

# Blue Frog™ System Case Study: Poultry Processing Plant

The Pilgrim Pride poultry processing plant in Marshville, NC asked BFS to reduce the sludge in Pond 2. The Marshville plant process .4MGD of wastewater from a poultry slaughter house. Solids are separated in a DAF and collected for reprocessing as feed.

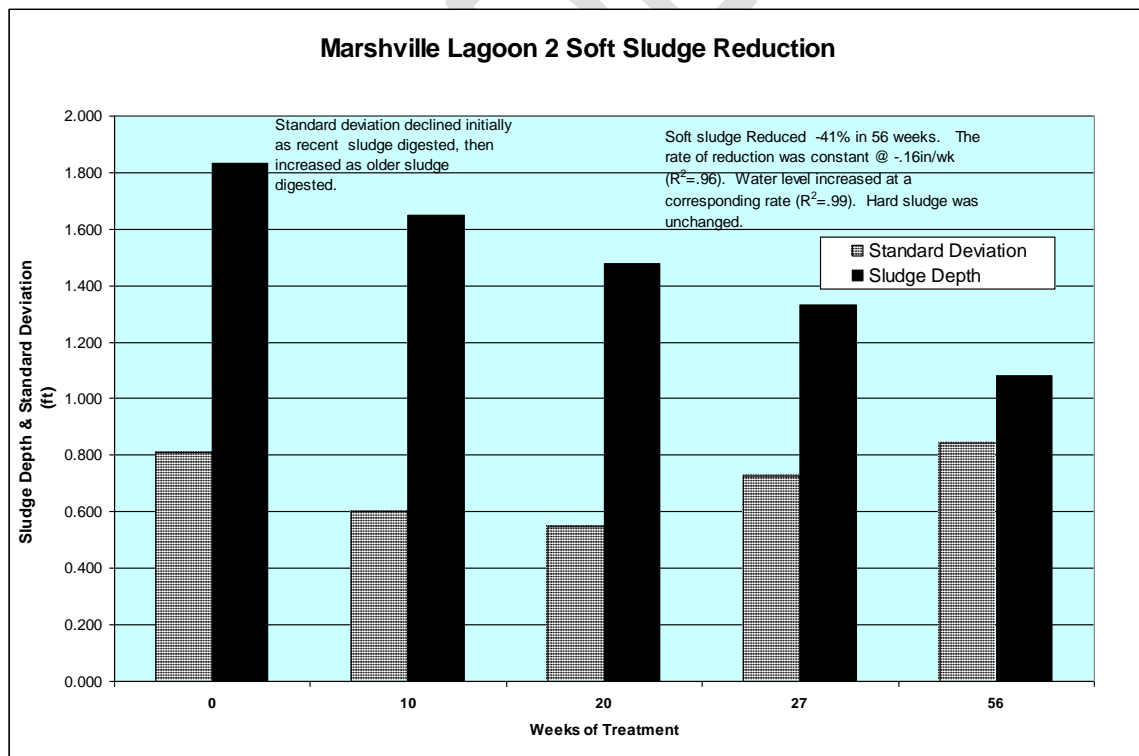
Supernatant gravity flows to Pond 1 and then Pond 2. Pond 1 has a series of splasher aerators (9) and then a settling basin. Pond 2 is a sludge holding pond.

## Objectives

1. Reduce sludge to avoid a \$400,000 dredging/disposal cost.
2. Reduce discharge-to-POTW-surcharge. [Added after installation.]
  - a. This surcharge is partially BOD, but mostly ammonia.

## Results

1. Sludge declined at a steady rate of 21cm/year



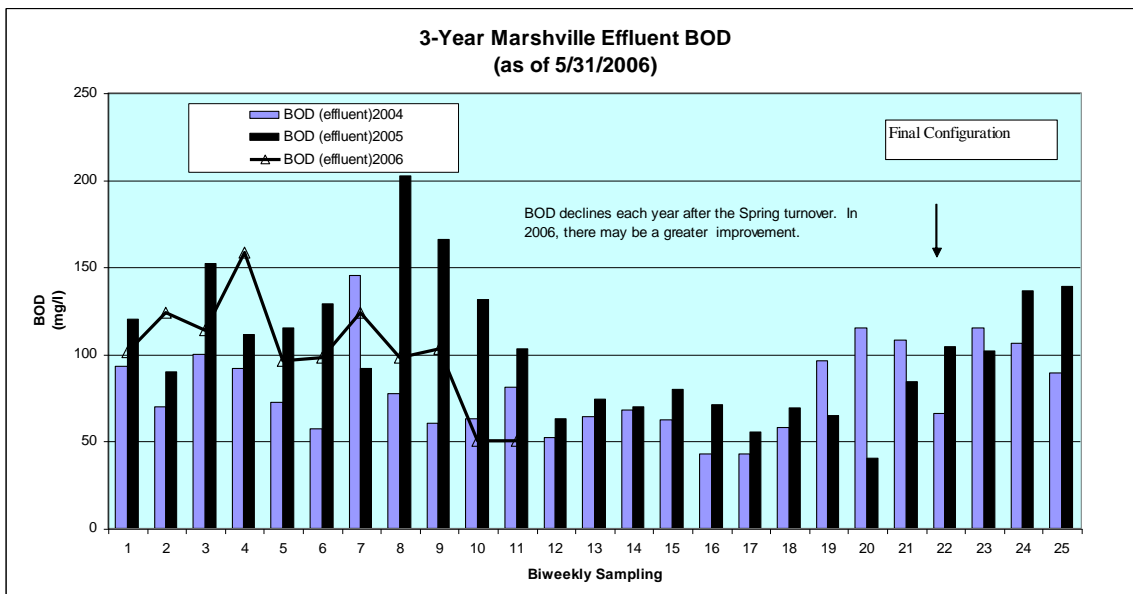
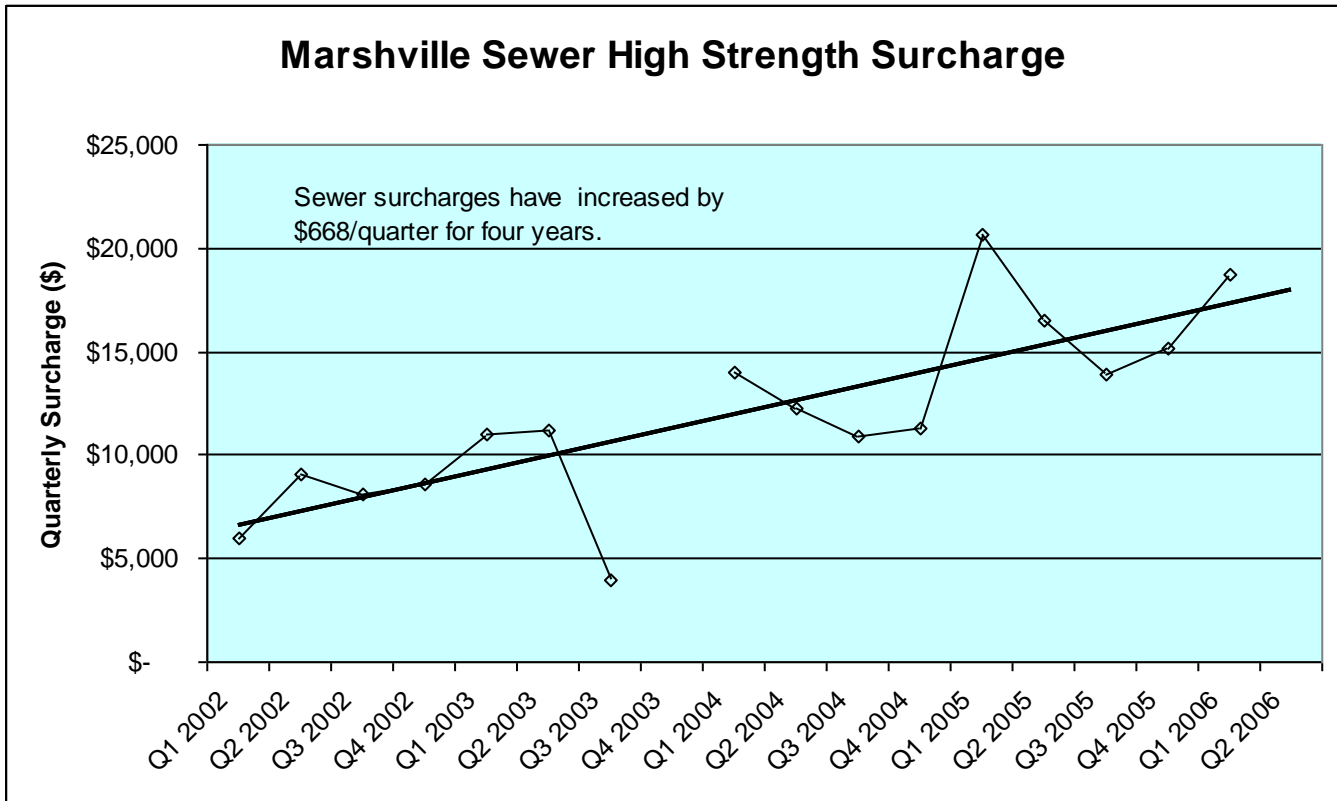
- The Marshville lagoon was the first non-farm lagoon designed by BFS. Flow enters at the bottom of the image and exits at 9:00 o'clock. The short-circuiting problem was severe. The dark lines are top-to-bottom curtains. Flow is directed East, then North, then NW, then SE. Drift lines are visible showing the final settling portion of the pond. The white around each BF/CSTR is foam. The white bars are floating PVC pipes used to keep the CSTRs round. [Subsequent CSTRs were form-stable hexagons.]

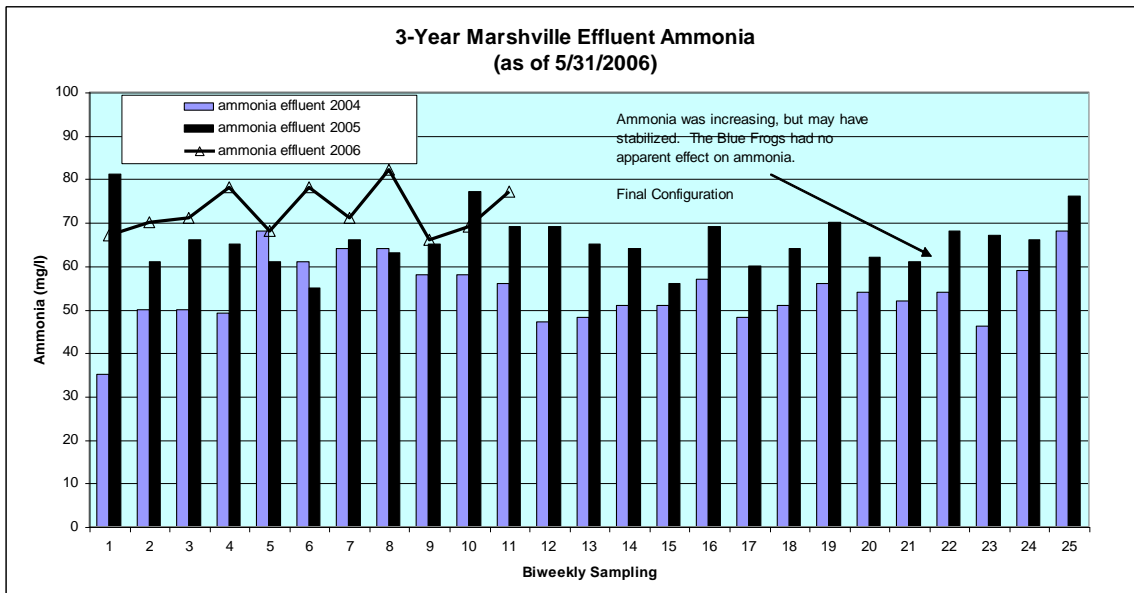
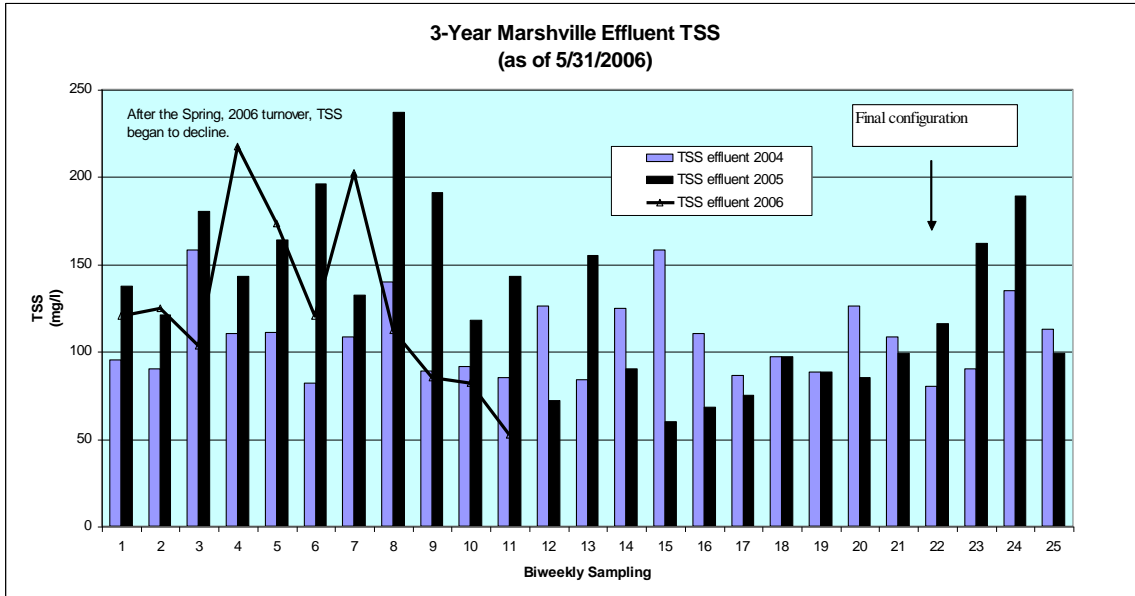
This photo is 5 years after installation.



- The sewer surcharge for discharging directly into the POTW is based on BOD and ammonia. Ammonia is about 80% of the weighting. The ammonia increased as sludge was digested, increasing the surcharge. This is an expected result for several years as the pre-existing inventory is exhausted.

At this stage of the BFS development, the GF was not yet invented. There is no significant aeration in P-2 and one would not expect biological de-nitrification.





4. As a development project, this was reconfigured at least 5 times as we learned basic concepts. Plant production (and waste output) increased significantly during this project. Taken as a whole, the data suggest that sludge went down, ammonia went up and BOD and TSS were seasonally unchanged. Recent data is not available.