



FEBRUARY 21, 2013

## IN THE KNOW

### CITY APPLIES FOR WASTEWATER PERMIT AMENDMENT

The City of Llano is working on a request to amend its wastewater permit from the Texas Commission on Environmental Quality (TCEQ). Our current permit, which expires on December 1, 2014, requires us to store our treated effluent in large lagoons, or ponds until it is used for year round irrigation of production crops in the fields at the City Farm. It also allows us to land apply the treated sludge (beneficial land application) from the plant so that we do not have to pay for its disposal at a Class A landfill. In 2011, the City requested and was granted a Type II reclaimed water permit which allows us to use water from the chlorine contact chamber at the wastewater treatment plant for construction or non-contact recreational purposes inside the city limits. We trucked this reclaimed water to the golf course and kept the greens alive during the summer when our drought contingency plan prohibited irrigation.

During the evaluation process of replacing our antiquated wastewater treatment plant, city officials were advised by engineers that the construction of an activated sludge wastewater treatment plant would still require the additional expenditure of approximately \$4,000,000 to meet TCEQ requirements to remove sludge and repair the lining of the ponds and expand the irrigation system before the expiration of our wastewater permit. These improvements were postponed as Phase II because the entire project was too expensive for USDA Rural Development to finance in one package.

Five years have passed since we built the plant and we are facing

the expiration of our permit in 23 months. Following a November workshop with Hejl, Lee, and Associates, Inc., our engineering firm of 20+ years, we engaged them to apply to TCEQ for an amendment to our wastewater permit. The amendment we have requested will allow the City to discharge our treated wastewater into the Llano River. It is anticipated that the application process for the permit amendment may take up to 18 months. Modifications to the plant could be required by TCEQ and cost upwards of \$1,000,000, but we will no longer have the expenses of relining our storage ponds, installing a 30 year monitoring system, or expanding the irrigation system for the fields.

Our entire State is facing critical water shortages and the current climate is such that our chances of obtaining a permit to discharge into the river have been greatly enhanced over our chances five years ago. The process is a lengthy one and there are numerous steps to perform. The LCRA has agreed to help with stream modeling- determining what impact the reclaimed water will have on the water in the river as it filters naturally through the sand along its path to Lake LBJ. This will help TCEQ determine water treatment requirements to protect the eco system of the river as well as drinking water sources in the Highland Lakes. TCEQ does not allow discharge within 10 miles of the lakes and it is to our advantage that we are over 18 miles (Continued on other side)

### OUR NEW SEWER PLANT'S HISTORY

In 2007, after years of planning and deliberation, the City of Llano constructed an activated sludge wastewater treatment plant with financing from USDA Rural Development. The total project cost was \$4,335,000 with \$859,000 granted and \$3,476,000 loaned over 40 years at 4 1/8%. An MBR (membrane bioreactor) plant was given great consideration before the decision was made to build the activated sludge plant. Several engineers were consulted to help with the evaluation. The advantage of the MBR plant was that its effluent could be treated to meet Tier I standards and eligibility for permitting to discharge directly into the Llano River. Then removal of sludge, pond repair, and irrigation expansion would no longer be required. But the initial investment of almost \$8,000,000 required multiple financing vehicles. Operation and maintenance costs were similar to those of an activated sludge plant. Most municipalities used activated sludge technology citing operator friendly, proven treatment technology, availability of parts and equipment from multiple vendors, TCEQ familiarity with the technology, ability to meet discharge permit requirements, ability of producing sludge capable of meeting TCEQ requirements for beneficial land application, ease of expandability. For these reasons and hesitation on the part of Rural Development to change the technology included in the original application for financing, the activated sludge technology was chosen. Design features were included in the plant construction to provide for the future addition of filters to allow tertiary treatment of wastewater and discharge of reclaimed water into the river.

away. The cities of Mason and Junction are both permitted to discharge into the Llano River and the level of treatment we currently use at our wastewater plant exceeds what the TCEQ has required of these two cities. In fact, the reclaimed water we produce now has lower levels of E. coli than the water we are bringing in through our intake valves at the water plant.

Should we desire to use our reclaimed water for the benefit of our community, we could implement a purple pipe project whereby a distribution system would be built to take Type I reclaimed water to the high school softball field, baseball field, football fields, practice fields, Moore complex, the City soccer fields and the golf course. However, TCEQ may require the water be treated to a higher level than is required for discharge into the river. An engineer's estimate of the cost for transmitting the water is \$1,782,000. As an alternative, a line could be installed taking the

reclaimed water directly to the golf course or discharged into the river at Robinson Park for about \$1,439,000. The additional expense of tertiary treatment may be needed to attain Type I reclaimed water standards. During the process of implementing the purple pipe project, the City would continue to irrigate the fields at the farm. It is a benefit to be able to use our water to irrigate, but at times of heavy rainfall we must have an outlet for water we cannot use if we do not expend the funds necessary to bring the ponds into compliance.

By applying for an amendment to our wastewater permit, the City has taken the first step in a logical sequence to minimize the financial impact on our customers of complying with pending TCEQ mandates and provide options for using our reclaimed water for the benefit of our community and others as we strive to be good stewards of a limited resource.

#### GLOSSARY

**Reclaimed water**-treated wastewater safe for a purpose that would otherwise expend other valuable water resources

**Effluent** – water and matter in the sewer system

**Activated sludge plant**- utilizes biological process involving air and organisms to treat wastewater

**MBR plant-membrane bioreactor**- technology using microfiltration with a suspended growth bioreactor

## WATER SOURCES FOR THE CITY OF LLANO

The City of Llano currently depends exclusively on the Llano River as its sole water supply and during hot, dry, summer months, its flow is greatly reduced. Two years ago we engaged the engineering firm of Halff Associates, Inc. of Austin to do an in depth study of how long the water we have stored in our two lakes could last during a drought and what options we have for additional sources of water.

The firm determined that with evaporation and unrestricted customer demand, a river flow of 3 cubic feet per second is necessary to keep the lake full during the summer. Any flow less than this will start to deplete the stores of the lake. They determined that by using flash boards on the City Lake dam, issuing water conservation orders according to our drought contingency plan, and pumping water over the dam at Robinson Park Lake, our lake storage could last about 6 months. Four previous droughts of record have lasted from 3 to 5 months.

Treating water that has become stagnant is difficult and we anticipate that we currently do not have the ability to treat the water as the flow approaches zero. The Texas Department of Agriculture has awarded to the City a \$350,000 grant for disaster relief. We are using the funds to install aeration devices in the City Lake which should improve the quality of

the water enough that we can treat it. We are also using a portion of the grant to finish a water well that was drilled near the water plant. The flow for this well tested at 150 gallons per minute – enough to potentially supply half of our water needs when we are in Stage 4 conservation.

The City has also contracted with Hejl, Lee, and Associates to conduct a feasibility study of bringing in water from the Hickory Aquifer near Valley Spring. The study includes groundwater study services, water treatment methods, transmission, storage and estimated costs. We are currently locating wells to test for both water quantity and quality.

One of the best ways our citizens can insure ample water for our town during dry summer months is to practice water conservation. Our water rate structure encourages conservation by increasing the charges per gallon as consumption increases. To further encourage conservation, the City has a rebate program to help with the cost of installing drought tolerant plants and grasses, low flow shower heads and toilets, and rainwater collection systems. Nobody likes to watch their investment in landscaping turn brown and crispy so citizens should educate themselves about ways to be water wise. For more information see the links below and visit [www.cityofllano.com](http://www.cityofllano.com).

#### LINKS

Texas AgriLife Extension Service  
<http://agrilife.tamu.edu/drought/>  
 Texas Drought Tolerant Plants  
<http://austintexas.gov/departments/plants>  
 Texas Commission on Environmental Quality  
<http://www.tceq.state.tx.us/>  
 LCRA Hydrologic Data  
<http://hydromet.lcra.org/>

City of Llano  
 301 W. Main  
 Llano, TX 78643

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