

From Page One

The issue dated April 21, 2005

It's show time for Blue Water

Coeur d'Alene company to open plant soon to exhibit its phosphate-removal technology

By [Paul Read](#)



Early next month, Coeur d'Alene-based Blue Water Technologies Inc. hopes to prove to skeptics of the phosphate-removal technology it's taking to market that it's willing to "put its money where its mouth is."

That, says company President Tom Daugherty, should happen when the 2-year-old company opens a \$1 million demonstration facility at the Hayden waste-water treatment plant, where potential customers—largely municipalities and industrial concerns—will be able to watch the technology work in a real-world setting.

Blue Water Technologies President Tom Daugherty at the company's \$1 million demonstration facility in Hayden.

The market for such new technology is expected to reach

\$1 billion a year in the U.S. by 2007 and perhaps 2.5 times that internationally, the company says.

Daugherty says Blue Water has ample evidence from limited tests that its technology removes phosphates from waste water effectively, but buyers are cautious about committing to it because it hasn't been tried in full scale at a waste-water treatment plant.

That will change next month when Blue Water begins treating hundreds of gallons of effluent a day at the Hayden plant. Daugherty expects the opening of the facility to trigger a steady flow of business for Blue Water, especially since its potential customers face new regulations that will drastically cut the amount of phosphorus they're allowed to discharge into rivers and lakes.

"It will be the best money we've spent," Daugherty says of the \$1 million demonstration facility.

The new facility was built on land inside the Hayden Area Regional Sewer Board's waste-water treatment complex, located near the western end of the Coeur d'Alene Airport. Daugherty says the sewer board is leasing the site to Blue Water for \$1 a year, and, after 10 years will end up owning the building if Blue Water decides not to renew the lease.

Inside the metal building are two big concrete "cells" into which treated waste water from the sewage plant will be pumped and the phosphates will be removed, before the water is piped about nine miles to the Spokane River. Four unequipped cells sit next to those two for future use by the plant.

Coated sand

Blue Water's technology, which it licenses from the University of Idaho, where it was discovered, uses a process in which phosphorus is removed from waste water by filtering the water through chemically enhanced sand. The patent-pending process is simple in that sand filtering already is commonly used in waste-water

treatment and many of the components of the system are readily available, says Daugherty. What makes the process different, he says, is that the sand is coated with ferric chloride, which gives it absorbent qualities, and that the sand is recoated and reused automatically.

Inside the cells, which measure 7-by-7-feet square and 16 feet deep, the treated sand works its way from top to bottom through waste water that normally would be ready for discharge. As the sand travels, its iron oxide coating rubs off and that coating absorbs phosphorus in water. Systems within the cell then separate by density the sand, clean water, and denser water that contains the phosphorus-laden iron oxide. The clean water then is piped out for discharge, the dirty water is sent back for further treatment, and the sand is reused.

For the past two years, Blue Water has been refining its technology and testing it in low-volume situations. It has a prototype of the system mounted on a truck that it has taken to various locations for demonstrations and testing, and also has accepted small containers of treated effluent shipped to it from potential customers that want to see if the technology could help them meet new discharge requirements.

One such customer was a chicken processing plant in Missouri that sent a five-gallon sample of its effluent, says Daugherty. Blue Water charges a fee for such “treatability” tests, and that enabled it to tally \$200,000 in revenues last year without having its product ready for market.

Daugherty says potential customers are scrambling to find technologies to remove phosphates from waste water because regulatory agencies nationally are clamping down on such discharges. Phosphorus can cause algae to grow too rapidly in a body of water, which depletes the oxygen that aquatic life needs.

Entities that discharge into the Spokane River, including several sewage-treatment plants and some industrial concerns, will have to slash phosphorus discharges sharply if proposed new regulations are enacted. For instance, the city of Coeur d’Alene’s treatment plant, which treats its effluent with alum to remove some phosphates, currently discharges about 900 parts per billion of phosphorus into the Spokane River. Under proposed rules that it and other dischargers likely will be subject to, that volume would have to be cut to less than 50 parts per billion by 2008 and 10 parts per billion in 2012.

The plant’s current phosphate-removal strategy is nearly maxed out, says Sid Frederickson, the city of Coeur d’Alene’s waste-water utility superintendent.

Blue Water has said it could get that plant’s phosphate discharge to about 40 parts per billion.

“It’s pretty promising technology,” says Frederickson, “but it hasn’t operated on a full scale yet.”

As for hitting 10 parts per billion, Daugherty says he knows of no current technology that is proven to cut phosphorus discharges to that level, though he says Blue Water believes that if it daisy chains two or more of its cells together, it might be achievable.

Jim Correll, manager of the Spokane office of CH2M Hill Inc., a big engineering firm that has done extensive work for the city of Spokane’s waste-water treatment plant, says he’s impressed with Blue Water’s efforts, but says a lot of unanswered questions remain.

“We think this technology has some real promise, but because they haven’t had a full-scale application, we just don’t have all the information we need,” Correll says.

He says Blue Water’s plans to demonstrate its technology at the Hayden plant will help potential customers see whether the high removal rates it has been able to achieve in small tests are sustainable over time, and whether problems with the process will emerge in higher-volume use. Correll says his firm likes to see proof, though, in much larger applications, say 10 million gallons of effluent a day, than the Hayden plant will show.

Still, he says, “They’ve gotten some pretty impressive results.”

For Blue Water to equip a sewage treatment plant about the size of the city of Coeur d’Alene’s, with its average of 3.2 million gallons of flow a day, would cost roughly \$1.5 million to \$2 million, Daugherty says. It would cost much more to equip Spokane’s plant, which averages about 35 million gallons of flow daily.

Daugherty says he expects Blue Water to make its first big sale this year. Though the sales cycle on such projects usually take several years, contracts could come quickly for the company because of the looming regulatory changes and because it has been talking with potential buyers for some time.

“We have 25 to 30 quotations out, in various stages,” says Daugherty.

He says it’s difficult to project future revenues for the company because the projects, when they come, will be large. The company also might in the future offer to build facilities for customers then lease access to them, providing Blue Water with recurring revenues, rather than upfront sales.

Daugherty says a key to Blue Water’s marketing effort will be word of mouth among municipalities and industrial concerns. It also sends employees to conferences on the topic, and has positioned its Web site so that search engines list Blue Water when Internet research is done on phosphate removal.

He says other companies that have technologies similar to Blue Water’s, but asserts that “on a single pass, we do better,” and contends that Blue Water’s solution is less costly to implement and maintain.

The company’s Hayden demonstration plant also will serve as a research facility for both the company and the University of Idaho, which has cooperated extensively with Blue Water in creating the plant, Daugherty says.

Daugherty was named president of Blue Water only recently, when company co-founder John Shovic stepped down from that post, as he has with his previous startups. Shovic, who has helped to launch two other companies, remains an owner and director of Blue Water.

Shovic says he and co-founder Barbara Ueckert launched Blue Water in 2003 after deciding to scour universities for promising technologies that they could license and commercialize. “The first one we went to was U of I, and we didn’t go any further,” Shovic recalls.

The university’s foundation, which oversees the licensing and sale of technologies, urged them to take a look at the phosphate-removal technology, nicknamed Vandal-ION, which was co-developed by UI professor Greg Moller.

Shovic says he and Ueckert did some research and found that phosphate removal could become a lucrative market. “What we found is that, yes, there is a market; that yes, there are good customers, both municipal and industrial; and that it’s a regulated market,” which means some customers are forced to spend money on technology, Shovic says.

The company quickly also hired UI researcher Remy Newcombe, who helped Moller develop the technology. She now is Blue Water’s chief technology officer, and Moller is a consultant to the company. Blue Water now employs 10 people, and has raised about \$1 million in two rounds of angel financing.

In addition to Blue Water, Shovic co-founded TriGeo Network Security Inc., of Coeur d’Alene, and Advance Hardware Architecture, in Pullman.