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## Utility Plans Expansion of Phosphorus Recovery System

For nearly two years, Clean Water Services (CWS) in Oregon has been successfully operating a facility that removes phosphorus and ammonia from the Durham Advanced Wastewater Treatment Plant's wastewater stream, and transforms them into an environmentally friendly commercial fertilizer. The company recently announced plans to install a second system at its facility in Hillsboro, OR.

CWS's Durham facility provides wastewater treatment for the cities of Beaverton, Tigard, Sherwood, Tualatin, Durham, and King City, and portions of Clackamas and Multnomah counties in Oregon, treating a total average dry weather flow of 20 mgd.

CWS installed the Ostara Pearl® Nutrient Recovery Process at the facility in June 2009 to help meet tight phosphorus discharge regulations. An effluent phosphorus concentration limit of 0.1 mg/l applies during summer months. The Durham plant discharges into the sensitive Tualatin River Watershed; hence effective treatment is crucial to ensure its protection and to safeguard the area's economic and environmental vitality.

The technology, developed at the University of British Columbia, is based on a proprietary fluidized bed reactor that recovers ammonia and phosphate from nutrient rich fluids. The recovered nutrient stream is mixed with appropriate doses of magnesium chloride and caustic to precipitate struvite pellets. The pellets are then harvested from the reactor and formulated to become a slow-release fertilizer.



Ostara's Pearl system at Clean Water Services' Durham Advanced Wastewater Treatment Plant has been operating since June 2009 and is producing approximately one ton of slow release fertilizer per day.

Since the facility began operating, the nutrient recovery process has reduced phosphorus concentration by more than 85 percent and ammonia by 15 percent in the digested sludge dewatering centrate return stream. Reducing these nutrient loads not only helps CWS meet discharge limits and protect the Tualatin River Watershed, but also has increased plant efficiency and reduced maintenance costs. The plant has seen a 40% reduction in demand for alum in the tertiary phosphorus removal process, and the amount of chemical sludge generated has been decreased.

The Durham facility's Pearl system is currently producing about one ton per day of fertilizer, which is marketed as Crystal Green®. The plant achieved a 500-ton production milestone in April 2011. Clean Water Services invested \$2.5 million into the facility and expects to recover the investment within seven years from a combination of fertilizer revenues and operational cost savings of approximately \$350,000 per year.

Clean Water Services recently teamed with Ostara to expand operations at CWS' Rock Creek Advanced Wastewater Treatment Facility in Hillsboro, OR.

The Rock Creek facility will be the first to feature Ostara's larger Pearl® 2000 system. Two reactors will be installed in a new building, with each reactor rated at 2,000 kg/day of production.

"Our continued partnership with Ostara is a testament to the success of our first nutrient recovery system at the Durham facility," said Bill Gaffi, General Manager of Clean Water Services. "This technology provides benefits to our ratepayers and the environment by extracting valuable nutrients to create an environmentally safe, revenue producing commercial fertilizer."

The Rock Creek facility is currently under construction and Clean Water Services expects it will be operational by fall 2011. The Rock Creek facility will have the capacity to produce 1200 tons of fertilizer every year. Combined with the Durham facility, which has an annual capacity of 500 tons, Clean Water Services will become the largest producer of Crystal Green in the world.

The company's literature refers to the product as an environmentally safe, slow-release fertilizer made from recovered nutrients and suited for the nursery, turf and specialty agriculture markets. It is sold through national and regional commercial fertilizer blenders across North America. A single application of Crystal Green on turf can replace multiple applications of phosphorus from other fertilizer blends, potentially reducing costs.

"Phosphorus, a key building block of life, is mined today in a limited number of areas but used globally as an essential agricultural input," said Phillip Abrary, Ostara's President and CEO. "We're recovering phosphorus and other nutrients and transforming them into a useful, premium fertilizer while reducing the carbon footprint in its manufacture and preventing runoff in its use. By bringing the process full circle, we are truly creating value from waste."

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More information is available at [www.ostara.com](http://www.ostara.com), or [www.cleanwaterservices.org](http://www.cleanwaterservices.org)

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