



## CUSTOMER TESTIMONIAL

Four Corners Water & Sewer District WRF

Bozeman, MT

June – September 2021

### Problem:

Our district, which has roughly 2,500 connections, has faced a serious FOG issue. Despite having a FOG control program and regulations on commercial food service establishments, FOG has always been an issue with our district. It wasn't until our commissioning of our Sequencing Batch Reactors that we realized how bad the problem was. FOG in large amounts allows the filamentous bacteria *Microthrix parvicella* to proliferate and outcompete good floc-forming bacteria in the mixed liquor. *M. parvicella* creates a foam on top of the mixed liquor that leads to poor settling, low nutrient removal and high TSS in treated effluent. We turned to Aquafix who help control filamentous bacteria with enzymes that support floc-forming bacteria. We tried their solution for 6 months while the filamentous bacteria got worse and worse (Figure 1). After desperation and hours of research we discovered that ozone has some affect on saturated fats. It breaks a double bond in the molecule of fat that is responsible for the fat's hydrophobic nature. We discovered Titus Twister had an ozone generator that injected into wet wells and decided to pilot the equipment.

### Application:

Our WRF has an influent wet well (IPS) that pumps influent to the headworks. The IPS was designed to have three separate cells that are only connected by a weir gate at the bottom. This allowed rags and grease to accumulate in the IPS because there was no natural mixing in the wet well. We decided to place the Titus Twister in the IPS and start the pilot with the ozone enabled.

### Result:

Within hours of the Titus Twister being turned on, the rags, FOG and scum on the surface of the IPS were gone. After a couple days, the FOG that had accumulated in the pre-react zones of the SBR were breaking up (Figure 2 and 3). The foam, which had 8 inches of thickness had reduced to less than an inch in three weeks. After a month of use, we could see mixed liquor in the basins (Figure 4), which had been covered up with foam since start up. As a test, we decided to leave the Titus Twister on but turn off the ozone for 24 hours. Within 6 hours the FOG had returned in the pre-react zones. After 12 hours, the foam had returned to the basins. We had verified that the ozone was the key to treating the FOG issue.

### Conclusion

The Titus Twister solved multiple issues that plagued our system. It cleaned up our lift station and kept the scum and rags in suspension and the ozone dissolved the FOG so the filamentous bacteria couldn't access their food source.

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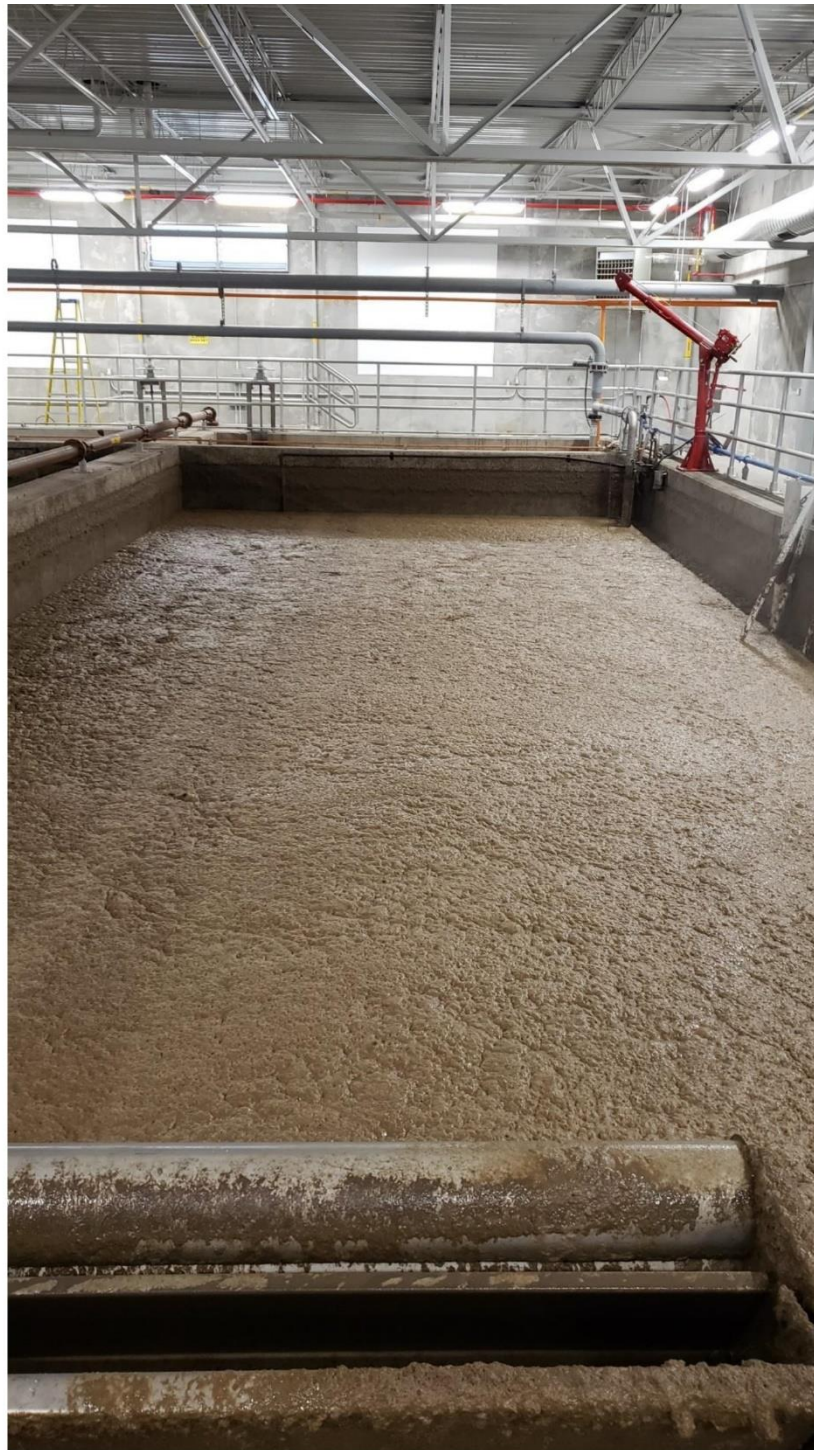


Figure 1: One of the basins in the SBR that is covered in foam produced from the filamentous bacteria. This was before the Titus Twister was started.

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Figure 2: One of the pre-react zones showing floating FOG and some foam accumulating.



Figure 3: The same pre-react zone as Figure 2 but after a couple days of the Titus Twister running. Notice minimal amount of FOG.

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Figure 4: One of the basins after a month of the Titus Twister running. There is no foam on the surface showing just mixed liquor.

**For more information:**

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