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Contact Information:

Vana Ankeny
Sr. Manager, Marketing Communications
951-785-3742
vana.ankeney@toro.com

For Immediate Release

Denver Parks and Recreation Reducing Water Consumption & Costs

Realizing Benefits from expanded utilization of Toro® Sentinel® Central Control System

RIVERSIDE, Calif. (July 25, 2012) – July is the Irrigation Association’s Smart Irrigation Month, making it an ideal time to celebrate the ongoing water conservation initiatives of Denver Parks and Recreation (DPR), an agency charged with maintaining public parkland in one of America’s most active metro areas. Irrigation of Denver parks has a long history – and a bright, water-conserving future.

Among Denver, Colorado’s many historical attractions is a hidden gem that visitors and residents appreciate, but probably aren’t even aware of: The city parks department’s century-old irrigation system. It wasn’t all that many years ago that parks department irrigation maintenance staff controlled the aging irrigation equipment by going between parks to turn water on and off as needed.

That hands-on, water-as-needed approach is quaint but hardly practical today. Denver is a vibrant, scenic city full of athletic, energetic nature lovers who treasure the city’s 320-plus parks, which range from small patches of turf to lush golf courses and multi-field athletic complexes.

Denver residents and civic leaders also treasure natural resources and have made the city a leader in conservation efforts such as recycling and reducing water consumption. This convergence of ideals – the love of the great outdoors and the desire to serve as responsible stewards – was a major impetus for the City of Denver Parks and Recreation Central Control Master Plan (CCMP).

In brief, the CCMP is a five-year project (2011-2015) to improve DPR irrigation to achieve greater irrigation efficiency and reduce water consumption and costs. A major element of the plan is the expanded use of central control technology to operate irrigation in city parks. The plan also includes more efficient landscape management in an effort to reduce irrigation water consumption per park acre.

A key resource that is enhancing irrigation efficiency in the parks system is the expanded use of the Toro® Sentinel® Central Control System. In ways the old irrigation maintenance staff never could have imagined, the Sentinel Central Control System gives the parks irrigation staff outstanding reach and flexibility in programming irrigation and in adjusting it – either manually or automatically.

Control at the District and Sub-District Levels

The Denver park system is divided into four main districts, each with multiple sub-districts. Because of the number of parks, their scattered locations and vast acreage (over 2,819 irrigated acres in the parks system), each district uses multiple Sentinel Central Control Systems to control irrigation.

“With the size of our districts, there isn’t one central location that is practical for controlling everything,” said Jill Wuertz, Water Conservation & Greenhouse Administrator for Denver Parks and Recreation.

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“We have to coordinate all maintenance activities, permit activities and watering activities, so we’re conducting training at the sub-district level. The Central Control Master Plan has us standardizing on one product [Sentinel], installing central control with master valves and flow sensors and building a communications network. One problem we had previously was communicating with [field] controllers. Every site is different. We have commercial-grade sprinklers throughout the system, but communications was always a challenge. As we have worked through building our new network, Toro has worked closely with parks staff to find new and innovative ways to ensure reliable communication with all field controllers. When you have a system as vast as ours and as old – we’ve been irrigating for over 100 years – you have a complex mix of new and old equipment.”

The implementation of the CCMP has been a true joint effort. Denver Water, the city’s water supplier, has provided support and significant funding to help speed the projected reduction in water consumption. Toro product developers and technicians have worked with local contractors to install the more complex elements of the system. They have also teamed with DPR Water Conservation to help train Denver parks staffers who operate the central controls. And parks department employees have been busy installing irrigation equipment at small sites to upgrade the system and enable the use of central control. This use of parks staff labor is projected to produce savings of more than \$1.04 million through 2014.

“Installing central control is complex, so parks worked with Toro to develop an optimization process to ensure the installation and system operation were all correct,” Wuertz said. “With a project of this scale, you really need to partner with as many people as you can to achieve what you’re trying to get done. DPR Water Conservation also created detailed scheduling templates to assist staff with making decisions on run time based on plant, water and soil relationships.”

Some elements of the central control system have actually been in place for some time, but they were underutilized due to improper installation and lack of training.

“We have had the product in the field for many years, but it didn’t always do what we wanted it to do,” Wuertz said. “We knew smart controllers were a good investment, but our staff had varied familiarity and standardizing on one product line allows us to focus our efforts. “The Central Control Master Plan unified the steps, the total project costs, and the operation going forward.”

Phase 1 in the five-year plan will be complete in 2012. It has focused on system upgrades and utilization of the Sentinel Central Control System in the city’s northeast district, where the Sentinel system had been installed in new parks at large redevelopment sites like Stapleton and Lowry, but older parks still needed to be upgraded.

Real World Challenges & Benefits

Debrah Binard is the Water Conservation Operations Coordinator-Irrigation Specialist for Denver Parks and Recreation. She is immersed in the central control project and said the parks irrigation staff has faced challenges when controllers are installed in areas where wireless communication is difficult.

“We had a lot of Sentinel controllers in the field operating as stand-alone units due to communications challenges,” she said. “Denver is hilly, treed and quite spread out, so we had problems with radio communications. We went through the system to determine where we have these problems and how to solve them. We have made it our standard to send data over our secure city network and to install antennas that will broadcast that information by radio to outlying field controllers.”

A variety of factors, she said, can compromise or block signals. “Positioning is vital to communications,” Binard said. “Ideally, a controller shouldn’t be in a low gulch, or adjacent to a large evergreen that can block the signals,” she said. “Buildings can also block signals, and their presence can change through new construction. We try to do the signal testing in full leaf and in summer heat. Heat spreads the signal, and leaves deflect signals, so try to do it in the heart of the growing system for the most accurate assessment.”

Proper installation by contractors is also a must, she said, and she is urging Toro to establish an installer certification program. Among other things, she said, proper installation would ensure reliable grounding of components, which is an issue in Denver, where major lightning storms occur frequently and can damage equipment.

Binard said the Denver parks irrigation staff formed a user group to share experiences and advice about programming the Sentinel software.

“We found our staff really needed some help learning the ins and outs of the software,” she said. “It has a lot of capability and versatility, and it’s advisable to have frequent training sessions to learn how to best utilize all the features. So we created the Sentinel User Group and hold bi-monthly meetings in the off-season to cover different topics. The Toro field rep and the Sentinel distributor attend, too.”

Among the Sentinel functions the staff appreciates is the ability to instantly shut down parts of the system if an event like vandalism occurs, or when it rains.

“One reason we went with central control is the capability of having a master valve and flow sensor setup, and in the event of the catastrophic flow, the system can automatically shut down. To have that management capability is a plus.

“Along with water savings, we see labor and gas savings in that staff used to have to run out and shut down controllers when it rained, then run back out to turn them on again after the rain. That took up a considerable amount of time, and it’s very helpful to be able to globally shut the system down.”

Reductions in Water Consumption and Costs

Early indications are that the CCMP will produce the desired results of reducing water consumption and costs for park system irrigation, while sustaining playable, aesthetically pleasing landscapes in Denver’s many parks.

Wuertz said water makes up 8-10% of the overall parks and rec budget, with approximately 97% of that water used for irrigation. She said the department staff has been challenged to reduce water consumption by 20% when the central controls are fully operable. The growing use of central controls, along with training and other steps to increase irrigation efficiency, is showing positive results.

Water consumption for parks irrigation peaked in 2008 at 1.639 billion gallons. After a rainy 2009, when the demand for irrigation was greatly reduced, water usage for parks system irrigation has steadily decreased. Parks irrigation used 1.418 billion gallons of water in 2010, and 1.223 billion gallons in 2011. All of this was achieved while park acreage continued to increase across the park system.

“My gut says we’re seeing 20% [reductions in water consumption] as we’re relying more heavily on the use of central controls, and that doesn’t even include labor savings associated with central control,” Wuertz said. “What we see is consistency with central control that you can’t necessarily get with the stand-alone controllers based on our staffing levels.”

She said the staff is utilizing the central control system flexibility to adjust irrigation scheduling more often and more efficiently.

“Before, we might have changed a controller schedule three times a summer, but now we’re making monthly adjustments and we want to go even further with greater training and mastery of the system to adjust it more frequently. We have grabbed the big gains in water savings and made the big changes, but now we want them to grab the smaller gains and make the more precise adjustments. That’s where the savings will really come in.”

Wuertz said the parks staff is also adjusting its landscape management. Previously, the staff budgeted for 30 inches of water per acre per irrigation year. “In 2012, we’ve moved to a target of 27 inches per acre, and that may be reduced further by budgetary needs or water availability from year to year.”

DPR uses other methods to manage water use and contain costs. The use of recycled water has been increased, especially on golf courses and new parks. Selected turf areas are being converted to natural grasses to reduce irrigation. And the department has operated a greenhouse since 1894, which also helps minimize plant and flower costs.

She said the staff is acutely aware of Colorado’s often-limited water supplies, which vary year-to-year based on snowmelt and rainfall. “We’re hoping for rain, but we’re prepared if it doesn’t happen,” she said. “The Sentinel Central Control System is allowing us to be prepared and not just be hopeful for rain.”

Even applying less water per acre, the parks staff has successfully maintained park landscapes at aesthetically acceptable levels. Plants and turf are still thriving and providing Denver residents with great outdoors experiences.

“As stewards of our park system, if you’ve historically overwatered plants, they won’t survive an extended drought as well. It creates a lot of very thirsty turf and trees,” Wuertz said. “But with our water management, I think we’re getting our plants to that point where they’re healthier and more adaptable to what is the reality of Colorado. Water management is about aligning irrigation with plant needs to maintain healthy horticultural assets. Along with being on a budget, we’re stewards of our resources.”

With an increased focus on irrigation management, improving system efficiencies and the expanded use of the Toro Sentinel Central Control System, Denver Parks and Recreation is lowering its water consumption and irrigation costs while still providing residents with one of the nation’s most beautiful and popular city park systems.

For more information on Toro Irrigation solutions, contact your local authorized Toro Irrigation distributor, call 877-345-8676, or visit www.toro.com.

About The Toro Company

The Toro Company (NYSE: TTC) is a leading worldwide provider of turf and landscape maintenance equipment, and irrigation solutions. With sales of nearly \$1.9 billion in fiscal 2011, Toro’s global presence extends to more than 90 countries through its reputation of world-class service, innovation and turf expertise. Since 1914, the company has built a tradition of excellence around a number of strong brands to help customers care for golf courses, sports fields, public green spaces, commercial and residential properties, and agricultural fields. More information is available at www.toro.com.