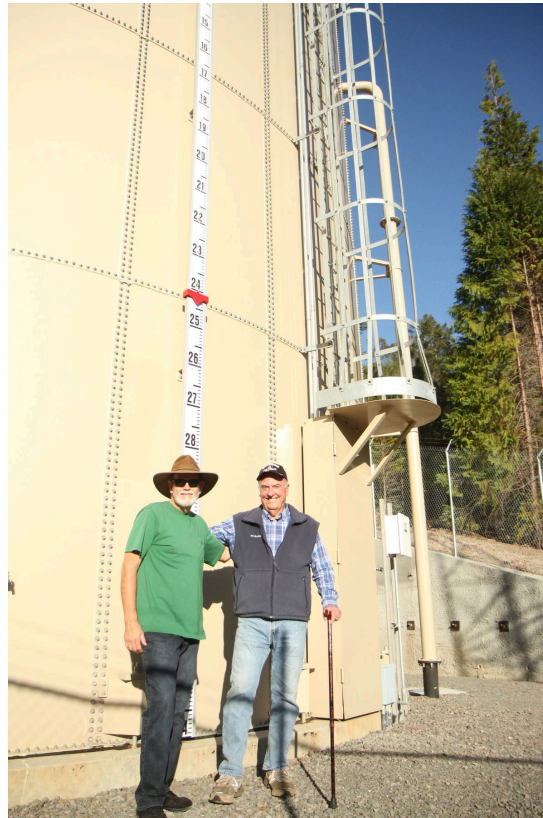


Water district's new tank above Hiouchi, and antenna, provide regional solutions

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The Big Rock Community Services District has the responsibility of providing services to a broad area. So outgoing board president Craig Bradford is proud to leave those services in good hands, after overseeing a \$4.2-million project to upgrade the district's storage and communications.

"Craig was able to convince the board to invest in this and hopefully get compensated back for some of it," said Big Rock director Mike Finley. "If not, the board did a great thing of authorizing the money ahead of time."

The Big Rock district provides water service to the unincorporated community of Hiouchi, about 10 miles northeast of Crescent City on U.S. Highway 199. The community is nestled within the Six Rivers National Forest and the Smith River National Recreation Area.

The Big Rock district covers about 520 acres with the annexation of the Hiouchi Flat area of Jedediah Smith Redwoods State Park and the boundary of the Redwood National Park Hiouchi Information/Visitor Center.

At the center of the district's services was an old, redwood, 100,000-gallon water tank that had been on a hill above Hiouchi since 1970. Bradford said the lifecycle on every kind of tank is about 50 years.

Theirs was leaking a bit. So, Bradford contacted the world's largest engineering firm, GHD Inc., which just happened to have its West Coast headquarters in Eureka. "I got the head engineer up here. I asked him, 'What can you tell me about this?'" Bradford said, pointing at the old tank.

The answer was blunt. "I'll be honest with you, Craig. In an earthquake of 5.5 magnitude or higher, it's coming off the mountain."

Bradford knew the district also had a second, 50,000-gallon tank up the hill about 100 yards that was connected with an interlacing pipeline underground. "So if one goes off, it pulls the other. And the whole mountain comes down on Hiouchi."

So, step one was to take down the old tank without interrupting the water supply to the community.

In step two, engineers created a ledge on the ultramafic rock, burrowed slightly into the hillside - which will never move, never crack, never come down, Bradford said.

Step three was to design a better mousetrap. Only this one would hold more than twice the water than its predecessor.

"The new tank is 215,000 gallons. Now, why did we increase the gallonage? Because back in 2010, at their request, we annexed both parks in our jurisdiction. That's the state park and the national park. They are merging," Bradford explained.

"We get a lot of visitors every year to those parks. What the prediction is, from both federal and state parks, is that it will increase the tourism here in Hiouchi by a factor of 20,000 a year."

To accommodate those extra numbers, Bradford said, the district had to design the new tank from the "grassroots up. We got to design it ourselves."

The old tank used to have just one steep road accessible by four-wheel-drive. Bradford had engineers create a second road for maintenance access all the way around the new tank.

Next went in the nail wall.

Bradford brought in McLennan Excavation of Brookings as the primary contractor, with 14 subcontractors. Built a nail wall between 14 and 18 feet high. "They put a nail in, put some pull on it, it spreads out and goes right into that granite," Bradford explained.

"Then they test it. Pull on it. The worst-case scenario is 4,000 pounds of pressure. It didn't budge."

He pointed up the hillside around the nail wall and said water that comes down the clay soil now goes in a cement ditch on the outside, on the surface. The part that goes down through the ultramafic rock comes out in spigots. Combined, it reduces the chances of erosion. "It's a beautiful arrangement," he said.

As for the tank, the old redwood was replaced with American steel. Bradford said a big metal tank like this one is also essentially a giant battery, with electrostatic activity that can cause erosion. To prevent that, they installed a “cathodic system.”

“Six big, ‘suicidal’ rods hang down. If they sense acid, they peel off some of their stuff that neutralizes it. And it does it electronically, by computer.

“So, it keeps (the water acidity level) not too much, not too little. Exactly neutral,” Bradford said.

The tank was completed and back in operation in June. Once it was back online, he said, GHD ranked the Big Rock district’s water No. 2 in quality in the U.S.

The tank draws its supply from a main pump station down near Smith River. “The water we draw is not surface water, like others downstream” Bradford said. “We have a well head there with two submersible, centrifugal pumps. They grab the water and push it up at a pretty strong rate. Comes up in a straight pipe line, unimpeded, with no laterals.

“Once it gets in here, two-thirds feeds Hiouchi with gravity flow. And the pressure is wonderful. The second tank feeds the other one-third of Hiouchi. That one is relatively new, so we won’t replace that one for a few years.”

The balance of the project’s funds went to build a communications tower. Bradford said Big Rock Community Service District took it upon itself to construct a 70-foot antenna tower, with two masts with two antennas on it, one 16 feet horizontally for 20-meter frequency band operations. The second vertical is for 2-meter frequency local operations.

The reason for the project is the impending closure of the communications array on Red Mountain in Humboldt County, which was put in a long time ago as a communications tool for first-responders during disasters.

But in 1996, Bradford said, the Yurok Tribe reported finding obsidian on Red Mountain and ordered the state to remove that site by Dec. 31, 2021 and return it to its original, native condition. Bradford said that’s a three-year process and the state hasn’t started yet.

“This replaces Red Mountain for Del Norte County. We’ve got an interstate agreement with Oregon, CORSAR (California Oregon Search and Rescue). They’ve got nine repeaters like this on nine mountains surrounding Merlin. And JCEC (Josephine Emergency Communications). They’ve got extra amateur radio guys to do public work.

“We hooked up with them. So, we need to be able to talk to them and to the command center down south in Mather, California, which houses the Office of Emergency Services command center,” Bradford said.

If ever there is a Cascadia event, or a devastating earthquake of 9.0 along the Cascadia subduction zone off the West Coast, Bradford said, FEMA designated for the first time Ward Field in Gasquet as the point of distribution for the region, delivering emergency supplies for survivors from Coos Bay south to Eureka.

“Their assumption is, after a Cascadia event, only Gasquet and Hiouchi will remain. We become independent. This radio tower will allow us to talk directly with Mather.”

Bradford proudly pointed out that Big Rock’s water tank and antenna project will provide solutions for the entire region.

“We wanted it to be that way. It’s unusual, extremely unique in its design. You just won’t see stuff like this anywhere,” he added.