

City of Napa Hydrographic Survey

When California's City of Napa needed a hydrographic survey near a proposed boat dock on the Napa River, they knew who to call: James Dickey, PLS, president of Cinquini and Passarino, Inc., had completed previous hydrographic surveys.

But Dickey didn't necessarily want to repeat all aspects of that work. "On those jobs," he explains, "we used an echo sounder to determine the depth, but we didn't have any way to integrate the depth and the horizontal location." This meant that one man worked a powerboat fitted with the echo sounder, and another remained on shore to take shots with a total station and record the depth reading as a "rod height." The process was slow, prone to transcription errors and the workflow was tedious.

Fortunately, he found an alternative. "I did some research online," he says, "and noticed that our Trimble TSC2 Controller now has a routine that allows it to be coupled with the Ohmex SonarMite." The SonarMite is a Bluetooth-enabled echo sounder that works well in shallow water and with small boats. Using Bluetooth, Dickey connected a rented SonarMite and his company's Trimble R8 GPS Receiver to the Trimble TSC2.

This changed everything. Now, using a second Trimble R8 as base station, crew members James Brown, LSIT, and Erik Vonderscheer could both work in the boat, with one managing speed and direction and the other tending the equipment. The echo sounder was clamped to the side of the boat and positioned underwater, with the receiver on a pole directly above it. The Trimble R8 was set to continuous topographic mode; the SonarMite was set to a two-hertz interval so that it took two shots every second. The TSC2's collection routine collected both the water surface elevation and the river bottom depth, along with horizontal coordinates, and exported all data in a format that worked well with Dickey's drafting software. Horizontal coordinates were based on the California Coordinate System of 1983, and elevations were based on NGVD 1929.

Because it was new technology, Dickey made sure to check initial results manually, using a Philly rod, and found that results were well within tolerance (about a tenth of a foot for this project) even with choppy water. The City of Napa was certainly pleased. "We're developing this area with a new, larger, concrete dock to improve boat access," says Napa Senior Civil Engineer Mark A. Tomko, PE, "and the topographic maps Jim gave us were just what we needed."

As for Dickey, he thinks he's finally found the right way to do small-scale hydrographic surveys. "I probably won't do anything different next time," he says. "This saved a lot of time."

*See feature article in POB's July issue:
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