

# Operation, Maintenance and Management of Wastewater Treatment



ESG began working with the City of Waycross in November, 2003. Our initial task included process trouble-shooting to bring the facility into NPDES permit compliance. The Waycross WWTP consisted of preliminary treatment via bar screens and grit collection followed by primary clarification, trickling filters, final clarification and rapid infiltration basins prior to disinfection. Approximately 18 months prior to ESG's involvement the construction of an activated sludge system (aeration basins and final clarifiers), with a design capability of 8 mgd, was completed but never placed in service due to a myriad of issues. The predominate issues are as follows:

- Leaking external walls in the aeration basins.
- Constructed with hydraulic faults that would not allow gravity flow through the process.
- Operations Staff unfamiliar with the activated sludge process.
- Inexperience of Operations Staff in starting up a new facility.

Within the first week of ESG making some modifications to the trickling filter process the effluent from the final clarifiers was within NPDES permit limits although the final effluent leaving the rapid infiltration basins (RIBs) was not. Given the mechanical plants trouble with meeting compliance limits, the RIBs had been overloaded and received a lack of maintenance; therefore, ESG had to determine a strategy to return the RIBs

to good health. A number of analyses were performed to determine which RIBs were causing the non-compliance issues. Once identified, the poorly performing RIBs were taken off-line and nursed back to health while routing flow to the healthy RIBs and/or bypassing the RIBs altogether. Within the first month of ESG assistance the facility was brought into full compliance.

After demonstrating the ability to meet permit compliance EPD authorized the City to reinstate their leachate receiving program. **This was important to Waycross because the revenue generated by leachate amounts to approximately \$150,000 per year.**

The next challenge was to bring the activated sludge process on-line. To accomplish start up of the new construction components ESG implemented a plan by performing the following:

- Converted one clarifier after the trickling filters to serve as a wet well whereby effluent flow from the trickling filter final clarifiers could be diverted to the wet well.
- Installed two submersible pumps for transferring flow to the aeration basins.
- Seed sludge was transported to Waycross to jump start the activated sludge process.

The final challenge involved meeting a Georgia EPD mandated deadline for completion

## Innovative Partnership Provides Solutions and Savings

- ESG was instrumental in renegotiating a consent order with EPD that allowed the City to move forward with a plant expansion and upgrade.
- ESG's operational and engineering expertise saved the City over \$3,000,000 on a major plant upgrade and expansion. In less than 12 months, ESG designed, built and started up a 6 million gallon per day (gpd) upgrade to the plant.
- ESG implemented a landfill leachate revenue enhancement program that generates in excess of \$430,000 per year of additional revenue for the City of Waycross.
- ESG has recorded no "lost time" accidents and has received numerous safety awards.



of additional facility enhancements previously agreed to in a consent order. ESG had 12 months to design and install effluent filters, an RAS pump station, and a permanent pump station for trickling filter effluent. During this process the City of Waycross was advised by their design engineer of some structural issues with the new aeration basins so the repair to these structures had to be performed prior to the EPD deadline as well. To further complicate matters, the both aeration basins required draining at the same time because the common center wall was capable of support with one basin full of water.

**Substantial completion of the project** was accomplished before the mandated EPD deadline. Resulting in the EPD not having to execute the stipulated penalty agreed to in the original consent order.

The result of ESG's efforts on behalf of the City of Waycross has resulted in:

- Removal of the consent order.
- Avoidance of a \$75,000 penalty.
- Highly motivated staff at the WWTP.
- Continuation of the leachate revenue enhancement program generates in excess of \$400,000 per year in additional revenue.
- Established level of trust with regulators where they use Waycross as an example of other City's to emulate.

The success of the initial task led to the City contract operating the entire wastewater utility which had a history of NPDES permit noncompliance and fines. The scope of work included operating the City's wastewater treatment and pumping facilities. The wastewater system includes a 7 mgd activated sludge treatment facility and 28 lift stations. Due to the condition of the facilities an Equipment Condition Assessment was initiated to establish the baseline condition of equipment assets. A corrective action plan was initiated along with the installation of a computerized maintenance management program allowing the City the ability to make repair and replacement decisions based on life cycle cost. ESG is also in the process of completing the design of an upgrade to the wastewater treatment system which was fast-tracked to meet an EPD mandated March 1 deadline. ESG's major accomplishments in Waycross include:

- Got the WWTP into compliance within 2 weeks in spite of years of compliance challenges.
- Turn-keyed a 3.5 mgd intermediate pump station in 6 weeks along with making repairs on leaking gates and weirs to get facilities into operation which had been constructed approximately 3 years previously.
- Interceded on the City's behalf with EPD to eliminate over \$2,000,000 in unnecessary construction which had been previously agreed to via the Mayor's signature as part of a pending Consent Order. EPD took the unusual step of accepting ESG's alternative approach which included very specific targeted improvements.
- Provided training, support and direction to existing staff to increase morale, productivity, and efficiency.
- Implemented state-of-the-art computerized maintenance management program.

## FACILITIES

- 6.7-MGD Oxidation Ditch with stringent seasonal ammonia limits
- Unique Trickling Filter-Activated Sludge Process Configuration
- "Rapid Infiltration Basins" with underdrain effluent collection
- Surface Water Discharge
- Landfill Sludge Disposal
- 18 Wastewater Lift Stations

## SCOPE OF SERVICES

- Operate/Maintain/Manage
- Wastewater Treatment
- Two Plant Sites
- Septage Receiving
- Industrial Waste Receiving
- Engineering Conceptual Planning Services
- Financial "Stewardship" evaluation to minimize O&M and capital impacts
- Regulatory Negotiation regarding Consent Orders
- Revenue generation

## START DATE

- November 2003

## POPULATION

- 35,000

