

Case Study: Punta Gorda, Florida Water Treatment Plant

Background

The Punta Gorda WTP is a 10MGD surface drinking water facility located just east of Punta Gorda Florida. The process includes floc tanks, four Solids Contact Units (SCUs) which are a form of upflow clarifier, which then feed two Greenleaf Filters with four cells each. The filters are backwashed every 70 hours regardless of head loss. High backwash flow rate is 5200gpm. The total cost to treat 1000 gallons of drinking water is \$1.73.

The plant became aware of the FilterSmart Media Level and Turbidity Monitors in 2013 when Tom Jackson, the Utilities Director for Punta Gorda attended a presentation on FilterSmart at the AL/FL Joint Rural Water Conference and passed the information along to Brian Fuller, the Plant Supervisor. Brian arranged for a field trial and subsequently purchased instruments to outfit the filters.

Filter Run Times Extended From 70 to 120 Hours

During the field trial, it was noted that the loading in the filters was very light. See Figure 1. This can be

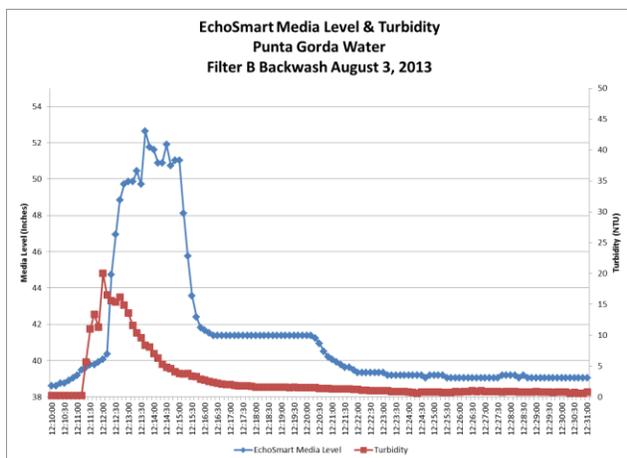


Figure 1. Graph of Media Level and Turbidity vs Time. Max Turbidity is 50NTU. Media expansion is roughly 30%.

seen in the relatively low turbidity measured during the backwash. Since the backwash schedule was based on time and not head loss, the suggestion was made to incrementally increase the Filter Run Times (FRTs) until the head loss value was reached. FRTs were increased to roughly 150 hours at one point, but were backed off to 120 hours due to various concerns. This initial process adjustment resulted in a 42% decrease in backwash water consumption annually at a value of approximately \$65,000.

High Rate Backwash Flow Duration Reduced Four Minutes

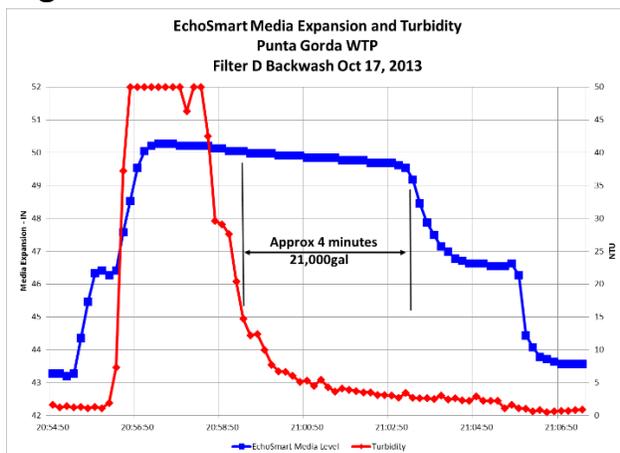


Figure 2. Four minutes of over-washing eliminated.

Once the instruments were purchased and installed, backwash data also indicated that the high rate portion of the backwash was longer than necessary, and was reduced by four minutes. See Figure 2. This adjustment resulted in a savings of approximately 22,100 gallons of wash water per wash, at a value of \$21,000 annually.

Together, these two simple adjustments to the backwash process resulted in \$86,000 in savings the first year. These savings are more than twice the total price of the instruments.

ATI-Entech Design

For information call 940-898-1173

Michael Emmanuel Regional Manager memmanuel@entechdesign.com

Kary Steadman Regional Manager ksteadman@entechdesign.com

Case Study: Punta Gorda, Florida Water Treatment Plant

Dramatic Savings Through Sludge Measurement in Drying & Handling Process

The flow of water in the SCUs is up through a blanket of sludge and into collection pipes which send the water to the filters. The sludge blanket rises to a level where it cascades into a trough, from which it is pumped to the drying process. See Figure 3. An EchoSmart sludge blanket monitor was installed in each of the four sludge troughs, with the signals used to control the sludge pumps. The goal was to keep the sludge level in the troughs within a 6-8 inch range. Previously, the sludge pumps were turned on and off manually, which produced inconsistent results. Using the EchoSmart blanket level to control the pumps eliminated these inconsistencies, and greatly reduced the hydraulic loading to the sludge drying train. See Figure 4.

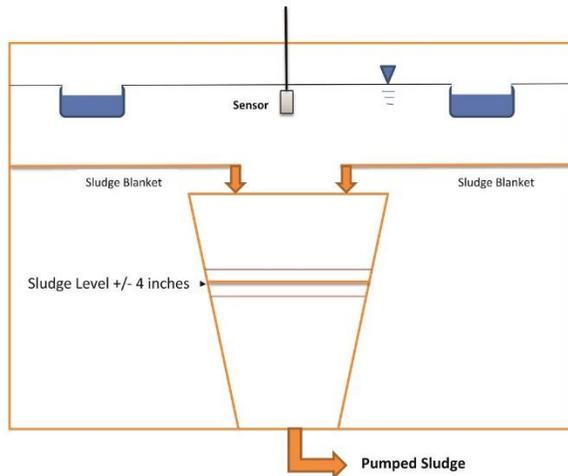


Figure 3. Solids Contact Unit

Perhaps the most unexpected and significant savings came from the sludge drying process. Backwash water and the sludge from the SCUs first go to a decant tank where the sludge settles and the

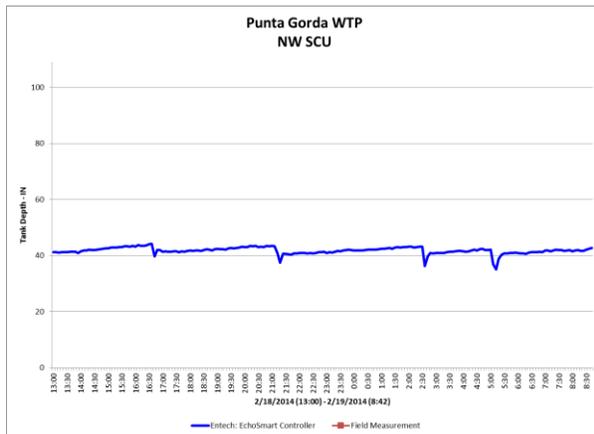


Figure 4. Blanket Level Trend in SCU.

supernatant is returned to the headworks. The settled sludge goes to one of a dozen three-walled drying cells with underdrains. A layer of sand is spread in the cells to protect the underdrain from the action of the front-end loader. Previously, all 12 cells were needed. With the reduced hydraulic loading, only one or two cells are now needed. Consequently, the amount of sand has been greatly reduced. According to Brian Fuller, "We used to order between \$200,000 and \$300,000 of sand a year. Since we implemented the blanket monitors, we haven't ordered sand in a couple of years."

In addition to these documented savings, there are others that haven't been documented. For example, the driver of the front end loader is free to resume other maintenance activities. Fuel for the front end loader is reduced. Polymer use prior to the sludge press has been reduced. Tipping fees to haul the sludge to the dump have been greatly reduced.

Summary

All told, the savings to the plant in the first couple of years after installing the FilterSmart and EchoSmart monitors could easily reach over a half million dollars. As Tom Jackson stated, "We love these instruments. They've given us data that we can use to make decisions that have saved us a lot of money!"

ATI-Entech Design

For information call 940-898-1173

Michael Emmanuel Regional Manager memmanuel@entechdesign.com

Kary Steadman Regional Manager ksteadman@entechdesign.com