

# Long Beach City Slowly Sinking

By GARNER DAVIDSON  
LONG BEACH, Calif., April 20 (AP)—You know what it is to have that sinking feeling? So does this seacoast city of more than a third of a million population.

Along the shore, parts of it are sinking. Palm trees, oil wells, office buildings, city hall, roller coaster, the harbor—all sinking. Not much, as distance goes. But quite a bit when the vast Pacific Ocean is at your door, and high tides creep up on you.

They call it subsidence. It is quiet but relentless. One large plant in the harbor district is 23 feet lower than it was when it all started in 1940. In the business district, which fronts the beach, the descent is not so great. But the big municipal auditorium where Miss Universe is chosen each year has gone down about three feet.

### Huge Dikes Built

Huge dikes have been built to keep the ocean out of the harbor industrial area and the city's West Side shoreline.

Experts agree that the cause is mainly the removal of oil and gas from a field that lies under the harbor and part of the city. The field was discovered in 1934.

One engineer said the subsidence is the penalty Long Beach is paying for the oil it is getting. He said, "It's a matter of compensation. Remove more than 920 million barrels of oil from a comparatively shallow field with weak underground structure and something has to give."

The area of the sinkage forms a shallow saucer. This saucer has its center in the harbor on the West Side and spreads out in a great 20-square-mile circle to encompass the downtown area and a large portion of the central and western sections of this city of 250,000.

### Plant Drops 23 Feet

The section east of the downtown district is on high ground and hasn't been affected by the sinkage. However, there is some threat at the opposite end of the city's shore front.

If it weren't for protecting dikes, many areas would be under water today. The Southern California Edison Co. plant in the Arbor area has dropped 23 feet and is 10 feet below sea level. The company has spent six million dollars to build 20-foot dikes to keep the ocean out and to install underground pumps to keep the water level down.

Parts of the west end of the Long Beach shore front—a section of apartment houses, resorts and amusement concessions—would be three feet under water at high tide today if the beach had not been widened and heightened to form a sand dike—at a cost of several million dollars.

### Most Damage in Harbor

So far virtually all the subsidence damage has been concentrated in the harbor. The Harbor Department reports that the settling process has broken pipelines, disrupted sewer and storm drains, buckled railroad tracks and cracked buildings. Sections of some buildings and wharf structures have been cut to relieve pressures. Some railroad streets and bridges have been raised.

City Manager Samuel Vickers says very little damage has been noted in other sections of the city, although "we are running into some problems in the maintenance of gas and water pipes. We have to put in flexible joints in some cases. This is not a serious problem, but we are watching it closely."

### Tidal Wave Could Cause Flood

Robert E. Shoemaker, chief harbor engineer, said in a report that a seismic tidal wave, like those which sometimes come out of the North Pacific, could cause serious flooding in the harbor if it should hit at the same time as normal high tides. He also expressed concern over what an accidental dike break or a wartime bombing might do to the harbor.

Another who is alarmed at what might happen is Clyde G. Roseberry, executive director of the Long Beach Civic League. He said that if the sinkage goes as far as some engineers predict—as much as 73 feet—"all our present shoreline will be under water, and the shoreline will be moved up close to Anaheim Street, 14 blocks from the ocean."

### Minor Earthquake Dangerous

He said, however, that Long Beach probably will spend enough of its oil revenue to keep the water out with dikes and other structures.

"Even so," he said, "the saucer effect has put all the buildings on a slight slant and in even a minor earthquake the damage could be terrific."

The villain is the Wilmington oil field which stretches out under the harbor and along the Long Beach coast line. There are about 2,700 wells in this field, about 900 of them belonging to the city. Revenue from the city wells average 24 million dollars a year, with the city and state dividing the money evenly.

### Different Solutions Offered

In the peak year of oil production, 1951, the center of the subsidence bowl dropped 2.37 feet. Since then less oil has been removed and the rate of sinkage has declined to an average of 1.4 feet per year at the center. In recent years, the average annual fall in the downtown area has been a little over an inch.

Nevertheless, the land is still sinking. What is the solution? Some have suggested that the removal of oil be stopped. But the city doesn't want to give up the revenue and is searching for other answers.

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