

BENTONITE

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on the mend, the bentonite industry has followed suit, restoring jobs lost in 2008 while creating an increase in mining applications across the region.

At the American Colloid plant east of Lovell, plant manager Steve Wilkerson said that at the height of the recession, around 42 employees lost their jobs. About 30 of those jobs have been restored and production has increased, surpassing pre-recession figures.

Before the recession, we were running at around 650,000 to 700,000 tons a year," Wilkerson said. "In 2008, we dropped off to around 280,000 tons. At the present moment, the way things are going right now, we should be back at around 750,000 to 780,000 tons."

Bentonite means business

The life of a bentonite mine depends on market conditions, and it's Lyndon Bucher's job at American Colloid to ensure that a steady flow of clay is available to keep pace with customer demands, including the oil industry, General Motors and Caterpillar.

Bucher, who works in American Colloid's permitting and reclamation department, said that like all mining operations, clay is subject to booms and busts. Business lately has been up.

"Bentonite is considered an industrial mineral, and so it goes into a number of different products," Bucher said. "You could say we're something of a bellwether for the national economy. For the most part, as the economy goes, so goes the bentonite industry."

Wyoming's annual bentonite production has risen from 1,400 tons in 1927 to more than 4.5 million tons. Five companies are engaged in 10 active mining plans across several counties in Montana and Wyoming, according to the BLM.

"I'm supposed to maintain at least five years of permitted reserves in every grade of bentonite," Bucher said. "We'll do the exploration drilling to locate and grade the product. Once the exploration is done, we know where we need to permit."

This arid region of the basin, which extends down the western front of the Pryor and Big Horn mountains in Montana and Wyoming, is considered one of the world's top producers of high-swelling, sodium-type bentonite clay, representing nearly 70 percent of the world's known supply.

According to the Wyoming Mining Association, the industry employs about 900 workers in the Big Horn Basin, including mill operators, mechanics, surveyors, packaging operators and laboratory technicians. For every job provided by the industry, an estimated three additional jobs are created in the community.

In Wyoming, where most of the activity takes place, the industry contributes more than \$1.1 billion in taxes and royalties. Its annual payroll with benefits comes to roughly \$4.8 million, with nearly 70 percent of that paid to employees in the Big Horn Basin.

"Without the bentonite industry, you could fold Big Horn County up and it would go away," county Commissioner Keith Grant said. "Of our top 10 assessed valuations, four are bentonite companies. The top two are oil and gas, and the third is in there, too."

Remaining reserves

It wasn't until 1888 that the first commercial shipment of bentonite was made. The clay earned its name from discoveries in Montana's Fort Benton Formation. It's been sought after ever since.

Large-scale bentonite mining and processing in this region began near Greybull in the early 1950s. More than 21,000 acres have been mined in the Big Horn Basin to date, according to the BLM.

On the hood of her truck, Hurley lays out a map with the mines designated in red. The bentonite sought by companies lies in a north-south trend along the eastern rim of the basin.

"This whole horizon of gray shale that's in front of us — we're looking at a long strike, or a trend, and there are bentonite beds all along that profile," Hurley said. "It's a big, huge area."

Hurley said an inland sea once covered this region

while mountain-building volcanoes to the west spread ash. The ash settled into the sea, where it was chemically worked over time.

Startled by sand, pressurized and compressed, it became the product rolling by the ton into the basin's plants. There, it's dried, processed and packaged in powder and granule forms to meet customer needs.

"There are several different beds, and each bed has its own unique properties," said Jason Schneider, the mining operations manager with American Colloid. "We're trying to select different beds to meet the demands for the final product."

Standing at a cross-cut at the Prairie mine on the state line, Schneider notes the stratified layers of shale and the bed of bentonite below. Even here in this small pit, no more than an acre in size, the bentonite comes in yellow and blue.

Schneider said each bed of clay is given to a different set of qualities suited for a variety of industrial uses. It's up to the companies to extract and process the right clay for the job.

"For this location, it's a lot of drilling mud," Schneider said. "With the activity in North Dakota, in the Bakken, that increases the demand for drilling mud. Foundry work has been real strong as well — the auto market. Those things are coming back, and when the economy starts to pick up, you see it on this end."

Estimates vary on how much accessible bentonite remains here in the ground. A 1980 report by the American Institute of Mining Engineers suggests that around 1.1 billion tons have yet to be mined.

A 1980 edition of the U.S. Bureau of Mines, Minerals, Facts and Problems lists bentonite reserves of around 200 million tons. Either way, it's enough to keep the bentonite industry supplied for years to come.

"If it's oil and gas drilling, we'll target a specific clay for that, and if it's oil liner, we'll target another clay for that," Bucher said.

"We have many different customers, and we'll try to meet the market demand by mining in these different areas and getting the right quality of clay into the plant."

Bentonite Industry Booms (continued)

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