

Public Utility Board

Summary of University of Tennessee
Municipal Technical Advisory Service
Management and Operations Study
April 5, 2012

Executive Summary Prepared by Roane County

Executive Summary # 2b

This Executive Summary 2b should be read and reviewed with Executive Summary 2c and the August 2012 Waste Water Report prepared by the Roane County Executive and Accounting and Budget Office.



Background

- ▶ 1976 Industrial Development Board (IDB) of Roane County built the WWTP
- ▶ Roane County Government operated the plant
- ▶ 2001 IDB officially transferred title to Roane County government
- ▶ 2006 operations transferred from county to Public Utility Board (PUB)
- ▶ 5 members make up the PUB



Collection System

- ▶ Largest part of the line system relatively new
- ▶ 2/3 system is force main
- ▶ 1/3 gravity, primarily commercial and industry
- ▶ Appears system may have some pretreatment issues



Management Challenges– Lift Station Ownership

- ▶ Ownership of many large sewer lift stations is vague

Recommendation # 1 – PUB should work to have a transfer of ownership of all stations to the PUB



Management Challenges– Grand Vista Bay and STEP

- ▶ STEP system in Grand Vista Bay has three primary issues:
 - clarification of ownership/easement
 - high maintenance cost
 - removal of septage

Recommendation # 2- Obtain legal easements and clarify the exact responsibilities of ownership and maintenance including removal of septage

Management Challenges–Maps and Staffing

- ▶ Sewer system maps not adequate
- ▶ Staffing could be low

Recommendation # 3 – Additional staff may be needed as system grows in customers and complexity

- serve customers
- prevent overflows and backups
- limit impact of infiltrations and inflow



Technical Challenges– Maintenance , Equipment, Tools

- ▶ Delayed maintenance can be an issue; thus to meet the needs one needs:
 - 1) proper design
 - 2) proper operations and maintenance
 - 3) control of discharges into the system
- ▶ Short on tools for maintenance

Recommendation # 4 – provide tools, parts, equipment and facilities for operations and maintenance. "Jet-trailer" and TV critical tools

Technical Challenges– Facility and Inventory

- ▶ "Need secure, protected, and heated enclosure is a must if Jet–Vac–TV truck is purchased"
- ▶ Need available inventory of supplies, spare parts, spare equipment, including pumps and motors

Recommendation # 5 – Construction of a garage/shop for storing tools, spare parts and equipment is needed

Technical Challenge– I/I

- ▶ Controlling inflow and infiltration (I/I) is critical for efficient operation of a WWTP
- ▶ Roane County plant since oversized for current usage has limited impact of I/I
- ▶ However I/I costs money and uses up plant capacity that may be needed in the future

Recommendation # 6 – Maintain a sense of urgency for locating and removing I/I



Technical Challenges– Rock and "Black" water

- ▶ Large presence of rocks and coal
- ▶ Presence of "black" water

Recommendation # 7 – Locate source and eliminate– maybe additional sewer use ordinances– extreme measure could be disconnecting– pretreatment program



Technical Challenges– Odors and related damage

- ▶ Sewer odors due to hydrogen sulfide "rotten egg"
- ▶ Particular issue of odor at Grand Vista Bay

Recommendation # 8 – Purchase hydrogen sulfide test kit– replace damage due to hydrogen sulfide (relief valves)

Technical Challenges– STEP system

- ▶ STEP system problems due to odors and septage

Recommendation # 9 – Investigate the possibility of using grinder pumps as an alternative to STEP system



Collection System Summary

- ▶ Relatively good condition compared to peers of similar age and size



Treatment Plant

- ▶ Plant is performing well with few violations of NPDES permit
- ▶ Some limited maintenance is needed
- ▶ Solids handling is a weakness at the facility
- ▶ Lack of maintenance shop/garage for supplies, parts and equipment is a weakness
- ▶ Personnel is well qualified



Compliance

- ▶ NPDES permit requires treated effluent to meet "secondary and effluent limited standards" which is relatively easy to meet due to the state having high numeric limits.
- ▶ Violations of permit however can be very costly



Maintenance

- ▶ New Maintenance Management Program is being implemented
- ▶ Nonscheduled repairs need to be honestly and diligently tracked
- ▶ "Heavy" maintenance has been performed (upgraded influent screen and aeration blowers and motors)
- ▶ Tasks to be completed – cleaning, checking, and coating of the big tanks



Maintenance con't

- ▶ Lack of shop or garage makes maintenance more challenging
- ▶ Handling of solids is a weakness
- ▶ Belt press is too small for a plant this size

Maintenance Recommendation # 1 – work to develop an effective "sludge management process"



Plant Capacity

- ▶ 1.0 Million Gallon flow per Day (MGD)
- ▶ Peak flow with I/I– 0.68
- ▶ Base sewage flow appears– 0.16
- ▶ Normal I/I flow appears– 0.11
- ▶ Peak day I/I– 0.52
- ▶ Biochemical Oxygen Demand (BOD) has been high on several occasions

Maintenance Rec #2– Locate source of BOD loading and take appropriate action

Plant Capacity

- ▶ Human capacity need appears to exist

Maintenance Rec # 3– Staffing guidance publications recommends two full-time workers (in addition to the director)

Maintenance Rec #4– Existing office facilities are currently inadequate especially with a proposal of an industrial pretreatment program. Storage and table space for maps and other records are needed

Laboratory

- ▶ Over half of an operator's time can be consumed in the lab
- ▶ Major emphasis is on quality
- ▶ Most all lab action is regulated
- ▶ Lab Quality Assurance program is in place
- ▶ Encouraged to follow program closely and improve program continually



Economy of Operations

- ▶ Depreciation is generally the largest line item expense that impacts customer rates
- ▶ Labor cost is generally the second highest
- ▶ Energy is often third
- ▶ Potential revenue enhancement would be compost waste solids, however cautions and study are needed before implementation



Treatment Plant Summary

- ▶ Operating in substantial compliance
- ▶ Should serve the community for many more years
- ▶ Solids processing is a weak area
- ▶ Age of plant necessitates some heavy maintenance
- ▶ Improve storage and maintenance facilities
- ▶ Reduce I/I
- ▶ Consider industrial pretreatment program

Mgt, Financial and Adm Operations

- ▶ Overtime 10% of salaries considered acceptable
- ▶ RCPU customers have high bills
- ▶ Rates raised 26% in 2010
- ▶ Residential rates unique in that they are fixed per month– generally rates are on usage
- ▶ Residential rates– \$31.25 plus \$25 if customers is on a STEP system



Mgt, Financial and Operational

- ▶ Recommendation #1 – reduce administrative layers and streamline decision-making
- ▶ Recommendation #2 – Seek to combine utility operations with Roane Central Utility District to provide economy of scale
- ▶ Recommendation #3 – Financial staff and operational staff need to better understand each other's roles and responsibilities
- ▶ Recommendation #4 – Execute contracts for billing

Mgt, Financial and Operational

- ▶ Recommendation #5– Digitize all system maps; also software is needed to track service calls and corrective actions
- ▶ Recommendation #6– Staffing is marginal and additional staff should be considered if overtime is greater than 10%– also compensation of staff should be kept current with industry standard of nearby utilities. Appears compensation is in line with other utilities.

Conclusion

- ▶ Roane County is commended for the 2006 change to a public utility board and hiring a professional director
- ▶ Recommendations are made for long term focus consideration:
 - high level care for physical components
 - liability-free system with appropriate safety programs
 - customer costs reasonable with effective use of personnel and operating costs

