

SANITARY SEWER REHABILITATION

Summary

- The Bremen Project is based on a Guaranteed Energy Savings Performance Contract. The Project includes improvements to the WWTP along with sanitary sewer rehabilitation. The improvements at the WWTP were considered under a separate Business Case which showed that the WWTP portion of the project was categorical (in excess of 20%) for energy reduction. This Business Case addresses the sanitary sewer rehabilitation portion of the project only.
- The sanitary sewer rehabilitation improvements include lining of existing sanitary sewers using the CIPP method and manhole rehabilitation.
- Guaranteed Energy Savings Performance Contract Price: \$2,086,000. The total GPR eligible amount for the entire project based on the Contract price excluding contingencies (\$99,000) and grit chamber concrete repair (\$9,000): \$1,978,000.
- The total estimated Planning Design Cost associated with the entire project based on Engineering Service Agreement that maybe qualified toward GPR: \$ 67,450.
- Estimated Energy Efficiency (GPR) portion of the Project are based on the PER Cost Estimates for the purpose of the Business Case:
 - 1) Sanitary sewer rehabilitation GPR portion Including construction, planning and design totals \$251,200; and
 - 2) The combined WWTP/sanitary sewer rehabilitation project, GPR portion is \$1,787,000 base on the PER estimated amount.

Background

- The presence of infiltration/inflow in the sanitary sewer system results in higher energy costs associated with flow pumpage and wastewater treatment.
- Of the 1.35 MGD flow to the WWTP, approximately 40% of that flow or 540,000 gpd is estimated to be associated with infiltration. The estimated reduction of infiltration with the proposed improvements is 25% or 135,000 gallons.

Results

- The cost savings from not having to treat the estimated infiltration that would be removed is \$22,745 per year. $(0.135 \text{ MGD} \times 365 \text{ days} \times \$461.59/\text{MG} - \text{treatment cost})^1$
- A portion of the wastewater treatment cost is related to energy consumption.

- The project is cost effective since the present worth of O & M savings is greater than the capital cost for the improvements.

| Cost Effective Analysis | | |
|-------------------------------------|---------------------------------|---|
| Capital Cost of Improvements | Annual O & M Savings | Present Worth of O & M (3%, 20 year) |
| \$251,200 | \$22,745 | \$338,400 |

- The payback period of the sanitary sewer rehabilitation portion of the project is 11 years which is less than the useful life of the sewer rehabilitation.

Conclusion

- The proposed improvements will result in energy cost savings associated with wastewater treatment.
- The proposed project is cost effective.
- The proposed project has less than an 11 year payback period. The improvements to the collection system have an expected life of over 11 years.

¹ Chapter 9- Green Project Reserve, Preliminary Engineering Report for Bremen Wastewater Treatment Plant and Collection System Rehabilitation/Improvements