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New filtering technology converts waste to fertilizer

Robert F. Kennedy Jr. calls Durham plant one of the 'best operated and functioning' treatment centers in the U.S.

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The Beaverton Valley Times, Jun 18, 2009, Updated Oct 30, 2009

The Durham Advanced Wastewater Treatment Facility has stepped to the front lines of the commercial sustainability movement with the unveiling of its new filtering technology that will recover phosphorus from waste and recycle it into sellable fertilizer.

JAIME VALDEZ / THE TIMES

CLEAN START – Phillip Abrary, David Van't Hof, Roy Rogers and Robert F. Kennedy Jr. inspect the first ton of fertilizer from the Durham Advanced Wastewater Treatment Facility.

The Durham facility, owned and operated by Clean Water Services, is the first in the world to use this technology in a full-scale commercial operation to treat 100 percent of its wastewater. It has signed a 15-year contract with the company that developed the system, Ostara Nutrient Recovery Technologies Inc. from Vancouver, British Columbia.

Robert F. Kennedy Jr., mayors from Beaverton, Tigard and Tualatin, and other local dignitaries and politicians were on hand on June 10 for the unveiling of the PEARL facility to showcase what many say is a bold step in an even-greener direction for Oregon and Washington County.

Kennedy, a prominent environmental lawyer and member of the Ostara board, has been a strong advocate for the technology and believes that it signals a bright light on the future of sustainability. Finding a way to get phosphorus out of wastewater — a traditionally costly problem — will not only save money in the long-run, but save the environment by decreasing the need to mine for phosphate.

"You now have indispensably the best operated and the best functioning sewage treatment plant in North America," Kennedy said.

The $2.5 million Ostara PEARL recovery facility is expected to remove more than 90 percent of phosphorus and 20 percent of ammonia in wastewater and in turn create 500 tons of Crystal Green fertilizer a year. As wastewater pours in, machines make a series of biological and chemical reactions that eventually leads to the creation of the slow-release pellet fertilizer, which will be sold by Ostara.

Both Clean Water Services (CWS) and Ostara will share revenue from the Crystal Green fertilizers sales and CWS is expected to find a return on the initial investment in five years.

The technology has come a long way in 10 years when it first began as a master's project by co-inventor Ahren Britton. The first prototype he created was about the size of a cappuccino maker, much different than the hulking and chugging metal machines churning out fertilizer in Durham.

Chief Executive Officer Phillip Abrary and Chief Operating Officer Ted Jones founded Ostara in 2005 to license this technology, making Britton, now the chief technology officer, its first employee.

"I got more than I thought of out of my master's," he joked at the PEARL facility's grand opening. "It's been a really fun ride."

The Durham facility has been praised many times in the past for its environmentally sensitive approach to water management, including being called the best operated and maintained wastewater treatment plant in the nation in 2005 by the Environmental Protection Agency.

CWS provides its services to more than 500,000 residents in the area, and the Durham facility cleans more than 20 million gallons a day of wastewater flow from Beaverton, Tigard, Tualatin, Sherwood and other cities in Washington County.

Before beginning operation of the filtering system in May, the Durham facility was like any other wastewater treatment plant in how it struggled with handling phosphorus, ammonia and magnesium build-ups in the treatment process. These chemicals clog and coat pipes and valves and reduce water-flow capacity, costing the facility money.

But now that has all changed. The water is flowing smoother and money will be saved on maintenance and treatment costs, according to Bill Gaffi, general manager for CWS.

“This technology will save our ratepayers money by extracting nutrients which would otherwise clog our pipes and reduce our plant’s treatment capacity,” he said.

On top of that, the new technology has given the plant, CWS and Washington County something else — an even greater credibility in the sustainability movement.