Wastewater Experts, Inc.
Balancing Engineering Realities with Financial Necessities

Client: Siemens Water **Project: 100,000 gpd WWTP in Pennsylvania**

Services Requested:

- **Identify Cause of Plant Effluent Failure**
- **Fix Operation**

Type of Treatment:

1. Wastewater Process: SBR Activated Sludge
2. Effluent Filtration: Rotary Drum Disc Filtration

This small municipal wastewater treatment plant serves a small town in Pennsylvania with little industrial input. The plant effluent requirement is relatively lenient at 10/10/1 (mg/L as BOD/TSS/NH4-N). However, the process was unable to meet those requirements following a prolonged startup. The Process Supplier retained the services of ***Wastewater Experts, Inc.*** to determine the cause of system failure and identify corrective procedures and fixes which would achieve a satisfactory Performance Acceptance Test.

Examination of plant operating records revealed that the SBR effluent was reasonable, but the Effluent Disc Filter was ineffective. After much additional investigation the problem was clearly the very small size of biomass particles in the SBR effluent which then passed through the filter. The process conditions which caused this problem were identified as follows:

a. The contract operator applied chronic and excessive chlorination to the SBR; this created a severely dispersed and limited microbial consortia with no flocculation.
b. The over-chlorination predictably and dramatically reduced nitrification; the Operator responded with excessive over-aeration – causing further deflocculation.
c. The Operator exacerbated these conditions by then operating at an excessive sludge age - running very low F:M to meet required nitrification with rates suppressed by over-chlorination.
d. The Operator added a flocculent to improve disc filter operation – but added it to the SBR instead of to the SBR effluent only.

The Biological/Chemical causations of this failure were ultimately resolved, after much negotiation with the Contract Operators.

Results

The Plant passed the Performance Acceptance Test.

17750 Rosewood St *Stilwell, Kansas, 66085* *913-706-9656*