S1.4.4 A Compact, Efficient and Expandable Title 22 Treatment System for Small Water Systems

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The community of San Simeon, CA was faced with a state fine due to violations of their discharge permit from their secondary effluent ocean outfall. The community was given the option to direct a portion of the fine funds towards an environmental improvement project that was related to the violation cause. The decision was made to pursue reducing their effluent discharge volume by installing a water reuse system to provide California Title 22 compliant water for local irrigation needs. Through innovative engineering and product selection the community was able to build a very simple and effective tertiary level treatment system for their wastewater flow which was installed within a small footprint at the WWTP and with modularity to allow for easy future expansion as the community recycled water demands expand.

Solution

The system installed includes an Amiad AMF²-36K microfiber filter rated for 20 micron particle removal followed by a HiPOx AOP system for disinfection.

The current operating capacity of the treatment system is approximately half of the 90,000 gallon average daily flow. One benefit of the system selected is that it is modular in design to allow expansion to double the treatment capacity so that the community can recycle 100% of their discharge flow for reuse.

Results

The AMF²-36K influent and effluent quality are continuously monitored to ensure that the system remains in compliance with the Title 22 permit requirements at all times. The influent turbidity does at times exceed 10 NTU. When this occurs, the effluent is automatically recycled back to the WWTP influent equalization basin for retreatment as it will not meet the permit parameters. Additionally, the WWTP has refined its operation to stabilize the secondary effluent turbidity.

Challenge testing of the disinfection capabilities of the HiPOx unit was performed using an MS2 stock solution. This testing confirmed the system's ability to continuously meet the disinfection criteria of the permit.

For permitting purposes the system also had to undergo coliform monitoring for 14 days to prove that it will consistently keep coliform below 1 MPN.

Conclusion

The Amiad AMF²-36K/APT Water HiPOx AOP system provided a simple, effective and expandable Title 22 compliant system for the San Simeon community. The system was installed within a small footprint without the need for significant construction which allowed the community to stay within their project budget. The simple system operation did not require the addition of District WWTP staff. The effluent quality meets State and community needs and can accommodate the changes in water quality which sometimes occur during the significant population fluctuations in the community.