Largest Compressible Media Filter in the World

100-MGD Enhanced High-Rate Facility for Both CSO and Tertiary Treatment

CASE STUDY

Location: **Springfield, Ohio**
Owner: **City of Springfield**
Engineer: **Black & Veatch**
Contractor: **Kokosing Construction**

Project Overview

Springfield Ohio has implemented the key component of its solution to control combined sewer overflows (CSOs) and protect the beneficial uses of Mad River, a whitewater trout stream. The solution is a 100 MGD enhanced high-rate treatment (EHRT) facility using the WWETCO compressible media FlexFilter™. This facility has almost two years of operational data and is producing secondary treatment effluent criteria.

The FlexFilter CMF technology was borne out of a 5-year national demonstration program in Columbus, GA, that evaluated multiple technologies for removal of pollutants and disinfection of pathogens in CSOs. This program was peer reviewed by a team of experts under the oversight of the Water Environment Research Foundation (WERF) and the US EPA Office of Research and Development (ORD).

Technology Selection

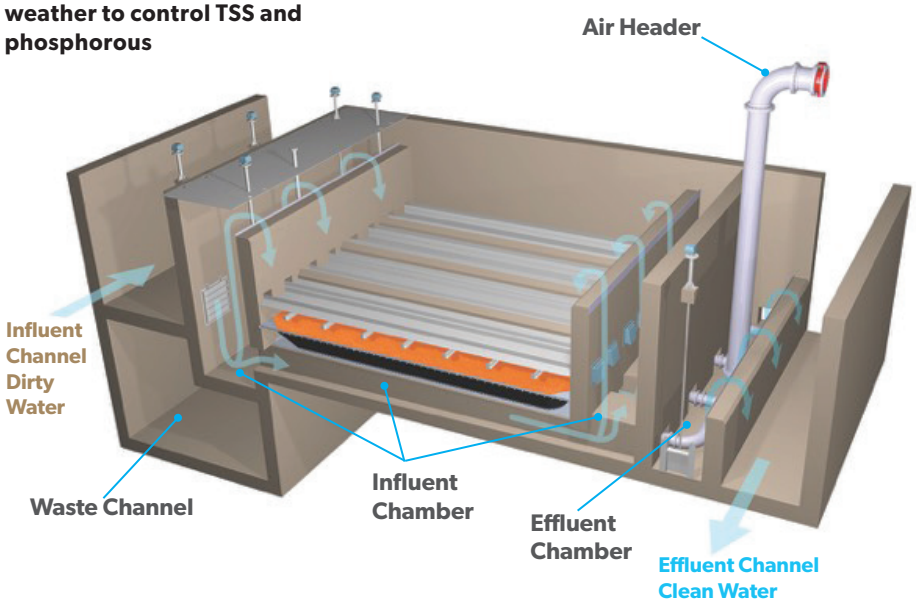
The WWETCO FlexFilter was evaluated against the ACTIFLO® and DensaDeg® technologies. Both economic and non-economic factors were considered in the selection of the EHRT process.

The evaluation revealed that the life cycle costs for the three technologies were virtually the same. The FlexFilter was slightly higher in the estimated construction cost. However, the top five factors that set the FlexFilter far above the competition were:

- **No chemicals required for solids removal and minimal solids production**
- **No need to increase plant staffing**
- **Simplicity of process and operations**
- **No ramp-up required and 100% turn down capability**
- **Dual-use, tertiary ability during dry weather to control TSS and phosphorous**

Equipment Selection

The FlexFilter EHRT includes overflow screening (1/2" openings), gravity flow to an 11-cell FlexFilter matrix, chlorination in a 10-minute serpentine contact basin (at 100 MGD), dechlorination and effluent pumping. The facility was constructed at a cost of $33.5 million in 2013/2014.



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Performance and Operation

With 2 years of operation complete, the Springfield EHRT facility has consistently produced an effluent that meets secondary treatment criteria for both total suspended solids (TSS at an average 16 mg/1) and carbonaceous biochemical oxygen demand (CBOD at an average 20 mg/1).

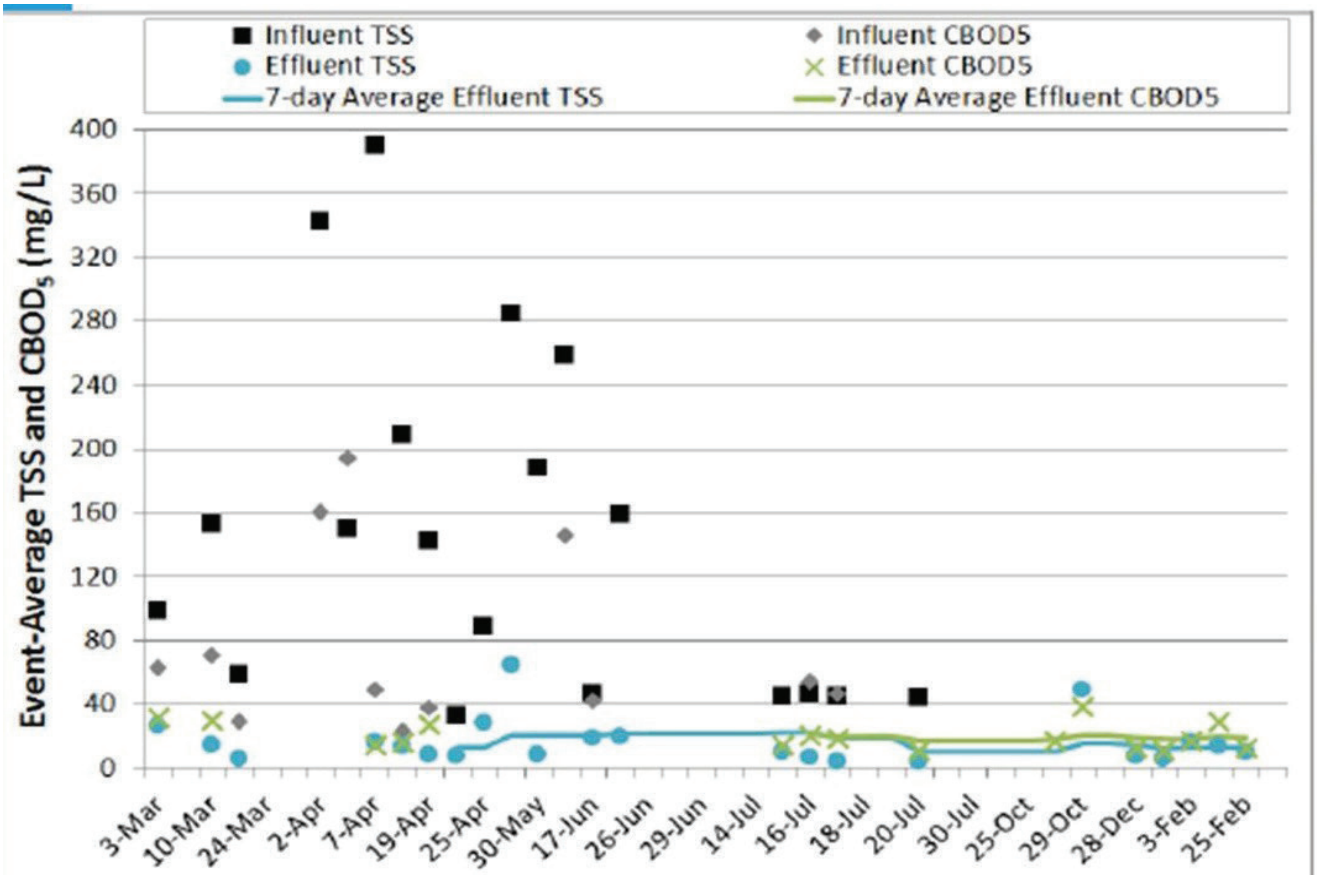
The FlexFilter effluent is disinfected and dechlorinated and meets E. coli water quality standards for bacteria.

Operation of the FlexFilter EHRT is unmanned and has treated over 40 events since placed on line. It is fully automatic including start-up, shut-down, post-event cleanup and periodic exercise. There has been no debris build-up or odor issues. The dry weather biological plant operation has improved because backwash, which contains the organic food, is returned ameliorating the starvation that can occur during long dilute wet weather events.

Effluent Averages*		
TSS	mg/L	16
$CB0D_5$	mg/L	20
NH3-N	mg/L	2.5
TP	mg/L	0.6
DO	mg/L	8.7
TRC**	mg/L	0.02
E. Coli	#/100 mL	56

*41 events 3/3/15 - 2/25/16
** 1.0 - 8.4 mg/L NaOCl dose

Performance of Auxiliary EHRT Facilities



Excellent Effluent Quality and Disinfection

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