



Town of Suffield, WPCA
844 East Street South, Suffield, Connecticut 06078

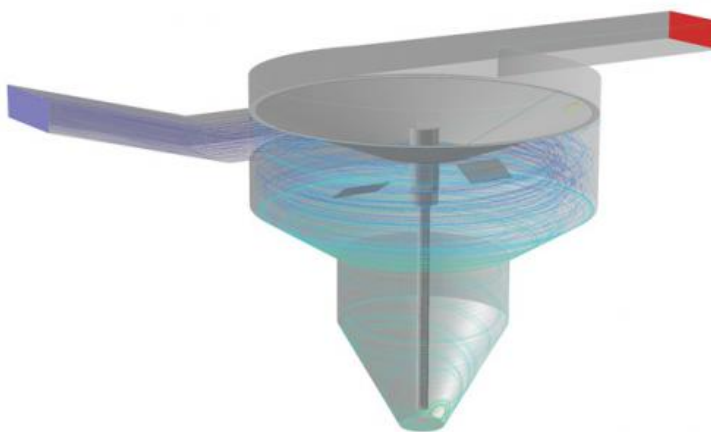
WPCA Plant Process Flow Description

Headwork's Building

All flow enters the plant through the headworks. Here the raw wastewater is screened by a six millimeter fine screen called a step screen, and a hand raked coarse screen.



Flow also passes through the grit chamber, where rocks, sand and inorganic particles are removed.



Cyclone grit system



Final grit product to landfill

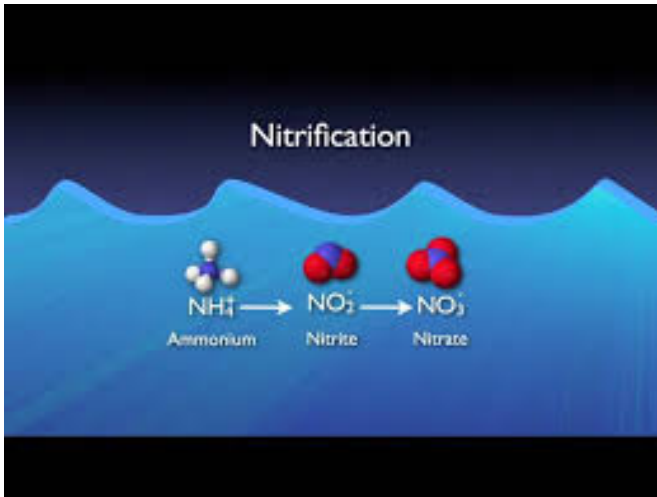
Aeration Tanks

The raw wastewater flows through a distribution box, where it mixes with return activated sludge from the clarifiers and is introduced into our "Carousel" extended aeration tank biological treatment. Here, microbes remove pollutants and form floc, which is activated sludge.



In 2001, the Connecticut DEEP imposed new strict regulations on treatment facilities to remove a major problem nutrient from our treated discharge. The biological removal process, called nitrification, converts ammonia in human waste to nitrate by adding oxygen. We have configured the aeration tanks through our

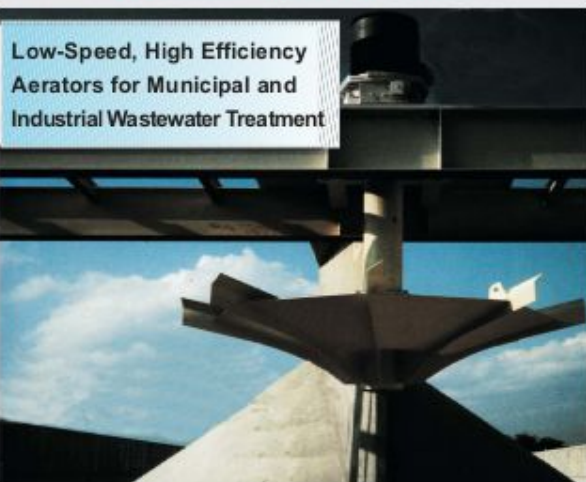
plant automation system, called SCADA (Supervisory, Control, and Data Acquisition) to have low oxygen zones, which force the microbes to use nitrogen instead of oxygen (called denitrification), therefore providing nitrogen removal.



The aerators, pictured below, are four 75 horsepower mixers, two per tank, that provide mixing and oxygen for the biological process.

EIMCO Mechanical Surface Aerators

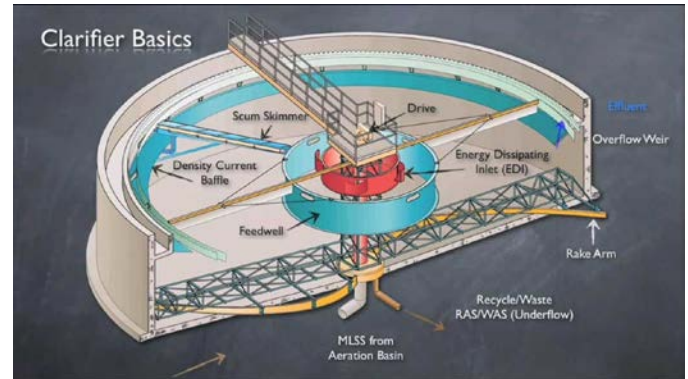
Low-Speed, High Efficiency Aerators for Municipal and Industrial Wastewater Treatment



DORR-OLIVER EIMCO

Secondary Clarifiers

Here the flow from the aeration basins is slowed down, and given time to settle, the cleaned wastewater separates from the activated sludge. As the sludge is settled, a portion is returned to the aeration basin by Return Activated Sludge (RAS) pumps, and a portion is sent to the Digester building holding tanks Waste Activated Sludge (WAS) for dewatering with the belt filter presses. Daily calculations tell us how much to waste to keep the plant in balance.



We have 3 Final Clarifier's with a volume of 300,000 gallons each.

Effluent Disinfection – Ultraviolet Light (May 1 – September 30)

The clarified wastewater flows to the Ultraviolet (UV) light disinfection system. The dose of the UV light, which deactivates the disease causing bacteria DNA so they die, is determined by the flow rate. The flow is measured at the end of this tank by a flow meter. After the flow meter, the cleaned wastewater flows through a pipe, under the Windsor Locks canal, and enters the Connecticut River.

Solids Disposal

The WAS, waste activated sludge, is pumped from one of two, 100,000 gallon tanks to two belt filter presses. Polymer is mixed with the sludge to coagulate the solid particles and facilitate dewatering of the 3% solids (thin muddy consistency) liquid sludge. The sludge is dewatered to a new consistency comparable to brownie or cake crumbs and loaded into a dump truck through a chute, and is then taken to Hartford MDC for final disposal.

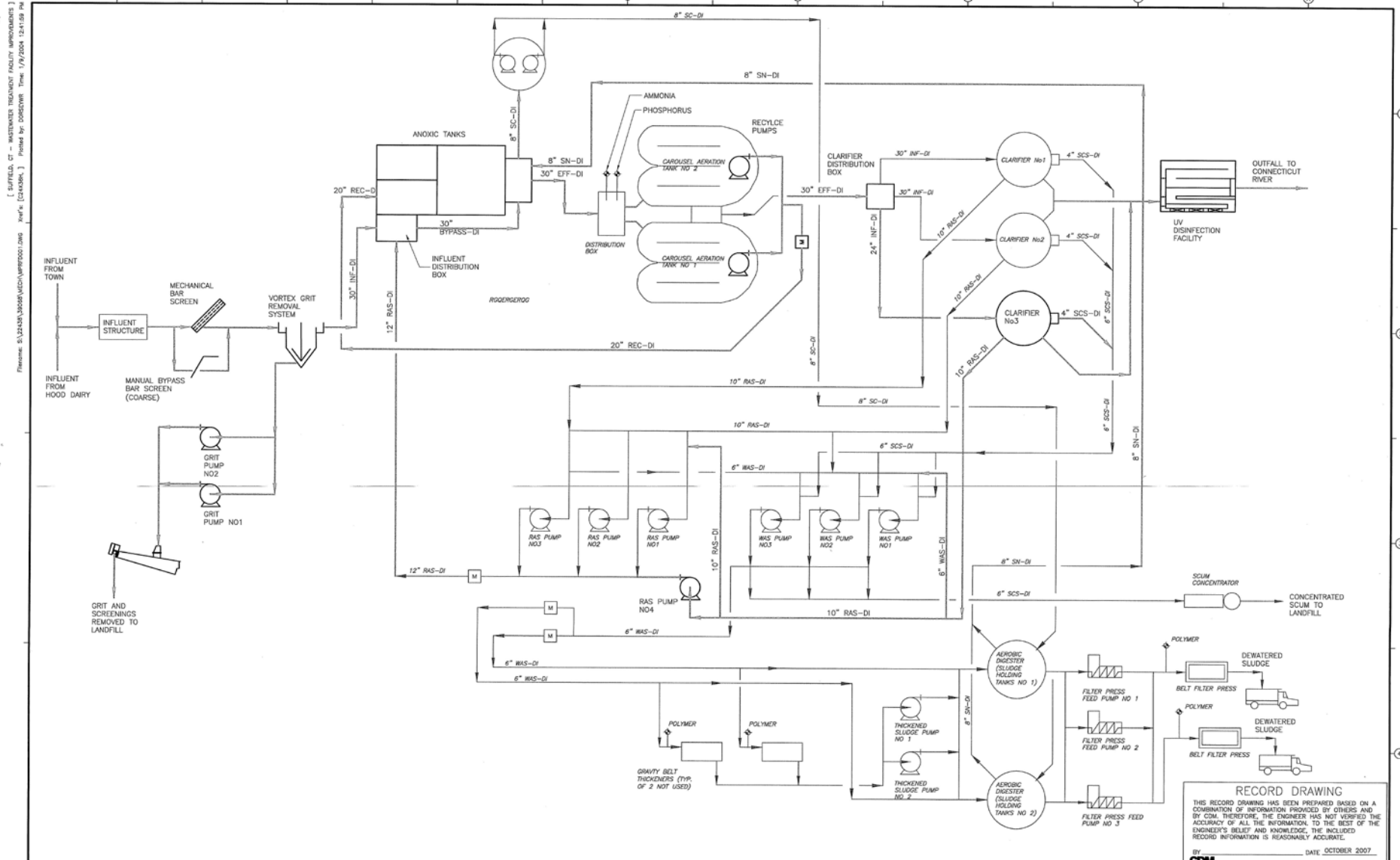


Above: Belt Filter Press



Above – Sludge “Cake”

SUFFIELD WPCA PROCESS FLOW DIAGRAM



[SUFFIELD, CT - WASTEWATER TREATMENT FACILITY IMPROVEMENTS]
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 DATE: APRIL 2005

CDM Camp Dresser & McKee Inc.

TOWN OF SUFFIELD, CONNECTICUT
 SUFFIELD WATER POLLUTION CONTROL AUTHORITY
WASTEWATER TREATMENT FACILITY IMPROVEMENTS

PROCESS FLOW DIAGRAM
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