The Oregonian

System turns sewage nutrients into fertilizer

Wastewater - An Oregon plant is participating in the first Western U.S. test of the Canadian-made equipment

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DURHAM -- What you flush down your toilet you might someday spread over your lawn as fertilizer.

The sprawling treatment plant in Durham that handles sewage from much of Washington County is testing new equipment that extracts nutrients from the wastewater and turns it into fertilizer valuable to nurseries, farms -- and, perhaps, homeowners.

It's the first trial of the system in the Western United States, and plant officials say the method promises not only to turn out a useful commercial product but also to clean water faster, reducing the load on the plant. That cuts costs and, in turn, customer rates.

"We don't have to build as many tanks," said Mark Poling, wastewater treatment director at Clean Water Services, which operates the Durham plant.

Water-treatment managers from other Oregon cities including Eugene and Salem toured the system Thursday. They said they were impressed, though the benefits of the system depend in part on how much they have to clean up wastewater before releasing it into rivers.

The Durham plant is held to some of the tightest standards in the country because it releases water into the once-heavily polluted Tualatin River. Phosphorus, for example, fed algae blooms that decayed into ugly, fish-killing messes.

Today the treatment plant removes nearly 99 percent of phosphorus from wastewater before it reaches the Tualatin. But that puts heavy pressure on the plant, because sewage must circulate through repeatedly for the plant to pull enough phosphorus out.

The phosphorus eventually ends up as sludge-like "biosolids" that are trucked to eastern Oregon and spread on farm fields.

The phosphorus causes further problems as it recirculates through the plant, solidifying into concrete-like coatings on the inside of pipes. That shrinks the size of the pipes, cutting the amount of wastewater that can flow through them and reducing the capacity of the plant as a whole.

The new waste-to-fertilizer system designed by Ostara Nutrient Recovery Technologies of Vancouver, B.C., instead sends the wastewater through a chamber where the phosphorus, along with ammonia, hardens into small balls about the size of BBs. The

process is triggered by magnesium, added to the solution in the form of deicing salt spread on icy sidewalks.

The BBs of phosphorus, ammonia and magnesium are an ideal fertilizer, especially because they dissolve slowly over about nine months, said Ahren Britton, chief technology officer at Ostara and developer of the system.

The first full-scale waste-to-fertilizer system was installed in Edmonton, Alberta, and the resulting fertilizer is now going to turf farms and container nurseries. Fisheries biologists in Canada also use it to replenish nutrients in important salmon streams.

Salmon that return to spawn and die in streams historically returned crucial nutrients to the water that helped the next generation grow stronger. Declining salmon runs leave streams short of those nutrients; the fertilizer helps provide them.

Ostara hopes to eventually market the fertilizer to private consumers, too, Britton said.

Clean Water Services officials said they are impressed with the system, which promises to remove enough phosphorus that wastewater does not need to flow through the Durham plant as many times -- allowing it to handle more wastewater. They are still crunching numbers to tell whether to install a full-fledged version of the system, Poling said.

Ostara says cost savings from improved plant operations and the value of the fertilizer could pay off the $2 million to $4 million cost of the system within three to five years.

The fertilizer also replaces other fertilizer that must also be mined, manufactured and hauled long distances, burning far more energy and producing far more greenhouse gases.

Officials who examined the system Thursday said it may become more attractive to other plants as the water released to rivers is required to be cleaner and cleaner.

"This is the wave of the future of our industry because the screws just continually get tightened and tightened," said Francis Kessler, wastewater-treatment manager in Salem.

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