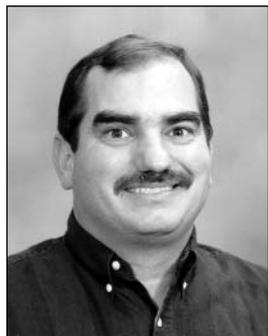


Kansas' oldest lagoon system functioning just fine

After more than 50 years of service, the City of Frankfort's wastewater stabilization ponds, commonly called lagoons, are still operating just fine. Frankfort is located in southeastern Marshall County in northeast Kansas.

The city's operating permit dated effective July 1, 2005 through June 30, 2010 has four-cell waste stabilization ponds with design population equivalent (P.E.) of 2700, a surface area of 15 acres and design flow of 0.24 million gallons per day (MGD). Permitted flow is .204 MGD for 120 days of detention time and permitted P.E. is 2040 at 100 gallons per capacity day. Frankfort's population is now 825 and the city's kindergarten

through 12th grade school system has a student population of 244. The receiving stream is the Black Vermillion in the Big Blue River Basin, which flows into Tuttle Creek Reservoir.



*Charlie Schwindamann
Wastewater Tech*

The Frankfort Index reported on development of the wastewater treatment facilities in 1954. The investigation into sewer treatment facilities began when the State Board of Health revoked the city's permit to dump raw sewage into the Black Vermillion River. The city was required to provide a schedule of compliance to have the project completed by December 15, 1955. Members of the governing body

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devoted much time and effort on the project. Then Frankfort Mayor Katherine Brawley made many trips at her own expense to get all the information she could to solve the problem and to secure a sewage disposal plant at the least possible expense to taxpayers. According to present Frankfort Mayor Sharon Owen, "Mayor Brawley was later able to share and provide information she had

gathered about the lagoon system to the city of Rossville and other area communities."

\$250 an acre for land

The city purchased 24.5 acres at \$250 per acre in the fall of 1955. The city advertised for construction bids and published an ordinance to purchase the necessary land on September 29, 1955. The project engineer was



Frankfort City Operator Doug Swearingen and Frankfort Mayor Sharon Owen pose next to the oldest lagoons for domestic wastewater treatment in Kansas.

Harold Hoskins and Associates of Lincoln, Neb.

The bid for construction of the 15 surface acre waste stabilization ponds was awarded to William F. Anderson of Holdrege, Neb. for a cost of \$50,741. The total cost of the project was set at \$66,557. That price included 10 percent for engineering, legal work and the purchase of the property. Frankfort would have the first waste stabilization ponds to be installed for domestic waste treatment in Kansas. The cost was also \$20,000 less than conventional treatment construction at that time. The bids were opened on October 20, 1955. The anticipated project completion date was December 1955, weather permitting.

The system's dikes in some areas stand more than 15 feet high. They were designed and constructed to be three feet above flood stage. The dikes are now part of a levy system that keeps



An aerial view of Frankfort shows the city's waste stabilization ponds southwest of the city in the bottom left corner of the image.

the city from being flooded by the Black Vermillion River.

By January 5, 1956 most of the earthwork was finished except

final touchup. The lift station foundation, a structure that

reached more than 20 feet in depth, had also been completed at

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that time. Work that remained included the main pump house and necessary plumbing to connect the existing wastewater system to the pumps so sewage could be lifted to the ponds.

On January 13, 1956 the city passed an ordinance regarding service charges for use of the new sewage disposal system. The monthly charges included: public schools \$10 and the parochial school \$7; slaughterhouses and locker plants \$5; restaurants, cafes, hotels and filling stations \$2.50; and single family residences \$1.

March 21, 1956 marked the system's grand opening. It was the day for the first sewage to be pumped to the new treatment ponds. At that time there were several Frankfort residents who had lived through the city's history, seeing first hand the new city services including water, sewer, gas, blacktop paving and dial telephone service along with many other lesser services that

contributed to the "modernization" of Frankfort.

In July 1956 the first item on the budget was \$3,280 for sewage disposal bonds that had been issued; in November "No Trespassing" signs were installed. On March 4, 1957 seeding of the dikes was discussed at the council meeting.

In November 1977, lagoon improvements for the Frankfort system were let for bid. They included adding a dike in the third cell to split it into two separate cells and changing some of the piping to meet new standards. Project construction was underway in September 1978 for a cost of \$81,000. This was 22 years after the original lagoon system was built for a total cost of only \$66,557.

Rates increase

December 1978 saw a new ordinance approved regarding the use of public sewers. The ordinance still utilized common

language found in most city sewer use ordinances.

At the time there was also a rate increase with residences increased to \$1.50 per month and businesses and nursing homes \$2.00 per 10,000 gallons of water used or fraction thereof. Apartments would pay \$1.50; trailer courts \$1.50 per occupied lot and public schools \$10.50 per month when school is in session. In Frankfort's first 20 years the rates had not increased much but the cost of construction had increased significantly. In 2007 the rates are now at \$11 per month per home, \$13 for businesses and \$110 for the schools.

The City of Frankfort's lagoon system still meets the discharge permit limits and is anticipated to do so for many years to come. KRWA performed a sludge profile in 2002 of the two primary cells. It was found that after more than 45 years of operation, the lagoons have only about 10 inches of sludge accumulation and have never been cleaned.

The Frankfort City Council made a wise decision in 1955 to install lagoons for the city waste treatment utility. I believe most small communities are best served by wastewater stabilization ponds as they are the most efficient system for the treatment of waste when land is readily available.

If your community has concerns about wastewater treatment or is interested in having sludge measured or the system smoke tested, give KRWA a call at 785/336-3760. I'll be pleased to provide information and also attend a council or work session meeting to discuss options with you.

Also watch for training sessions for wastewater operators at the 2008 conference in Wichita on March 25- 27.

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