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# Carnation Treatment Plant NEWS

Wastewater treatment in Carnation – warming freezing pipes with blow torches, keeping bacteria alive, and sleepovers in the plant – what a year it was for our plant operators!

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## LEARN MORE ABOUT WASTEWATER TREATMENT IN YOUR AREA!

King County Wastewater Treatment Division's (WTD) goal as a community partner is to:

- Share information about operations and maintenance activities
- Provide educational opportunities
- Minimize surprises from our operations and maintenance activities

Interested in learning more about your local treatment plant? Check out our website where you can learn more about our state-of-the-art treatment process, how it promotes wetland enhancement at the Chinook Bend Natural Area, and more!



[kingcounty.gov/depts/dnpr/wtd/system/carnation](http://kingcounty.gov/depts/dnpr/wtd/system/carnation)



### OUR STAFF KEEP THE PLANT MOVING!

Inside are just a few examples of how our operations and maintenance staff play a vital role in keeping the Carnation Treatment Plant operational, especially during winter. They are on the front line of public health twenty-four hours a day, seven days a week, and we deeply appreciate them!

Two of our Carnation Treatment Plant operators: Tyler Stiltner (left) and Dustin Harris (right)



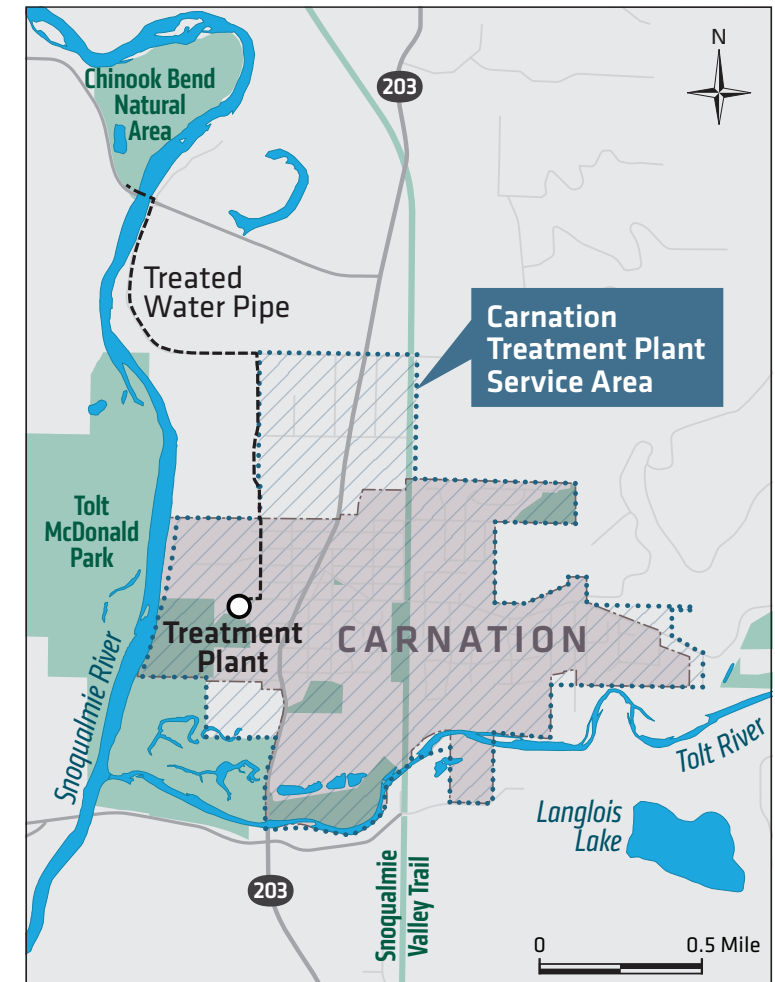
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### DO YOU KNOW WHERE WATER GOES AFTER YOU SEND IT DOWN THE DRAIN?

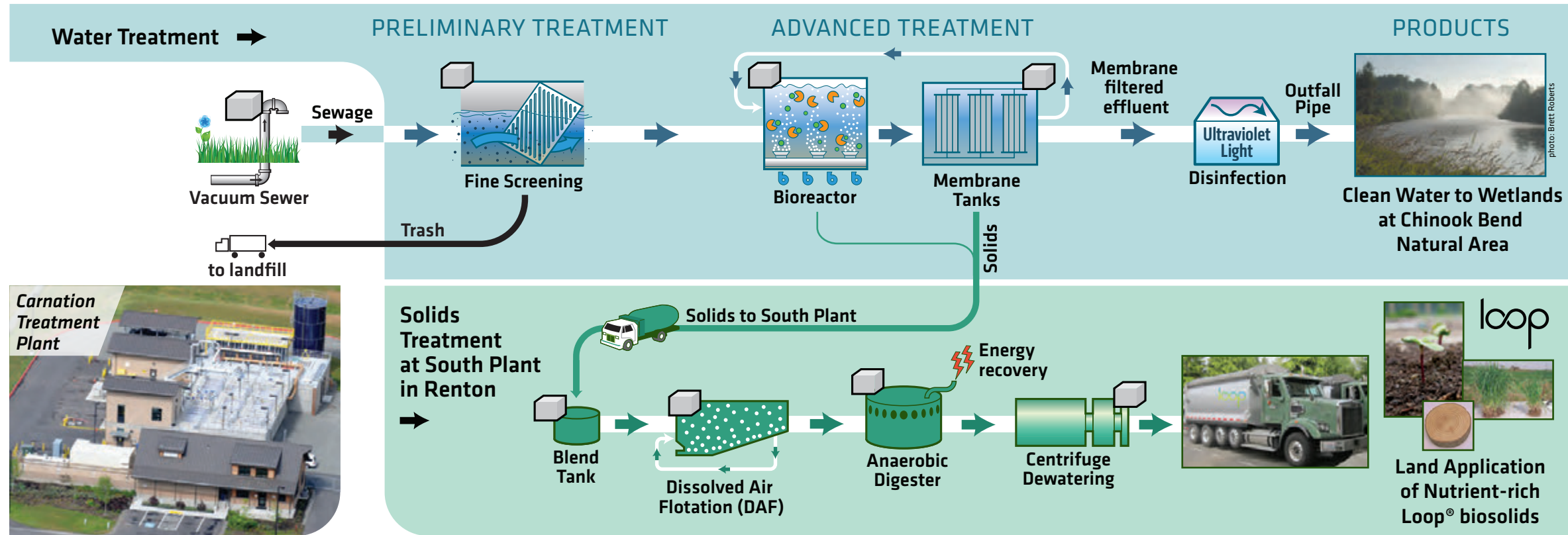
Unless you are on septic, the water you send down the drain in the City of Carnation travels through pipes owned and maintained by the City of Carnation to King County's Wastewater Treatment Division's (WTD) Carnation Treatment Plant. At this plant, we process about 111,000 gallons of wastewater every day. After we treat the water, we release it in the wetlands at the Chinook Bend Natural Area. About 35 million gallons of clean, recycled wastewater are sent to the Chinook Bend Natural Area every year where approximately 20 percent of the Chinook salmon that return to the Snoqualmie River Watershed spawn.

The Carnation Treatment facility kicked off operations in May, 2008 so it is almost 14 years old. We estimate that the plant treats waste from about 2,000 people in Carnation's downtown area. As local population grows and more people get connected, we will continue to invest in and upgrade the system. We work around the clock to keep our plants working because we believe in protecting public health and the environment.



We release treated water into the Chinook Bend Natural Area

## Wastewater Treatment *PROCESS* at the Carnation Treatment Plant = odor control



### Keeping the bacteria that clean our wastewater happy

All King County treatment plants use processes that mimic how nature cleans water: mechanical systems remove solids and floating material, and microorganisms (bacteria) help break down organic matter and remove nutrients. Like other living creatures, the bacteria we use to clean wastewater need the right combination of air and food to thrive. We use chemicals at key steps in the treatment process to help maintain favorable conditions for these bacteria to survive and treat the wastewater.

WTD recently tested using a familiar and safer chemical to treat wastewater at the Carnation Treatment Plant. This chemical is magnesium hydroxide, which is the main ingredient of milk of magnesia, improves treatment efficiency, saves ratepayer money, and minimizes the use of corrosive chemicals. Based on the success of the pilot test, WTD is preparing to install a permanent magnesium hydroxide system at the Carnation Treatment Plant in the coming years.



### Cold and rain brought new challenges for treatment plant staff this past winter

From the outside, the Carnation Treatment Plant looks like a large, industrial facility. Inside it is filled with pipes, pumps, and tanks that work to treat wastewater. But the people operating that infrastructure are truly our greatest asset.

Each year, King County WTD operations and maintenance staff work hard to be well-prepared for the rainy season. This winter, our crews had to go above and beyond to keep treatment processes going at the Carnation Treatment Plant

despite extremely cold temperatures and higher than normal wastewater volumes.

*The winter was so cold that some of the pipes in outside cabinets froze*



### Historic cold

This winter was historically cold for our region. During one particularly cold stretch, some pipes, valves, and other critical treatment equipment froze. To keep the plant working as usual, staff used blow torches to warm up some of the pipes we use to keep wastewater flowing! Our operations, mechanical, and electrical staff work together to resolve issues like these. They are now upgrading vulnerable insulation, piping, and electrical cables to be ready for extreme cold in the future.

### Heavy rains

The heavy rains of winter also brought higher than normal wastewater flows. In fact, the Carnation Treatment Plant experienced a 32% increase in incoming wastewater on several days in January! King County and the City of Carnation are currently investigating what may have caused the large increases in flow.

### More flow means more debris

The Carnation plant is designed to handle higher flows that typically happen in the winter but the increase in flow this year overwhelmed the screens that are used to filter out debris and trash from incoming wastewater. Operations staff spent extra time caring for the filtration screens to make sure all wastewater flowed through the treatment plant.

In January, we completed several upgrades to overhaul the screens. This helped accommodate debris coming with the increased flows. Plant operators spent the night at the treatment plant to monitor wastewater flow and screen performance overnight.



*We use screens to filter debris like this from wastewater*

### Membrane feed pump upgrades will keep our system working

After bacteria clean the wastewater, the mixture of treated wastewater and bacteria enters our advanced membrane bioreactor system. This system is full of fine filters that remove particles as small as bacteria while allowing water molecules and dissolved material such as salts to pass through.

During regular inspections in 2021, we learned that our membrane feed pump, which pumps water into the membrane filtration tank, is beyond its useful life expectancy. This year, WTD will perform system upgrades to update this technology.

*We use membranes to filter bacteria out of wastewater after it has helped clean the water*

