

Wastewater Treatment Plant Relocation and Conveyance System Project Description

This project's estimated cost is \$80,500,000. The estimate includes funds to plan, pre-design, design, acquire land, construct, furnish and equip a new wastewater treatment facility to be located on City owned property, at 2944 75th Street SW, Willmar, MN next to the existing sludge holding facilities, approximately 5.5 miles west of the existing wastewater facility. The plant will include preliminary and advanced secondary treatment with UV disinfection. The plant will be designed for a 20-year life with an estimated average flow of 5.2 mgd. Also included in the estimate is a sanitary sewer main to transport flows from the existing wastewater treatment plant to the new wastewater treatment plant site.

The preliminary treatment will include fine bar screening and raw sewage pumping. The preliminary treated wastewater will flow to the advanced activated sludge treatment system with ammonia and phosphorous removal.

Waste sludge will be thickened and stored until land is available for waste sludge spreading and incorporation. Preliminary treatment residual will be either composted or placed in a landfill.

The treatment facility will be monitored and controlled by a Supervisory Control and Data Acquisition System (SCADA) to minimize operator routine activities and maximize treatment. The facilities will be supported with standby power, HVAC systems, water and natural gas. Sampling and testing of the wastewater at the new wastewater laboratory will ensure water quality and efficient operation.

The City of Willmar recently began a 5-year effort to replace its aging and outdated wastewater treatment process with emerging treatment technology to protect the Minnesota River, increase capacity, and to meet new and expanding state and federal requirements. The City's 70-year old wastewater treatment plant (WWTP) discharges an average of 4 MGD to Hawk Creek, within the Minnesota River Basin. The City must build a new wastewater treatment plant to current requirements, replace aging equipment, and also address changing water quality standards. The project involves a complete WWTP reconstruction because of the following:

1. Inability of the existing wastewater treatment process to reliably meet the City's regulatory constraints.
2. Continued aging of the outdated treatment technology.
3. Continued City growth resulting in increase flows and loadings.
4. Upcoming regulatory changes in water quality associated with the Minnesota River.

Items 1 and 2 are impacted by the existing rotating biological contact (RBC) treatment process that fails to provide consistent treatment to comply with NPDES requirements. The RBC process is also incapable of providing the treatment needed to meet future NPDES requirements. Upcoming NPDES permit requirements require that the WWTP produce effluent low in phosphorous among other substances. Therefore, the City is faced with removing the existing treatment process and installing new technology in its place.

Over the life of the existing RBC's, the City has experienced challenges with mechanical breakdown and other related performance issues. The City worked with its design engineer and the equipment manufacturer to minimize the impact of this technology on both the operations of the facility and overall performance of the WWTP. While overall WWTP compliance has been maintained, the long term reliability of this technology has come under question by state and federal water pollution control authorities.

Most notably, the Clean Water Act of 1987 states that, "the U.S. EPA Administrator is authorized to make a grant to fund all of the costs of the modification or replacement of biodisc equipment

(rotating biological contactors) in any publicly owned treatment works" provided a number of conditions are met. Unfortunately, the U.S. Congress did not provide a separate pool of funding for these grants and the conditions require that modification or replacement occur early in the facility life.

Statewide Impact

Willmar is currently the second highest point source contributor of phosphorus (14%) to the Minnesota River. The existing wastewater treatment plant cannot reduce these levels of phosphorus. The proposed project will reduce the levels of phosphorus discharged by 90%, improving water quality to the lower Minnesota River watershed at Shakopee. This will also help improve the water quality as the Minnesota River drains to the Mississippi River and will help reduce phosphorus in the Lake Pepin area.

Regional Impact

Willmar is a commercial and medical center supporting west central Minnesota rural/agricultural communities with goods and services. The proposed project will provide infrastructure to support the regional community. Approximately one-half the people who work in Willmar live outside the city. This project opens the possibility of development of a regional waste treatment facility that can allow smaller communities to join in Willmar's efforts to clean the environment with proven treatment infrastructure for continued regional growth.

Local Impact

As stated in the above project description many of the problems with the existing wastewater treatment plant have been documented. The existing wastewater plant cannot meet new projected permit requirements for not only phosphorus, but TMDL's for ammonia. The project will also eliminate sewer surcharging and overflows as well increase capacity to allow septic systems within the service area to connect to the system when necessary. The purpose of the new plant is to provide sound, proven treatment infrastructure for continued community growth, establishing environmental protection as the "first line of defense" for this community.