

Expansion

Provides Opportunity for Village of Sparta WWTP to Eliminate Final Tank Weir Cleaning

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Algae build up in final clarifier tank weirs and troughs can be a huge time drain for small municipal wastewater treatment plants. The final clarifier tank weir and effluent troughs must be kept clean and free of algae and other plant growth to assure that the plants will not have problems with TSS, low DO, and equipment plugging. The Village of Sparta WWTP is no exception, but with the installation of final clarifier weir and trough covers, they have successfully eliminated the growth of algae on the weirs and in the troughs.

The Village of Sparta Wastewater Treatment Plant is a small municipal wastewater treatment plant in western Michigan. It

is rated at a flow of .8 MGD, and is currently being expanded by Moore & Bruggink Consulting Engineers to a rate of 1.2 MGD. The plant operates with a full time staff of three people. For a plant of this size, the small number of operators keeps everyone on their toes with operation and maintenance of the wastewater plant, the eight lift stations that feed the plant, and also the collection system. With the expansion of the plant, there is now almost double the amount of equipment to maintain. There are no plans to add any staff members, so the staff will be pressed even further to wisely and effectively use their limited time. As in many wastewater treatment plants around Michigan, the final clarifier



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tank weirs and troughs required weekly cleaning and maintenance to keep the algae from building up and causing problems with TSS, low DO, and plugging of their chlorination equipment. See the picture located below showing weirs filled with only several days worth of algae growth before a cleaning.

As part of the expansion, Moore & Bruggink saw the chance to eliminate the weir and trough cleaning from the maintenance schedule and increase reliability of the plant chlorination system by putting fiberglass weir covers on the four final clarifier effluent weirs and troughs. The fiberglass weir covers were supplied by Nefco, and installed by Midwest Power Systems, who is the general contractor for the expansion project. The fiberglass weir trough covers work to eliminate algae growth by locking sunlight from reaching the weirs. Without sunlight, the algae are unable to grow. The results after three months of operation during the summer months have been amazing. The weirs were cleaned thoroughly before the covers were placed, and have not had to be cleaned once since that day. As shown in the picture below, there is no sign of algae growth on any of the weirs that were covered.

The covers are hinged in six-foot sections, which allow the plant staff to inspect the weirs at any point in time. The white

coloring provides UV resistance, and adds a very clean look to the plant. The plant staff is very impressed with the results of the trough covers. Denny Pecynski, the Superintendent of the Village of Sparta WWTP says “The trough covers have outperformed our expectations! We have not had to clean them once, and that frees up our time to focus on more important operational concerns.”

The weir trough covers will also save the plant staff money. Consider that the plant staff used to spend at least 10 to 15 hours a week cleaning the weirs and troughs of two final clarifiers during the spring through early fall. With the addition of two new final clarifiers, this could up to 20 to 30 hours per week! Assuming wages of approximately \$20 per hour, this could save the plant \$19,000 by allowing them to perform other tasks besides weir cleaning. This pays for the installation of the weir trough covers in just under four years.

Other weir and trough cleaning systems were investigated, but the fact that covers required no maintenance, and could be installed with minimal additional cost compared to the other options gave them the edge. This was the first time Moore & Bruggink has specified weir and trough covers in a wastewater plant, but they said they would definitely consider them for future projects. 🐟

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