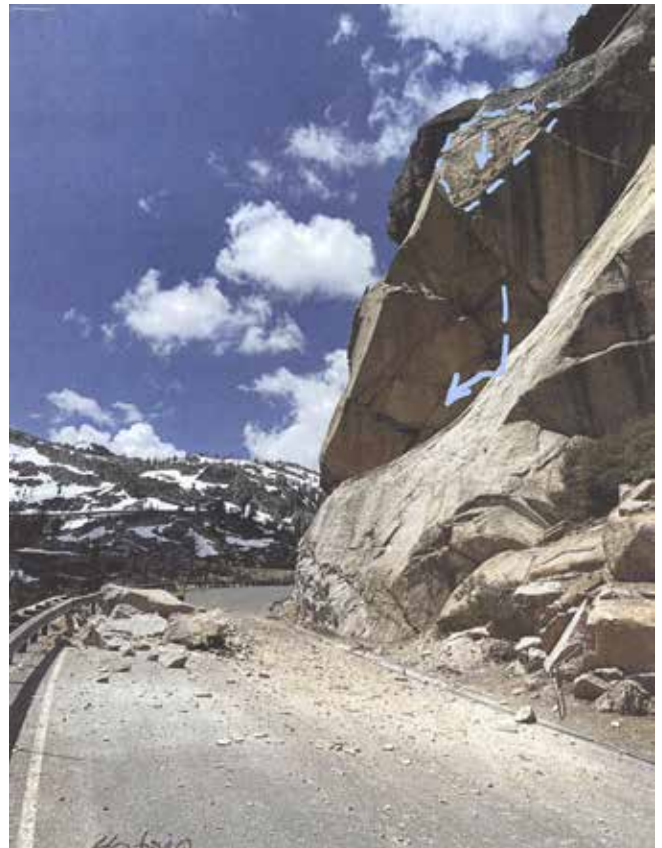


## Scary & Stay Tuned

On June 9 a rock fall closed Old Highway 40, Donner Pass Rd. The largest rock in the fall is about 40 tons. The immediate solution, as with previous rock falls, would be to get some bulldozers there to push the rocks off the side and re-open the road. Of course you'd want to remove the new expensive guard rail first. It's a bit more complicated than that though.

Nevada County has been monitoring the area for some time though, especially as part of the road reconstruction over the last three years and so they first consulted their data. Then they got some geological engineers out. They sent drones up to evaluate things. The result was, "stay away," and it's going to be awhile before even the first stage of resolving the problem gets underway.

The first step is to get some scaling done which means sending people up the rock faces with six-foot long steel rods. They poke and prod the cracks to see what's loose and ready to fall immediately. That's the immediate analysis. Then, over time, Drones will go up following the same precise routes each month. A computer program then analyzes the photos pixel by pixel. That analysis can record changes of less than an inch. Engineers will get an idea of how the rock face



Rock fall area; rocks still in place. The dashed blue area shows one area of ongoing concern

is shifting and what the immediate danger is.

The rock face is moving in geological time, of course, but now it's moving in human time as well with the rocks moving measurably now as the rock fall shows. Engineers have gone to the area and probed the cracks that riddle the whole face. One crack is twenty-five feet deep and shows immediately recent breakage. When that breaks off the boulder should be about one hundred tons.

If the scaling analysis works and only shows that some loose rocks need to be removed the road can open in time for Labor Day. Then the focus is what happens next in the off-season which will mean more closures. If the scaling shows more immediate danger than who knows when the road can reopen. No one wants to gamble about a catastrophic rock fall which would include a one-hundred ton, or any ton, boulder.

Once the initial analysis is done plans can be made for the long-term solutions. Those include removing loose rock and drilling bolt holes for long anchor bolts to bolt the face to the rock behind. Another solution calls for inserting inflatable pillows into the cracks that can assert many tons of force to break off rocks. Then the road can reopen. The drilling should be interesting. One method uses



The rock face is riddled with cracks, one is twenty-five feet deep.

wagon drill rigs that go down the rock faces and drill the holes. Another method brings in cranes with two-hundred foot reach to drill into the rock faces.

If that's not enough, extreme measures, including blasting, will have to be employed to remove rock that could fall. All that happens over the new road which will have to have fill placed on top to cushion it against rock falls. In any case, about fifty feet of road is going to need replacement.

Then everything has to be hauled away. That will take time. We won't know until August what the scaling discovers and then some time after that what the long-term solutions are. So stay tuned.

Rocks are brittle and so where soil slides can give some warning, the rocks don't give much. That makes things particularly dangerous and why the road cannot reopen immediately. For now, the place is "very scary," said one of the engineers.



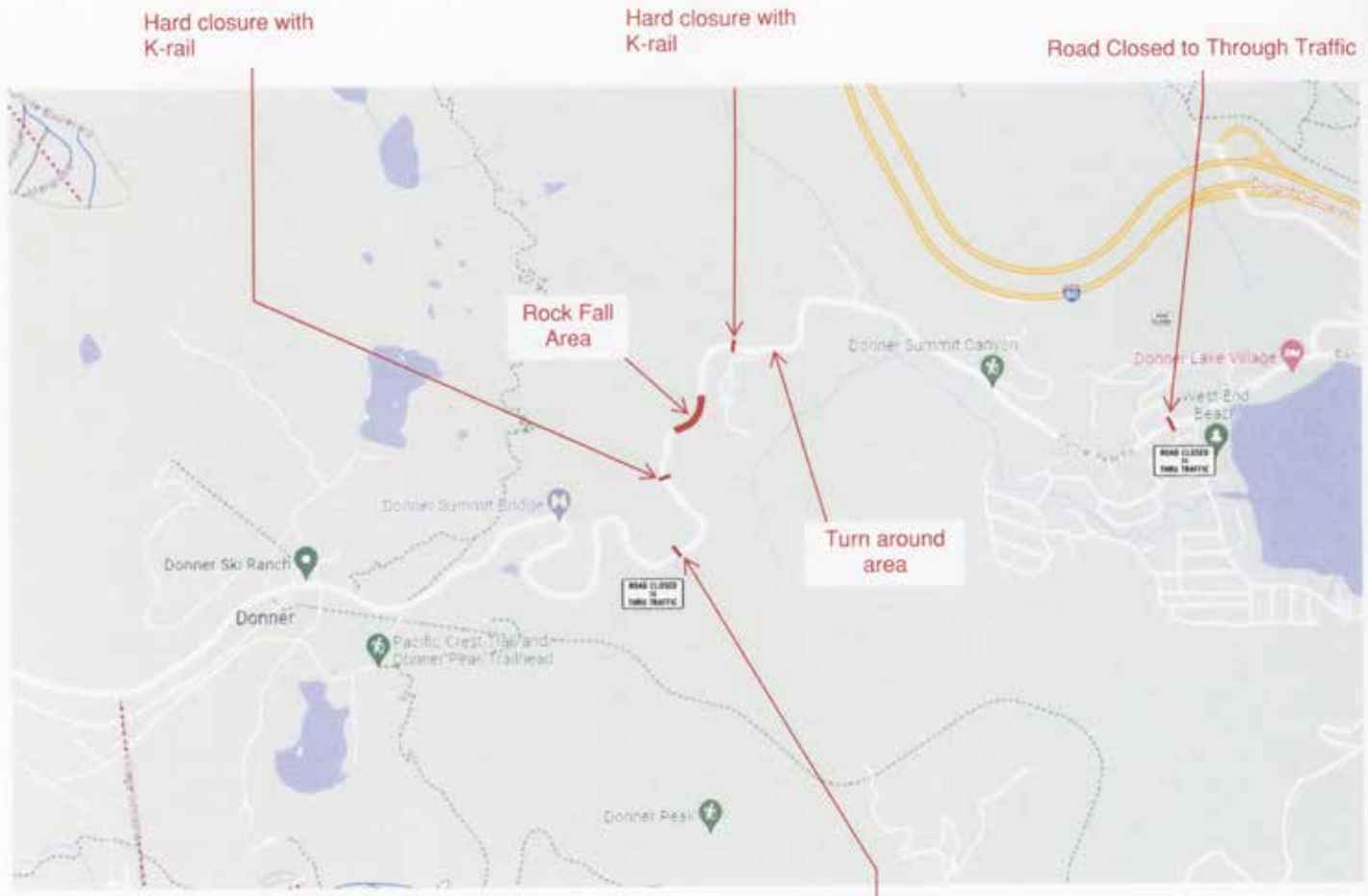
Within the red circle is the about 100 ton boulder with the twenty-five foot crack which extends down to the soil.



Parenthetically, it's been quite amazing at the number of people in automobiles, on bikes, or even just walking who don't believe the road closed signs. Just while we were getting our initial update a half dozen cars and once bicyclist approached the barrier. Some of the big rocks are getting ready to fall. They may not fall immediately, but who wants to be there when they do? Did we mention that one is about 100 tons? A nice road bike or SUV is no match.



The rock fall area



Donner Pass Rd  
Road Closure Map