City of Evansville

Facilities Plan for

Wastewater Treatment Plant Modifications

November 2008

Project Summary

Foth Infrastructure and Environment, LLC was retained by the City of Evansville to prepare a facilities plan for upgrading the wastewater treatment plant (WWTP). The need for the facilities planning process was based on new limitations for the WWTP proposed by Wisconsin Department of Natural Resources, the need to increase treatment capacity for additional growth and the need to have an energy efficient facility.

Purpose

The purpose of the facilities plan was to review existing conditions and equipment, and to evaluate long term needs. A 20-year design period was used in this facilities plan, with the design period extending through the year 2028. The existing treatment facility was constructed and placed in service in 1982.

Scope

The WWTP facilities were evaluated for physical condition and available capacity. All existing equipment and facilities currently are in good physical condition and provide adequate capacity for current flows and loads. The facility is also in compliance with existing limitations and requirements of the Wisconsin Department of Natural Resources.

Wastewater treatment alternatives for secondary biological treatment, sludge treatment and sludge storage were evaluated for cost effectiveness based on total present worth values. All equipment was evaluated based on sufficient treatment capacity to meet future flow and loading conditions, performance, and non-economic advantages and disadvantages. Based on these evaluations, a recommended WWTP upgrade plan was developed and is presented in this facilities plan.

A preliminary financing plan was developed for this project. Costs associated with this project, including construction cost debt retirement and operation and maintenance costs, will be paid for through a Clean Water Fund loan and user charge fees and any potential grant assistance which would be available to the City. Based on this funding evaluation, user charges for the City's customers are anticipated to increase with the implementation of this project.

Conclusions

Based on the findings of this report, the following conclusions can be made with regard to the City of Evansville wastewater collection and treatment facilities:

- Infiltration and inflow for the City of Evansville collection system are not excessive according to EPA criteria, with the exception of one extreme storm event in August of 2007.
- The WWTP is currently providing a high level of wastewater treatment with effluent quality being below the existing permit limits.

- Based on projections presented in the adopted City of Evansville Smart Growth Plan, the service area population for the Evansville WWTP is anticipated to increase at a maximum rate of approximately 12-percent every five years.
- Increased flows and loads at the WWTP are anticipated from residential growth, new industrial users, and a proposed soybean crushing facility.
- The existing wastewater facilities do not have adequate capacity for future flows.
- Additional facilities for nitrogen removal will be required due to projected new wastewater effluent limitations.
- Additional facilities for sludge digestion will be required due to the recommended change in biological treatment.
- The current WWTP effluent limits in the WPDES permit are anticipated to change in the next permit re-issuance to include a total nitrogen limitation of 10mg/l.
- Upgrade of the WWTP will not require expansion of the plant site.
- The total project construction cost is estimated at $4,250,700.
- The user charge costs associated with the WWTP modifications, for the average residential user, are anticipated to increase from approximately $17/month to $25/month.

Schedule

Based on the findings of this report, the following schedule is proposed:

- Submit the Facilities Plan to the WDNR for review and approval in November of 2008.
- Submit plans and specification to the WDNR for review and approval by February of 2009.
- Start construction of the WWTP upgrades by April of 2009.
- Complete construction by July of 2010.
- Complete start-up of new WWTF by September 2010.