



# Engineering Ethics: The St. Francis Dam Failure

An Online Continuing Education Course for Engineers

**Course Number: ET-2030**

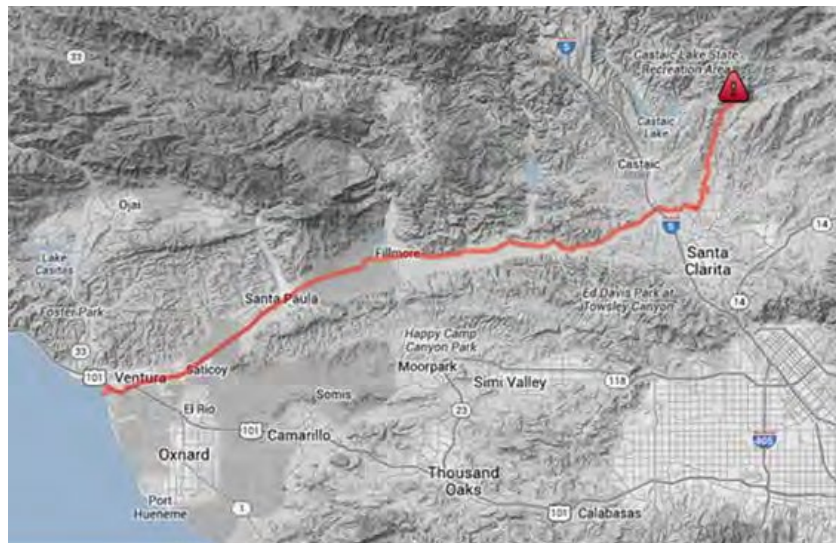
**Credit: 2 Hours / 2 PDH / 2 CPD**

# Engineering Ethics – The St. Francis Dam Failure

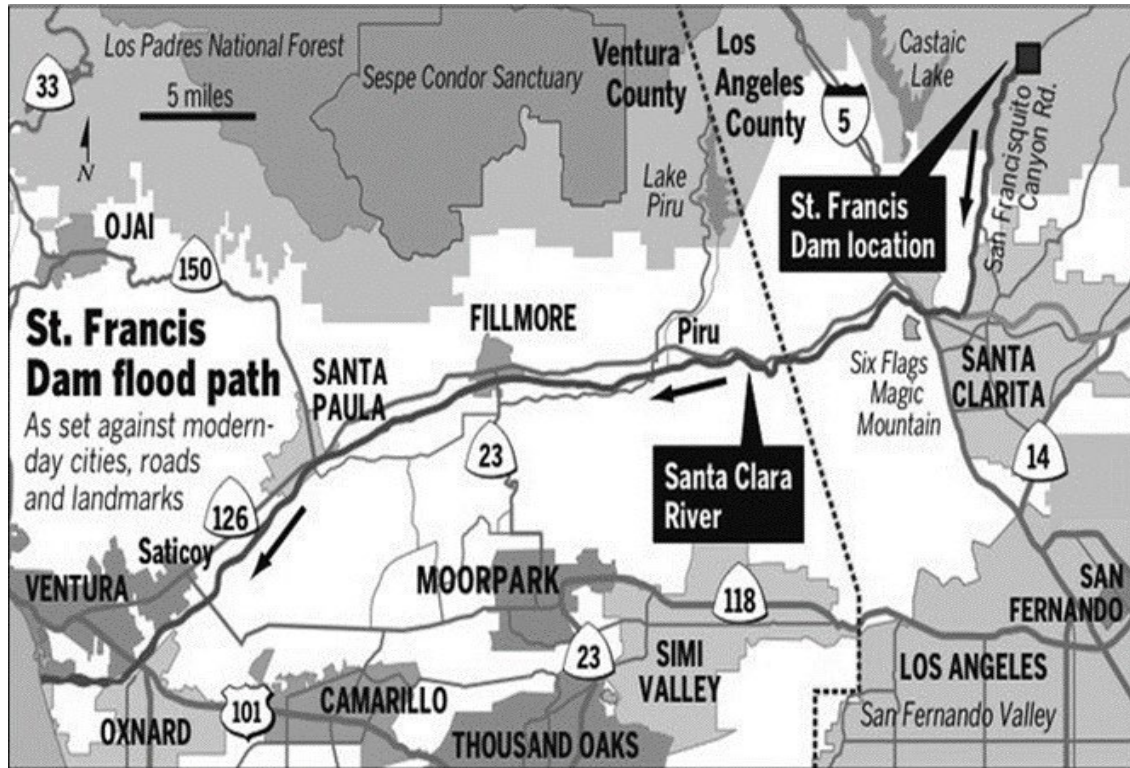
Mary McElroy, P.E.

## Introduction

On Monday, March 12<sup>th</sup>, 1928, at 11:57 p.m., the electric lights in the city of Los Angeles, California, flickered momentarily. At that same instant, in the San Francisquito Canyon, located approximately 35-miles to the north and east of Los Angeles, the St. Francis Dam collapsed, releasing 15-billion gallons of water. Over the course of the next 5 ½ hours, the released water, which originally was traveling in the form of a 75-foot high wave, picked up debris, mud, and human bodies as it traveled west following the Santa Clara River bed and finally emptying into the Pacific Ocean near Ventura, California. This massive wave created a 2-mile wide path of destruction as it traveled approximately 55-miles, flooding Castaic, Fillmore, Bardsdale, Santa Paula, and Montalvo.



*The path the floodwaters followed after the dam collapsed releasing 36, 180 acre-feet of water down the San Francisquito Canyon*



*The path the floodwaters followed set against modern-day cities, roads, and landmarks*

Because the incident occurred around midnight, most people were in their beds sleeping when the dam collapsed and had no warning as to the impending disaster. Eyewitness accounts of the event described the victim's shock when the floodwaters hit.

Mr. Ray Rising, an employee of the Department of Power and Water, who was living with his family near the dam, described the incident. *"We were all asleep in our wood-framed home when I heard a roaring like a cyclone. The water was so high we couldn't get out the front door. The house disintegrated. In the darkness, I became tangled in an oak tree, fought clear and swam to the surface. I was wrapped with electrical wires and held by the only power pole in the canyon. I grabbed the roof of another house, jumping off when it floated to the hillside. I was stripped of clothing but scrambled up the Razorback of a hillside. There was no moon, and it was overcast with an eerie fog-very cold."*

The statements from two survivors sleeping in tents at the Southern California Edison Company workers' camp, located approximately 15-miles SW of the St. Francis Dam, document the utter shock they experienced when the flood waters struck their camp. Oliver Crockett stated that *“we were all asleep when the flood came. The first I knew was that I had been thrown against the roof of the tent in which I was sleeping. The water had come underneath the tent, and we were imprisoned there for an hour before we reached safety. All around me, tents were swirling, and men were being thrown about like straws. I never saw them again.”*

After impact from the floodwaters, Russel Roth used a floating water tank to save his life explaining, *“I was on top of a raft composed of part of the tent and was being tossed around. Finally, I got aboard a big metal object, which proved to be a water tank, and that saved my life. I rode this until I was dashed up onto the shore. Then I ran up the hill, and some fellow ran by me, and I haven't seen him since.”*



*Twisted auto wreckage marks the site of the Southern California Edison Kemp Camp, which was destroyed in the flood*

In Santa Paula, eyewitness descriptions of the destruction created by the St. Francis Dam collapse and ensuing flood explained, *“It is just one great scene of devastation, at some places a mile and a half wide, which stretches to the sea (Pacific Ocean). Thousands of people and automobiles are sloshing through the mud and debris looking for the dead. Bodies have been washed into the isolated canyons. I saw one alive stuck in the mud up to his neck.”*

*“As far as you could see, there were uprooted trees, fragments of barns and farm buildings, fence posts wrapped in yards and yards of tangled barbed wire, carcasses of cows, dogs, chickens, horses, and slabs of concrete, perhaps from the abutments of the Willard Bridge that had recently linked Santa Paula to the oil leases on South Mountain.”*



*People examine the damaged road and washed away railroad track, caused by excess water flowing down the Santa Clara River after the failure of the St. Francis Dam.*

It was estimated that over 450 people died as a direct result of the dam failure. The death occurred not only from drowning but by impact from mangled debris and impalement by uprooted trees. An exact number of deaths could not be determined since many of the bodies of the victims washed out to the Pacific Ocean with the floodwaters. Dead bodies from the catastrophe were found in the Pacific Ocean as far south as San Diego and continued to be recovered through the mid-1950s.

The floodwaters from the St. Francis Dam course destroyed most structures in its path. Powerhouse No. 2, which generated power, was demolished. Residential structures were swept away. It was estimated that 100 homes were damaged. Over 24,000 acres of fertile land were destroyed. Roads and bridges were washed away. Bardsdale Dam was turned upside down and destroyed.

The city of Los Angeles lost 100 families and affected lands.

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