Bottoms up with Great Salt Lake water? Utah companies say it can be purified

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ANTELOPE ISLAND STATE PARK — If someone suggested taking a drink out of the Great Salt Lake, many people would be inclined to say, "Yuck."

But two Utah companies are trying to show the Pentagon that their technology can take some of the foulest water around and turn it into drinking water for combat troops. They just wrapped up a weeklong demonstration on the causeway to Antelope Island in which they drew water from Farmington Bay.

For the past two years, Thermal Management Technologies has been using a $2.1 million contract from the Department of Defense to modify technology owned by Purestream Technology. The water-purification process — essentially a highly energy efficient method of distillation — grew out of a research program headed by Dr. Clair Batty at Utah State University.

In the demonstration at the Great Salt Lake, a small pump was used to suck water from Farmington Bay. That water is loaded with more salt than oceans, teeming with brine shrimp and bugs and algae, polluted with things like mercury and — according to an old urban legend — pickled sewage.

But the "yuck" became "yum" when Amy Hansen, permitting manager for Purestream, stirred the treated water with a lemonade mix. The purified lake water itself is essentially tasteless.

Credit: John Hollenhorst

Two Utah companies are using their technology to turn water from the Great Salt Lake's Farmington Bay into drinking water. The water is heated, and the steam is then condensed back into clear drinking water.

"The taste? It tastes like water," Hansen said. "It just tastes like water."

It's a variation on a centuries-old device: a still. Purestream's process uses a more efficient method, though, that company officials hope will make it into a best-seller with the Pentagon.

"It's thermally engineered to use lower levels of energy," Hansen said. "The water is heated, the steam is then condensed back into crystal-clear drinking water."

Purestream has a large-scale version that's going into commercial use in oil and gas fields. It's so big it needs to be hauled around by a semi. The smaller unit being tested by and for the Army is much more portable and can be hauled into position on a small flatbed trailer. The technology has not been endorsed by the Army, but the U.S. Army Tank Automotive Research Development and Engineering Center found it promising enough to fund the testing program.

According to Hansen, the Army hopes the effort will lead to better purification systems than those currently in the field that typically rely on reverse osmosis and filtration systems.

"They foul sometimes," Hansen said. "They require a lot of labor, a lot of manpower, to be able to work them."

Purestream's unit is operated by a single person and it's easy to haul in for a company of soldiers. Within a few hours, it can be up and running, producing 1,800 gallons of drinking water each day — 75 gallons every hour. The source can be an ocean, a lake, a pond or a river, the company said.

The treated water has not yet been certified as safe to drink, but a Purestream statement said: "We can say that we have been testing it to a standard generic set of city water quality tests and that we have all been drinking the water."

Besides potential military uses, Purestream also envisions using the portable system in emergency response situations and on humanitarian missions around the world.

Now the unit is being delivered to Michigan for more testing by the Department of Defense.