

Fort Wayne City Utilities (FWCU) operates the Fort Wayne Water Pollution Control Plant (WPCP) for more than 254,000 residents of the city and surrounding service areas in northeast Indiana. The WPCP was designed for an average daily flow of 74 million gallons per day (MGD) and discharges to the Maumee River. Treatment includes preliminary, primary, and secondary treatment with activated sludge, followed by disinfection. Sludge is anaerobically digested and conveyed to the city's Biosolids Handling Facility for further processing and beneficial reuse. FWCU plans to use Clean Water State Revolving Fund (CWSRF) emerging contaminant (EC) funding to characterize a range of ECs within the collection and treatment systems and explore potential mitigation strategies or treatment technologies. FWCU is also considering coordinating with several smaller utilities and industries in the surrounding area that generate or accept liquid or solid waste that may face similar EC challenges, which could reduce and share the potential burden of implementing EC treatment technologies.

FWCU initiated the comprehensive program by reviewing potential ECs to monitor. FWCU considered industrial and agricultural activities in the area as well as available laboratory capabilities. This review identified 75 ECs for monitoring, including per- and polyfluoroalkyl substances (PFAS), pharmaceuticals and personal care products (PPCPs), and microplastics. After reviewing and qualitatively identifying the ECs, FWCU used CWSRF EC funding to conduct sampling and analysis at the WPCP, the city's Biosolids Handling Facility, and at known or suspected PFAS dischargers within the collection system. These efforts are separate from – but complementary to – potential industrial pretreatment program activities. Industrial pretreatment may offer opportunities to treat highly concentrated sources of ECs at the source or in the collection system before they reach the WPCP. FWCU is also considering laboratory equipment upgrades at the WPCP, including the installation of new PFAS-specific analytical equipment. Analysis of ECs is currently conducted externally through contracted laboratories.

Based on findings from the sampling and analysis activities, FWCU will determine which technology pilots are most appropriate. The WPCP has an Innovation Team and an internal lab that has conducted pilot projects in the past for both liquid and solid waste streams. FWCU is considering five technologies for liquid treatment of influent, effluent, and side stream flows: foam fractionation combined with electro-oxidation, foam fractionation with supercritical water oxidation (SCWO), granular activated carbon, reverse osmosis, nanofiltration, and ion exchange. The five technologies FWCU is considering for post-anaerobic digestion treatment of thermally dried solids are gasification, pyrolysis, incineration, SCWO, and smoldering/combustion.

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 for CWSRF funding. The proposed project includes sampling and analysis and potential pilot testing activities that will guide the implementation of a capital project at the WPCP.

To be eligible for the CWSRF emerging contaminants funds:

1. *The presence of an EC(s) needs to be confirmed.* FWCU confirmed the presence of PFAS qualitatively using the presence of facilities known or suspected to discharge PFAS upstream of the WPCP. Using the CWSRF EC funds, FWCU is conducting a comprehensive EC sampling and analysis program at the WPCP, the city's Biosolids Handling Facility, and within the collection system.
2. *A capital project needs to be identified.* The monitoring activities and potential pilot projects proposed as part of the project will guide the development and implementation of a capital project at the WPCP.

Based on the points outlined above, the proposed project is eligible for CWSRF EC funds.

Emerging Contaminants:

PFAS, PPCPs, microplastics

Project Type:

Technology pilot; Lab equipment purchase