

City of Gardiner

Wastewater Treatment Plant



A little history:

- Before 1982, all waste went into the Kennebec. That's over 365 million gallons per year
- Between 1982 and 2005, we were able to shorten that to only 20 million gallons of waste flowing into the river
- Now we only allow less than 2 million gallons of waste to enter the river untreated.
- Our goal is to bring that number down to zero and prevent any and all waste from draining into the Kennebec

Goals of the Wastewater Treatment Plant include:

- Maintaining the quality of the water in the Kennebec River.
- Preventing the contamination of the drinking water.
- Allow for boating, swimming, and other activities.
- Protecting the aquatic life, such as fish and clams.

What we try to do:

- Target disease-causing bacteria such as Typhoid, Cholera, Dysentery, Polio, and Hepatitis
- Target oxygen-depleting organics that are found in human waste
- Get rid of toxins such as mercury, copper, and other metals.
- Screen out visible contaminants like paper and plastic

The entire sewage treatment process begins at the pump stations. The sewage is pumped through pump stations around the city all the way to the plant.



The South
Gardiner Pump
Station



The Main Avenue
Pump Station



The Screw Pumps



The
Screw
pumps
bring the
sewage
into the
plant.

They have to turn constantly in order to bring the sewage in 24 hours, 7 days a week.



Once the sewage is pumped up the Screw
Pumps...



The Mechanical Bar Rack removes the
screenings from the sewage. We then bring the
screenings to the Hatch Hill landfill.



Once the screenings are removed, the sewage goes to a big tank called a clarifier

The clarifier helps separate the sludge from the water. Since this is the first clarifier, it is called the primary clarifier.

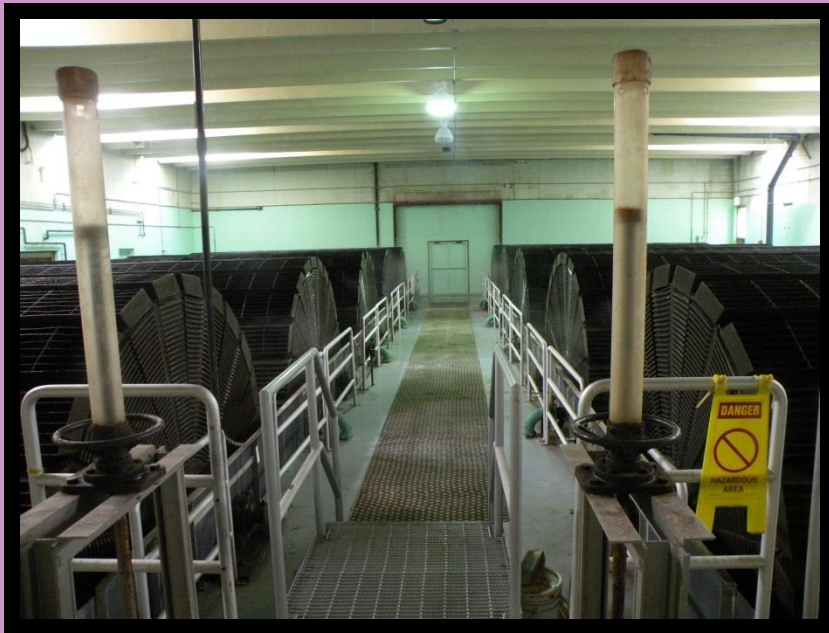


In this picture, Art Robinson measures the height of the sludge in the clarifier.

We measure the sludge levels to see if we are pumping out enough of it to the next stage.

This is where the sewage splits up. The water goes to one area of the plant, while the sludge goes to another.

The water!

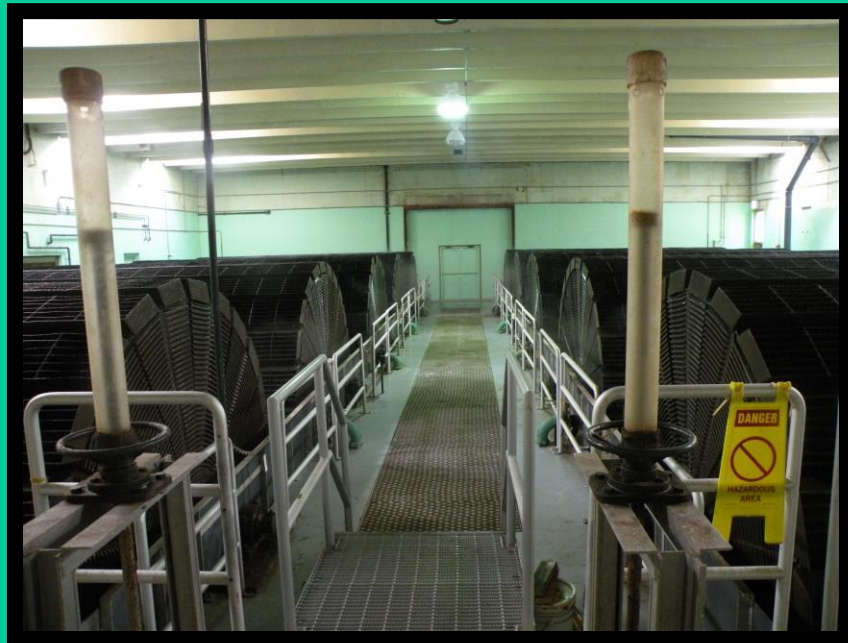


The sludge!



First we'll see where the water goes.

The water flows from the clarifier to the RBC's (Rotating Biological Contractors). The RBC's are covered in microorganisms that eat a lot of remaining sludge from the water.



But not all of the sludge gets eaten. A lot of the sludge sticks to the organisms themselves, forming big clumps.

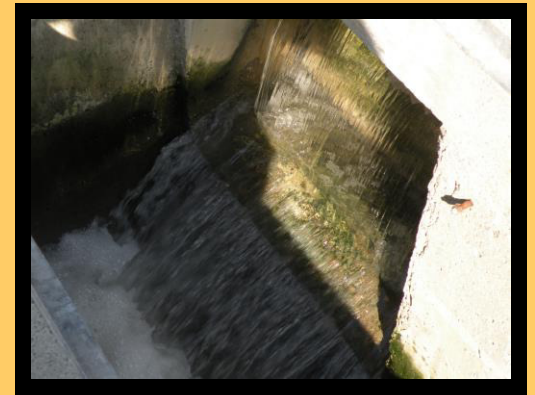


After the RBC's, the water goes into the secondary clarifiers. They settle the last of the sludge from the water. The clumps formed on the RBC's fall off and sink to the bottom of the clarifier.

This step also adds chlorine, a chemical that kills pathogenic bacteria (disease causing), and sodium bi-sulfite, a chemical that removes the chlorine so that we don't contaminate the river.



Once the water leaves the clarifiers, it enters the contact tanks before leaving the plant.



The contact tanks finish the process, they bring the levels of the pathogenic bacteria down to levels that won't hurt the river environment.



You've seen what happens to the water, but what about the sludge?

Larry Whitmore, a plant technician, oversees the Digester Tanks. He is in charge of separating the remaining water from the sludge using these big tanks.



The sludge is then pumped from the Digester Tanks to the Screw Press. The Press compacts and dries the sludge to reduce its weight.



Larry Whitmore is in charge of watching the Press. If the sludge is too thick, it will clog up the machine.



The sludge goes from the Press into a giant dumpster. When the dumpster is full, it is taken to New England Organics, where the sludge goes through the composting process. Then the compost is sold for use in gardens and soil supplements.

So you've seen what happens to the sewage, but how do we know the new water is safe to go out to the river?

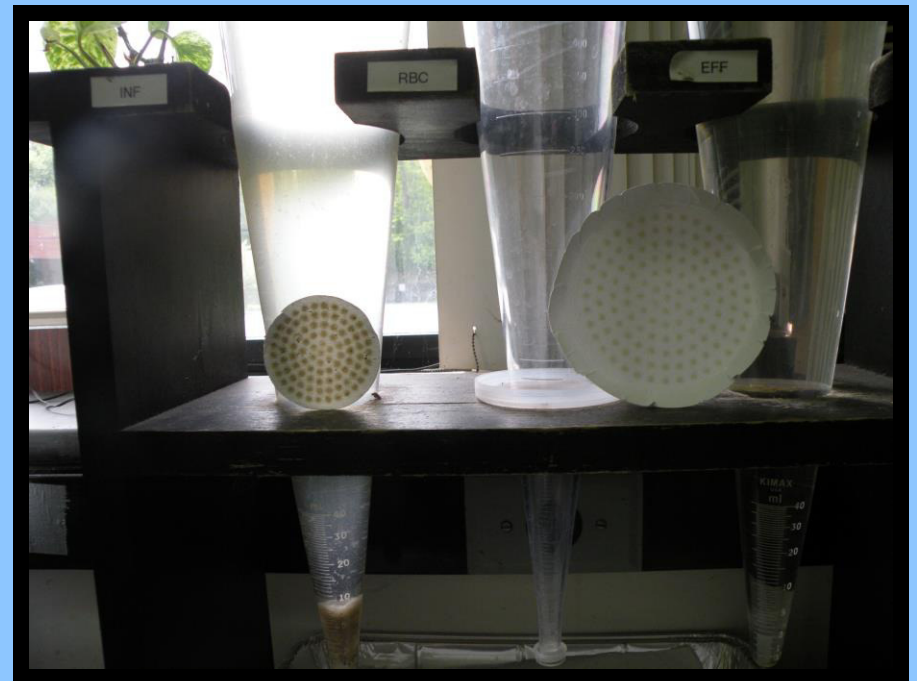


We do a series of laboratory tests to make sure the water will not contaminate the river.

The BOD test is used to measure organic loads to treatment plants, determine plant efficiency, and control plant processes



We do settleable solids tests and the results are recorded in milliliters/liter.



In order to keep the plant running and the sludge flowing, we have to keep the machinery in tip-top shape.



Plant Mechanic Jeff Hatch works on the blowers. The blowers make the RBC's turn so that all of the microorganisms living on them are in contact with the water.



This generator keeps the plant running strong during power outages.

The staff at the wastewater plant works with a lot of chemicals, and the sewage is filled with pathogenic bacteria. It is very important that we keep the plant clean and keep the harmful bacteria in the water.



Craig Hopkins cleans the floors of the plant with a power scrubber. He also cleans the clarifier tanks so the sludge doesn't build up.

Working at a wastewater plant is ideal for many different careers.

- Engineers
- Mechanics
- Chemists
- Biologists
- Environmental Scientists
- Industrial Operators
- And many more..



Lab Technician Mary Bowers performs tests on the sewer water.

Our main goal at the wastewater plant is protecting the environment for everybody, including birds!



We even have a few living here at the plant with us.