

Water flows at adobe ranch site after quake

Artesian well, earth bubble up with liquid

Pat Sherman, San Diego Union-Tribune, 5-13-10

RANCHO PENASQUITOS — The earthquake that struck Mexicali on Easter Sunday has greatly increased the flow of groundwater at the historic 1823 Los Peñasquitos Adobe Ranch House.

Docent-led tours of the ranch, the county's first Mexican land grant, include a stop inside a small wood structure that shelters its artesian well.

Park rangers, returning to the property a day after the magnitude-7.2 quake that struck April 4, were surprised to see water streaming up from the well at two to three times its previous rate.

In addition, a grassy patch of earth east of the ranch house, where water had been bubbling up at a leisurely pace, now roils like a caldron, saturating an area twice as large as it had before the temblor.

A cracked section of sidewalk in front of the ranch house has gradually lifted since the quake and is now lined with moisture.

"We're doing our part to better understand it, (to take) whatever steps we may need to manage it so we can make sure that our adobe ranch house is secured," county parks Ranger Paul Kucharczyk said.

The water temperature in the grassy area is 70 degrees, the same as the well, leading rangers to believe it flows from an underground aquifer, and not a broken waterline.

Larry Horsman, a materials engineer with the county department of public works, said he believes the ranch house is not threatened, though the excess water could pose problems for an adjacent archaeological dig.

"We're trying to get one of our hydrogeologists out there to look at it," Horsman said. "We'd like to at least get the water routed into an area where it's not interfering with parking and (foot) travel."

Horsman said there has been no decrease in water pressure in other areas of the park, also suggesting the water is from a natural, underground source.

Retired San Diego State University geology professor Pat Abbott said the apparent relationship between water and earthquakes at the ranch is "fascinating" but "a very common phenomenon."

He said the type of surface "ground roll," or Rayleigh waves, felt during the recent quake have the power to create new cracks and fissures in the brittle, 155-million-year-old rock just below the surface.

"Rayleigh waves passing through can easily make new cracks, close old cracks or connect two cracks," Abbott said. "If some of the (existing) fractures got partly closed, that would squeeze water out and away" in another area, he said.

Abbott said he believes the increased water flow will be temporary.

“My guess is that’s not a permanent change, but I feel quite certain that it is a response to the earthquake,” Abbott said.

Earthquakes seem to have a history of altering water flow at the ranch.

Ranger Rusty Rodes recently discovered a San Diego Union article dated April 4, 1872, that documents a similar increase in water flow at the well and east of the structure after a quake. Though the article doesn’t name the source of the shaking, it was most likely related to the Great Loan Pine earthquake on March 26, 1872, that is believed to have measured between magnitude 7.6 and 8.

In the article, former ranch resident Capt. George A. Johnson reported that the well’s water flow had increased by 48,063 gallons a day. The well fed a nearby reservoir, which at times provided water for a citrus orchard.

“On Tuesday morning the reservoir was discovered overflowing,” the article reads. “Thinking that the surface escape pipes were clogged, an examination was made by the captain, which showed that they were running freely. On going to the spring house, the water was discovered bubbling up in an unusually lively manner.”

According to the article, a change in water flow at the ranch in 1857 also was reported by former owner Francisco Maria Alvarado. It followed an earthquake, perhaps the Fort Tejon earthquake of January of that year, though it also was not named.

“That shock seemed to have curtailed (the water), and a smaller flow was the consequence,” the Union reported.