



CAVE MAN Santa Cruz civil engineer Steve Wolfman is managing a project that aims to slow ocean damage to West Cliff Drive. PHOTO: CHIP SCHEUER

Saving West Cliff

Santa Cruz engineers hope an innovative approach will stop Westside sinkholes BY ARIC SLEEPER

For years, Santa Cruz has defended itself from the ocean's power with shields of armored rock, mending holes in the collapsing bedrock with riprap—boulders of varying size. But in the ceaseless battle between the city and the sea, Mother Nature has gained some more ground—or more accurately, taken it away.

Our most recent problem is a sinkhole, 15 feet wide and 28 feet deep, at the rear of an 88-foot-long cave that runs parallel to West Cliff Drive. Located between Woodrow and Columbia streets, the sinkhole is the fourth in a series of problems that has plagued the location for decades. The most recent crumble happened on March 1, just in front of

the last repair—a 2009 fill-in of the third sinkhole in the last 27 years.

On March 1, a combination of high tide and high surf surged through the sea cave and up the ramp of riprap left from previous fill-ins, causing the bedrock to collapse along with the soil above it, according to Rodney Cahill of Mesiti-Miller Engineering.

"The high-energy wave environment scoured the last piece of critical material from the roof of the sea cave, causing a collapse of the cave," says Cahill. "And then subsequent wave activity removed the loose soils and smaller rock from previous repairs."

This particular ocean cave near Woodrow also happens to lie on

a fault line—another factor in its continual collapse over the years.

Abandoning the conventional riprap countermeasures, city staff, with the help of Cahill and other engineers and geologists, have devised a new plan utilizing concrete to plug the sinkhole, along with a curved wall within the cave that will minimize wave damage. Workers will work on the hole from above and below, resulting in some street closures on West Cliff Drive.

"This is a different approach, a more long-term fix for this specific location, so that it doesn't continue under the road, and weaken the road," said Mark Dettle, director of Santa Cruz Public Works, at a recent city council meeting.