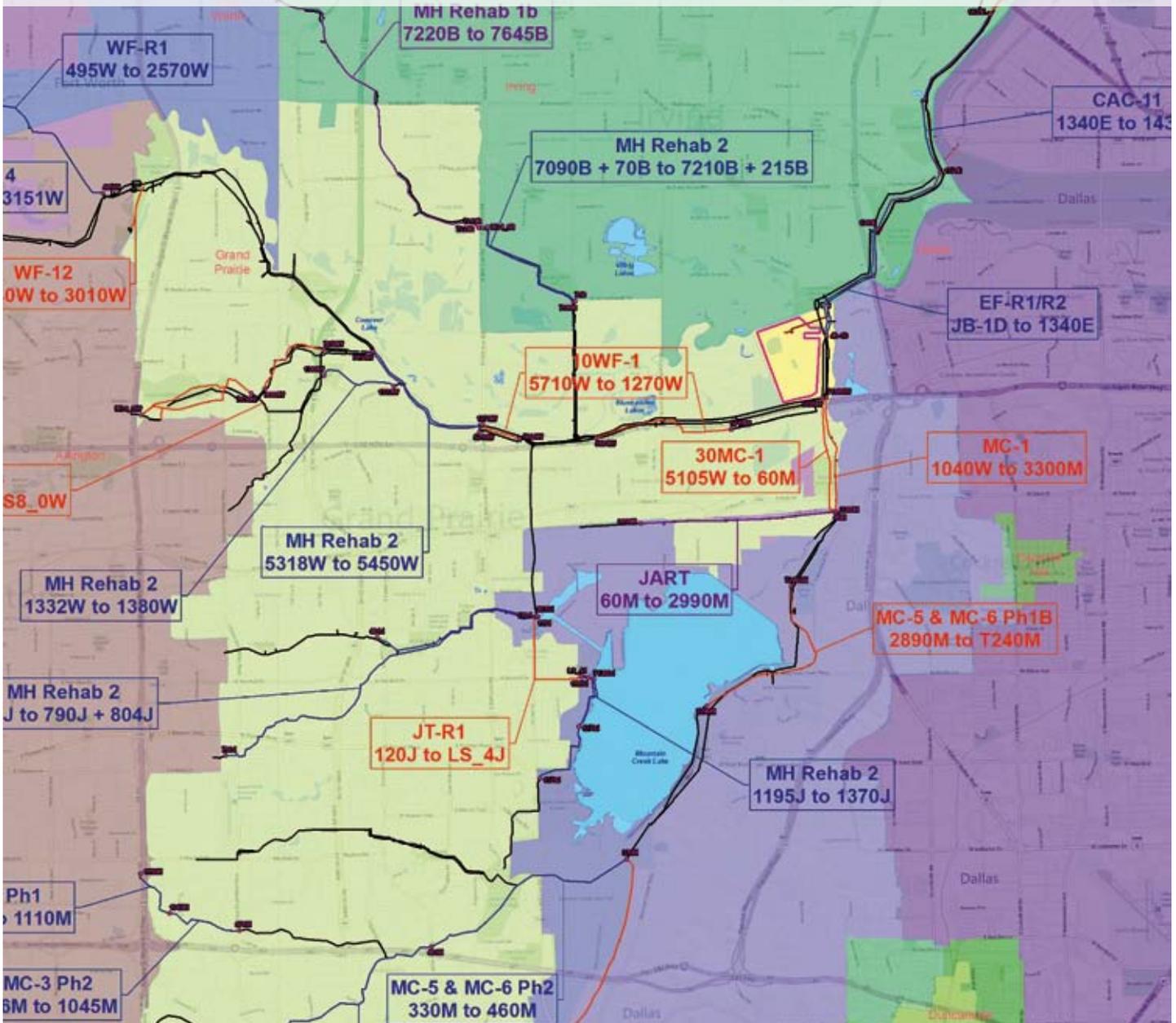


# Geographic information systems provide key resources for TRA projects



# CRWS, TCWSP undergo triennial evaluations

The Trinity River Authority board of directors recently approved contracts to perform triennial evaluations for Central Regional Wastewater System and Tarrant County Water Supply Project.

Teams of engineers are currently reviewing documents and observing operations and maintenance practices, programs and equipment at both projects. They will also evaluate each system's regulatory compliance records and long-term planning.

Triennial evaluations are part of the provisions designed to protect the interests of those who purchase bonds issued to fund construction and expansion of some of TRA's regional water and wastewater systems.

"These extensive and long-term assessments illustrate TRA's commitment to operating and maintaining each system in a fiscally responsible and efficient manner," said Northern Region Manager Fiona Allen. "Bond buyers and customers alike can be assured that we can meet the needs of each system's contracting parties both today and in the future."

TRA has recently issued bonds to fund system expansion and improvement projects at both CRWS and TCWSP. A series of construction projects totaling nearly \$300 million at CRWS will eventually result in an upgrade in treatment capacity from 162.0 million gallons per day to 189.0 MGD. TRA issued bonds for more than \$50 million to fund construction projects designed to improve processes and enhance reliability at TCWSP.

Engineers begin the evaluation process with a thorough review of written plans and reports that document procedures, regulatory compliance and planning activities at each project. For CRWS, these include the Texas Pollutant Discharge Elimination System Permit and compliance data, facility drawings, process diagrams, maintenance logs, operations reports, inspection reports, condition evaluations and master plans. Insurance policies, warranty documents and risk management plans, in addition to many other documents, are also reviewed.

Engineers will consider similar planning and procedural documents at TCWSP, paying close attention

to key regulatory issues, Texas Commission on Environmental Quality monthly operational reports, water quantity and quality data and chemical use.

Next, a team of engineers, including those with architectural, electrical, instrumentation, operations and maintenance expertise, will visit each system's plant and other key project components to examine facility and equipment layout and conditions and to observe operations and maintenance procedures.

From these reviews and observations, the engineering team will make recommendations for improving efficiency in the system and for correcting any noted deficiencies.

One year after the initial review and assessment, the engineering team will perform a follow-up evaluation based on the first year's findings. Two years after the first assessment, a final evaluation based on the second review completes the triennial evaluation.

"Triennial evaluations are a valuable opportunity to gain from independent experts insight into our practices that we can use to improve our operations," said Allen. "We can learn how to avert potential problems and how other facilities have overcome issues that we may encounter."

## TRA board elects executive committee

The Trinity River Authority's 25-member board of directors recently elected four directors to serve on the executive committee and as chairmen of TRA's functional committees.

Ronald J. Goldman of Fort Worth, representing the Trinity River basin at large, serves as chairman of the legal committee. John W. Jenkins of Hankamer, also appointed to an at-large position, is chairman of the utility services committee. Jess A. Laird of Athens, representing Henderson County, serves as chairman of the administration committee. Kevin Maxwell of Crockett, representing Houston County, is chairman of the resources development committee.



A team of engineers visited the CRWS plant and collection system components to observe operations and maintenance procedures. Seen here from left to right are CRWS Process Automation Engineer Mike Woolsey, Carollo Engineer Scott Hoff, CRWS Manager Systems Operations Mike Young and Carollo Engineer Steve Frost.

Both CRWS and TCWSP bond covenants call for a new cycle of triennial evaluations to begin every three years.

CRWS provides wastewater treatment for 20 DFW Metroplex cities, along with the Dallas/Fort Worth International Airport. The system transports wastewater through 200 miles of interceptor

pipelines to the 162-MGD plant.

TCWSP provides drinking water to Bedford, Euless and Colleyville, along with portions of Grapevine and North Richland Hills. The project draws raw water from Lake Arlington and treats it at the 87-MGD plant before distribution to customers cities' storage tanks.

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## CRWS on-site stormwater storage basin more than 50 percent complete

In spite of frequent rainfall during the last four months, construction crews have made substantial progress in installing ground-stabilizing anchors and pouring concrete for a massive 125-million-gallon stormwater storage basin at TRA's Central Regional Wastewater System.

"The bar screens are installed," said Construction Inspector Supervisor Mike Query. "All of the anchors were installed by the end of March."

In addition to a 200-million-gallon-per-day screening facility, support structures for the basin include a 50-MGD pump station, a junction box and a sluice gate isolation structure.

"The basin is more than 50 percent complete," said Query. "If the weather cooperates, it will be substantially complete and ready for testing by July 2013."

The stormwater storage basin will help CRWS manage high influent flows during heavy rain events. The system is currently permitted to treat an average of 162.0 MGD with a peak two-hour flow of 405.0 MGD during wet weather. Flows in excess of 375.0 MGD will be routed to the basin, which is designed to hold 125 mg but has a 175 mg maximum capacity. After the storm has passed, operators will return the stored effluent to the treatment process.

In addition to frequent rainfall, construction crews have faced other challenges. Before construction began, engineers encountered unstable soil conditions at the construction site. In response, they amended the design to include large anchors installed diagonally below the basin to hold soil layers in place and prevent cracks in the concrete floor and walls.

Despite challenges, the project remains on schedule and within budget, with costs totaling nearly \$42 million.

CRWS treats wastewater for 20 DFW Metroplex cities and the Dallas/Fort Worth International Airport. The CRWS plant and collection system are undergoing construction to improve processes and expand treatment and transportation capacity to 189.0 MGD with a peak two-hour flow of 623.0 MGD.



*Construction crews, dwarfed by the massive size of the CRWS on-site stormwater storage basin, pour concrete under a clear, blue sky. Engineers designed the basin to store 125 million gallons with a maximum capacity of 175 mg to help CRWS manage high influent flows during heavy rain events.*



*Construction crews have moved mountains of dirt and poured tons of concrete to build the CRWS stormwater storage basin. Crews stabilized soil layers beneath the basin with large anchors during construction.*

## Production at TCRWSS gradually recovering from drought

Treated water production at TRA's Trinity County Regional Water Supply System is gradually increasing after dropping during recent drought conditions. TCRWSS draws water through 18 wells located in natural sand and gravel deposits saturated with water from nearby Lake Livingston. When the lake's level falls due to drought or other issues, water recedes from the sand and gravel deposits, reducing the volume available to the system.

After last year's severe drought conditions, Lake Livingston dropped by more than four feet below normal pool level to a low of 126.91 feet above mean sea level in mid-November. As a result, TCRWSS' production fell to 490 gallons per minute, roughly half of maximum capacity.

TCRWSS provides drinking water to the cities of Trinity and Groveton, the Westwood Shores Municipal Utility District and the Glendale, Riverside and Trinity Rural Water Supply Corporations.

In response to the loss of production capacity, each of the system's customers implemented outdoor water use restrictions according to its drought contingency plans. Most residents in the TCRWSS service area were allowed to water twice a week. Some were subject to tiered pricing structures to encourage water conservation.

Replenished by winter rains, Lake Livingston reached normal pool level in late January. Over the last two months, production at TCRWSS has risen by over 200 gpm.

"We are pumping and treating 694 gpm and are gaining production capacity every day," said TCRWSS Senior Operator Steve Lee. With the increase in production, the system's customers have lifted restrictions. Based on past experience, Lee expects production to return to maximum levels in about three months.

"By May, we will be pumping around 1,000 gpm, more than enough to meet customer needs this summer," he said.

## GIS maps vividly illustrate collection systems and easements

TRA's Geographic Information Systems program provides invaluable resources for plant managers, land rights specialists, engineers, contractors and project designers. But this sophisticated system of entering, storing, interpreting and managing geographical data was not developed overnight – the program is the result of careful planning and research with potential for future applications.

Land Records Research Specialist Brenda Porter has been essential to the implementation of the program from the very beginning. In 2005, she began researching and developing a new system to convert TRA's land rights information into GIS data. Since special training is needed to program data into the system, Porter began taking classes in GIS at Tarrant County College in 2008 and has received three certifications. After she receives her associate's degree in GIS this year, she plans to attend the University of Texas at Arlington to earn a bachelor's degree in GIS.

GIS allows authorized TRA employees and consultants to see a map of pipeline easements within a given area. Parcel layers provided by the county are superimposed on top of aerial photographs to give users a clear idea of property lines, and the names of the individuals to whom the property belongs are found via tax records. Porter then creates another map layer based on land survey data to trace the route

or location of structures such as manholes, pipelines and metering stations. She links documents such as easements, deeds and permits to the relevant area for quick reference. Street layers can also be added to give context to these locations.

"On the GIS map, you can see the route of our pipeline and how our easement follows along the pipeline," Porter said. A pipeline easement provides the rights TRA needs to construct and operate a line on another land owner's property. TRA's easements typically grant the rights to install a sanitary sewer or water line with the stipulation that the easement belongs to TRA and that TRA must permit any work or construction the owner wishes to perform on the easement.

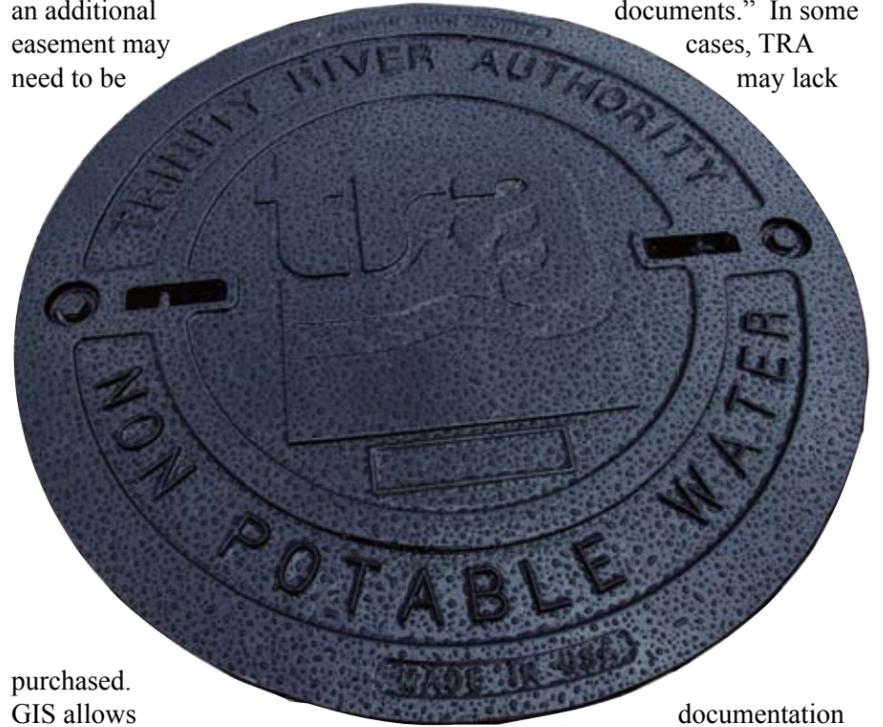
Since many of TRA's easements intersect both public and private property, knowing owners' names is essential in case of emergency. In such instances, plant managers and engineers easily can access the GIS map, locate the pipeline, identify on whose property the issue is located, and contact the owners to notify them of impending repair work.

With GIS, plant managers and engineers can also quickly see a complete map of their collection systems, zoom in on particular sections of pipeline and locate manholes and metering stations. This is essential during times of construction, repair and routine maintenance.

GIS is also essential for project planning. When a new

pipeline needs to be constructed or rehabilitated, engineers consult GIS maps to identify existing pipelines and to determine the property lines the new pipeline would cross. If a larger pipe needs to be installed, an additional easement may need to be

"We're basically at 90 percent complete," she said, "CRWS alone had more than 50,000 documents that we had to enter, and went clear back to 1955. What we are doing now is filling in the gaps of missing documents." In some cases, TRA may lack



purchased.

GIS allows design engineers to access relevant documents as well as to plan for future development.

Porter has already implemented system maps for Central Regional Wastewater System, Denton Creek Regional Wastewater System, Ten Mile Creek Regional Wastewater System, Red Oak Creek Regional Wastewater System, Mountain Creek Regional Wastewater System, Livingston Regional Water Supply System, and Huntsville Regional Water Supply.

documentation for properties inherited from other cities or utility districts. Porter's painstaking work of building the land rights GIS system has helped TRA identify these missing pieces.

Other future plans include maintaining the system, refining and updating existing data and increasing user functionality.

## Wolf Creek Park kicks off the 2012 camping season

Camping season is in full swing at Wolf Creek Park, which opened March 1. So far, campers have enjoyed snow cones galore from the marina store, plus fishing, new playground equipment, new steps to the lake – and, yes, campfires. The park has played host to Boy Scout Pack 567, survived Spring Break and celebrated St. Patrick's Day, all in a few short weeks. And there's plenty more to come. To stay apprised of what's going on at Wolf Creek Park, make sure to visit its Facebook page at [www.facebook.com/TRAWolfCreekPark](http://www.facebook.com/TRAWolfCreekPark).



# General Manager's Message

## Planning at forefront of Texas, TRA efforts

We certainly live in interesting times when it comes to water planning in Texas. Late last year, the Texas Water Development Board adopted the 2012 State Water Plan – the ninth such plan it has compiled – and the fourth round of regional water planning under 1997's Senate Bill 1 has also begun. Many areas of our state are cautiously optimistic that they are moving out of the worst one-year drought in Texas history, a drought that dominated the 2012 water plan and will continue to influence planning efforts for years to come.

According to former TWDB Chairman Edward G. Vaughn, the primary message of the 2012 water plan is that under serious drought conditions, Texas does not and will not have enough water to meet the needs of its people, businesses and agricultural enterprises. Texas' current water planning process was conceived as a response to the drought of 1995, and its underlying theme has been our state's acknowledgment of its vulnerability to drought and to the limits of existing water supplies. Thus, those of us who are custodians of water resources must be prudent and thoughtful when determining how best to conserve those resources,

meet future water supply needs and respond to future dry conditions.

For TRA and its partners, being good stewards of our state's water supply is imperative – and complicated. Water providers must consider engineering, socioeconomic, hydrological, environmental, legal and institutional components and attempt to balance them all. Without doubt, the challenges our state faced during the last year have highlighted the fact that our water planning process exists to ensure that our citizens and economy have enough water during times of extended drought. I believe we can all agree that 2011's dry conditions captured the attention of everyone in our state from legislators and the news media to homeowners facing watering restrictions.

TRA's board of directors and executive leadership are committed to devoting the appropriate time, research and resources to make sure that we are the best possible guardians of the water supplies we oversee – and that those supplies are used toward the best interests of the people of Texas. To that end, our board of directors formed a special committee in December of last year to examine current and potential

uses of TRA's Lake Livingston water supply. This committee will make recommendations to the board of directors about how best to manage that supply in coming years.

Developed as a cooperative water-supply effort between TRA and the city of Houston, Lake Livingston reached its normal pool level of 131 feet above mean sea level in 1971; Houston owns 70 percent of the lake's water rights, with the remaining 30 percent belonging to TRA. Currently, 22 percent of TRA's total water rights in the southern Trinity River basin is committed for municipal, agricultural and industrial use. As Texas enters its fourth round of regional water planning this year, planners will revisit strategies for the future use of TRA's remaining 78 percent of uncommitted water.

The choices we make today about water sales will have long-term effects for the Trinity River basin and our state – we must make sure we take every step possible to make sound and effective decisions. The special committee has met twice thus far to gather background and set a prospective course. Moving forward, the group will consider everything from interbasin transfers recommended



General Manager J. Kevin Ward

in the current state water plan to a comprehensive rate study for Lake Livingston water and any additional requests or interest in purchasing raw water from TRA.

According to a recent report from Texas Comptroller of Public Accounts Susan Combs, recent drought conditions may prove one of the most devastating economic events in Texas history. Agricultural losses are estimated at \$5.2 billion for 2011, not including indirect drought losses, which could add another \$3.5 billion. At TRA, we want to continue planning efforts that can help supply water to the people and places in our state that need it most. I hope our readers will continue to follow this issue as we provide updates on TRA's role in water supply planning across our state.

## Rains bring relief to parts of Texas

Extreme weather patterns remain the rule in North Central Texas where the hottest, driest year on record has been followed by the sixth-wettest winter. According to the National Weather Service, 12.41 inches of rain fell at Dallas/Fort Worth International Airport from December 2011 through February 2012, well above the median 6.06 inches. Winter rains have also fallen on East Texas, restoring water supplies and allowing officials to lift burn bans.

According to the Texas Water Development Board, rainwater runoff has filled reservoirs throughout North Central Texas to 87 percent full on average, up from a low of 68 percent in November. TRA serves as local sponsor for three U.S. Army Corps of Engineers-operated lakes in North Texas that have refilled since last fall. Bardwell reached 100 percent capacity in late January after falling to six feet below normal conservation level in late November. Lakes Joe Pool and Navarro Mills both reached 100 percent in late January after falling approximately four feet below normal conservation level in late fall.

Tarrant County looks to be better prepared for the dry months of summer this year according to the Tarrant Regional Water District, which supplies raw water to 98

percent of the county – including TRA's Tarrant County Water Supply Project. TRWD's reservoirs were 97 percent full as of late March.

"We're in much better shape than last year, when 88 percent was our peak at the end of April," said David Marshall, TRWD engineering services director.

In contrast, rainstorms have bypassed West, Central and South Texas.

"Last year's drought affected pretty much everybody," said Texas State Climatologist John Nielsen-Gammon. "This year is going to be pretty uneven. While North Texas and East Texas look to be in pretty good shape for this summer, I think there are still going to be areas of the state dealing with drought this year."

The U.S. Drought Monitor map shows drought conditions persisting across West, Central and South Texas, with 87 percent of the state classified in at least a moderate, or greater, level of drought.

At press time, the TWDB listed statewide reservoir levels at 75.72 percent full, up from a low of 58 percent in November 2011; it considers the increase in stored water a sign that Texas is beginning to recover from the extreme 2011 drought. But the TWDB cautions that normal reservoir levels for this time of year are 83 percent

full and that current levels are still substantially below normal.

Spring weather predictions add to the cautious mood.

The National Weather Service Climate Prediction Center is calling for enhanced chances of below-normal rainfall through spring. Since reservoirs often replenish during spring rain events, some may not refill. Furthermore, weather predictions favor above-normal temperatures this summer, resulting in high water demand and increased lake evaporation.

For these two reasons, TWDB reports that the number of water suppliers with restrictions in place continues to increase in spite of recent rains.

In the upper Trinity River basin, residents cut water usage when most cities implemented twice-a-week outdoor water limits near the end of August 2011. The TRWD may wait until June before lifting restrictions. In fact, several North Texas water suppliers, including Dallas and TRWD, are considering making restrictions permanent.

Since Nielsen-Gammon believes that the longer-term sea surface temperature patterns will continue to favor drought-friendly conditions for several more years, conserving water may become an enduring part of life for all Texans.

### Wallisville Saltwater Barrier mitigates drought's impact on Lake Livingston

During the 2011 drought, which broke temperature and precipitation records set in 1956, Lake Livingston fell by more than four feet, a reduction of about 326,000 acre feet of water. An acre foot is the volume of water required to cover one acre with a foot of water, or 325,851 gallons. Winter rains have since refilled the lake, bringing it back to normal pool level of 131 feet above mean sea level in late January.

Historically, Lake Livingston has actually suffered more dramatic water loss during less severe droughts. For example, the 1988 drought resulted in a loss of 69,000 acre feet more than the drought of 2011.

The Wallisville Saltwater Barrier, which began operations in 1999, is responsible for reducing water loss in Lake Livingston. The project, located on the Trinity River just north of Trinity Bay, controls the migration of saltwater upstream to diversion points of major water distribution systems for rice irrigation during low river conditions. A dam mechanically blocks saltwater, while navigational locks allow boat traffic on the river to pass.

Before the barrier, TRA was required to release fixed-rights agreement water from Lake Livingston to flush saltwater downstream away from diversion points. Now, with the Wallisville Saltwater Barrier in place, Lake Livingston Dam has reduced the amount of water it must release during drought conditions.

# Employee Milestones

## New Hires

CRWS welcomes **Brad Beeching** as senior maintenance mechanic and **Mark Reeves, Cody Edmondson, Nevada Ryan** and **Carlos Alonso** as operators I.

LLP is excited to have **Kevin Havard** as part-time maintenance helper.

LRF welcomes **Robert Sweet** as park ranger, **Larry Mink** and **Mary Kyle** as part-time office clerks.

GO is pleased to have **Stacie Dowell** as paralegal, and **Phu Phan** as GIS intern.



*Alexandra Alana Hoppe, daughter of Julie Hoppe, human resources supervisor, recently graduated with a bachelor's degree in business administration from the University of Texas at Arlington.*



*Jamie Clark, son of Public Information Officer Michelle Clark, won second place with a time of 9:47 in the boys' age 1-6 division of the Mustang Mile as part of his elementary school's Texan Trail Run 5K.*



*Mary Kyle, LRF park attendant, has a new grandson. Austin David Rice was born March 15.*



*John Herndon, CRWS environmental services coordinator, has a new grandson. John and his wife, Dottie, welcomed Maxime Jack O'Hagan into the family on Oct. 20, 2011. Maxime's proud parents are David and Anastasia O'Hagan of Phoenix, Ariz.*



*Scruffy, a medium sized terrier mix, who, for 10 years, served as the CRWS treatment plant mascot and audible alarm system, passed away Feb. 12. During her tenure at the plant, she accompanied Barry Van Campen, maintenance mechanic II, as he performed his duties, barking at all who approached. Three years ago when construction traffic increased at the plant, Scruffy retired to the safety of Van Campen's home.*

## Promotions

**George Garcia** and **Arlen Sauer** were promoted to maintenance mechanics II at CRWS.



*TCWSP Biologist Gary Smith, right, receives a Texas Water Utilities Association 25-year service award from TWUA President CeCe White.*



*Dianna Watkins, CRWS biologist, recently welcomed her first grandson. Jackson Robert Watkins was born Feb. 12.*



*Sam Thomas, GO clerk/typist, recently welcomed a second granddaughter. Wylie Jane Wells was born Jan. 9 to Katy and Jimmy Wells.*

# Cowtown Corner

Several TRA employees participated in Fort Worth's 34th annual Cowtown event in February. This year's schedule broke event registration records with more than 25,000 runners in six different races: the Marathon; University of North Texas Health Science Center Half Marathon; 50K Ultra Marathon; 10K; Adults 5K; and Cook Children's 5K. The Cowtown emphasizes the importance of good physical fitness in the community by working with local schools and community centers in teaching proper running, training and nutrition to area youth in preparation for participating in the race, as well as a lifetime of fitness. This year, the Cowtown awarded funds and running shoes to more than 1,400 children.



*General Manager Kevin Ward, 10K*



*Public Information Officer Michelle Clark, Cook Children's 5K; CSS Assistant Manager Richard Postma, University of North Texas Health Science Center Half Marathon; and Executive Project Manager Alison Mackey, 10K*



*Northern Regional Manager Fiona Allen, second from left, Adults 5K*

# DCRWS alternate outfall substantially complete

TRA's Denton Creek Regional Wastewater System will soon be able to pump as much as 11.5 million gallons per day of treated wastewater through 4.4 miles of pipeline to a new discharge point on White's Branch Creek.

DCRWS currently discharges reclaimed water into Cade Branch, a tributary of Denton Creek that flows into Grapevine Lake. Construction crews recently increased the plant's treatment capacity from 5.0 to 11.5 MGD, and construction to increase the project's collection system from 27 to 55 miles in length will be complete this year. TRA applied for permission to increase the volume of treated water flowing to Cade Branch in anticipation of the system expansion but was denied after the Texas Commission on Environmental Quality changed the method for assessing the impact of reclaimed water on reservoirs.

At issue are state-mandated stream standards for dissolved oxygen that apply to lake backwaters or coves. A level of 5.0 milligrams of dissolved oxygen per liter of water is specified as necessary to support a healthy fish community. The main bodies of most lakes have 5.0 mg/L, or greater, of dissolved oxygen as wind and wave action mix air and water, causing oxygen to be absorbed. Sunlight allows algae to carry on photosynthesis, which adds oxygen to the water as well.

Coves and backwaters, those narrow fingers of water around the perimeter of a lake, can be

naturally low in dissolved oxygen for a number of reasons. The water tends to be tranquil, with little agitation or movement. Wind and sun can be blocked by overhanging vegetation or high stream banks. Other cove conditions contribute to low levels of dissolved oxygen as well, sometimes bringing the naturally occurring level below 5.0 mg/L. The TCEQ cannot permit a discharge of reclaimed water if it cannot be demonstrated that stream standards will be met.

Even though DCRWS' effluent has an average of about 7.5 mg/L of dissolved oxygen, levels drop off as the water flows from Cade Branch to Denton Creek and into Grapevine Lake. TCEQ concluded that standards will not be met if the discharge is increased.

As a result, DCRWS constructed a second discharge site as well as a pipeline and a pump station to transport water to the new site. The pipelines and pumps will also be able to supply reclaimed water to cities north of the plant for future reuse needs.

The TCEQ issued an interim permit for DCRWS to treat and discharge 7.0 MGD to Cade Branch during construction of the alternate discharge pump station and pipeline. Once the new discharge facility is online, the permit calls for a reduction in the amount discharged to Cade Branch to 4.75 MGD. The total discharge of both outfalls will not exceed 11.5 MGD.

DCRWS provides service to 11 communities in north Tarrant



*The DCRWS alternate discharge on White's Branch Creek. The DCRWS plant has recently been upgraded to 11.5 MGD, and construction crews are currently laying new pipe to extend the collection system from 27 to 55 miles in length. The system has been expanded almost continuously since it began operation in 1990 in response to rapid development in its service area. Developers plan to begin construction on two communities as soon as the collection system is complete.*

and southern Denton counties. The system's customers include the cities of Fort Worth, Haslet, Keller, Roanoke and Southlake, along with the towns of Argyle, Flower Mound, Northlake and Westlake, plus the Circle T Municipal Utility District Nos. 1 and 3. The Alliance Airport Development Area and the Texas

Motor Speedway are located in this area.

Since the system began operation in 1990, DCRWS has increased treatment capacity several times due to population growth and development in the system's service area.

## Catching up with AISD intern Javier Celestial

As the spring semester comes to a close, inTRA once more caught up with Arlington Independent School District intern Javier Celestial to catch up on his rotations through TRA's staff groups and projects.

"I was surprised at the amount of detail and hard work that goes into the water industry," Celestial said. "The internship has more than met my expectations. Going into this, I figured I would see a few filters and clean water as the end result. But it's much more than that – there are many different facets to the water and wastewater treatment process."

The scale of the wastewater industry impressed Celestial. "I had no idea wastewater plants were so large," he said. "Some individual construction projects at CRWS are larger than the construction of entire water utilities."

Celestial gained an overview of water and wastewater treatment processes from Northern Region staff, and he learned how to edit, send, receive and revise engineering contracts with NR Manager of Engineering Services Karen Stafford-Brown. He has worked with Senior Biologist Gary Smith at Tarrant County Water Supply where he learned to count fecal coliforms

and test water samples, and has also practiced these skills in the lab at Central Regional Wastewater System. Celestial participated in evacuation drills at CRWS and also studied safety procedures for wastewater operations with Training Coordinator Tracy Owens.

Clean Rivers Program Coordinator Angela Kilpatrick and Planning and Environmental Management Assistant Webster Mangham have taught Javier how to collect field data using a multi-probe device that measures dissolved oxygen, pH, conductivity, and temperature. The data collected helps the Texas Commission on Environmental Quality determine any possible environmental problems within a watershed. Celestial also worked with Planning and Environmental Management Assistant Dr. Hong Wu and Senior Manager of Planning and Environmental Management Glenn Clingenpeel to help complete a mass water balance model that will allow TRA to understand how Lake Livingston and other water supplies respond to various hydrologic conditions.

As part of his Water Careers Education class at Arlington High School, Celestial will soon test



*Arlington Independent School District intern Javier Celestial, right, accompanies Planning and Environmental Management Assistant Webster Mangham as he collects water quality data on the Trinity River.*

for his class D water license. The course is taught by a Class A water operator who provides hands-on training and instruction. The group has recently learned how to build and use a water meter in preparation for a Meter Madness competition in Waco. The entire class will compete to build a meter quickly and correctly, and winners will advance to compete in San Antonio at Texas Water 2012.

Celestial has recently received his acceptance letter from the University of Texas at Arlington.

"I plan on majoring in physics,

but I may decide to double major in math and physics, and I would like to take engineering courses as well," he said.

Celestial will start classes this fall, and he will use the skills he learned through TRA's internship program throughout his education and future career.

"Furthering my education and broadening my skills are extremely important to me," he said. "I'm always interested in new subjects, which is why I was drawn to this internship. It has been a great experience."

# SCADA saves time, improves safety on TMCRRS night shift

New Supervisory Control and Data Acquisition equipment at Ten Mile Creek Regional Wastewater System is saving time and improving safety for plant operators, especially on the night shift.

The TMCRRS plant sprawls 100 acres in far southeast Dallas County. The system treats and transports an average of 17.0 million gallons per day of wastewater for Cedar Hill, DeSoto, Duncanville, Lancaster and Ferris. Operators process wastewater in three independent treatment trains with separate sets of clarifiers, blowers and aeration basins.

A lone operator, accompanied by two dogs, makes rounds on a golf cart to keep water flowing and pumps and barscreens operating efficiently throughout the night.

“The operators are required to enter every building and visit every piece of equipment,” said TMCRRS Operator Chief Sam Colvin. “They need to put their hands on the pumps, look at and listen to every process. That way, they can feel if something is heating up or vibrating in an unusual way.”

Senior Operator Mike Chandler has been on the night shift at the TMCRRS plant since 1994. He was originally skeptical and apprehensive about the SCADA system but has been surprised by how easy it is to use and how much it improves operations at the plant.

“If we needed to change pumps in the raw water pump station, those are near the back of the plant and way underground,” he said. “I would have to go out to the building and then down several flights of stairs and manually switch off one pump and turn on another. It took a lot of time and I was out of touch with the rest of the plant while I was underground. The SCADA lets me switch pumps right here in the office without taking my eyes off the rest of the plant. I still go out to the pump station and check to make sure it switched.”

Before the addition of SCADA remote monitoring and controls, operators made rounds four times each shift and sometimes more if electrical glitches, common during thunderstorms, kept them on the run.

“Every time the lights flicker, electrical equipment and pumps can trip off,” said Chandler. “When that happens, we have to reset and restart several plant components.”

For this reason, and because wastewater flows also increase dramatically during wet weather, two operators remain on duty when nighttime weather is stormy.

TMCRRS began a thorough update of its SCADA equipment in 2006 that will be complete this year.

“In this six-year period, we’ve gone from the least automated to one of the most automated of TRA’s treatment systems,” said Tim Morgan, TMCRRS chief electronics technician.

The SCADA system monitors equipment and processes throughout



*Spread across one hundred acres, the TMCRRS plant has three separate treatment trains for operators to monitor and operate. Automating the plant and collection system with a SCADA system has increased efficiency and safety.*

TMCRRS’ plant and collection system and reports the information to the operator station in the administration building. Operators can track the flow of water from the collection system to the plant and through the processes. They know how much water is headed to the plant and approximately when it will arrive. On-screen diagrams representing plant processes instantly indicate whether equipment is functioning and at what speed, if applicable.

“The SCADA system is a visual picture of how much water is going to each treatment train and how everything is working,” said Chandler.

The system also monitors process data such as dissolved oxygen so that operators can make instantaneous adjustments to equipment and chemicals to keep the processes on track.

“We had DO meters prior to the SCADA. We would go to each aeration basin, calibrate the meter and then record the measurement,” said Chandler. “Now we can see the DO readings for all the aeration basins at once on the SCADA system. If it is too low in one of the basins, we can start a blower and adjust the air on the screen.”

The ability to remotely control some equipment and processes improves safety for the operators. They spend less time physically navigating the plant grounds, equipment and stairways. Most importantly, they can reset and restart high voltage equipment from the operator station.

One of the most important aspects of the SCADA remote monitoring is the alarm system.

“We had alarms before, but they were located on each piece of equipment. If I was underground or on the other side of the plant, I might not see an issue until I made my next round,” said Chandler.

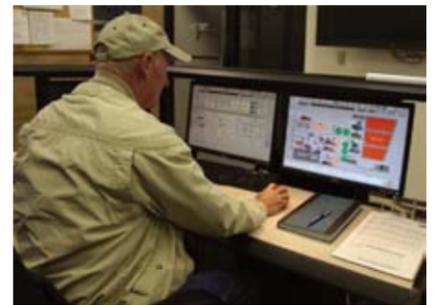
If a pump trips off or a large piece of debris hits the barscreen,

an alarm flashes red on the SCADA system screen, and the operator knows it needs his immediate attention.

With the ability to remotely monitor and control processes and equipment, operators will soon make fewer rounds per shift.

“They will still be required to make rounds to ensure everything is functioning properly and is correctly reflected on the SCADA,” said Colvin.

Currently, TMCRRS has one SCADA station in the administration building and a second in a blower building. Each station can monitor and control the entire system. By the end of the year, seven additional SCADA stations will be installed throughout the plant.



*Operator Chief Sam Colvin demonstrates the SCADA system at the operator station in the administration building. The plant’s layout is shown. Operators can access flow, equipment and process data by clicking on the appropriate icon.*

## CRWS repairs Proctor Road pipeline



*Thanks to the quick thinking and actions of the CRWS metering staff and collection repair staff, plus Northern Region and construction services personnel, in early March crews replaced an approximately 700-foot section of pipe along Proctor Road in Irving whose crown had deteriorated. TRA staff quickly mobilized appropriate contractors and removed the damaged pipe section, replacing it with new 39-inch pipe – all with no outflows or disruption of service.*



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## Anniversaries

### 40 Years

Gerald Null, manager, TCWSP

### 25 Years

Barry Van Campen, main. mech. II, CRWS  
Tim Morgan, chief electronic technician, TMCRWS  
John Owens, support resources manager, GO

### 10 Years

Suzanne Hamm, secretary/bookkeeper, TMCWS  
James Hart, senior main. mech., CRWS  
James Vickery II, senior main. mech., TCWSP  
Peggy English, senior secretary, CRWS  
Sherrie Dao, senior secretary, GO

### 5 Years

Bonnie Crawford, accounting clerk, TCWSP  
Linda Vice, senior secretary, CSS  
Randy Wilks, main. mech. II, CRWS  
Calvin Waller, chief electronic technician, TCWSP  
Steven Daniels, senior chemist, CRWS  
Gordon Drouin, main. mech. I, CRWS  
David Tomlinson, inspector II, CSS  
Osvaldo Robles, inspector II, CSS

### 3 Years

James Mallory, operator II, DCRWS  
Michael Ramirez, operator I, CRWS



*TCWSP Project Manager Gerald Null accepts a certificate for 40 years of service from Northern Regional Assistant Manager Patty Cleveland while shaking hands with Northern Regional Manager Fiona Allen.*

## Wish Dale Luck!

Dale Burrow, CRWS interceptor system specialist and team captain of TRA's Operations Challenge Team, the CReWSers, has been selected, along with three other distinguished competitors, to represent the Water Environment Federation, the water quality industry and the United States in the Argentina Operations Challenge Competition in Buenos Aires April 17-20. Look for more information and photos in the April/May edition of *inTRA*.

Congratulations to John Bennett, DCRWS project manager and the next president of the Water Environment Association of Texas. Look for more in the next issue of *inTRA*.