

## Emergency HDPE Water Reuse Pipeline Helps Mitigate Drought-Related Disasters in Wichita Falls

IRVING, Texas - The Plastics Pipe Institute, Inc. (PPI) honored ISCO Industries' Wichita Falls Water Reuse Pipeline project with the 2014 PPI Project of the Year Award in the Municipal & Industrial Division. This is the second consecutive year ISCO has received this award.

"It is always great to be recognized as a leader in the HDPE industry supplying innovative and efficient total piping solutions," said ISCO President Vince Tyra. "ISCO's breadth of resources, equipment and technical expertise allow us to be responsive in time-sensitive situations without sacrificing quality and value."

Wichita Falls-based Bowles Construction, the contractor for the water reuse project, hired ISCO to provide a turn-key solution for the pipeline using high-density polyethylene pipe (HDPE).



ISCO completed the emergency water reuse pipeline in fewer than four months while the city faced Stage Four drought conditions. The pipeline takes purified water, created from the 7 to 10 million gallons of treated wastewater that is normally released into the Wichita River every day, and after extensive filtration and treatment, supplies it to the public for use.

"This was an emergency solution, and the rate at which ISCO delivered the HDPE pipe and fused the pipeline together, while maintaining quality, surpassed my expectations," said Kerry Maroney, a civil engineer with Biggs & Mathews, Inc. and a consulting engineer for the city. "The situation was disastrous. In the past 114 years, we've never had two consecutive years of less than 20 inches of rainfall a year; it is unprecedented."

### Drought Disaster

Some states worry about sudden tornados appearing with little warning or powerful hurricanes and flash flooding occurring. In Texas, and much of the arid Western United States, drought emergencies may be less volatile but they can still be disastrous. In 2011, there were more than 100 consecutive days with over 100-degree temperatures and no rain. The combined capacity of the city's water supplies, Lakes Arrowhead and Kickapoo, has dropped 25 percent in the last nine months. As such, the city is not only rapidly losing its ability to provide water to its citizens and industries but also losing its ability to supply wholesale



water to surrounding municipalities and utilities that are experiencing similar drought conditions.

With more than 140,000 people affected by the city's drought conditions, residents are restricted to "domestic-only use," which includes necessities like drinking water. Further, all outdoor watering and irrigation are banned, and the surcharge on excess domestic water use has tripled. The city has also issued 2,360 tickets for water violations this year.

"The citizens of Wichita Falls are doing a superior job of conservation - without that we'd be running through 23 million gallons per day, and now, on good days, we're using half that," Maroney said. "But we can't conserve our way out of this."

Wichita Falls first declared stage-one drought conditions in September 2011, which only restricted the city's parks department to twice-weekly watering and initiated a public information campaign to educate residents on water conservation. The situation progressed from there to stage-three in February 2013 when the lake levels fell to 40 percent. Nine months later, the city declared a stage-four drought disaster.

There was no question that Wichita Falls needed to find another way to source water. So they started looking for an answer that didn't come from the clouds. "The bottom line is, we got to a point where we needed to take immediate action," said Shawn Garcia, an

engineer with Wichita Falls' Public Works Department.



### A Solution from an Unlikely Source

After researching its options, the city came up with an unusual solution - a direct potable water reuse (DPR) project. With water levels dropping and no rain in sight, it was a project that needed to be done, and done quickly.

"ISCO provided Bowles Construction with the full force of our expertise and quality assurance to ensure this project was completed quickly and assure the city it was done correctly," said Steve Garber, ISCO regional sales manager.

The water reuse project will take purified water, created from the 7 to 10 million gallons of treated wastewater normally released into the Wichita River every day, and send it



through a 12-mile HDPE pipeline to the Cypress Water Treatment Plant. It will then undergo extensive filtration, reverse osmosis (RO) and clarification, and be mixed with raw surface water. The 50/50 mixture will then endure another treatment process and finally be supplied to the public.

Bowles helped city officials develop the project and determine the route for the pipeline. It also oversaw the project to ensure everything ran smoothly and was completed on time.

"We knew we had to find water somehow; this drought is affecting everybody," said Andy Bowles. "We are a regular utility contractor for the city, and we were happy to bring our knowledge and experience to bear on this situation."

After reviewing both HDPE and fusible PVC pipe for the pipeline, HDPE was the clear choice for the terrain, the variable weather conditions, the flexibility of HDPE material, and the durability of the fusion process. Two weeks after the contract was signed, ISCO delivered the first truckload of pipe. Two days later, field technicians began fusing and laying the 12-mile pipeline for Bowles.

"We have no groundwater source, we continue to see the lakes go down, and we can't jump out there and build a lake," Maroney said. "This project is the quickest way to pick up another seven to eight million gallons a day.

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and fused the pipeline together while maintaining quality surpassed expectations."

About 80 percent of the total withdrawals in the United States are from surface water resources, and the U.S. population generates an estimated 32 billion gallons per day of municipal wastewater. According to the 2012 EPA Guidelines for Water Reuse, arid regions like Texas are natural candidates for water reclamation, and significant projects such as the Wichita Falls water reuse project are already underway throughout much of the region. For Wichita Falls, the temporary reuse project will supply 40 to 50 percent of the water supply.

In less than four months, ISCO supplied 65,000 feet of 32-inch HDPE pipe. The temporary pipeline travels from a wastewater treatment plant on the east side of the city through drainage channels, rights-of-way and ditches to the newly-constructed Cypress Water Treatment Plant on the city's west side. The city will reuse the pipe for a permanent water reuse project to be completed within the next four to five years.

For more information, visit the Plastics Pipe Institute website: [www.plasticpipe.org](http://www.plasticpipe.org).

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#### **About PPI:**

The Plastics Pipe Institute Inc. (PPI) is the major trade association representing all segments of the plastic pipe industry and is dedicated to promoting plastics as the material of choice for pipe applications. PPI is the premier technical, engineering and industry knowledge resource publishing data for use in development and design of plastic pipe systems. Additionally, PPI collaborates with industry organizations that set standards for manufacturing practices and installation methods.