



Photo tour of Cortland's Wastewater Treatment Facility



Bar screen:
This screen removes large objects to protect
the machinery in the plant
(image not from Cortland)



Raw sewage influent well:
Raw sewage is collected here with waste sludge
(excess bacteria) from the secondary clarifier.

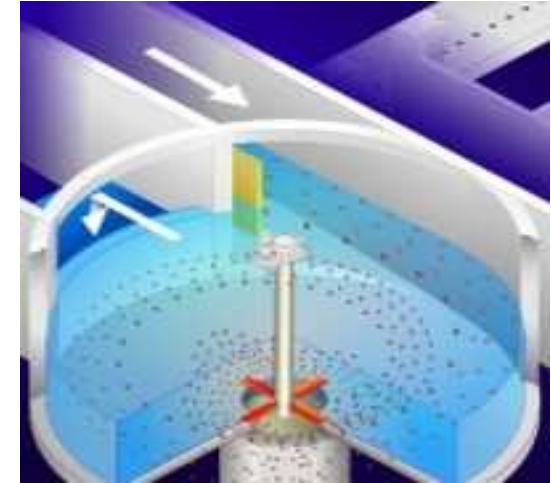


Emergency generator:
This is used to keep the plant
running if power is lost.



Raw sewage pump:
These are used to transfer water from influent well to grit removal chamber.
Operation of the pump(s) is responsible for approximately half of the
35,000\$/month electricity bill.

Physical process



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Grit removal chamber:
Heavier inorganic material, such as coffee grounds and sand, settle out
and is removed to protect equipment.
(images not from Cortland)

Physical process



Primary clarifier:

Slows water down to allow material to settle out of the water. The material that settles out due to gravity is collected at the bottom and is called sludge. It is pumped over to the anaerobic digester. Excess bacterial that settled out of the secondary clarifier is removed from the system here.

Biological process



Aeration basin:

Bacteria are used to convert the organic material in the wastewater into more bacteria. Air is bubbled through to provide oxygen for this process.

Physical process



Secondary clarifier photo 1:
Water from aeration basin flows by gravity into the secondary clarifier

Physical process



Secondary clarifier photo 2:

This photo show dead bacteria collecting in the first section of the secondary clarifier. It will skimmed off of the top of the water and sent to the anaerobic digester.

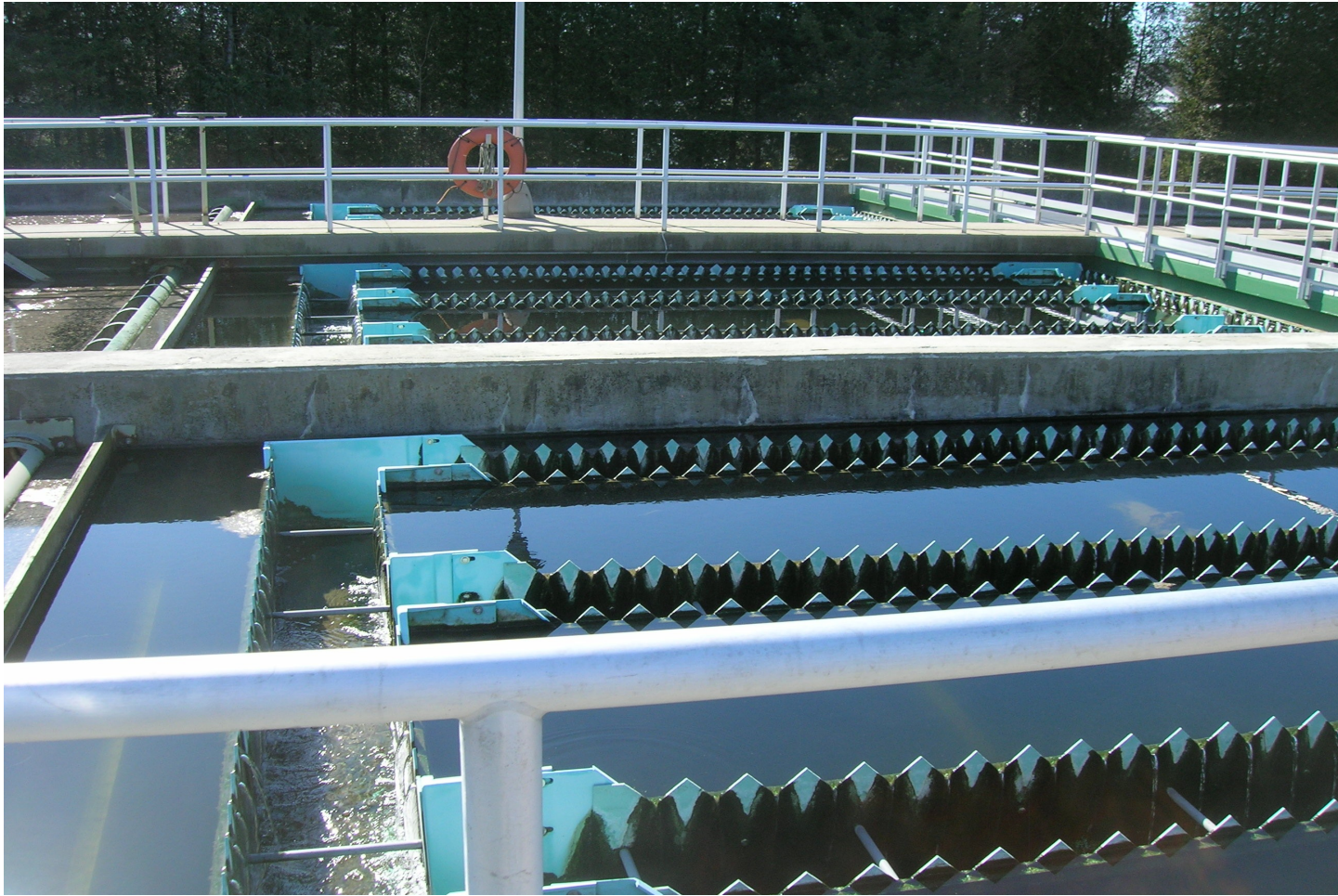
Physical process



Secondary clarifier photo 3:

The bacteria generated in the aeration basin is allowed to settle out as sludge. It mostly consists of healthy bacteria so a large portion is returned to the aeration basin to keep the population up. The bacteria that is not needed is sent to the influent wells so that it can settle out in the primary clarifier and be sent to the anaerobic digester.

Physical process



Secondary clarifier photo 4:
V-notch weir at the end of the secondary clarifier starts the re-aeration process.

Physical process



Secondary clarifier photo 5:
Aeration at the end of the secondary clarifier

Physical and sometimes chemical process



Chlorination contact tank:

Chlorine is added between May 15th and October 15th to disinfect the water before it is released. This tank ensures that the chlorine is in contact with the water long enough for disinfection to take place. The water is dechlorinated before being discharged into the river to protect the environment. Re-aeration also continues in this tank to increase the dissolved oxygen levels.



Effluent is released into the Tioughnioga river in Cortland

Biological process



Anaerobic digester:

The sludge collected from primary clarifier is sent here to be converted into more inert forms. Two populations of bacteria are catered to in these tanks by carefully regulating the temperature and pH. Methane, a by-product of this process, is collected to help heat the plant.

Physical process



Belt dewatering press: This machine reduces the amount of water in the sludge from the digester. After being run through this press the material, called sludge cake, is loaded into dump trucks and taken to the landfill for disposal.

(image not from Cortland)



Dewatered sludge cake:

In an agreement with the landfill, sludge is disposed of for free as long as the wastewater treatment plant accepts and treats the leachate from the landfill.

Leachate is water that has percolated through the landfill.