

Oregon's largest dairy runs on closed loop

Farm grows feed for cow, turns waste into energy, fertilizer

By **GEORGE PLAVERN**
EO Media Group

BOARDMAN, Ore. — The milking parlor at Columbia River Dairy is a large, warehouse-like building where cows arrive twice a day to be milked by modern machinery.

First, the animals are loaded onto slowly rotating carousels where their udders are sprayed with a disinfectant and attached to automatic pumps. Each spin lasts just a few minutes before the cows are unloaded back where they started. The process is smooth, continuous and efficient.

Outside, Milky Way trucks are waiting 24/7 to deliver milk from the dairy — part of Threemile Canyon Farms — to Tillamook Cheese, which runs a cheesemaking plant at the nearby Port of Morrow. With 26,000 milking cows producing 170,000 gallons every day, there is always lots to do.

Threemile Canyon is, by far, the largest dairy operation in Oregon. The herd totals 70,000 cattle, including calves and heifers. Located on 93,000 acres in rural Morrow County, the farm also grows a variety of conventional and organic crops, such as potatoes, onions, corn and wheat.

Now, another mega-dairy is looking to expand in the county, which is raising questions about water and air pollution in the surrounding communities. Willow Creek Dairy, which has leased land from Threemile Canyon since 2002, wants to strike out on its own and add 30,000 cows on part of the former Boardman Tree Farm.

More than 2,300 comments have poured in on the proposal, mostly in opposition. Environmental advocacy groups argue that Willow Creek would produce as much waste as a mid-size city, and regulations don't offer enough protection. They also question the wisdom of having two large dairies so close together.

But Marty Myers, general manager of Threemile Can-



Twin carousels simultaneously milk 80 cows on each side while slowly revolving in the milking parlor at the Columbia River Dairy outside Boardman, Ore.



The three 2,000-horsepower engines in the powerhouse of the methane digester can produce 4.8 megawatts of electricity.

yon, defended their management practices, which he said are forward-thinking and sustainable.

"It isn't bad just because it's big," Myers said. "It's agriculture of the future."

Closed-loop system

In fact, Myers said, the size of Threemile Canyon allows them to do things that wouldn't be practical for a smaller dairy farm.

By growing crops and raising cows all in the same place, the farm is able to recycle its own waste to use as fertilizer in the field. That, in turn, creates more feed for the animals, thus completing the closed-loop system.

"We get big beneficial uses out of that cow manure," Myers said. "It's not a negative for us. It's a positive."

It all begins with the cows. Threemile Canyon dedicates between 20,000 and 25,000

acres to growing feed crops, such as grain corn and a hybrid wheat known as triticale. Everything is harvested and stored for the animals to eat year-round.

Once the heifers are 2 years old, they are ready to be milked. Of course, they are also producing waste throughout their lives — roughly 436 million gallons of liquid manure every year. Per Oregon rules for confined animal feeding operations, or CAFOs, none of that material can be discharged into surface water or groundwater.

At Threemile Canyon, freestall barns are flushed regularly into a concrete collection basin, and from there pumped into a methane digester at the farm. The digester then heats the waste at 100 degrees and bacteria breaks it down into a gas. The gas is then burned to drive three 2,000-horsepower engines capable of generating

4.8 megawatts of power.

Myers estimates the facility, which was built in 2012, removes 60,000 tons of carbon from the atmosphere annually.

From there, about half of the leftover solids are made into animal bedding. The other half is used for organic fertilizer. The liquid is pumped into one of three lagoons, which is treated and run through irrigation pivots to grow more conventional crops and feed.

"Our average time in that lagoon is 10 days," Myers said. "We're applying that year-round to growing crops. ... We never let it become anaerobic. That reduces air emissions."

Managing nitrates

Threemile Canyon is within the Lower Umatilla Basin Groundwater Management Area, where the level of nitrates in the groundwater already exceeds the federal safe drinking water standard. According to the Oregon Department of Environmental Quality, the primary source of nitrogen in groundwater comes from fertilizer, with irrigated agriculture making up 81.6 percent of the problem.

Opponents of mega-dairies are concerned about adding a second operation so close, comparing it to a "sewer-less city." Oregon CAFO permits also lack surface water monitoring required under the federal Clean Water Act, they argue.

Myers said the fertilizer that is applied to the farm's

By the numbers

Threemile Canyon Farms

LAND BASE

- 93,000 total acres
- 39,500 acres irrigated farmland
- 23,000 acres in conservation

DAIRY

- 70,000 total cows
- 26,000 milking cows (mostly Jersey)
- 1.4 million pounds of milk per day (162,790 gallons)

METHANE DIGESTER

- Built 2012
- \$32 million
- 4.8 megawatt power capacity

EMPLOYEES

- 300 year-round
- 400 seasonal/contract
- \$10 million annual payroll

water quality advisories — essentially a warning — and two notices of noncompliance, meaning they've violated a condition of their permit.

In every case, Matthews said the problem was dealt with quickly. Overall, he said he believes the management practices at Threemile Canyon are thorough.

"If they see an issue, I think they do a very good job to bring it to our attention and repair it," Matthews said.

Animal welfare

In addition to environmental practices, Myers said Threemile Canyon is subject to a three-layer approach to animal welfare.

First, Myers said the farm conducts voluntary animal welfare audits through a company called Validus. Inspectors arrive unannounced, and are free to watch employees and go over protocol, Myers said.

Last year, Myers said Columbia River Dairy was the first in the country to receive a perfect score from Validus. They also consistently scored 95 percent or better on how they treat their heifers, he said.

"Those are pretty impressive scores," Myers said.

Along with voluntary audits, Myers said the dairy works regularly with its own animal advocate, a veterinarian and professor at Evergreen University. Along with the farm's own animal welfare committee, they make recommendations on how to improve practices.

"It's not a static process," Myers said. "It's a continual improvement process, and we're proud of that."

Greg te Velde, a California dairyman, is the owner of Willow Creek Dairy, which has applied for its own CAFO license under the name Lost Valley Ranch.

Myers has testified in favor of te Velde, his longtime tenant. Myers said he believes they too will be dedicated to best management practices. A similar lagoon and land application system is proposed at Willow Creek, and though a methane digester is not in the immediate plans, it could be phased in later.

"They know how to do things right," Myers said.

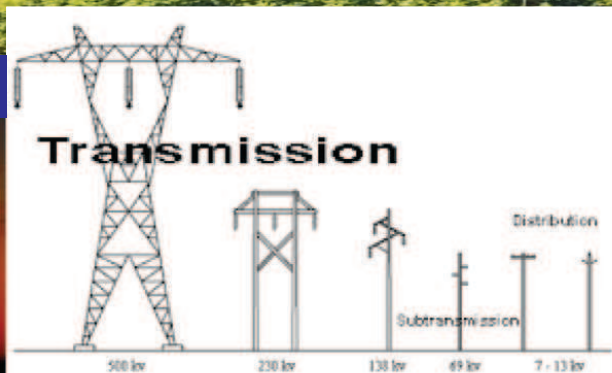
The public comment period for the Willow Creek/Lost Valley CAFO has been extended through Nov. 4.

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