamation to announce funding availability once the budget is approved, the front end of the construction season is often lost once grants are finally awarded.

Furthermore, in recent years it appears Reclamation's priorities have shifted away from WCFSP's more traditional water conservation techniques toward the modernizing approaches funded through Water 2025 and its successor, the WaterSMART initiative. Though these new programs are essential to developing the country's next generation of water management practices, it is equally important that Reclamation continues to fund more mundane conservation efforts through WCFSP.

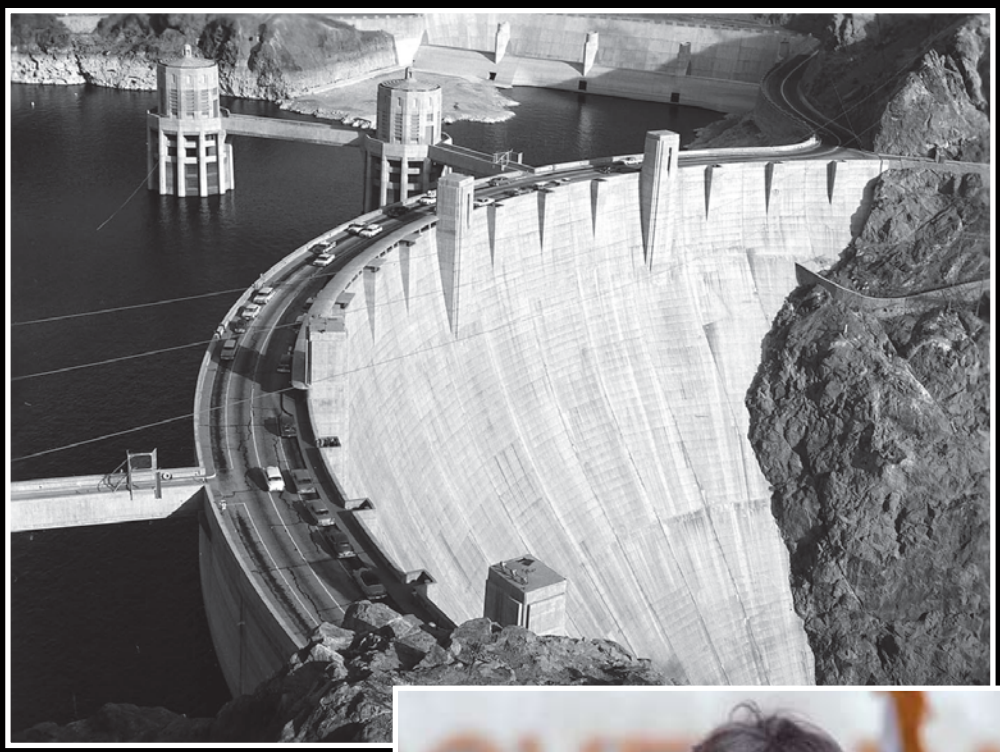
My experiences as general manager at ECBID—and now as a project manager at RH2 Engineering—contribute to my steadfast belief that water savings achieved through canal lining and piping efforts enable Reclamation to achieve a high return on a fairly small percentage of its annual budget. Continued funding of WCFSP at a meaningful level, while promoting predictability in the timing and amount of funding, is essential to the success of water conservation efforts throughout the western United States.

Dick Erickson is a project manager at RH2 Engineering in East Wenatchee, Washington, and is the former general manager of East Columbia Basin Irrigation District in Othello, Washington. He can be reached by phone at (509) 886-6779, or e-mail at derickson@rh2.com.

Hoover Dam Celebrates 75 Years

Reclamation recently celebrated the 75th anniversary of Hoover Dam during an event highlighted by speeches from Reclamation Commissioner Michael Connor and Assistant Secretary of the Interior for Water and Science Anne Castle.

"Hoover Dam is the iconic symbol of the Bureau of Reclamation," said Connor. "But more importantly, this engineering marvel is also the symbol of American know-how, ingenuity, drive and success . . . the building of Hoover Dam changed America."



Castle also lauded the impact of the dam on the western landscape. "Hoover and Lake Mead and the other Colorado River storage projects have made it possible for people like us to live here and enjoy the climate, to work here and to play here," she said. "It wouldn't have been possible without a secure water supply and the power that Hoover Dam provides."

Franklin Delano Roosevelt dedicated the dam on September 30, 1935. To honor the late president's participation in the dedication, Peter Small, a Roosevelt impersonator, also took part in the ceremony. "The changes wrought in the last 75 years by the Boulder Canyon Dam project, of which this dam is the key feature, are greater than I or anyone could have anticipated when it was being planned," he said in character. "I wish . . . to recognize those who built this magnificent structure and to say to those who have managed it and maintained it—well done!"

Standing 726 feet high and 660 feet wide at is base, Hoover Dam was the largest project of its kind at the time of its construction and employed around 20,000 workers during the height of the Great Depression. Over its life, Reclamation estimates the dam has saved $50 billion in flood damages, as well as provided water to more than 18 million people and 1 million acres of farmland in surrounding states. The dam's hydroelectric plant produces approximately 4 billion kilowatt-hours of electricity each year.

"[The dam has] elite status among American accomplishments, not only because of its size and functionality, but also through its construction, the building of Hoover Dam changed America," Connor said.

To mark the 75th anniversary of the dedication of Hoover Dam, the Bureau of Reclamation conducted a dedication event on September 30, 2010. Speakers included Department of the Interior Assistant Secretary for Water and Science Anne Castle.

P&G: What Are They? ...and Why Should You Care About Them?

By Fred Caver, chairman, National Waterways Conference

If you have been paying attention to water resources issues at the Washington level, you may have heard some noise about proposed revisions to the P&G. This may sound a bit esoteric to you, and you may think it's some sort of bureaucratic exercise that can't possibly be of interest to you. But, if you are concerned in any way with water supply, irrigation, navigation, flood control, hydropower, or any of a number of other uses of water—and especially if your interests include obtaining economic benefits from water—I'm here to assert that you should be interested, and further, that if you aren't already, you should become involved in the revision process.

For the record, "P&G" is short-hand terminology for the rather long-winded title of a document that guides federal planning actions: "Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies." If nothing else, you now understand why a short-hand title is needed.

As implied above, the P&G provides the goals, objectives and rules under which the Army Corps of Engineers, the Bureau of Reclamation, and other federal water resources agencies conduct planning studies and formulate solutions to water resources problems. These, in many cases, lead to recommendations for authorization of federal projects by Congress. Obviously then, the make-up of these rules will have a direct bearing on the type and focus of federal water resources projects that are recommended, authorized, and then implemented in this country. But there is more; it's not just federal water projects that will be affected. We'll get to that in a bit, but first some background.

The current edition of the P&G was issued by a presidential executive order in 1983. Responding to concerns that this version should be updated to reflect contemporary priorities and values, most notably an increased focus on environmental values, Congress included a provision in the Water Resources Development Act of 2007 requiring the secretary of the army to issue revisions that would change the way the Corps conducts its studies. This provision, in great summary, directed a revision that would result in a balanced approach to multiple objectives: economic, environmental, and social well-being, including public safety.

Although Congress contemplated that the new P&G would only apply to the Corps, the White House Council on Environmental Quality (CEQ) took over the job of revision with the idea that the new version should apply equally to the Bureau of Reclamation and other water resources agencies as well.

CEQ issued a draft proposal for the front part of a new document (referred to as the "Principles and Standards," or P&S) through a Federal Register notice late last year and accepted comments last spring. The P&S is now under review by an expert panel assembled by the National Academy of Sciences (NAS), whose review is expected to be completed by the end of this calendar year. Presumably, CEQ will

incorporate recommended changes from the NAS review and public comment into a final version of the P&S. Concurrently, new guidelines—the detailed rules—are now being drafted by an interagency team of experts and are expected to be released next summer.

So, why is there concern over the draft P&S? Well, to begin with, the draft proposal isn't very good from any perspective. It is imperative that the new P&S (and the new guidelines when they are added) establish a clear, concise, and workable framework to guide the development of these projects, which are so vital to our economic security and environmental quality.

As drafted, the proposal fundamentally fails to achieve this critical end and must be extensively revised to offer a path to balanced solutions, clear and consistent guidance to planners, and replicable results that are understandable to all stakeholders. Adding confusion when clarity is essential, it uses the concepts of "principles," "guidelines," "procedures," and "standards" interchangeably, so that the proposal is unworkable.

A concise set of principles should:

- Utilize cost-benefit analysis and other such recognized and proven analytical tools as a basis to compare options.
- Provide for the unbiased consideration of all alternatives, and not exclude or penalize classes of alternatives from consideration and recommendation.
- Require that decisions are made based on an assessment of net beneficial effects.
- Establish a peer review process that is appropriate to the potential impacts of the project and seamlessly integrated into the planning process.

The draft fails on each of these points. Moreover, the draft suffers from several other critical failures:

- It includes a proposed "national objective," which clearly (and contrary to congressional intent) elevates environmental goals over economic and social ones. This approach would be especially detrimental to irrigation, flood control, navigation, and water supply projects.
- It contemplates forcing multiple objectives in every water resources planning study. Such a requirement is impractical, does not reflect the reality of project development, and would result in a waste of scarce resources.
- It ignores the reality of cost sharing introduced in the Water Resources Development Act of 1986. Nonfederal sponsors, as well as federal planners, have a clear and important role in the decision process and must have a complete understanding of the process as they decide whether to expend local financial resources for feasibility studies. Failure to recognize this reality results in a process that lacks transparency and, predictability, a critically defective in the draft.

As I hinted earlier, this P&G stuff has implications not only for federal projects, but for also for those undertaken by state and local governments, and perhaps even by private interests.

Although it's true that the P&G directly affects planning for federal projects, it will indirectly affect many other actions in which the federal government has a role by providing a framework or basis for such things as issuance of Clean Water Act permits by the Corps and EPA, proposed new Administration policies on floodplain management, OMB guidance related to all federal appropriations, and several pieces of legislation that have been proposed by Congress to broaden and strengthen federal oversight and jurisdiction over water resources.

The National Waterways Conference, which I chair, is sponsoring a national alliance of water resources organizations to address things of common interest and concern such as the new P&G. Representatives of this alliance met with CEQ in early April of this year to express their concerns. This meeting resulted in a productive dialogue that provided the CEQ staff a realistic analysis of the impact the proposed P&S would have on critical projects.

The stakes are high. We really—really—need to get this right. And we need your help. Pay attention to these inscrutable activities going on in Washington, express your opinions to your legislators and other elected officials, take advantage of opportunities to make comments. In one way or another, this process will affect you. Working together, we can effect a balanced approach to a long-term, viable, and effective planning model.

In addition to serving as chairman of the National Waterways Conference, Fred Caver runs a small water resources consulting firm, Caver and Associates, Inc., based in Austin, Texas. www.caverandassociates.com. Prior to his retirement in 2005, he was the deputy director of civil works for the Army Corps of Engineers.

The National Waterways Conference is a broad-based, national organization comprising flood control, water supply, navigation, hydropower, conservation, and other water resources beneficiaries. Its mission is to effect common sense policies and programs, recognizing the public value of our nation's water resources and their contributions to public safety, a competitive economy, security, environmental quality, and energy conservation. More information is available at www.waterways.org.

Loup River Irrigation District's Title Transfer Case Study

By Family Farm Alliance

A case study that demonstrates how title transfer can open up new opportunities for irrigation districts to better manage irrigation and flood waters for multiple benefits.

Backdrop—Streamlined federal regulation and decision-making are the keys to sound western water policy. Wherever possible, meaningful delegation of decision-making authority and responsibility should be transferred to the local level. Of course, regulation of water supplies and water projects is both necessary and beneficial. However, in the water arena, a one-size-fits-all approach dictated from Washington is counterproductive and ineffective. Title transfers are a positive means of strengthening control of water resources at the local level. In addition, they help reduce federal costs and allow for a better allocation of federal resources. Over the past 12 years, the Family Farm Alliance has worked closely with Reclamation on both individual title transfers and on title transfer policy. Since 1996, more than two dozen Reclamation projects have been transferred or authorized to be transferred to local entities. Those local agencies are usually the irrigation or water district that has fulfilled its federal obligation to pay for construction of the project.

Organization—In November 2002, the Loup Basin Reclamation District, Farwell Irrigation District, and Sargent Irrigation District purchased all facilities from the Bureau of Reclamation and U.S. Department of Interior. The titles to the facilities were put into the Loup Basin Reclamation District's name; Farwell and Sargent Irrigation Districts operate the facilities.

Project Description—The Sargent Unit of the Pick-Sloan Missouri Basin Program extends the Middle Loup River Valley between the towns of Milburn and Comstock, Nebraska. Generally, the lands are within the Loess Hills region. Irrigation facilities consist of the Milburn Diversion Dam on the Middle Loup River, the 39.6-mile-long Sargent Canal, 44.2 miles of laterals,

19.4 mils of drains, and a small pump lifting installation. Approximately 14,000 irrigated acres are served by Sargent. Other benefits include flood control, recreation, and fish and wildlife conservation and enhancement.

The Farwell Unit of the Pick-Sloan Missouri Basin Program lies between the North and Middle Loup Rivers in Nebraska. The unit furnishes a full supply of water to 53,414 acres of irrigable land. Flood control, recreation, and fish and wildlife benefits also are provided. Principal features are Sherman Dam and Reservoir, Arcadia Diversion Dam, Sherman Feeder Canal, and Farwell Canals, a system of laterals, and 38 pumping plants.

The Loup Basin Reclamation District operates and maintains the diversion dam works, laterals, drains, and other irrigation works of the Sargent Unit. The Loup Basin Reclamation District acts as the contracting agency for the Sargent Irrigation District and the Farwell Irrigation District in matters concerning the diversion and canal works. The Sargent and Farwell Irrigation Districts are the contracting agencies for the lateral and drainage works of their respective units within the Middle Loup Diversion.

Benefits Associated with Title Transfer—By assuming control of their projects, Sargent and Farwell Irrigation Districts are in the driver's seat and have found new partners and opportunities to work for multibenefit solutions to aging infrastructure, flood control, and water management challenges.

Aging Infrastructure Cost Sharing—Since the 2002 title transfer, irrigation district managers have found creative ways to secure financial assistance for aging infrastructure. In the Sargent project, local water managers brokered a deal with the Nebraska Game and Parks Department, which was interested in developing a fish way on the Middle Loup River at Milburn Diversion Dam. In exchange for working with the state on this proposal, Sargent Irrigation District asked for assistance to install three new gates on the diversion dam. After the new gates were installed, the district was able to fix two old gates, which puts the facility in sound shape for decades. Sargent Irrigation District received about $140,000 from the State of Nebraska through a grant program, $75,000 from a local Natural Resources District, and about $550,000 in federal funding administered by the Nebraska Game and Parks Department. The remainder of the project was paid for by the Sargent Irrigation District, which issued a 25-year bond in the amount of $600,000. The state financial assistance allowed this project to get off-center and provided a means to repair the facility and pay for it. Local water managers believe the title transfer, which removed past contractual obligations with the Bureau of Reclamation, provided the freedom for the district to work with other local, state, and federal agencies to find creative solutions.

In the future, funding to address aging infrastructure will become more and more difficult to obtain. It will take very creative financing and doing things outside the box—like title transfers—to address aging infrastructure challenges. For Sargent and Farwell districts, title transfer has proven thus far that others are willing to assist with addressing aging infrastructure issues as long as they receive something in return.

Flood Control Assistance—The years 2007 and 2008 brought excessive rains and floods to the Loup Basin valley. The four counties served by the two irrigation districts were declared disaster areas at least once during this period by the governor of Nebraska. Because the Bureau of Reclamation was no longer tied to this project, FEMA was able to provide much-needed federal emergency funding

Arcadia Diversion Dam with Sherman Feeder Canal.

assistance to fix flood-damaged facilities. The Sargent District was authorized to receive in excess of $500,000 and the Farwell District in excess of $1.2 million. Both Districts filed for extensions, which allowed the districts to use their own staff to take care of most of the work. District managers believe this assistance would have been impossible if they were still under contract with Reclamation.

Water Conservation Assistance—Farwell and Sargent Irrigation Districts have been approached by numerous entities on the local, state, and national level who are interested in working with the Districts on partnership-based water conservation programs. District managers believe these important opportunities could only be considered by districts that no longer have Reclamation contracts.

Water Leasing—In the State of Nebraska, a law has been passed that allows leasing of water, which could potentially provide another future revenue stream for the Farwell and Sargent districts. Federal and state agencies, local entities, and cities are currently discussing proposals with the districts on this matter. A decision will likely be made in the next few years that could prove to be very beneficial to the long-term viability of the districts.

Challenges—Other irrigation districts are interested in acquiring title to Reclamation facilities. Experience throughout the West demonstrates that when control of projects is assumed by local interests, the projects are run more cost effectively and with far fewer items of deferred maintenance. In addition, some local districts want to acquire title to their own water distribution works, to which the federal government holds title because federal funds—long since repaid—were used to help build them. Despite the benefits, local water agencies are discouraged from pursuing title transfers because the process is expensive and slow. Environmental impact analyses can be time consuming, even for uncomplicated projects that will continue to be operated in the same manner as they always have been. Moreover, every title transfer requires and act of Congress to accomplish, regardless of whether the project covers 10 acres or 10,000 acres.

Solutions—The challenge associated with title transfers was identified as a major concern when the Family Farm Alliance engaged in the Managing for Excellence (M4E) process with Reclamation. Executing the action plan was a primary initiative for Reclamation in recent years. Alliance engagement in M4E and the related NRC study has been a priority with the Alliance since early 2005.

Through the M4E process, Reclamation developed a legislative concept for a programmatic approach intended to simplify transfer of "non-complicated" facilities. The idea was to create a set of criteria to identify non-

Sherman Reservoir.

complicated projects whose transfer to local ownership would not impact the environment or taxpayers. Facilities meeting the criteria could be transferred out of federal ownership by the secretary of the interior under a new standing authority granted by Congress. The Reclamation approach envisioned the use of existing procedures under the National Environmental Policy Act to streamline environmental reviews for proposed title transfers meeting the programmatic criteria.

Title transfers for larger, more complicated projects that did not meet the criteria would still require individual acts of Congress. In essence, Reclamation's approach would allow Congress to delegate to the secretary of interior the authority to transfer the ownership of single-purpose, non-complicated projects. This would greatly reduce the hurdles and expense that can impede transfers beneficial to local and federal government.

In the 110th Congress, Representative Cathy McMorris Rodgers (R-WA) introduced H.R. 6992, which captured well the philosophy embedded in Reclamation's M4E approach to facilitate title transfers. H.R. 6992 established an effective mechanism to identify and analyze the potential for public benefits from the transfer out of federal ownership of federal facilities. The Family Farm Alliance testified in support of this bill before the House Water and Power Subcommittee in 2008. Unfortunately, there was not enough time left in the 110th Congress for H.R. 6992 to move. Such a bill—if reintroduced, approved by Congress, and signed by the president—would facilitate the transfer of those eligible facilities to promote more efficient management of water and water-related facilities at the local level.

This case study is reprinted with permission from the Family Farm Alliance's Western Water Management case study publication based on source material provided by General Manager Tom Knutson and the Loup Basin Reclamation District. For questions about title transfer, please contact Tom Knutson at Water Management Solutions by phone at (308) 754-8699, or e-mail at t819@mainstaycomm.net.

Family Farm Alliance Executive Director Dan Keppen can be reached by phone at (541) 850-9007, or e-mail at dankeppen@charter.net.

Left: Sherman Dam outlet house. Above: The 0.2 check, which is two-tenths of a mile from the dam.

Your Role in Irrigation Efficiency

By Deborah Hamlin, CAS, executive director, Irrigation Association

What's your personal role in helping achieve irrigation efficiency? Certainly the issues of water quality, access, and quantity are ones influenced by so many stakeholders, particularly in the American West. So how are you making an impact?

There's no question that every water management professional today is continually working to improve his stewardship of what is arguably the world's most precious resource. The Irrigation Association (IA) is helping professionals like you do that.

Dedicated to ensuring that water is available for irrigation for future generations, IA helps the industry by promoting efficient technologies, products, and services. We do that by:

- Educating practitioners with classes, best practices, and industry news.
- Certifying professionals who serve as role models to others.
- Advocating for issues that affect growers and irrigation at the federal and state levels.
- Shaping standards that will help ensure irrigation efficiency.

Efficiency Works

Irrigation efficiency is a proven key to successful water management.

According to the U.S. Department of Agriculture's (USDA's) Economic Research Service, the average U.S. water application rate declined by 20 percent, or more than 5 inches per acre, from 1969 to 2003. Over the same period, water efficiency gains allowed farmers to increase total irrigated acreage by more than 40 percent while applying only 11 percent more water.

More recently, the release of the 2008 Farm and Ranch Irrigation Survey, conducted by USDA's National Agricultural Statistics Service, showed that efficient irrigation methods (sprinkler and drip irrigation) have increased over the last decade while gravity and subirrigation methods are less popular.

While the number of sprinkler-irrigated acres increased by approximately 6 million (to a total of more than 30 million acres), water use held steady in 2003 and actually declined slightly in 2008. Gravity irrigation, used on more than 22 million acres nationally, shows that average water usage for this method actually increased as of 2008, despite the number of acres continuing to drop.

Grower efficiency is improving. While some individual farms may be using more water, the number of farms is decreasing, indicating that the crop produced with that water is expanding.

How IA Is Helping

As an individual, it can be difficult to effectively participate in all the government and policy discussions that take place regarding water use. So groups like the Irrigation Association are working to ensure the voice of industry experts are heard and consulted. IA has placed an emphasis on supporting western water and agriculture concerns, highlighting the implementation of efficiency measures. In 2010 alone, IA has:

- Lobbied for the full funding allocation for the 2008 Farm Bill's Environmental Quality Incentives Program and Agricultural Water Enhancement Program.
- Created a task force to begin focusing on the upcoming 2012 Farm Bill, including irrigation issues and funding.
- Provided written feedback on agricultural policy utilized by IA members, fulfilling a request from the House Agriculture Committee during the planning of the 2012 Farm Bill.
- Developed a working group to determine how best to engage in the policy debate on regulations affecting agriculture water use from the Ogallala Aquifer.
- Developed a working group to define IA's role and position on issues affecting water availability and use in California.
- Sent letters to California legislators and the steering committee for the Alliance for Clean Water and Jobs in support of the state's Safe, Clean and Reliable Drinking Water Supply Act.
- Hosted IA's second annual Water Conference, which provides a forum for dialogue on water challenges and potential solutions with irrigation professionals, government officials, and other water managers.

- Expanded and reformatted IA's annual Legislative Conference to foster stronger relationships with public policy makers and influencers. The May 2010 event brought nearly 30 members to Capitol Hill for presentations by government leaders and almost 50 face-to-face meetings with U.S. congressional staff and officials.

Opportunities for You

Expanding one's personal knowledge of irrigation efficiency and its impact on the United States is critical to ensuring the continued maintenance of our water supply. As a result, the Irrigation Association is expanding the educational opportunities providing irrigation efficiency education for professionals at a variety of venues.

At the 2010 Irrigation Show, IA has increased its emphasis on agriculture by:

- Adding an Ag Insights Track, composed of four, 45-minute seminars providing insights into key challenges and policy issues affecting growers, dealers, equipment manufacturers, and other agriculture attendees.
- Offering six agriculture-focused classes.
- Showcasing more than 90 technical sessions, predominantly ag-focused, in the ASABE Fifth National Decennial Irrigation Conference.
- Signing four production agriculture and agribusiness organizations as formal show partners: the Equipment Marketing and Distribution Association, the Family Farm Alliance, Field to Market: The Keystone Alliance for Sustainable Agriculture, and Western Growers.
- Offering three agricultural certification exams: certified irrigation designer (specializing in drip/micro, sprinkler or surface irrigation); certified agricultural irrigation specialist; and the new certified agricultural water manager.

The Irrigation Association also works to provide educational opportunities in a variety of other ways:

- In 2010, IA helped to develop the education program for Ag Connect EXPO, a new agriculture trade show.
- New in 2010, IA sponsored the irrigation technology seminars at the Sunbelt Ag Expo in Moultrie, Georgia.
- IA has introduced online classes (four currently online, two almost ready for launch), counting more than 500 users to date.

Spreading the Word

Part of your role in preserving our water supply and increasing irrigation efficiency involves educating others.

Launched in 2006, IA's Smart Irrigation Month (www.smartirrigationmonth.org) acts as a vehicle to encourage all irrigation users to manage water efficiently. As leaders of the irrigation industry, you are looked to both as role models and trusted sources of information. But there are many irrigation users who need to actually make the changes to their daily routines in order to achieve irrigation efficiency. Your guidance can help them understand the need to make such changes and how to act on it.

IA is also empowering you to spread education by offering education class sponsorships and licenses. IA offers more than 25 classes in landscape, golf, and agriculture topics at basic, intermediate, and advanced levels that help educate irrigation professionals on irrigation efficiency in system design, installation, maintenance, and auditing. These turnkey classes are market tested and brand neutral, eliminating the need for water managers to invest time and money in developing training programs. IA can provide an instructor, or you can lead a class yourself.

The Ongoing Need for Efficiency

Efficiency is not a simple fix. Attending a class, earning a certification, or reminding others to irrigate efficiently will not sustain our water supply. Efficiency is a mindset that must be adopted and practiced continually at every stage of water management.

Adopting more efficient technology is only a first step. Using trained professionals and employees to maintain irrigation systems and equipment properly is critical to keeping a system running efficiently. Keeping up with continually evolving best practices and understanding the value of new technologies will help ensure that irrigated agriculture continues to make great strides in using water efficiently while maintaining high levels of productivity.

You can make a greater impact on managing our water issues by staying educated and helping to educate others. The Irrigation Association is here to help you do that.

Deborah Hamlin is a certified association executive and has served as the executive director of the Irrigation Association in Falls Church, Virginia, since 2006. For more information about the Irrigation Association, please visit its website at www.irrigation.org.

Integrated Water Resources Plan, San Benito County, Hollister, California.

HDR Focuses on Irrigation District Needs

By Gary Bleeker, executive vice president & director, HDR's Water Business Group

As the demands on western water supplies continue to rise, irrigation district managers and boards of directors face new and increased challenges to achieve their primary goal—delivering water to our nation's farmers and ranchers. HDR stands ready to assist irrigation districts in meeting those challenges. With decades of experience in water management and a deep roster of engineering and environmental professionals, HDR understands the unique issues irrigation districts face and recently enhanced its commitment to them in an effort to help meet the vital needs of their constituents in an efficient and cost-effective manner.

Since the firm's founding in 1917, its water group has remained a core focus. In fact, the firm's initial business model primarily relied on the development of water and sewage systems for new cities springing up in the Midwest in the early 20th century. HDR's commitment to water management continues today and the firm's abilities run the gamut of issues faced by irrigation districts.

HDR's water group professionals stand ready to provide district managers and boards of directors with expert advice on a wide variety of issues ranging from integrated water planning and energy efficiency to pumping/conveyance systems and water quality/advanced treatment technologies. Additionally, the firm's climate change specialists understand the challenges of watershed management as districts contend with society's charge to do more with less.

Today's environment requires an integrated approach that marries market-leading technologies with practical implementation techniques. HDR provides districts with the ability to achieve this integration and approaches water management with competing goals in mind by posing a deceptively simple question: How can water be managed to meet multiple environmental, economic, and social objectives over the next 50 years?

In many cases, district managers will have to look at both tried-and-true application and control techniques, as well as new solutions to achieve this delicate balance. Efficiency through innovation is quickly becoming the norm in irrigation management technology. The days of waiting for a canal rider to report water levels 70 miles from district headquarters have given way to advanced telemetry systems capable of achieving the same goal instantly with real-time reporting. HDR's engineers and systems specialists understand these needs and are able to provide practical expertise to assist districts as they weigh their options, implement an agreed-upon approach, and

operate new technologies going forward.

However, HDR also knows the West cannot ignore existing infrastructure left to irrigators by their pioneering predecessors. For many districts, aging infrastructure concerns too often threaten the livelihood of agricultural communities and can even jeopardize public safety. Recognizing that local budgets are not limitless and federal funding is rarely assured, HDR offers the same efficient, integrated approach to rehabilitating existing infrastructure as it does to the implementation of technological advances. This efficiency extends to assisting districts develop new sources of revenue to help offset infrastructure revitalization costs, including the installation of small hydroelectric generation units.

HDR further understands that irrigation districts need more than engineering and construction services to meet the often-competing objectives with which they are tasked. HDR project managers know piping a canal or rehabilitating a pumping plant can mean far more than ensuring that the technical logistics are in place to complete the project. The firm integrates its traditional services with a strong understanding of regulatory considerations such that its professionals are able to help districts develop the resources necessary to provide sustainable solutions for its clients in a cost-effective manner.

Additionally, HDR's decades of experience leave the firm uniquely positioned to help irrigation districts interact with the local community. Involving the public early in the process takes on renewed importance as suburban communities expand into areas previously dominated by agriculture. Ensuring the cooperation of these new residents is often essential to project success, and a district's outreach efforts are invaluable to gaining the public's support. The specialized local knowledge offered by irrigation district managers and boards of directors benefit HDR public outreach specialists in their efforts to help ensure that stakeholder involvement is meaningful in order to anticipate potential issues upfront.

The cover picture on this issue of *Irrigation Leader* serves as a reminder of past, present, and future engineering achievements. As a leader of an integrated team of professional consulting firms, HDR and the Hoover Support Team collectively provided design and support services for the recently completed Hoover Dam Bypass, which spans the great Colorado River. Hoover Dam and the water behind it were made possible by the last generation of engineers for the West's arid landscape. By partnering with irrigation districts, HDR aims to bridge the gap toward the next generation of water management strategies and achievements.

The firm is proud to support *Irrigation Leader* and believes it will prove to be an important tool to facilitate the exchange of ideas among members of the irrigation community. The ongoing discussion surrounding integrated water management takes on renewed importance as the West faces exceptional new challenges, and HDR looks forward to taking part in this essential conversation.

Gary Bleeker is an executive vice president and the director of HDR's Water Business Group. He is based in Bellevue, Washington.
For more information about HDR, please visit the firm's website at www.hdrinc.com.

Congressional Forum Highlights Concern About Proposed EPA Permit

By Norm Semanko, executive director & general counsel, Idaho Water Users Association

On September 29, the House Rural Solutions Working Group held a forum to discuss the impact of EPA regulations on rural economies. The group invited me to provide remarks on behalf of the Family Farm Alliance and National Water Resources Association regarding recent EPA rulemaking efforts, including the proposed general permit governing the use of aquatic herbicides to be finalized in December.

In June, EPA released its draft National Pollutant Discharge Elimination System (NPDES) permit for point source discharges of pesticides to waters of the United States, known as the Pesticides General Permit (PGP). EPA developed the PGP in response to a Sixth Circuit Court of Appeals decision (*National Cotton Council, et al. v. EPA*) to vacate a rule exempting pesticides from the NPDES process if applied according to Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requirements. As a result, discharges to waters of the United States from the application of pesticides will require NPDES permits when the court's mandate takes effect next April.

During my testimony, I indicated that Western agricultural water users regularly apply aquatic herbicides under FIFRA requirements to keep their water delivery systems free of aquatic weeds and additional regulation would be unnecessarily duplicative. The use of aquatic herbicides provides for the efficient delivery of water, avoids flooding, promotes water conservation and helps avoid water quality problems associated with other methods of aquatic weed control.

I highlighted a major concern with EPA's draft permit is that the definition of "waters of the United States" is the one that existed in federal regulations prior to the Supreme Court's *Rapanos* decision. Following the decision, the Bush Administration decided not to issue a new rule, but instead issued guidance interpreting Clean Water Act jurisdiction under *Rapanos*. We compared this 2008 guidance memo issued by the U.S. Army Corps of Engineers and EPA to the current draft PGP and discovered discrepancies.

To our knowledge, the 2008 guidance is the only post-*Rapanos* statement by EPA or the Corps on Clean Water Act jurisdictional determinations. However, the guidance does not rise to the level of a regulation and merely provides guidance to field offices. Yet regulations defining "navigable waters" and "waters of the United States" all predate the Supreme Court decision in *Rapanos* and, to the extent they are inconsistent with *Rapanos*, were effectively voided by that decision.

By incorporating these pre-*Rapanos* regulations, the PGP uses a regulatory definition that is inconsistent with the current judicial interpretation, incorporates language from antiquated definitions, and effectively attempts to overturn Supreme Court precedent by administrative action. We recommended that the section of the draft permit that defines "waters of the United States" be rewritten to provide consistency with the 2008 guidance memo written in response to *Rapanos*.

Furthermore, the application of aquatic herbicides in canals, ditches, drains and other irrigation delivery and drainage facilities is statutorily exempt from the definition of a "point source" under the Clean Water Act and does not require an NPDES permit. However, the PGP does not exempt these activities from NPDES coverage and EPA appears to be using it to eliminate or dilute the existing statutory point source exemptions. Additionally, canals, ditches, drains and other irrigation delivery and drainage facilities are not uniformly "waters of the United States," indicating the application of aquatic herbicides to these facilities does not automatically require an NPDES permit.

Aside from these technical issues, significant questions remain surrounding the April 2011 deadline. Specifically, it leaves irrigation districts uncertain as to whether they will be able to continue necessary weed management programs once the rule becomes effective, particularly if the PGP is not fully operational at the deadline.

We are hopeful that a concerted, good faith effort working with EPA will result in a streamlined pesticide regulatory process that will be efficient and fair to farmers and ranchers, as well as consistent with current judicial interpretation and statutory exemptions in the Clean Water Act. However, based on our past experiences with EPA, we are concerned the agency will not address our concerns. As a result, I indicated during my testimony that it is advisable for Congress to provide additional oversight – and legislative relief – to ensure that the continued use of pesticide products under FIFRA guidelines does not require an unnecessary NPDES permit.

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District Develops Advance in Irrigation Headgate Efficiency

When Harlingen Irrigation District Cameron County No. 1 (HIDCC1) in south Texas sought to replace wooden headgates at check structures located throughout the district, district staff wanted to develop a durable, automated solution with little funding. Two years later, they have installed 30 automated, aluminum gates at 13 check structures for a fraction of the cost of commercial solutions.

"[The district's] goal has always been to deliver water as efficiently as we possibly can," said Tom McLemore, HIDCC1's project manager responsible for the initiative. "We wanted to develop a low-cost gate that an irrigation district could get into without a lot of funding."

HIDCC1 developed and tested the new gate on-site at its flow meter calibration facility with funding provided by the Texas Water Development Board through its Innovative Technologies in Agriculture program. Located at the district's Los Indios pumping plant, the facility allowed district staff to test and calibrate the automated flow monitoring components of the gates in a controlled environment. After five initial gates were developed and installed, the project expanded with funding from Reclamation's WaterSMART grant program.

Through its testing process, district staff determined that gates made of lighter-weight aluminum would enable them to use cheaper actuators running at a lower voltage. Additionally, the salinity of water in the region made steel gates susceptible to corrosion, a problem largely avoided with the aluminum model. District staff also applied a UHMW polyethylene material to the gates to lower the aluminum's friction coefficient, making opening and closing the gates easier on the low-voltage actuators.

The automation of the gates required little additional effort as the district installed an extensive telemetry system in 2003. Additionally, software developed by A.W. Blair Engineering enabled the gates to communicate upstream and downstream demand to each other. "It was just an addition to what we already had," said McLemore, referring to the ease of connecting the new gates to the existing telemetry system.

McLemore estimates the district produced each gate for under $5,000, less than one-fifth of the cost of commercial aluminum gates with similar automation capabilities. McLemore hopes this low cost will enable other districts to replicate the solution developed at HIDCC1. Ultimately, McLemore aims to publish a paper featuring diagrams and the technical specifications of the gates. While the district hired an aluminum fabrication specialist to complete the gates, he believes many districts maintain similar in-house capabilities and could produce these low-cost gates using HIDCC1's plans.

Tom McLemore is a project manager at Harlingen Irrigation District Cameron County No. 1 in Harlingen, Texas. He can be reached by phone at (956) 423-7015, or by e-mail at info@hidcc1.org.

One of the first gates installed under the Texas Water Development Board Innovative Technologies Grant.

Gate site with wind generator.

Conserving Water and Repairing Canals with AquaLastic®

Sealing of construction joints and stress cracks with AquaLastic.

AquaLastic® started over a snatched lunch break on a windswept highway in Washington State. Tom Matheson and Jim Powers were discussing the emergency situation that had recently taken place at a nearby canal company. The large concrete canal was leaking and gradually flooding a populated area below the canal. It was threatening to breach and threatening an even bigger flood disaster.

Tom Matheson's industrial painting company happened to be working in the canal at the time, using a polyurea product to seal metal gates. They suggested applying the material to the leaks as a stop-gap.

And it was this temporary solution that Tom (Matheson Painting, Inc.) and Jim (Powers Equipment Company) realized was likely the foundation of a new business that could bring meaningful solutions to the problems caused by degrading irrigation canals. A few months later, with the temporary solution still perfectly in place, AquaLastic® came into being as a canal repair opportunity, offered by Jim and Tom's new company, Hydro Consulting LLC.

Several product revolutions and over a decade later, the AquaLastic® Canal Repair System has become the leading method of concrete canal repair throughout the northwest irrigation states and is rapidly growing in demand in many more states, such as California, Utah, Arizona, New Mexico, Nevada, and more. Exclusively distributed for Hydro Consulting LLC by Cygnet Enterprises NorthWest Inc., AquaLastic® has become the main product of choice for irrigation districts that have concrete canals in need of crack repair.

Jim Powers explained, "We have come a long way since that first discussion between Tom and me. We have now applied over 7 million linear feet of AquaLastic® with absolutely no product failure. We took a polyurea product and with the help of the manufacturer, made it into something really workable in an irrigation situation."

AquaLastic® has been through a number of product revolutions since that very first application. The improvements include tensile strength, psi, and elongation ability, all of which have contributed to its faultless history.

"We didn't just want 10 years of successful repair," said Tom Matheson, "but many more years on top of that, so that irrigation and water districts could be highly confident in their investment.

"For that reason, we have worked closely with our American polyurea manufacturer, changing and developing the product range, and constantly developing and improving application techniques, so that we are now confident that there is no other product that can come close to it or to our track record."

This is a sentiment echoed by the irrigation customers, many of which have put AquaLastic® into rolling year-by-year programs, hitting the major trouble spots in their canal systems first, followed by annual upgrading and maintenance projects.

AquaLastic® is a concrete canal repair material originally designed to seal cracks. Since then, it has developed into a complete repair system capable of dealing with heavily decayed canals, flumes, and tunnels that have holes, crumbling areas, and the myriad of the typical problems that arise in ageing canals.

AquaLastic® can be applied into cracks or as a complete lining or covering, and hollow areas behind concrete canals can be filled with state-of-the-art materials and foams identified by Hydo Consulting as the best materials currently available. The system has been developed in a type of pyramid, with lower-cost materials used as fillers and the higher-cost

materials that bring stability and longevity used only where necessary. Always, the vital ingredient for long-term repair and cost effectiveness, is AquaLastic®. For example, flumes have been completely lined with the AquaLastic® Canal Repair System, bringing many years of new life at about one-tenth of the cost of replacement. Maintenance budgets are stretched by carefully looking at the canals and ditches and then designing a program that fits the individual customer.

AquaLastic® is applied through a network of specially qualified applicators that possess a high level of experience and who can safely operate the high-pressure application equipment. Their skills ensure that preparation and application is to the highest standards, which in turn ensures longevity of the product in the canal.

A new system has recently been added to Hydro Consulting's portfolio. The ALPS (AquaLastic® Low Pressure System) has recently undergone irrigation district trials with successful results. ALPS allows the irrigation district to apply an AquaLastic® material under low pressure with their own application crews. The ALPS system is self-contained and highly mobiles and can easily be towed behind an ATV or physically wheeled into tight spots. Therefore, it is a solution for flumes and areas of canal systems that are difficult to get to, such as high-level flumes and remote places on canal systems. In addition, districts can operate their own annual maintenance program in smaller canals and flumes, and others are considering keeping an ALPS on hand for emergency situations.

The AquaLastic® Low Pressure System can now be rented or purchased.

Because of its successful history in irrigation, the AquaLastic® high-pressure and now low-pressure systems have enormous potential for funding and grant opportunities since they meet many funding requirements, such seepage prevention. It is innovative American technology and both the AquaLastic® materials and the ALPS system are made in America.

Canal repair can be an emergency situation for many irrigation districts, either because they are losing valuable water, or because structural problems are occurring. In these situations a quick repair with AquaLastic® can also be a long-term repair, making it a particularly economic prospect.

Getting value for money is vital and AquaLastic® customers have much to say about AquaLastic®. Roza Irrigation District in Washington saved notable funds that paid for the original installation of AquaLastic® by stopping leaks and recouping funds from water that was now available. Nampa and Meridian Irrigation District saved hundreds of thousands of dollars by repairing a flume that would otherwise have had to be replaced. Kennewick Irrigation District has chosen to repair large portions of its canals systems over several years and The Boise Project, Idaho, has now repaired canals for a number of consecutive years. The first emergency application at the Quincy Columbia Irrigation District that was the 'birth' of AquaLastic® is still as good as new and the district has gone on to use it in many subsequent years.

Total surface lining with AquaLastic.

Irrigation Leader

2010 CALENDAR

Nov. 3-4	Water Education Foundation, Water Quality Conference, Ontario, CA
Nov. 10-12	National Water Resources Assn., Annual Conference, San Diego, CA
Nov. 18-19	Idaho Water Users Assn., Annual Water Law Seminar, Boise, ID
Nov. 22-24	Nebraska Water Resources Assn., Annual Convention, Kearney, NE
Nov. 30-Dec. 3	Assn. of California Water Agencies, Fall Conference, Indian Wells, CA
Nov. 30-Dec. 3	Oregon Water Resources Congress, Annual Conference, Hood River, OR
Dec. 1-3	Washington State Water Resources Assn., Annual Conference, Spokane, WA
Dec. 5-7	Irrigation Assn., Irrigation Show, Phoenix, AZ
Dec. 15-17	Colorado River Water Users Assn., Annual Conference, Las Vegas, NV
Jan. 12-14	Groundwater Management Districts Assn., Annual Conference, San Antonio, TX
Jan. 18-20	Idaho Water Users Assn., Annual Convention, Boise, ID
Jan. 26-28	Colorado Water Congress, Annual Convention, Denver, CO
Feb. 1-3	Nevada Water Resources Assn., Annual Conference, Reno, NV
Feb. 9-10	Texas Water Conservation Assn., Texas Water Day, Washington, DC

For more information, or if you would like a water event listed here, please phone (703) 517-3962, or e-mail Irrigation.Leader@waterstrategies.com.
Submissions are due the first of each month preceding the next issue.