

August/September 2011



Newsletter of the Trinity River Authority of Texas



It's Gator Time

# Colleyville West booster pump station complete

Construction crews recently completed the Colleyville West booster pump station, a component of Tarrant County Water Supply Project's distribution system. This new facility, which replaces a 30-year-old pump station, delivers water to the city of Colleyville's potable water distribution system.

The building's exterior is designed to blend in with the surrounding residential and commercial community. Outside walls are a combination of tan blocks and red brick, and attractive landscaping plus an ornate metal fence complete the look.

The new structure houses three 4.5-million-gallon-per-day pumps with a firm capacity of nine MGD and a total capacity of 13.5 MGD. Firm capacity is the station's pumping capacity with one pump offline.

The pump station delivers water to a 20-inch pipeline in Colleyville's distribution system and to one of the city's elevated storage tanks during periods of high water demand. Under average- or low-water demand conditions, TCWSP's distribution system is capable of moving water to Colleyville's system without assistance from the booster pump station. However, during periods of high water demand, additional pumping capacity is needed to move more water at a faster rate. In other

words, the system needs a boost — hence the term booster pump station.

The new Colleyville West booster pump station is one of several projects constructed to increase capacity in TCWSP's distribution system after production capacity at the project's treatment plant increased from 72 to 87 MGD in 2004.

Other distribution system improvement projects include a new 60-inch transfer service main that transports water from the plant to the Murphy Drive treated water storage and pump station. This project, currently under construction, will complement an existing 48-inch transfer service main, which is also undergoing rehabilitation and improvement.

Capacity also recently increased at the Murphy Drive treated water storage and pump station, and construction crews completed the Glade Road booster pump station that delivers water to North Richland Hills in late 2010. Finally, installation of a new 30-inch water line, which will run from the Glade Road booster pump station to the city of North Richland Hill's distribution system, is ongoing.

TCWSP provides drinking water to Bedford, Colleyville and Euless, along with portions of Grapevine and North Richland Hills.



*Designed to blend with the surrounding residential and commercial community, the outside walls of TCWSP's newest booster pump station use a combination of red brick and tan blocks. This fall, crews will install residential-style landscaping and an ornate metal fence.*



*On the cover: A four-foot alligator escapes into water near Lake Livingston Dam. Lake Livingston Project staff released the reptile after it was recently discovered in the project's boat house behind the administrative building.*

*The alligator seen here is dwarfed by those entered into the Great Alligator Roundup at Texas Gatorfest 2011. See page 7 for all the happenings at the most unusual festival on the Trinity River.*



*During periods of high water demand, three 4.5-million-gallon-per-day pumps deliver water to a 20-inch pipeline in Colleyville's distribution system and to one of the city's elevated storage tanks. Under average- or low-water demand conditions, TCWSP's distribution system is capable of moving water to Colleyville's system without assistance from the booster pump station. However, during periods of high-water demand, additional pumping capacity is needed to move more water at a faster rate. In other words, the system needs a boost — hence the term booster pump station.*

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Visit Current News on the home page of TRA's website at [www.trinityra.org](http://www.trinityra.org) for more stories.

# MCRWS clarifiers to undergo stabilization repair

At its regularly scheduled December meeting, TRA's board of directors will consider a bid for nearly \$8 million in construction to improve and repair the Mountain Creek Regional Wastewater System.

An important part of the project is not only repair but also an addition to the system's secondary clarifiers needed to improve effluent quality. Currently, the plant's two secondary clarifiers are not able to operate at top efficiency during high flow conditions due to changes in the subsurface conditions below the basins.

"Over time, the soils underneath have shifted, causing the clarifiers to become unlevel," said Ron Tamada, Northern Region manager of engineering services. "The resulting changes in the way the water moves through the clarifiers can cause effluent quality to degrade."

Clarifiers play an important role in wastewater treatment. Water

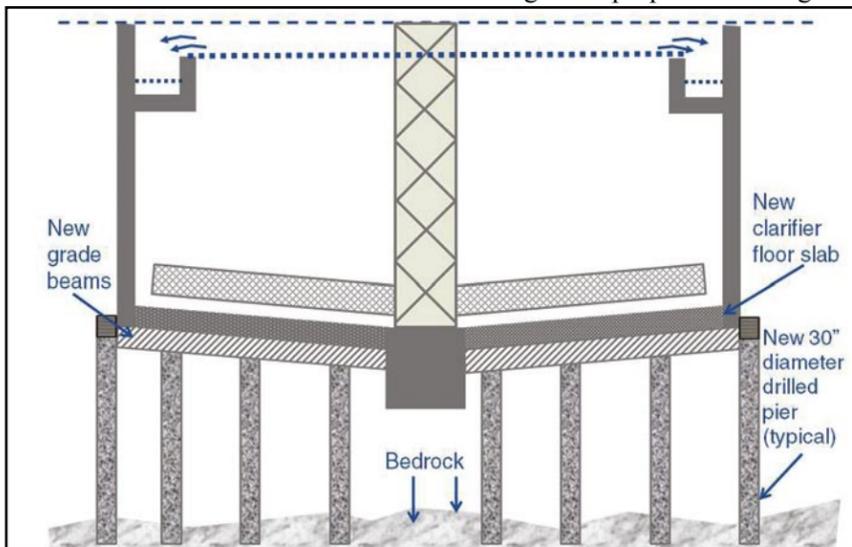
enters the circular tanks through a pipe at the center. As the water flows in a circle, it gradually slows down, allowing solids to settle to the bottom where they are removed with a raking mechanism. Clear water flows evenly over outside weirs at the periphery of the tanks.

Because MCRWS' clarifiers are no longer level, water flows unevenly over the weirs with increased velocity in the lower portion of the tank. The increased flow velocity draws the partially settled solids and increases the total suspended solids in the treated water.

"We are seeing spikes in total suspended solids, especially during wet weather when flows are high," said MCRWS Project Manager Billy Hill.

Engineers have designed a repair to level the clarifiers and guard against future subsurface soil movement.

Engineers propose installing



Engineers propose installing 30-inch piers, stabilized in bedrock below, to level each clarifier and guard against future subsurface soil movement.



A new secondary clarifier will be added adjacent to the two existing clarifiers seen here on the right. A cloth disk filter unit will be located nearby.

30-inch diameter piers beneath the outer walls and underneath the concrete-slab basin floors. Each pier will be anchored to the bedrock far below the basins to provide solid support. New floors will replace the current floors, and supportive footing extensions will join the piers to the basin.

"In other words, the clarifiers will be rebuilt on a solid, level platform," said Tamada. "They should remain stable for decades to come regardless of soil expansion and contraction."

Engineers also propose adding a third clarifier to the MCRWS treatment process.

"A third clarifier will serve two purposes," said Tamada. "First, a minimum of two clarifiers are needed to handle the current flow, and secondly, the third clarifier will

be able to treat future increased flows."

With three clarifiers available, operators can take one offline for repairs. The proposed new clarifier will be built with the same supportive structures planned for the existing basins. Once the new clarifier is complete, each of the existing basins will undergo repairs, one at a time.

Effluent quality at MCRWS will also be improved with the addition of tertiary filters. Cloth disk filters, currently in use at other TRA regional wastewater systems, are highly effective at removing solids without the use of chemical coagulants. With fewer suspended solids the ultraviolet disinfection units are more efficient.

Continued on page 7. See MCRWS.

## TRA, water agencies receive funding to study zebra mussel impact

Five Trinity River basin water supply agencies, including the Trinity River Authority, are collaborating with the U.S. Army Corps of Engineers to study potential impacts of zebra mussel infestations on water supply infrastructure within the basin.

The USACE offers funds through the Public Assistance to States program on a competitive basis with a requirement that the contributions be matched by a local sponsor.

The cities of Dallas and Houston, the North Texas Municipal Water District and the Tarrant Regional Water District, with TRA serving as the contractual local sponsor, have entered into a \$400,000 agreement with the

USACE. The five agencies will supply \$40,000 each for a total of \$200,000 to satisfy the matching requirement; the USACE will supply the remaining \$200,000 to fund the study.

"PAS funding is awarded on a competitive basis. There was no guarantee that the entire requested federal match of \$200,000 would be available," said TRA's Senior Manager of Planning and Environmental Management Glenn Clingenpeel.

Zebra mussels are a small, freshwater bivalve indigenous to the Black and Caspian seas of the Baltic region and southwestern Asia. They were introduced to the Great Lakes in the mid-1980s and have since spread to the northeastern United States and down the entire reach of the Mississippi River.

With no natural predators or competition, the mussels have flourished. Zebra mussels attach themselves to virtually any underwater hard surface, including boats, water intake structures, the inside walls of pipelines, hydroelectric facilities and even other living organisms. Zebra mussels can reproduce in sufficient numbers to clog pipelines and weigh down buoys, boats and other floating



Colonies of zebra mussels adhere to a structure at a Lake Texoma marina. The bivalves reproduce in sufficient numbers to clog pipes, weigh down floating equipment and kill living hosts.

equipment. Infestations are a continuing tremendous expense.

Zebra mussels spread through a watershed via downstream migration and are imported from one watershed to another by hitchhiking on watercraft. According to the United States Geological Society, the mussels are nearly impossible to eradicate once they inhabit interconnected bodies of water. To date, the only known

successful eradication occurred in a small isolated quarry in Virginia.

Zebra mussels were first documented in Lake Texoma in 2009 and have since been found in Sister Grove Creek, a 30-mile waterway that carries water from Lake Texoma to Lake Lavon, a reservoir in the Trinity River basin. Thus far, any attempt to eliminate them from the basin has been unsuccessful.



Zebra mussels attach to any hard, underwater surface including living organisms. The mussels have killed this clam in Lake Texoma.

# Water restrictions aim to extend water supplies through continuing drought

After months of below-average rainfall, exacerbated by record-breaking heat, the U.S. Drought Monitor map shows virtually all of Texas in exceptional drought – its most extreme classification. Increased demands this summer have taxed water treatment and distribution systems while depleting supplies across the state, leading many Texas municipalities and water agencies to implement mandatory water restrictions.

In the upper Trinity River basin, Tarrant Regional Water District for the first time implemented Stage 1 of its Drought Contingency Plan after the district’s storage capacity fell to 75 percent.

TRWD serves 1.8 million people in 11 North Texas counties, including 98 percent of Tarrant County. It owns and operates four area reservoirs: Lake Bridgeport and Eagle Mountain Lake to the northwest and Cedar Creek and Richland-Chambers reservoirs in East Texas. The district determines its storage capacity based on the water supply levels of all four reservoirs.

TRWD’s Stage 1 restrictions mainly address outdoor water use.

“In a residential setting, 50 to 60 percent or more of water is used outdoors on our landscapes, and experts tell us that about half of that is wasted by over-watering,” said Mark Olson, water conservation coordinator for the TRWD. “That’s why we target outdoor water use.”

TRWD’s customers, including the cities of Fort Worth, Arlington and Mansfield and the Trinity River Authority’s Tarrant County Water Supply Project, have implemented mandatory two-day-a-week outdoor watering restrictions and other conservation measures with the goal of reducing consumption by 5 percent. TCWSP treats potable water for five cities: Bedford, Colleyville, Euless, Grapevine and North Richland Hills.

TRWD reports that the restrictions are working better than expected. Tarrant County residents have cut their usage by about 8.5 percent, which exceeds the 5-percent goal. According to TRWD, this amounts to 337 million gallons every 10 days, a quantity equal to an entire day’s consumption.

Slowing down the rate of consumption is important and effective in slowing the decline in overall capacity, but prolonged rainfall is the only way the reservoirs will be replenished. Even though Tarrant County residents are using less water, in the absence of substantial precipitation, TRWD’s reservoirs continue to decline and had reached 71 percent of capacity as of late September.

“This is the worst one-year drought on record for the state of Texas, so we’re looking at a lot of rain needed before we can get out of these drought restrictions,” said Olson. “Climatologists are telling us we’ll need 12 to 15 inches of

rain just to get back to near-normal conditions.”

And experts don’t see rain on the horizon for Texas.

According to the Climate Prediction Center, dry, warm weather is likely to persist through the fall and winter. Without rain, reservoir levels will decline further over the winter months although at a slower pace as decreasing temperatures result in less evaporation. If storage capacity drops to 60 percent, TRWD will implement Stage 2 of its Drought Contingency Plan, accompanied by increasingly stringent mandatory restrictions. Outdoor watering, for example, would be limited to once a week.

These restrictions will help ensure that water is available for the health and safety of Tarrant County users if the drought persists.

“We have to remember that the water supplies we depend on are not an endless resource,” said Olson. “Droughts are a part of life here in Texas, and the number of people living in our region is expected to double in the next 50 years. That means the demand for water will continue to rise, and meeting that demand is going to be a challenge. Conserving the water we have available today is the way to go. It’s the easiest way to stretch our resources – and our dollars – to meet our future needs.”

## TRWD Stage 1 Water Restrictions\*

- Residential customers whose addresses end in odd numbers (1, 3, 5, 7 or 9) may water lawns and landscapes on Sundays and Thursdays. Addresses ending in even numbers (2, 4, 6, 8 or 0) may water on Saturdays and Wednesdays. Non-residential customers may water on Tuesdays and Fridays. Watering on Mondays is prohibited.
- Outdoor watering is prohibited between 10 a.m. and 6 p.m.
- Hosing paved areas, such as sidewalks, driveways, parking lots, etc., is prohibited.
- Vehicle washing is limited to use of hand-held buckets and hose with positive shutoff valve. Vehicles may be washed at any time at a carwash.
- Hosing buildings or other structures for purposes other than fire protection is prohibited.
- The public is asked to reduce the frequency of draining and refilling swimming pools.
- Hotels, restaurants and bars are encouraged to serve water only upon request.

*\*Tarrant County residents should contact their cities to find out more about how Stage 1 restrictions have been implemented.*

# Drought effects on Lake Livingston

Lake level and discharge information are updated on the front page of TRA’s website at [www.trinityra.org](http://www.trinityra.org).

Twitter users also can receive updates every time the discharge changes by following @LivingstonDam. Tweets also can be sent directly to users’ cell phones as text messages, depending on user settings.

With Texas currently experiencing its worst drought in more than half a century, water supply reservoirs across the state are feeling the toll. According to the U.S. Drought Monitor, this summer’s persistent hot and dry weather has pushed more than 96 percent of the state into either extreme or exceptional drought conditions. Through the end of September, rainfall totals around Lake Livingston were nearly 22 inches below the 30-year average.

Until recently, Lake Livingston was the only reservoir in Texas holding its normal level. With its level now below normal and falling, TRA offers the following information about how lake level and downstream discharges are affected by drought conditions.

## What is Lake Livingston’s normal level, and how has it been affected by previous droughts?

- Normal pool level: 131 feet above mean sea level
- Record low level: 125.25 msl – Oct. 26, 1988
- Second lowest level: 126.20 msl – November 1978
- Third lowest level: 126.67 msl – Aug. 22, 1996
- Current level: 127.54 msl (as of publication)

## What is Lake Livingston’s primary purpose?

Lake Livingston is a water supply reservoir. The largest single-purpose reservoir in Texas at 83,000 surface acres, the project was completed in 1971 as the result of a contract between TRA and the city of Houston. The lake supplies water in Polk, San Jacinto, Trinity and Walker counties, as well as to Houston. Lake Livingston also provides water to two power plants located in Freestone and Grimes

counties and provides irrigation and municipal water downstream of Lake Livingston in Liberty, Chambers and Jefferson counties.

Lake Livingston was not designed for flood control or flood storage – flow through the dam is controlled by 12 tainter gates in a concrete and steel spillway. Operation of the spillway mirrors river behavior – as river flow increases, discharges will increase proportionately.

## What about the recreation opportunities at the lake – aren’t those important, too?

Yes – recreation is a tremendous benefit provided by the reservoir, and its economic impact on our area is significant. However, that function must always be secondary to water supply obligations. Lake Livingston’s primary purpose is to supply water downstream when water would otherwise be unavailable. In fact, the only time the reservoir serves its intended

primary purpose is when the level drops below normal.

## Where does Lake Livingston’s water come from?

Lake Livingston Reservoir is refilled by rainfall and resulting runoff within the Trinity River basin upstream and north of Lake Livingston.

## Why is TRA releasing water at the dam when the lake level is already below normal?

The amount of water we release at Lake Livingston Dam during drought conditions is determined solely by our contractual commitments to downstream diverters. Lake Livingston has a drought contingency plan that is triggered by lake level, but the plan does not stop the release of water to downstream diverters under any circumstances – as long as we have water, we are legally obligated to

*Continued on page 4. See Lake Livingston.*

# General Manager's Message

## Proposition 2 vital for future cost-effective utility rates

TRA's last issue of *inTRA* briefly discussed an upcoming ballot measure that may greatly affect future access to cost-effective water and wastewater utility rates: Proposition 2, which gives Texas voters a chance to approve up to \$6 billion in Texas Water Development Board bonding authority. Scheduled for appearance on the Nov. 8 ballot, Proposition 2 would grant constitutional authority to maintain the lower-interest loan programs the TWDB provides, and it would prevent the TWDB's existing bond authority from being exhausted as early as August of 2013.

TRA's weekly collection of news clips, *exTRA*, has recently included a number of articles about Proposition 2, and we anticipate media coverage to increase as the election date grows closer. I encourage all of our readers to learn as much as possible about the proposition and its benefits before voting on Nov. 8. According to media reports from across the state, the TWDB has historically offered Texas jurisdictions a program that is flexible as well as cost-effective – and in some cases the program has allowed water and wastewater projects to move forward when other funding options made them cost-prohibitive. To illustrate this

point, Houston journalist Stephen Thomas has reported that the average tax-exempt 22-year market interest rate is 5.10 percent, while the average TWDB rate is 4.61 percent. The difference is greater for a taxable market issue of the same average duration: 7.14 percent on the market and 5.50 percent from the TWDB. This difference means substantial savings for Texas rate payers.

TRA's board of directors recently adopted Resolution No. R-1335 urging Texas voters to pass Proposition 2 – the resolution is presented in its entirety on the right. In addition, we have also asked the leadership of our customer cities to help educate their citizens about the importance of this constitutional amendment. We believe that the passage of Proposition 2 will help TRA continue providing the highest quality and most cost-effective solutions to our customers.

If you'd like to know more about the background behind Proposition 2, I encourage you to visit TRA's website at [www.trinityra.org](http://www.trinityra.org). A fact sheet and a Frequently Asked Questions document are posted in our Current News section. Interested readers can also find more information

on the TWDB's website at [www.twdb.state.tx.us](http://www.twdb.state.tx.us). Information on Proposition 2 appears prominently on the TWDB home page.



General Manager J. Kevin Ward

### RESOLUTION NO. R-1335

#### A RESOLUTION OF THE BOARD OF DIRECTORS OF THE TRINITY RIVER AUTHORITY OF TEXAS URGING THE PASSAGE OF PROPOSITION 2 BY TEXAS VOTERS ON THE NOVEMBER 8, 2011 BALLOT.

#### Preamble

WHEREAS, the 82nd Texas Legislature passed Senate Joint Resolution 4, which provides for a constitutional amendment authorizing up to \$6 billion of additional general obligation bonds to be issued by the Texas Water Development Board (TWDB); and

WHEREAS, this proposed constitutional amendment is Proposition 2, which will be considered by Texas voters on the November 8, 2011 ballot; and

WHEREAS, the TWDB will use the bond proceeds to make low-interest loans to Texas communities for a variety of water supply and water quality projects, including providing matching funds to self-supporting, low-interest state revolving fund programs directly benefiting the Trinity River Authority and its customers; and

WHEREAS, the Trinity River Authority of Texas has often utilized TWDB loans for water and wastewater projects that address basic health needs and regulatory requirements, and to make repairs, improvements and expansions to existing facilities.

NOW THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE TRINITY RIVER AUTHORITY OF TEXAS:

That the Board of Directors of the Trinity River Authority of Texas recommends and urges the passage of Proposition 2 by Texas voters on November 8, 2011.

ADOPTED this 24th day of August, 2011.

### Lake Livingston, *continued from page 3.*

send it downstream. Stage 1 of the plan assumes a mild water shortage condition, and is triggered when the level of Lake Livingston drops below 126.5 msl.

### Who owns the rights to the water in Lake Livingston?

The city of Houston owns 70 percent of the surface water available from Lake Livingston, and the reservoir serves as Houston's primary water supply lake. TRA owns the remaining 30 percent and uses those rights to supply water to Huntsville, Livingston and rural areas in Trinity County, as well as the areas previously mentioned.

### How is the water from Lake Livingston delivered to customers?

Water for the city of Houston is released through the gates at Lake Livingston Dam and travels downstream to the Coastal Water Authority's pumping station south of Dayton, Texas. The water is then treated and used for both industrial and municipal purposes. Raw water for Huntsville, Livingston and Trinity County is pumped directly from the reservoir and treated at three TRA-owned and -operated facilities in the area.

### Is the current lake level safe for recreational purposes?

Recreational boaters, swimmers, etc., should always be aware of submerged hazards on Lake Livingston at any lake level, but TRA encourages the public to be especially vigilant during lower lake levels since hazards that previously were deep beneath the surface can present new dangers.

Because of safety concerns TRA has closed the following public boat ramps: Blanchard, Point Blank, Patrick's Ferry and Wolf Creek Park. Those wishing to launch small boats and personal watercraft can use the public ramps at Tigerville Park as well as Paul Cauthan on White Rock Creek, although either may close in the near future, and prudent judgment is required to determine the feasibility of launch.

### Does the current drop in lake level have anything to do with the East Texas Electric Cooperative hydroelectric power project?

No – the drop in lake level is related solely to our state's unprecedented drought conditions. The ETEC hydroelectric project is tentatively scheduled for completion in 2014, and Lake Livingston will not be drawn down to accommodate construction or to generate power. Hydroelectric power will be generated using run-of-the-river flows that pass through Livingston Dam to meet downstream commitments or to drain excess storm water runoff.



The TRA CREWSers compete in the maintenance event in a regional practice competition. Please come out and cheer for the CREWSers at the national Operations Challenge competition in October at WEFTEC.11 in Los Angeles. With four national championships under its belt, TRA's team is sure to be among the top contenders this year. Stay tuned for national competition results on TRA's website at [www.trinityra.org](http://www.trinityra.org) and in the October/November issue of *inTRA*.

**Employee Milestones**

**New Hires**

LRF welcomes **Ginger Tomplait** as office clerk. TCWSP is excited to have **Mark Castle** as electronic technician II.

TMCWRS welcomes **Michael Moore** as maintenance mechanic II. GO is glad to have **Jeanne Daily** as senior accounting clerk.

CSS welcomes **Jesse Reed, Todd Bacon** and **Jonathan Sivernell** as inspectors II.

CRWS is excited to have **Turk Gibson** as maintenance mechanic II.

**Promotions**

**Gordon Drouin** was promoted to maintenance mechanic II at CRWS.

**James Thomas** was promoted to senior electronics technician at CRWS.

**Aaron Johnson** was promoted to operator II at HRWSS.

**David Hill** was promoted to operator II at CRWS.

**Tina Nguyen** was promoted to financial analyst.

**Alison Mackey** was promoted to executive project manager.

**Current Events**

**Tim Morgan**, TMCWRS electronics chief, became a Certified Fiber Optic Technician and a Certified Fiber Optic Specialist in Testing through the Fiber Optic Association of America.

The Texas State Guard honored **Malcolm “Evert” Cowdin**, maintenance mechanic II at CRWS, with a Commanding General’s Individual Award for extraordinary meritorious conduct in performance of outstanding service during Hurricane Alex.



*A Worthy catch! The Worthy family poses at Wolf Creek Park with 290 pounds of fish they hooked in Lake Livingston in early August.*



*Congratulations to Sarah Callahan, daughter of Jeri Callahan, senior secretary, Northern Region, on her graduation from Texas State University with a bachelor’s degree in marketing.*



*DAQ, son of Mike Querry, CSS construction inspector supervisor, won the feature at Kennedale Speedway.*



*Brooke Munoz, daughter of Kristie Munoz, LLP biologist, started kindergarten this fall. Brooke loves going to school and is enthusiastic about learning.*



*Lake Livingston Project Assistant Manager Mark Waters, left, congratulates Wolf Creek Park Supervisor Eddie Knight on five years of service with TRA.*

**TRA hosts Water Careers Education intern**

The Trinity River Authority is partnering with the city of Arlington and the Arlington Independent School District to introduce a high school senior to career opportunities in the water industry.

The AISD Water Careers Education Program combines classroom water-science studies with hands-on experience in the field.

Javier Celestial from Arlington High School will intern with TRA during the 2011-2012 school year. Celestial enjoys school and is especially interested in math and science. After graduating from high school, he plans to study physics as well as math and engineering at the University of Texas at Arlington.

Celestial is looking forward to his time at TRA.

“I feel like working with TRA is going to be fun, exciting and educational,” he said. “I don’t think people understand or appreciate how much work is actually put into cleaning and maintaining water.”

In his spare time, Celestial enjoys working on cars, watching

movies and spending time with friends.

During his internship, Celestial will rotate among TRA offices and treatment projects to become familiar with everything from planning and permitting to water and wastewater treatment and water quality.

Celestial will complete a series of stints with TRA’s Northern Region, Tarrant County Water Supply Project, Central Regional Wastewater System and Planning and Environmental Management Division starting in September and running through the end of the school year in May.

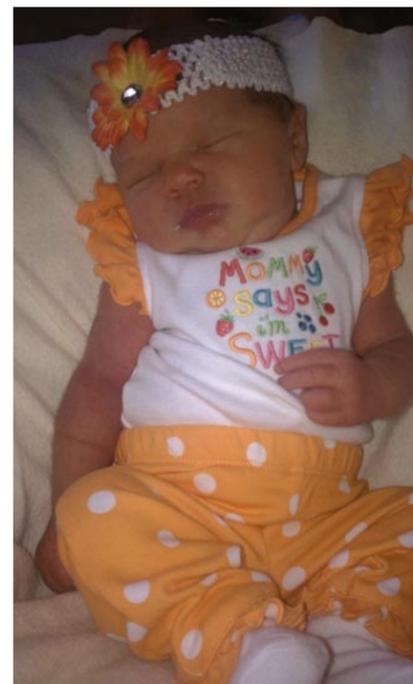
During his time with TRA’s Northern Region, Celestial will learn the business aspects of the water industry, including long-range planning, population projections, water resource planning, rate structures, funding and construction oversight.

At TCWSP, he will assist water treatment operators and laboratory technicians with the production and distribution of potable water. Following his water treatment experience, he will learn to collect and treat wastewater at CRWS.



To complete the water business cycle, Celestial will accompany and support PEMD and Clean Rivers Program staff as they collect and test water quality samples and study habitats and ecosystems throughout the Trinity River basin.

According to the American Water Works Association, almost 50 percent of today’s water and wastewater operators will retire within the next five to seven years. Curricula such as the AISD Water Careers Education Program can help encourage young people to explore the diverse opportunities available to them in the water industry.



*Jacob Young, field inspector at Lake Livingston Project, and his wife Alisha celebrated the birth of their lovely daughter on August 7. Jaci Lee Young weighed 6 pounds, 14 ounces, and was 18.5 inches long.*

# Clean Rivers Program conducts ambitious river survey

TRA's Clean Rivers Program has completed an unprecedented survey of the Trinity River from Fort Worth to the headwaters of Lake Livingston. Webster Mangham, planning and environmental management assistant, teamed with staff members from the Texas Water Development Board, the Texas Commission on Environmental Quality and Espey Consultants Inc. to collect a massive amount of data while navigating more than 300 river miles in small boats during June, July and August.

"This was a ground-breaking survey," said Glenn Clingenpeel, senior manager of TRA's planning and environmental management division. "Nothing like it has ever been attempted in Texas."

Engineer Tim Osting with EC accompanied Mangham on every leg of the project.

Engineer Mike Vielleux and biologist David Flores with TWDB came along for portions of the journey, as did TCEQ biologists Kyle Garmany and Dakus Geeslin.

"Every member of the team is an expert in the river studies field," said Mangham. "We were all excited to be involved."

Last summer, CRP completed a seven-day preliminary survey gathering initial observations and measurements on two portions of the main stem of the Trinity River. From that data, they identified different types of habitats and developed a plan for conducting additional surveys.

This year, the team set out to quantify the habitats and to measure the physical characteristics of the river as well as the flow of water. In addition, they took thousands of GPS-embedded photos that will eventually be uploaded to Google Earth.

Angela Kilpatrick, Clean Rivers Program coordinator, organized the project, provided logistical support and managed the data from TRA's general office in Arlington. Months of preparation and planning took place before the survey began.

The team planned the route in detail, using information it had gathered during last year's survey, as well as maps and satellite photos. The group divided the survey into seven trips, each one two to five days long. Of particular concern

was the best locations to put in and take out the boat, as well as navigation choke points such as locks and dams.

The team researched, purchased and packed a number of survey tools including cameras, computers, global positioning systems and other scientific measuring equipment, plus camping and survival gear, all of which had to fit in a small boat. Once the equipment was ready, the next step was gaining access to the river, a task that proved to be a challenge.

"Just accessing the river takes a great deal of planning," said Kilpatrick. "If the land adjacent to the river was private property, we got permission from the owner. We also notified local game wardens and county sheriffs."

At the river, thick vegetation, boulders and steep river banks often made for challenging boat launches.

"Getting the boat over the river bank and into the water sometimes took more than an hour," said Mangham. "We gained lots of experience in winching the boat in and out of the river. The Dallas Water Utilities and TRA's Lake Livingston Project gave us some vital assistance in several locations."

The survey crew cut through poison ivy, waded through thigh-deep sticky silt and dodged many natural and man-made obstructions.

The worst hazards the crew encountered on the river were the series of locks and dams built in the early 1900s to aid in navigating the river. The old concrete structures make a waterfall too steep for a small boat to traverse. Each lock presented a different set of challenges. One lock required taking the boat apart and lifting it over the lock and the others required access points in between since they were impossible to portage around.

The survey started on the West Fork of the Trinity River near Interstate 820. Much of the segment upstream of Greenbelt Road was not navigable in a boat, requiring the team to portage for much of the first eight miles.

Mangham and team took a



The 2011 Trinity River survey crew pauses on the sixth leg of the journey. Seen here from left to right are Kyle Garmany and Dakus Geeslin, both biologists with the TCEQ; Webster Mangham, TRA planning and environmental management assistant; David Flores, TWDB biologist; Mike Vielleux, TWDB engineer; and Tim Osting, Espey Consulting engineer.

number of different measurements as they proceeded down the river, along with visually identifying different types of habitats, referred to as mesohabitats, and measuring the length of each. In the Trinity River, mesohabitats include riffles, runs, pools and backwaters. Since each species of fish tends to prefer one type of habitat over another, this will help determine the numbers and kinds of fish that exist in the river.

"Gar, including alligator and longnose gar, are found in pools,"

said Mangham.

"Red shiners prefer to spawn in riffles."

Our preliminary observations indicate that the Trinity River, at extreme low flows, consists of about 62 percent run, 33 percent pool, 3 percent riffle, and 2 percent bifurcated, or split between two types."

Future studies will verify initial assumptions by looking at all fish in a number of representative habitats to determine quantity and size.

The team also took cross sectional measurements at every even river mile. They mapped a depth profile of the river bottom and measured the velocity, depth and flow volume of the water. In addition, they collected sediment samples and took geo-referenced photos pegged to a specific location by GPS coordinates.

At certain points, the crew carried out intense habitat studies

using survey tools to determine the water surface slope, a measurement that is used to calculate the river's energy.

For more than two months, the team put in 12-15 hour days, keeping the pace fast and productive. Temperatures ranged between 98 and 112 degrees on most days. The group camped on sandbars, forsaking tents because of the heat.

Despite the many challenges, the team found the work and the river engrossing.

"I feel very lucky to be among a small handful of folks to see every gravel bar, high bank and historical structure - from mills to locks to crossings - on the Trinity River between Fort Worth and Lake Livingston," said Osting. "We encountered a range of healthy wildlife as we recorded reams of instream data on a full variety of river habitats."

In addition to beautiful scenery, they saw bald eagles, wild pigs, deer, beaver, snakes and fish. One of the most surreal moments was when a large-mouthed bass jumped into the boat.

"In our two-and-a-half months on the river, we covered more than 300 river miles, took 6,000 geo-referenced photos, identified 1,400 mesohabitats, took 150 cross sectional measurements and gathered 20 sediment samples," said Mangham. "We will use information from this survey to identify select sites that are representative of the river for future long-term monitoring and studies."

Follow CRP's activities and see videos and additional photos on Facebook at [www.facebook.com/TRACleanRivers](http://www.facebook.com/TRACleanRivers).



TWDB biologist David Flores and engineer Mike Vielleux embark on leg two of the survey heading south from State Highway 287 to the lock and dam near Crockett.



Webster Mangham, TRA planning and environmental management assistant, measures the depth of the water flowing in the river. The team took cross-sectional measurements at every even river mile.

# 2011 United Way campaign gets under way

The Trinity River Authority's general office held its 2011 United Way campaign from Sept. 1-16.

Employees had the opportunity to donate to the campaign in a number of ways. Cash contributions and payroll deductions were a convenient and popular option, and employees could also purchase blue-jean casual days for \$3 per day or \$15 per week. New this year, 12 weeks of casual Fridays could be purchased for \$36. In addition, employees donated cash for a chance to challenge each other to play darts, golf, ping pong and a bean bag toss.

The most popular game proved to be the bean bag toss, with challengers Yesha Rai and Brenda Porter contending for top honors. Hong Wu, last year's ping pong champ, scored the most points in a single dart game.

As usual, team competition fueled the campaign. Employees were randomly assigned to teams, and team members earned points by making donations, purchasing casual days and playing games. The team

with the most points at the end of the competition won the General Manager's Prize: prime seats to see the Texas Rangers play the Seattle Mariners.

The green team took an early lead and held the top spot for the entire competition until noon of the last day when General Manager Kevind Ward issued a mega challenge offering bonus points for games as well as a special guess-the-GM's-number game. Employees responded with a flurry of donations and game-playing, resulting in an upset when the gold team pulled ahead to win the competition with 1537 points.

The general office United Way drive is one of several throughout TRA and is the first of this year's campaign. *inTRA* will continue to showcase photos and campaign details from other projects as they complete their own fundraisers.

We have a big goal to meet – in 2010, TRA projects raised nearly \$53,000 for the United Way.



*Webster Mangham, planning and environmental management assistant, left, and General Services Manager Don Tucker square off in an over-the-shoulder darts match to benefit the United Way.*

## Texas Gatorfest 2011



*Emma, daughter of Glenn Clingenpeel, TRA's senior manager of planning and environmental management, enjoys a hands-on experience with a live gator in the Alligator Education Tent at Texas Gatorfest 2011.*

Counted among the most unusual festivals in the state, Texas Gatorfest 2011 attracted crowds of adults and youngsters to Fort Anahuac Park in Anahuac, Texas, Sept. 16-18. Music, food, shopping and family fun kept everyone moving and happy.

The heart of the festival was the Great Texas Alligator Roundup, where participants from across Texas competed for cash prizes totaling more than \$4,500, with this year's winning gator caught in Brazoria County measuring more than 12 feet long. Hunters brought in dozens of alligators on Saturday and Sunday.

In addition to the Alligator Roundup, attendees spent time on the Trinity River on airboat rides or riverboat tours. At the park, families enjoyed carnival rides, pony rides

and a petting zoo, plus unique shopping with dozens of vendors, live music on three entertainment stages and the tremendously popular beer garden.

TRA Senior Manager of Planning and Environmental Management Glenn Clingenpeel and Lake Livingston Project Permit Administrator Debbie Foxworth represented TRA in the Alligator Education Tent, speaking to visitors about the impact of drought on the Trinity River basin and available water supplies. Nearby, the Texas Parks and Wildlife Department provided an opportunity for festival attendees to view, touch and hold live alligators. For more information, visit [www.texasgatorfest.com](http://www.texasgatorfest.com).

### MCRWS, continued from page 2.

MCRWS treats wastewater for Midlothian and Venus, plus the southern part of Grand Prairie. The system includes a 3.0-million-gallon-per-day treatment plant and 23 miles of collection-system pipelines. The treatment plant, located in Midlothian, includes

two drum screens, two aeration basins, two aerobic digesters, two final clarifiers and a single-channel ultraviolet-light disinfection system. Treated effluent is discharged to a small, unnamed tributary stream that flows to Padera Lake and ultimately into Joe Pool Lake.

## Growing frustration: overcoming harsh conditions in the yard

Extended drought and extreme high temperatures have taken a toll on our landscapes. Some of our turf grass, shrubs, perennials and annuals are wilted and withered.

Horticulturists suggest we take this opportunity to start fresh and rethink our landscapes. Why not plan a landscape that can tolerate drought and heat? There are many options at our disposal. We could consider switching to drip irrigation, a more efficient and effective means of delivering water to the landscape. Or learn how to use compost and mulch to give our yards an additional defense against hot, dry conditions. We could search a database of native and adapted plants to compile a list that will thrive in the soil and light we have in our yards.

The following websites have ideas on planning low-water landscapes, choosing drought-tolerant ornamental plants and optimizing lawn and garden water use:

- <http://www.txsmartscape.com>
- <http://texassuperstar.com>
- <http://aggie-horticulture.tamu.edu>
- <http://agrilife.org/drought>

### Texas-tough plants

It's official. According to the National Weather Service, the Texas summer of 2011 was the hottest June-August ever recorded in the United States. In addition, 2011 is also the worst single-year drought in Texas history. How did our yards and gardens fare during the record-breaking heat and outdoor water restrictions?

Some of our plants barely hung on, while others disappeared despite applications of mulch and use of hand watering. But not everything appeared to suffer. Some plants thrived in spite of the harsh conditions. In fact, the lantana is growing strong with bigger flowers than usual. What other plants succeeded in the Texas heat and drought?

Wanting to compile a list of Texas-tough plants, *inTRA* conducted an informal poll asking readers to send a list of the top five shrubs and plants in their yards and gardens that survived our long, hot and dry summer looking fresh – and maybe even blooming.

While many readers were dismayed by the conditions in their yards and gardens, most had at least one thriving plant, and a few respondents even kept their good humor while sharing their disappointment. A reader in Arlington reports that nothing but dirt, rocks, dry leaves, twigs and mosquitoes remain in his yard. A Livingston resident finds that weeds are flourishing in spite of heat and drought, and a Rockwall respondent shares that Dallas and nut grasses are doing well, as is poison ivy with leaves as big as a man's hand.

Tongue-in-cheek responses aside, the top five TRA-reported landscape plants able to thrive during the hottest June-August in recorded U.S. history and the worst one-year drought in Texas are as follows:

1. Crepe myrtle
2. Texas sage
3. Nandina
4. Lantana
5. Holly

The following plants didn't make the list of top five but were reported more than once:

- Oxblood lily
- Varous salvias
- Mexican petunia
- Turks cap
- Mexican fire bush
- Vitex
- Roses
- Lamb's ears



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## *Anniversaries*

35 Years

Michael Young, systems operations manager, CRWS

25 Years

Greg Schneider, senior electrician, CRWS

John Nelluelil, operator I, CRWS

20 Years

Russell Gurss, chief operator, CRWS

Ricky Sosa, senior maintenance mechanic, CRWS

15 Years

John Herndon, environmental services coordinator, CRWS

10 Years

James Spurlock, operator II, TMCRRWS

Douglas McMurrin, senior electrician, CRWS

Clarence Mack, senior biologist, CRWS

Alison Mackey, executive project manager, GO

5 Years

Charles Knight, park supervisor, Wolf Creek Park

3 Years

Robert Ray, senior maintenance mechanic, DCRWS

Jesse Borries, senior field technician, CRWS

Ernest Fink, inspector II, CSS

Jay Shannon, maintenance engineer, CRWS

John Bishop, electronic technician II, CRWS