



WATER WISE

PART 3

WATER'S NEW

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Keeping the **bigger water picture** in mind everyday

ONLY 1% OF THE WORLD'S WATER is available for human consumption, and our demand for that water continues to increase steadily. The world's population is growing by approximately 80 million people per year, which implies increased fresh water demand of an amazing 64 billion cubic meters annually.

Taken from our white paper, "Water Conservation and the Green Industry," those statistics are part of the "big picture," and they may be best described as overwhelming. When speaking in terms of billions and millions, it's difficult to see how the actions of each of us as individuals can possibly have a positive impact on the world's water situation. However, our seemingly mundane choices do play a role in the global water crisis we face today. In other words, we have to keep the big picture in mind while focusing on the smaller picture framed by our everyday lives.

While everyone can try to limit their own personal water use, landscape and irrigation contractors are in a particularly unique position to create a wider swath of positive change. But, first, they must make the decision to commit to that positive change. Manufacturers and other Green Industry suppliers are developing more efficient products that leave smaller environmental footprints, but it's up to contractors to take advantage of these products and encourage their customers to do the same.

The first step is for contractors to become

knowledgeable about the many elements of a sustainable landscape. Recommending and planting more drought-resistant trees, plants and turf is one example. Understanding when it's right to irrigate with non-potable water is another. And, of course, learning about the latest water-efficient irrigation system components and design practices is a must.

The newest smart controllers can ensure that landscapes are only getting as much water as they need. When used appropriately, drip and subsurface irrigation can use up to 70% less water than above-ground sprays. Rain/freeze sensors and soil moisture sensors can add affordable smart control in just about any application. At commercial sites, central controls can simplify irrigation scheduling and make users quickly aware of any system performance issues.

It's certainly important for contractors to have a solid understanding of water-efficient products and system design principles, but successful contractors will more and more be those who are able to educate their customers on both the need for and best practices of water-efficient landscaping. By being up-to-date on local water-efficient product rebates and watering restrictions, contractors can make the decision to use water intelligently an easy one for their customers.



Prepare for *opportunities* in water

BY **RON HALL** EDITOR-AT-LARGE

With challenges come opportunities. In terms of water use, the choices facing the Green Industry are that stark: discovering and capitalizing on opportunities in the face of challenges. There are many challenges.

In the short term the biggest challenge is the anemic economy, which has taken a big bite out of every industry involved with construction or property management. Then there are the millions of property owners who are just now being educated on the value of wise landscape water use.

The longer-term challenge for our industry and American landscapes is the almost certain prospect of less water, poorer quality water and more expensive water.

This will impact everybody in the Green Industry — seed producers, plant nurseries, equipment manufacturers, plant health care product providers, distributors, architects, designers, installers, irrigators, landscape maintainers and let's not forget property owners, the most important people on this list.

Opportunities right now are not so clearly defined, but they're real. These opportunities are being

capitalized upon by a so far small number of visionary and entrepreneurial Green Industry professionals who are developing and adopting ever-more-efficient products and strategies that require significantly less potable water to provide beautiful, living landscapes for their clients. How our Green Industry, as a whole, creates similar opportunities to grow the value of our services with fewer inputs will define future success. I'm confident we will. It's within our DNA to adapt and to innovate and to continue to provide our society with beautiful outdoor environments.

Indeed, those of us in the Green Industry will be looked to and called upon to take a more aggressive and vital role in conserving our nation's fresh water and preserving its quality.

Without attempting to deny the huge challenge this poses or sugar-coat the reality of today's anemic economy or the water still being needlessly wasted on too many manmade landscapes, we're making progress. This is reflected in the technology our industry can now command, some of it just now gaining wide acceptance. This includes:

- › Smart (weather-based) controllers
- › Automatic irrigation shut-off devices

- › Water-efficient rotor and spray features with pressure regulation and check valves
- › Drip irrigation that allows direct-to-plant root water devices
- › High-efficiency nozzles

But, as we all recognize, technology merely provides the tools ... and tools by themselves aren't enough. We have a big job ahead of us in educating ourselves to use these tools intelligently. This involves taking advantage of the training opportunities being made available by product suppliers, Green Industry associations and water agencies.

Beyond that — and this may be the most important piece of the puzzle — we must, as a whole, adopt a more resource-conserving approach to our services and also do a better job of educating customers.

The economy will eventually turn around and society, partly through our efforts, will come to understand water's worth to their landscapes and their pocketbooks.

It's no exaggeration to say that we're in the process of reinventing our Green Industry's future in terms of its use of water. This may be the single most important issue our industry faces in securing its growth into the next decade. **LM**

Ornamental hedges were replaced with drought-tolerant plants that require less maintenance but still have the desired visual impact.

Partners

rather than

WATER SUPPLIERS, faced with increasing demand for treated water and seasonal or

chronic shortages, employ a mixed bag of strategies to encourage or, more dramatically, force conservation by implementing outdoor irrigation bans. Short of that, they employ tiered water pricing, educational programs, water-efficient model homes, demonstration gardens, and financial incentives to encourage property owners to install and use water-efficient products, both inside of their homes and businesses and on their landscapes. Some also pay property owners to replace the turfgrass on their properties with synthetic turf or drought-tolerant native or adapted plant material.

Time to get with it

But water purveyors can't and shouldn't do all of the heavy lifting alone in terms of driving intelligent outdoor water

use. It's time for us Green Industry contractors to step up to help property owners execute smart water management strategies. Who else is better positioned to use their knowledge of urban and suburban ecologies and employ the modern water-conserving technology that irrigation product suppliers now offer.

Strength in numbers

Because of our large numbers and our unique and specialized training and knowledge, those of us in the professional Green Industry are perfectly positioned to partner with water agencies, and to be in the forefront, promoting and implementing more efficient use of fresh water resources on the properties of our customers. We're the

Why we should make peace with water agencies and what it will mean for our customers and our industry.

BY **RICHARD RESTUCCIA**



Nearly four dozen water features spread throughout the campus were either converted to landscape beds or were shut off completely.



adversaries

“boots on the ground,” at least in comparison to water officials, when it comes to showing customers how to incorporate new technologies and sustainable practices. But to do this proactively, we must establish mutually beneficial relationships with the water agencies. After all, those of us in the professional Green Industry, and especially us contractors, share the same goal as water agencies – smarter and more efficient use of water on landscapes.

Think of these industry/agency collaborations in terms of having the choice of being considered as part of the problem in promoting water conservation, as is too often the case, or being recognized as a valuable partner. Obviously, the better option is the latter — to be recognized as part of the solution.

Because of our numbers and our presence in virtually every community in the U.S. and Canada, we’re in daily contact with hundreds of thousands of property owners and property managers. These people constitute, for the most part, a receptive audience that trusts us and that we can educate regarding intelligent landscape water use. We have the ears of our customers. Many of us regularly communicate with our customers, and those of us who are managing very large properties often talk with owners or property managers once a week or sometimes even daily.

Also, too often we don’t give ourselves enough credit for the hard-earned and specialized knowledge we bring to our customers’ properties, especially if we made the effort to

really learn and practice our craft. We know (or should know) each property’s special characteristics, especially what’s going on with turfgrass and other landscape plant material on each property. It’s this knowledge and commitment that allows us to establish mutually beneficial relationships with our clients and be viewed as trusted partners.

Building relationships

Building this bond with customers is crucial to helping them make wiser and more financially sound water management decisions. Equally crucial, as mentioned previously in this article, is our relationship with purveyors who provide the water.

As we all know, actions taken by these agencies or other rule-making bodies affect the landscape business, often dramatically. During times of shortages, agencies often restrict or, in extreme situations, ban outdoor watering. This can have a devastating effect on our professional services, as evidenced by the historic three-year drought that dried up portions of Georgia and the Carolinas 2006-2009, and dramatically slowed sales of landscape plants and all landscape services.

But this relationship between water agencies and our industry doesn’t have to be adversarial. In fact, it shouldn’t be. Water agencies and local governments often enact policies that, seeking to conserve water, also offer landscape and irrigation professionals new opportunities to profitably serve their customers.

For example, when agencies offer rebates for retrofitting older irrigation systems with more water efficient products, this provides the opportunity to shorten the return-on-investment (ROI) for property owners for significant upgrades. These might include replacing older clocks with smart controllers, installing rotary nozzles and making turf conversions. A 24-month ROI, or less, almost guarantees approval for an upgrade. And chances

for providing these services remain good up to a 30-month ROI, but beyond that, not as likely.

Significant cost savings

A good example of smart water conservation measures in a commercial office park environment is Cisco Systems in San Jose, CA, which over the past decade adopted a more ecologically friendly landscape program and at the same time reduced its landscape operating costs. Cisco, which provides networking equipment and network management for Internet applications, made the changes at the suggestion of ValleyCrest Landscape Maintenance, its landscape partner since 1998. Over the past decade, landscape costs at the expansive campus have declined significantly.

Cisco's landscape management plan focused on three components: horticultural improvements, reducing water consumption and sending less waste to landfills. The goal was to determine how much water was being consumed, what plants required the most water and other inputs, such as fertilizer. Ascertain- ing what resources were being used to sustain the current level of landscape showed what was being spent for water usage and maintenance costs and revealed some opportunities to improve.

A landscape program was developed that encompassed a plant density reduction plan, resulting in the removal of some plants that required significant amounts of water. Plants that required watering five days were replaced with shrubs requiring only two days of irrigation, representing a 60% decrease in the amount of water needed.

Water-conserving drip irrigation systems are being systematically installed and all 48 buildings on the campus were retrofitted with smart, weather-based controllers, which lower irrigation water usage on average 24% a year. In California alone, Cisco saves more than 81 million gallons of water from the company's water conservation

5 TIPS FOR WORKING WITH WATER AGENCIES

1. Call your local water agency to set an appointment to learn about all rebate programs available to contractors, owners and managers. You will be amazed at how much you can learn in an hour meeting.
2. Attend water management training provided by water agencies to show them you are interested in learning about what they are telling customers.
3. Invite the agency to do a water audit on jobs you are starting. This gives a third party the opportunity to provide unbiased advice on what is needed to improve a system. Customers will perceive less of a conflict of interest.
4. Let water agencies know you are available to provide training for their community outreach programs.
5. Take time to explain the challenges you encounter as a contractor promoting water management. If they understand the day-to-day management and challenges in promoting water savings, they can develop programs with higher impact.

efforts as reported in its 2007 Corporate Citizenship Report.

Additionally, multi-colored flowerbeds at Cisco's sprawling campus were converted to attractive swatches of low maintenance iceberg roses. Ornamental hedges were replaced with drought-tolerant shrubs that require less maintenance but still have the desired visual impact. Nearly four dozen water features spread throughout the campus were either converted to landscape beds or were shut off completely, saving considerable water and energy. The average water feature on the campus annually uses 87,350 gallons of water and consumes 24,528 Kilowatt hours of electricity. The savings from not running seven fountains add up to more than four million gallons of water each year.

Waste not, want not


Perhaps one of the largest challenges on a large office campus is green waste reduction. Bagging and dumping grass cuttings is labor intensive – to say nothing of the water needed to maintain a vivid green appearance and the fuel used to cut and transport it. Turf reduction programs in areas of Cisco's 98-acre campus helped to produce less green waste. And in the turf areas that remained untouched, use of specially designed equipment to mulch the grass clippings on-site resulted in reductions in water and

fertilizer usage, which is good for the environment and the bottom line.

The strategic landscape program at Cisco serves as a model for integrating landscape services into a building's operating plan. When new initiatives are mandated by corporate decision-makers, when companies decide to 'go green,' or if the economy places pressures to operate an asset at its maximum potential, building owners and property managers need leaders in smart landscape management who are experienced in maximizing every dollar spent. It must be done in a way that makes sense for companies, it must be efficient, it must be collaborative, it must be simple, and smart water management requires participation by all.

Adopting a smart water management plan works. The proof is as simple as basic dollars-and-sense business accounting. Customers, like Cisco, are learning that ecologically sound landscape practices, and especially those that save significant amounts of irrigation water through increased efficiencies, offer aesthetic benefits to their properties and offer substantial cost savings — savings that will grow over time. **LM**

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Properly managed turfgrass replaces grey infrastructure on urban properties and dramatically decreases nonpoint pollution.

Scoring water wins in urban landscapes



Water management and multi-functional green spaces are the Green Industry's indispensable contribution to the sustainability marketplace.

BY **MARK STEVEN APFELBACHER**



GREEN ROOFS. Green walls. Green building materials. Green building standards. Go to any trade show in the building trades these days and you'll see that everything at the show is green. But where does water management, in particular urban outdoor water management, fit into this ever-enlarging green picture?

In this case, it seems, it has taken another industry's capitalization on a new market to realize what the Green Industry is sitting on. Water management and multi-functional green spaces are the Green Industry's indispensable contribution to the sustainability marketplace.

Sustainable roots

Landscapers and lawn care professionals have been working with sustainability and water long before the U.S. Green Building Council (USGBC) was formed in 1993, well before the U.S. EPA's Energy Star label came around in 1992, and the professional Green Industry was a multi-million dollar industry before the first city recycling program emerged in Woodbury, NJ, in the 1970s.

Too date, however, much of our practice has focused on single-serving landscapes — spaces that serve primarily one purpose. This could be a lawn, a landscape, a park or a sports field. In these spaces the primary function is aesthetics or recreation, not infrastructure or related to civic engineered function. Single-serving landscapes as aesthetic and recreation components are in direct competition with the assumed superiority of grey infrastructure. Grey infrastructure includes building footprints, site utilities, parking lots and roads. Landscapes are perceived as a “second” to all improvements related to basic civic functions and land uses.

Landscape and lawn professionals possess and employ practical management strategies that relate to aesthetics and recreation “green” elements as well as water resources. Increasingly they’re being called upon to design and develop multi-functional landscapes where the purpose is to perform more than one service for human development. For example, multi-functional landscapes and utilities may include massive parking lots that look and operate as a park space when not full of vehicles, stormwater management features that appear as landscape amenities, roofs transformed into stormwater catchment and energy conservation systems.

Adding value and functionality

Multi-functional landscapes transition the perspective of green spaces from a space to maintain to a space that expresses value and functionality. Take the example of great American urban parks. Cities have hundreds of staff maintaining and refining green spaces such as Central Park of New York, Minneapolis’ Chain of Lakes and Grand Rounds Park, Millennium Park in Chicago, and Golden Gate Park of San Francisco. The value in human appreciation of these green spaces is international; the value in dollars of parks in taxes and other revenue is metropolitan. The Trust for Public Land found that land adjacent to park space in the City of Philadelphia generates an additional \$18 million in annual taxes, and adds \$680 million to the value of nearby homes. Cities already value high quality green space and now through the introduction of water management strategies, multi-functional landscapes will add even greater environmental services.

Commercial and industrial landscapes have received many a black eye by water resource managers and environmentalists for their contribution to aquifer depletion, urban runoff pollution and heat island effect. This critique, in some instances, is justifiable from an environmental point of view, but ridiculous from the landowner and business manager perspective. Industrious and entrepreneurial developers haven’t had the practical technological capabilities or the regulatory direction to make economically and environmentally feasible choices. New technologies, such as sub-surface drainage and smart irrigation systems, turf reinforcements, permeable or porous pavers,

intelligent moisture sensor controls, and use of perennial or native-hybrids are “paving the green way” for financially prudent and ecologically sensitive multi-functional landscapes.

Expressing function in landscapes takes a shift from traditional management to identifying design strategies that make sense relative to each site’s grading, land use patterns and vegetation. These spaces should be relatively easy to identify — for example, recommending a rain garden in a persistently wet area of turfgrass, identifying spaces for curb cuts for stormwater management, locating where sand and silt build up on impervious surfaces, and rerouting roof downspouts that have eroded channels to energy dissipation devices or intensively vegetated landscapes.

Resources to get started

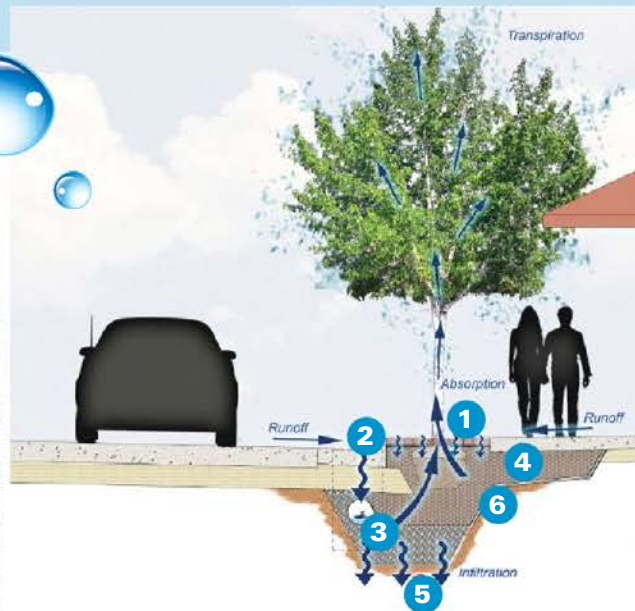
USGBC’s Leadership in Energy and Environmental Design (LEED) Certification or Sustainable Sites Initiative (SSI) and the U.S. Environmental Protection Agency’s (EPA) websites are all excellent starting points to understand techniques and define metrics of how your lawn and landscape techniques relate to greater environmental function. If you feel that there is dysfunction or bias in a LEED, SSI and EPA, so be it. They do however represent excellent resources for use in business development; repackaging and selling environmentally friendly projects will create new work. The base language and its connection to larger environmental issues is a great starting point for clients to begin to see how a landscape or lawn company relates to being environmentally practical.

In traditional management and water function, the fallback is grey infrastructure, which is pavement, curb, gutter and storm sewers. This single-serving landscape design has for too long defined the American green space aesthetic and accompanying ecological function. A lake, river or stream is





A green roof, like this one on the Target Center in Minneapolis, provides stormwater catchment and energy conservation.



LEGEND

- 1 Permeable pavers
- 2 Catch basin in street curb
- 3 Crushed Granite Infiltration trench & 12" diameter perforated pipe
- 4 Structural soil
- 5 Infiltrating soil
- 6 Impervious PVC barrier

add increased function and value through the introduction of rain water management and low impact design (LID) techniques. Commercial, industrial and residential green spaces can be transitioned into multi-functional landscapes through water management indicators.

Water: A tool to add value

Circling back to the opening question, “What the devil does all this “greening” mean for water? A simple answer is: “Greening” through water management in multi-functional landscapes adds value and functionality for our clients and the environment.

The perspective of traditional landscapes is changed by using water as a tool to allow landscapes to be used for multiple purposes. New products and tested practices now provide the Green Industry feasible economic and environmental solutions for new construction and re-development. Water-related technologies increase the capability for landscape and lawn care professionals to transition applicable green spaces from single serving to multi-functional.

We will find that it’s easier for a customer to pull the trigger on projects that have double value on any dollar invested in multi-functional landscapes for water management. Water always wins, regardless of the odds. It’s time to work with water to capitalize on the sustainability marketplace niche. **LM**

quite literally as close as the curb. Efficient water conveyance systems of grey infrastructure result in dirty flushes of water runoff and ambient heat pollution radiating from our asphalt and concrete jungles. From a bird’s eye view, the face of urban areas appears pockmarked from grey infrastructure.

Today, nonpoint source pollution remains the largest contributor to America’s water quality and quantity problems. It is the biggest single reason that 40% of our surveyed rivers, lakes and estuaries are not clean enough to meet basic uses, such as fishing or swimming, says the U.S. EPA. Urban and rural flooding events are increased by runoff from traditional engineering and storm water management.

Parks and private landscapes may have innovative irrigation systems, top-of-the-line construction materials and maintenance techniques, but the greater opportunity is to

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Life without lawns

Faced with an uncertain water future, California water agencies are using cash to entice homeowners to remove their turfgrass lawns.

BY **RON HALL** EDITOR-AT-LARGE

FOR 30 YEARS, and until the recent economic slowdown, California's Inland Empire (IE) was one of the fastest growing regions in the U.S. Comprised of portions of Riverside and San Bernardino Counties, its population ballooned from 1.55 million to 4.1 million between 1980 and 2008, including a 23% increase over the last decade. While growth has slowed since 2008, it's generally believed that robust growth will eventually return.

This vast, arid region of Southern California, at 27,000 square miles and approximately two-thirds the size of the state of Connecticut, is located 30 miles northeast of Los Angeles. Surrounded by rolling hills and mountains, it has just about everything one could desire in terms of a modern American lifestyle including year-round sunshine, modern infrastructure and plenty of recreational

opportunities. However, with all of these aforementioned amenities, the IE lacks one major core component in maintaining its enviable way of life and necessary for future growth and development. It faces an uncertain water future.

The region receives 11 in. to 15 in. of precipitation and rain annually, depending on geography, and available ground and surface water is not reliable enough to sustain its many bustling communities or allow future growth. Most IE communities supplement the water they draw from underground aquifers or nearby streams with imported water provided by the half-century-old State Water Project that brings water south through the San Joaquin Valley Delta. This is an expensive proposition, The transportation and delivery of this water (each gallon weighs 8.3 lbs.) to the Southern California area consumes

an incredible amount of energy. The State uses an estimated 19% of its available energy treating and transporting water.

The relative scarcity of regional water sources and the expense of providing outside water to this vibrant region of California will almost

certainly mean the downsizing of irrigated lawns and more landscaping with synthetic turf and native plants. Water agencies in the IE have been experimenting with ways to entice homeowners to replace their lawns with low water using plants that will remain healthy, or with synthetic turf or hardscapes. And, for the most part, these programs have been well received and successful, especially when coupled

CRITERIA FOR SELECTION

- Agree to pre- and post-site inspections
- No restrictions in plant type or site coverage
- No irrigation modification requirement
- Must install permeable surfaces
- No reinstallation of cool-season turfgrass

with financial incentives. This is an increasingly common strategy by water authorities throughout the arid U.S. Southwest.

Lisa Morgan-Perales, Water Resources Analyst II, IEUA, describes a 19-month project by the Inland Empire Utilities Agency (IEUA) to evaluate the public's interest in replacing turfgrass with low-water-use plants and surfaces. She says the program was patterned after similar programs implemented by the Southern Nevada Water Agency and the Crescenta Valley Water District.

The IEUA is a regional wholesale water supplier and wastewater treatment provider serving eight retail water agency members – the cities of Chino, Chino Hills, Ontario, Upland and the Cucamonga Water District, Fontana Water Company, Monte Vista Water District and the San Antonio Water Company.

The IEUA began developing the program in the spring of 2007 and launched it in December of the same year. It ran for 19 months, concluding in July 2009. Initially the program had been budgeted with \$50,000 to convert 30 residential landscapes. A year after its initiation it received additional funding expanding the budget to \$240,620 to cover the expense of 136 residential conversions. Participants were paid \$2 a sq. ft. per conversion with a minimum



BEFORE



AFTER

of 400 sq. ft. being converted. The maximum allowable rebate per property was \$2,000 or 1,000 sq. ft. removed.

Once a member agency received an application to be included in the project from a homeowner to be a part of the project, the agency did a pre-site inspection that included photographing the site. At the conclusion of the Program, the member agencies conducted post-site inspections of the participating properties, again photographing the sites to document the changes, and sent the information to the IEUA for final review and payment to the participants.

Morgan-Perales says the project resulted in 186,446 sq. ft. of turfgrass being replaced with low-water-use plants and approximately 28,320 sq. ft. of artificial turf and other low-water-using surfaces on homeowners' properties. This resulted in an estimated water savings of 26 acre feet per year. An acre foot of water is the amount of water it takes to cover an acre of flat land with a foot of water — 325,851 U.S. gallons.

In assessing the project, Morgan-Perales describes how the converted properties were classified, using subjective visual criteria, into three categories:

▶ **Models of Success**, 61 properties, landscape design contains a high percentage of plant coverage or a mixture of plant and non-permeable materials

Water authorities in the U.S. Southwest are promoting smaller areas of maintained turfgrass on residential properties as evidenced by this conversion in Montclair, CA.

▶ **Alternative Landscapes**, 23 properties, landscape design contains a higher percentage of “other” plant (non-native plant) coverage and may contain a higher percentage of hardscape

▶ **Made the Grade**, 52 conversions, Landscape design contains a high percentage of permeable paving surfaces with minimal plant coverage.

Morgan-Perales says analysis of the results of the project suggested similarly focused future turf removal projects require each applicant to submit a mandatory site plan with live plants covering a minimum percentage of the design, require that participants modify their irrigation systems and require that eligible project areas include the front yard.

Beyond that, the IEUA would like to develop and circulate a “recommended plant/materials list” and increase the maximum conversion area while lowering the rebate amount, she says.

All in all, the project that ended in July 2009 was positive on several fronts, she adds, including building the IEUA's recognition and strengthening customer relations between agency staff and the public. **LM**

IN THE PROGRAM

- ▶ Encouraged to install low-water-consuming plant materials
- ▶ Encouraged to modify existing irrigation with drip or subsurface irrigation technologies
- ▶ Maintain converted landscaping for five years
- ▶ Agree to water usage monitoring for five years