

Case History

Bonita Springs Utilities Wastewater Plant

TSS Meter Replaces NTU for Re-Use Protocol Diversion

Plant Data: In 2002, the Bonita Springs Utilities (BSU) wastewater-treatment capacity was increased from 4.25 million to 7 million gallons per day. The plant utilizes the Eimco denitrification treatment process and on average produced one to four million gallons per day of re-use water. The re-use water is sold to a local community for golf course and residential irrigation. The need to provide a continual supply of re-use water to the customer is critical. In addition to the customer demands BSU had other concerns regarding the operation of the re-use system. In 2002, the plant had only a "storage pond" for storing re-use water which did not meet the protocol for re-use and had to be retreated. As has been noted at other re-use facilities in Florida the filter effluent NTU and the TSS lab results were frequently at odds with the NTU meter showing a need to reject the flow even when the lab results would be returned with a result noticeably lower than 5 mg/L limit detailed in the permit.

Situation: In January 2002 a situation occurred where the golf course customer needs for re-use were great, the holding pond was nearly full and an unidentified filamentous bacteria was creating a series of problems in the plant causing the water quality to exceed the 3.0 NTU protocol limit for rejecting the re-use flow. At the same time the plant TSS results were consistently lower than 5 mg/L (this was consistent with plant history). After a careful reading of the utilities permit BSU determined to find a way of using the re-use water and installed instrumentation to measure the TSS directly. After testing the equipment vs. the laboratory results for approximately one year it was determined that the instrumentation was providing reliable, representative and repeatable measurements. With the knowledge of local regulators BSU began regulating the flow of re-use water based on the TSS meter(s) instead of turbidity. The turbidimeters continue to be used as a backup system in the event of a TSS sensor failure. The use of the TSS meters has continued since then and a permit variance was granted August 2005 by The Florida Department of Environmental Protection.

Testing: The testing of the TSS meters included a daily calibration check of the device against the laboratory results. Data was collected over a period of one year and included along with a statistical analysis with the variance request. Results were typically within 0.1 to 0.5mg/L of the laboratory test. Frequently the difference was less than 0.1 ppm compared to the laboratory results.

Equipment: The instrumentation used by BSU for the re-use water filter effluent TSS measurement was the WTW Measurement Systems VisoTurb TSS sensor. The VisoTurb TSS sensor is part of the WTW Measurement Systems IQ sensor network which allows connection of up to twenty sensors on a digital network where the signal cable carries data and the power supply between sensors. Sensors can be any mix of the following ammonia, nitrate, DO, pH/ORP, TSS low range (VisoTurb TSS), TSS high range (ViSolids), conductivity, UV 254 and more.

Current Status: Following the above referenced testing criteria the data collected was prepared by a major engineering firm and presented to DEP for approval of a variance to the operating protocol. The variance would allow the use of TSS in lieu of NTU to determine when to reject the re-use flow. At the time the data was reviewed by DEP BSU was one of only 2 – 3 utilities to receive a variance. Regulations have now changed to allow the use of TSS to determine when to reject the water in re-use applications without having to procure a variance. Any questions regarding this application can be directed to Bill Lazenby at Lazenby & Associates, Inc. Plant contact can be readily coordinated with the BSU operations staff upon request.

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