MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

# City of Perry
# Phase 2 – Inflow and Infiltration Correction

## Clean Water State Revolving Fund
## Green Project Reserve
## Business Case

**State Fiscal Year 2012 Intended Use Plan**
**Project Number C295690-01**

**Loan Closing Date: May 10, 2012**
**Loan Amount: $292,000**
**Green Amount: $220,000**

# I. COLLECTION SYSTEM REHABILITATION

## Summary

- Rehabilitation of the city of Perry's wastewater collection system to reduce excessive inflow and infiltration (I/I).
- Total Loan amount = $292,000
- Estimated energy efficient (green) portion of loan = 75.3% ($220,000)

## Background

The collection system was constructed in the 1960's using vitrified clay pipe. The old vitrified clay pipes admit a significant volume of I/I which has led to sanitary sewer overflows at low-lying manholes, at lift station #1, and has placed significant burden on the wastewater treatment system. An I/I study was conducted in 2009 by Klingner & Associates, P.C. for the city of Perry to help identify which portions of the sewer have the most significant I/I. The study indicated that the most significant cases of I/I were adding approximately 600 gallons per minute during rain events of approximately two inches.

## Energy Efficiency Justification

The collection system rehabilitation improvements consist of cured in place pipe (CIPP) lining of approximately 3,147 lineal feet of eight-inch sewer, rehabilitation of 11 manholes using cementitious lining, and replacement of two other manholes. The collection system rehabilitation will be used to reduce the amount of I/I entering the collection system. This will reduce the energy consumption of the lift stations and the wastewater treatment facility because the amount of water to be pumped and treated is reduced. The Discharge Monitoring Reports from 2009 to 2014 indicate that the project has reduced the average maximum daily flow from 460,000 gallons per day to 126,000 gallons per day a 73 percent reduction in average maximum daily flow.

## Conclusion

- Use of CIPP lining was the cost effective alternative.
- Per Section 3.5-4, "*Infiltration/Inflow (I/I) correction projects that save energy from pumping and reduced treatment costs and are cost effective.*"

## References


- Attachment 2. 2012 Clean Water State Revolving Fund 10% Green Project Reserve: Guidance for Determining Project Eligibility.
- Klingner & Associates, P.C. facility plan, “Phase 2 I/I Correction” for the city of Perry, Missouri sealed February 4, 2011.
- Klingner & Associates, P.C. specifications, “Phase 2 I/I Correction” for the city of Perry, Missouri sealed May 18, 2011.
- Lake Construction Company Change Order No. 2 for the city of Perry, Missouri approved on September, 25, 2012.
- Discharge Monitoring Reports from January 1, 2009 to September 31, 2014.