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Updated: Tuesday, October 16, 2007

Pilot project could mark major shift

If a project planned in Walla Walla County pans out, it could spell a world of change for energy production.

By Vicki Hillhouse of the Union-Bulletin

The paper mill off U.S. Highway 12 was a distant speck in the photograph as Dr. Peter McGrail reached for his laser pointer.

With a lift of his arm, the red light flitted toward the photo's faraway horizon, behind two scientists in the foreground standing in the wide, open land owned by the Port of Walla Walla.

The picture, part of a more-than-hourlong public presentation last week, showed the approximate location of a potentially world-changing pilot project on 500 to 700 acres in western Walla Walla County.

More than 10,000 feet under where the scientists stood are some of the Pacific Northwest's deepest and thickest continental basalt flood deposits.

McGrail and other scientists from Pacific Northwest National Laboratory plan to inject 3,000 to 5,000 tons of liquid carbon dioxide into those Grande Ronde basalt formations next summer. Then they will watch for the carbon dioxide to mineralize over time.

If it does, the process may change the face of energy around the globe, said

McGrail, a geophysicist for PNNL - also known as Battelle Labs.

It may allow dirty coal-fueled power plants to operate more cleanly by burying the harmful greenhouse gases normally released to the air. If it's successful, it would create a new possibility for power generation for nations such as the United States, China and India, homes to not only a wealth of coal reserves, but also similar basalt cores.

The U.S. Department of Energy is the principal source of funding for the \$10 million-plus pilot project.


It ``addresses key questions about the process that can't be answered in a lab," said McGrail, who's been studying carbon sequestration for 10 years.

But what if the carbon dioxide doesn't mineralize? That was the question on the minds of many of the estimated 30 people who attended McGrail's presentation at



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the Walla Walla Regional Airport.

``Worst-case scenario," said Port of Walla Walla Commissioner Michael Fredrickson. ``Let's say everything goes wrong. Then what?"

``That's the function of the monitoring process," McGrail answered.

If the liquid carbon dioxide doesn't mineralize, then it could be slowly vented, he said. Even then, it likely would never move beyond what's known underground as the ``vantage interbed" - a layer of weathered basalt that over the years has turned into clay with an extremely low permeability.

McGrail said the carbon dioxide would never reach the ``good aquifers." Instead it would likely remain sealed in the deeper basalts where the nonpotable water is so full of fluoride and sulfides that anyone who drank it would eventually lose their teeth to decay.

He also said the carbon dioxide would not affect populated areas, such as the Boise Paper Solutions plant in the photo, one of the nearest and most populated buildings to the test site.

``I think the probability of something like that happening is so remote," McGrail said. ``Almost virtually nil."

If mineralization is successful, local resident and retired well-driller Pat Jungmann wondered whether the limestone created in the process would plug the injection hole.

McGrail said the deep-aquifer water moves away from the well carrying the carbon dioxide. Consequently, the carbon dioxide would spread. Filling the hole would be a slow process, he said.

He said the test will show more about the underground containment capability for other possible energy sources, as well. The answer may have direct applications for wind energy if scientists are able to store compressed air in a deep geologic reservoir, he said.

Many questions from the presentation centered on a possible power plant that could subsequently be built at the site. Several residents worry that even a cleaner burning coal plant would still produce mercury pollution.

McGrail said there are ways to remove mercury. However, he emphasized that the more than \$2 billion power plant proposed by Gig Harbor, Wash.,-based Wallula Energy Resource Center is separate from the pilot project that could begin as early as next month.

Battelle is not under contract with the power plant developers at this time, he said.

As part of the site characterization process, ``thumper" trucks will be brought in to vibrate the ground as part of a seismic survey. He said under the best-case scenario, the seismic testing could begin in November or December.

Whether a power plant is the ultimate result, the pilot project will be beneficial, said Port of Walla Walla Executive Director Jim Kuntz.

In addition to the ``gold mine" of information that will result about the land and its qualities, the process has worldwide implications, he said.

``If it's successful, many communities across the country and world may benefit from the research," Kuntz said.

If the project fails, McGrail said monitoring of the five wells drilled on the land will take place 18 to 24 months after closure. He said the property would still be viable for development of other industry.

McGrail, for one, isn't predicting a failure. Almost \$500 million has been spent by the Department of Energy characterizing the region's flood basalts through work at Hanford. Despite what some may see as a longshot to changing coal-fueled power plants and stabilizing the concentrations of greenhouse gases, McGrail believes the land in Wallula could shape the future in carbon sequestration.

``If it's going to work, it's going to work here," he said. ``That's the bottom line."

FOR YOUR INFORMATION

How will the carbon sequestration pilot project take place?

Pre-injection site characteristic study:

Seismic survey to begin as early as November.

Well-logging and geochemical sampling during the borehole drilling phase.

Multiple multiwell hydrologic tests.

Injection facts:

3,000 to 5,000 tons of carbon dioxide would be injected.

The injection would occur over a two- to four-week period.

The initial radius of the carbon dioxide bubble is only about 100 feet. The maximum spread of the radius is about 500 feet, depending on how much carbon dioxide is used.

Carbon dioxide is expected to be dissolved in the formation of water and become mineralized over several years.

Monitoring program:

The extensive monitoring includes air, shallow subsurface and deep monitoring processes.

Water samples will be obtained periodically to check geochemical changes.

Core sample extraction will take place two to three years after injection.

Well closure

Wells would be plugged and abandoned according to state regulations.

The site would be restored to pre-testing conditions.

Closure of the wells could be optioned depending on the outcome of the test and the desire to use the wells to support a proposed commercial operation.

Information from a presentation by Dr. Peter McGrail, geophysicist for Pacific Northwest National Laboratory.

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David Shannon wrote on Oct 17, 2007 8:42 AM:

" I will reserve judgment on this specific project, but the coal will have contaminates and instead renewable energy, such as solar(for which there are significant advances now)we are encouraging depleting of natural resources. I would like to see development of cleaner industries. "

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