

The City of Orlando Water Reclamation Division (OWRD) operates three water reclamation facilities which dispose the majority of their sludge through land application. The Florida Department of Environmental Protection (FDEP) prohibits land application of sewage sludge when the groundwater is within two feet of the ground surface to prevent pollutants from reaching Florida's primary drinking water aquifer. During wet periods or after storm events, OWRD is forced to store their sludge onsite, where storage capacity is limited. OWRD is exploring options for landfilling sludge, but finding a landfill willing to accept sewage sludge after a heavy rain event is challenging. Further, as drinking water utilities are required to provide treatment of PFAS chemicals to comply with new regulations, it is likely that reject streams will be discharged to the sanitary sewer system, which could result in higher PFAS concentrations in sludge. If PFAS limits are established for land application of sewage sludge, this may limit OWRD's ability to land apply the material. As a result, OWRD is looking for a long-term solution that minimizes or eliminates the City's dependence on land application as a disposal method and addresses the current concerns regarding PFAS contamination of biosolids.

OWRD evaluated a range of sludge management alternatives including composting, drying, incineration, and other technologies with the goal of reducing the volume of biosolids generated and/or treating for emerging contaminants including PFAS. OWRD also conducted PFAS sampling to understand the concentrations in the influent, effluent, and biosolids. During its evaluation, OWRD identified a potentially viable emerging treatment option, supercritical water oxidation (SCWO). SCWO brings the sludge to a high temperature and pressure state, then introduces air to oxidize the organic material in sludge. The organic material is converted to water, carbon dioxide and heat, and chemicals like pesticides, solvents and PFAS are destroyed. OWRD's initial analysis indicated that SCWO is cost-effective and reduces the volume of solids by at least 70%.

OWRD is partnering with FDEP to run a three-month pilot of the SCWO system at its Iron Bridge wastewater treatment plant. FDEP is funding the pilot through a Clean Water SRF emerging contaminants fund grant, which enables OWRD to evaluate SCWO's effectiveness at destroying PFAS chemicals. During the pilot, OWRD will lease a 6-ton per day SCWO treatment unit and will work with the technology vendor to sample the feed sludge and treated effluent streams for PFAS, nitrogen species and ortho-phosphate. If the pilot meets the City of Orlando and FDEP's testing goals, FDEP has expressed interest in funding a full scale 30-ton per day SCWO unit at another one of OWRD's facilities, which will allow the City to study the long-term operating capabilities of the system.

### Eligibilities:

Per Section 603(c)(1) of the Clean Water Act (CWA), the construction of a capital project at a publicly owned treatment works is eligible. The proposed project includes pilot testing activities and monitoring that are working towards the construction of a new treatment process at a water reclamation facility.

To be eligible for the CWSRF emerging contaminants funds:

1. The presence of an emerging contaminant(s) needs to be confirmed. OWRD tested for PFAS in the influent, effluent and sludge of all three of their water reclamation facilities.
2. A capital project needs to be identified. The pilot testing activities and monitoring proposed as part of the project will guide the implementation of a capital project at one of OWRD's treatment facilities.

All of the above make the proposed project eligible for CWSRF emerging contaminants funds.

**Emerging Contaminant:**  
*PFAS, Pharmaceuticals and personal care products (PPCPs)*

**Project Type:**  
*Biosolids technology pilot*