



Hole-In-Mountain Avalanche

The number of things that can cause one of our automated SNOw TELelemetry (SNOTEL) sites to go bad vary from simple equipment failure to wind damage, bear problems, mice chewing on wires, vandalism, snags falling on the equipment and in one case, a jeep trying to push the panel fence used to protect the snow pillow over with its front bumper. Often times you know something is wrong, because the data drifts or bounces all over the place, the battery slowly but surely begins its trip to the next life or more dramatically, the entire site seemingly drops off the face of the world. In most cases this is a metaphor for a site that just quits reporting for a variety of reasons, but in the case of the Hole-In-Mountain SNOTEL site, that's exactly what happened. An avalanche broke loose above the site and in a torrent of snow and a blast of wind, the site disappeared!

Now an avalanche is simply the rapid movement of snow down a mountainside, a simple sounding definition that masks the destructive nature of the beast. Every year, avalanches cause multiple deaths to those caught in their paths. Most occur on slopes between 25 to 50 degrees with limited vegetative cover. Avalanche chutes or their scour zones are usually readily apparent during the summer when the snow is gone and the topography and lack of vegetation cause slide zones to stand out. The risks from an avalanche are greatest during and immediately after snowstorms and when temperatures rise. Of particular concern is the lee side or down wind side of mountains where the wind can blow snow off the ridgeline, causing the downwind areas to load up much faster and deeper than would happen due to snowfall alone. The Hole-In-Mountain site has all these characteristics and then some.

Including this site, there are five SNOTEL sites in this small range as well as the adjacent Ruby Mountains just to the south. The East Humboldt Range is essentially an extension of the larger Ruby Mountains, separated only by Secret Pass where highway 229 crosses from east to west. During a storm on February 16 – 17, 1986, 6.7 inches of Snow Water Equivalent accumulated on the pillow at this site. Considering the usually colder temperatures in central Nevada, this meant that 4-6 feet of powdery snow would have fallen on the pillow in a 24 hour period. This would be a phenomenal snowfall in a much warmer and wetter climate such as the Sierra Nevada Range, but for central Nevada, wind deposition must have played a major role in loading the site up like it did. The other four SNOTEL sites lie just to the south in the Ruby Mountains and are all located on the west facing slope. None showed a gain of more than 2.0 inches of Snow Water Equivalent for the same time period, making it unlikely that this was solely the result of a massive storm event. Precipitation data at Hole-In-Mountain did not show as high a catch as the pillow did, but with the assumed high winds, precipitation catch efficiencies typically don't keep

up with what falls on the pillow. Unfortunately, this site was missing two pieces of information that would help solve this riddle. Air temperature data was missing or not reliable that year and snow depth data was not yet being measured.

Sometime after the Midnight reading was received on February 18, an avalanche let loose on the steeper slope above the site, came rushing down through the aspen grove, whose bare branches in the winter would do little to slow or stop the snow, hit the site and off it went.

Now some folks would call us persistent, some would call us slow learners, but most might use the term dumb for putting the site right back up in the same spot. But the fact is that snow data needs to come from the same location year after year to provide the best possible data record for predicting the annual spring runoff. Varying the point where snow data are collected by just a few feet, can affect the consistency of the data dramatically. So we watch each winter come and go. Watch the snow fall at this site with the additional help of a recently installed snow depth sensor and continue the record started in 1982. As sure as day follows night and summer follows winter this area will slide again! I only hope for two things:

1. Nobody is up at the site when it happens, especially myself, and
2. It happens after I retire and it becomes someone else's problem to deal with!



As you can see from the photo, this site lies on a bench just east of the East Humboldt Range at an elevation of 8,100 feet. Hole in the Mountain Peak rises to 11,306 feet just to the west of it. Vegetation is primarily young aspen along the bench and low growing shrubs on the steeper mountain side. A prime recipe for an avalanche.

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