

REQUESTED BY:  
SFERRA

LAW DEPARTMENT  
DRAFT NO. 3600

TITLE

AN ORDINANCE FOR THE PURPOSE OF AUTHORIZING THE MAYOR AND THE DIRECTOR OF PUBLIC SERVICE AND SAFETY TO ADVERTISE FOR BIDS AND TO ENTER INTO CONTRACT(S) THAT ARE NECESSARY TO SECURE AND INSTALL EQUIPMENT, MATERIALS AND/OR OBTAIN PROFESSIONAL SERVICES FOR OF A SEWAGE SLUDGE DISC THICKENER SYSTEM, AND DECLARING AN EMERGENCY.

ORDINANCE NO. 12665/16

WHEREAS, the City of Warren owns, operates and maintains a public Water Pollution Control facility (WPC) for the purpose of converting waste water to clean water by removing organic waste materials from the water in conformation with all government and EPA regulations; and

WHEREAS, the Water Pollution Control sludge dissolved air flotation thickener has historically experienced difficulty consistently thickening both primary and secondary sewage sludge resulting in long periods of floating sludge throughout the other treatment processes; and

WHEREAS, a five-month trial of a rotary sludge disc thickener demonstrated a superior means to consistently thicken Water Pollution Control sludge and not generate additional and detrimental recycled flows; NOW THEREFORE

BE IT ORDAINED by the Council of the City of Warren, State of Ohio:

Section 1: That the Mayor and the Director of Public Service and Safety be, and hereby are, authorized to advertise for bids necessary to secure and install the necessary equipment, materials and obtain professional services, in accordance with plans and specifications on file with the Director of Public Service and Safety. After advertising for bids according to law, the Mayor and the Director of Public Service and Safety are hereby authorized to enter into whatever contract(s) which may be useful or necessary to accomplish said purpose.

Section 2: That the funds for payment of said contract(s) shall be paid from Account No. 703-450-560-200 Construction.

Section 3: That the contract(s) shall first be approved by the Law Director and the City Auditor be, and hereby is, authorized to disburse said funds upon receipt of proper vouchers, signed by the proper persons, for the stated purposes and for no other purpose.

Section 4: That this Ordinance is hereby declared to be an emergency measure necessary for the immediate preservation of the public peace, health, welfare and safety, and for the further reason to obtain and maintain consistent compliance with the EPA requirements. WHEREFORE, this Ordinance shall go into immediate effect.

Passed in Council this 27<sup>TH</sup> day of July, 2016.

SIGNED: [Signature]  
PRESIDENT OF COUNCIL

ATTEST: [Signature]  
CLERK

FILED WITH THE MAYOR: 7-27-16

DATE APPROVED: 7-27-16

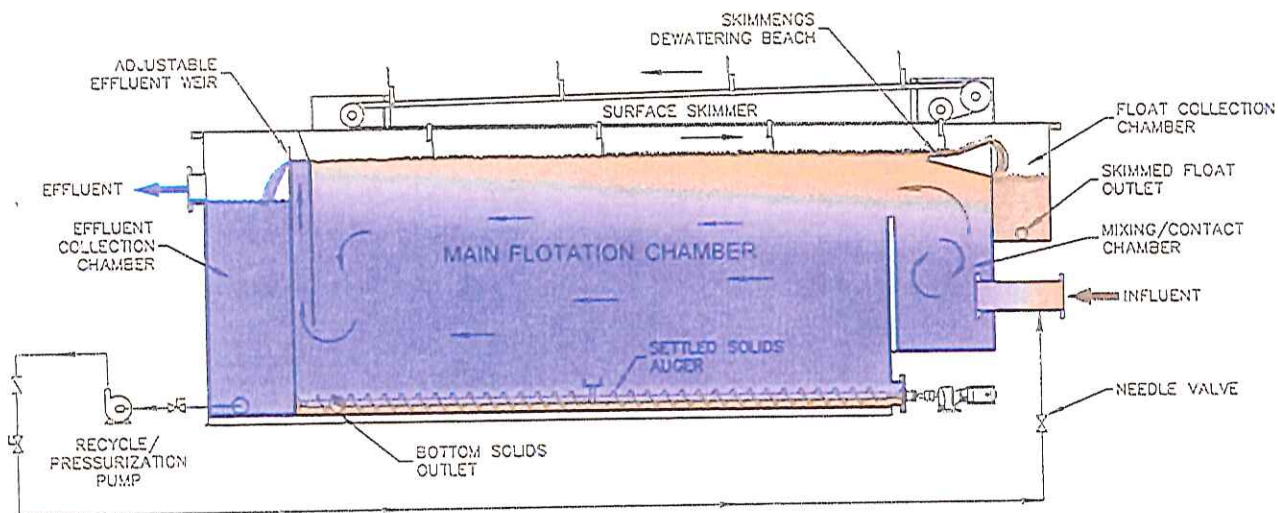
[Signature]  
MAYOR, CITY OF WARREN

### Installation of a WPC Disc Thickener System

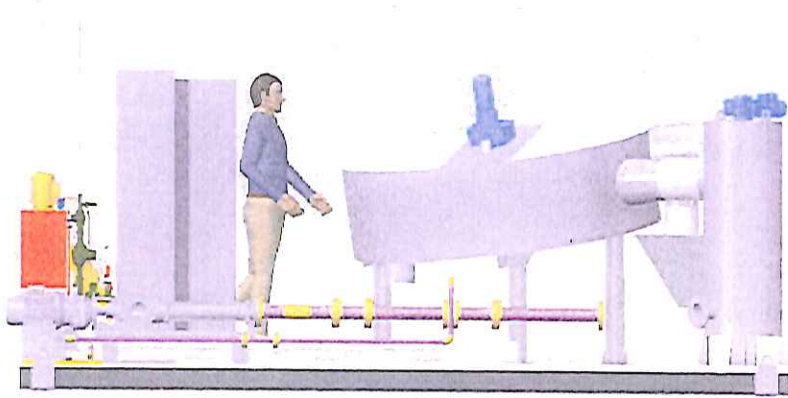
There are two sources of sludge in the process of cleaning the wastewater. Primary Sludge results from simple gravity settling of the raw sewage and contains heavy organic solids, food particles and hair. Secondary Treatment adds a mass of microorganisms to the settled sewage to eat the dissolved food left in the water. After the contact, the organisms are gravity settled in a clarifier and most of the organisms are returned to eat more food. To control the population of microorganisms, a steady stream of secondary sludge is removed from the system. This is called Waste Activated Sludge. The combination of primary sludge and waste secondary sludge is currently thickened in a dissolved air flotation (DAF) thickener.

The dissolved air flotation (DAF) thickener adds a certain kind of polymer to the sludge that makes the organic solids clump together. Air is fine bubbled into the tank and the air carries most of the polymer-clumped solids to the top of the water. Skimmers ride along the surface of the tank and push the thickened floating sludge into a thickened sludge well from which the sludge will be pumped for further treatment.

Some of the solids sink to the bottom. The DAF originally had sludge collectors to scrape the heavy solids to another sump for removal from the tank. The bottom sludge collectors broke many times and were removed from both DAF tanks rendering the tanks incapable to removing any settled sludge. The clear water from the tank flows under an effluent weir to be recycled. Unfortunately, many float solids find their way past the effluent weir and end up being recycled to the wet stream processes. Despite much staff effort, floating solids have been found in the Primary Tanks, covering the secondary aeration tanks, in the mixed liquor channel, covering the final clarifiers, and even in the chlorine contact tanks. This has resulted in many extra hours of tank cleaning and has contributed to EPA violations of our treated water quality. Even if the bottom solids scrapers had not been removed, most DAF units have long since been replaced by far more efficient sludge thickening equipment.



The challenge then was to find another sludge thickening process that would be small enough to fit into the remaining existing space and effectively pre-thicken our sludge. WPC staff members toured the Madison Wastewater Treatment Plant and were impressed with the Rotary Sludge Disc Thickener they operated. It had a much smaller footprint than other sludge thickening processes and effectively thickened the sludge.



A smaller trailer-mounted disc thickener unit was requested for demonstration at this facility. The week-long free demonstration was very effective. We were able to work out an arrangement to rent the unit for five months to see how well it operated under various plant conditions. The unit thickened our waste secondary sludge very well. The sludge entering the unit is mixed with polymer and spread over a porous rotating disc. The water flows through the small holes in the disc and the polymer-clumped solids stay on top of the disc. Plows move the sludge rows back and forth to further dry the thickening sludge furrows. Then the thickened sludge is scraped off the disc to be pumped for further treatment.



A local Engineering Firm, MS Consultants, was hired to provide professional services to coordinate the purchase and installation of a new sludge disc thickener system. Until the plant refurbishment is complete in about five years we may still need to rely on the DAF units for primary sludge thickening. The new rotary sludge disc thickeners will handle all of the secondary sludge thickening.

The current estimate for the cost to purchase and install the new system is \$555,935 which will be paid out of WPC unencumbered reserves.

If you have any additional questions or would like to see the current system in person, feel free to contact me.

Ed Haller, Director WPC

