Using Treated Wastewater to Irrigate Fields in Tamworth, Australia

Coming off possibly the worst draught Australia has experienced in 1,000 years, the country's Environment Protection Authority (EPA) (the Australian equivalent to the U.S. Environmental Protection Agency) is placing greater emphasis on using its scarce water resources more efficiently. In the city of Tamworth, located about 240 miles northwest of Sydney, this includes using treated wastewater to irrigate crops.

Craig Chandler and Bob Johnson, directors of TEAM Irrigation, are the owners of the Lindsay dealership in Dubbo, Australia, and have been in on the ground floor since the project was first conceived. "We were proud to be involved in the project from when it was still just a blank sheet of paper." The water treatment plant took about one year to construct and allows for a maximum daily effluent discharge of 14.2 million gallons of water, or 2,400 gallons of water per minute. When pumped through 13 pivots, it is sufficient to apply .36 inches of water over a 24-hour period to area fields.

While the project is not the first of its kind in Australia, it is the largest undertaking that Chandler is aware of in Australia and the first to feature all three Lindsay products. The water treatment project is a fully integrated Lindsay Watertronics pump station that is used to move the effluent from holding ponds through Lindsay Zimmatic pivots and ultimately onto nearly 1,600 acres of grain and alfalfa crops. The five 215 horsepower pumps and 13 poly-lined pivots are integrated with Lindsay's FieldNET wireless management network, which allows for complete monitoring and control of the project, says Chandler. "FieldNET is critical as far as monitoring and controlling all of the system components. With an effluent project like this, there is no room for accidents. A broken pipe would spell disaster if it was allowed to go unchecked."

Before the installation at Tamworth, the entire Watertronics pumping station was engineered, assembled, and live tested at full flow and pressure at the Lindsay Watertronics factory in Wisconsin. The pumps and pivots, which range in length from 778 feet to 1,772 feet, were all made in the United States and then shipped to Australia. Chandler says they were shipped by rail to Los Angeles or Houston, loaded onto container ships and sent to Australia. "We used 6–7 containers for the pivots and another 2 for the pumps. The whole process took 4–5 weeks sailing time to Australia."

The project took two years to complete once the Tamworth City Council decided to move forward on it, but the council took 14 years to reach that decision. With the city's population expected to grow to 50,000 by 2020, the city council decided to decommission and relocate two existing wastewater treatment plants to the outskirts of town. The new treatment plant, rather than dumping wastewater into the nearby Peel River, is using the treated water to irrigate fields.

During the 14 years it took to make the decision to rebuild the treatment plants, public opposition played a significant role in dragging out the process. "It looked, at one stage, that the whole project might fail," said Chandler. "Downstream farmers had been extracting treated effluent from the former plants

for their fields. This was no longer allowed by EPA." Chandler also says that when the the EPA gets involved, it extends the planning process exponentially. Now that the plant has been built and operating for a full year, all of the opposition has just seemed to go away. "Everyone is reasonably happy now."

Other than the delays in getting the project off the ground, the only drama Chandler described once construction started were delays from the power authority. Once the treatment plant was constructed, there was a 4–5 month delay before they got power, says Chandler. "We had to move from the site and wait for the power to come on before we could go back and commission the plant. The only real drama we experienced was moving to and from site."

Although Australia is through the worst of the drought, the government has been pushing harder for more efficient irrigation systems like lining channels, pressurizing systems, and more accurately measuring water use. There has also been a strong push for more pivots. And Chandler sees a new trend in irrigating with wastewater, both in Australia and the United States. "The days of effluent discharge into river systems are pretty much over."