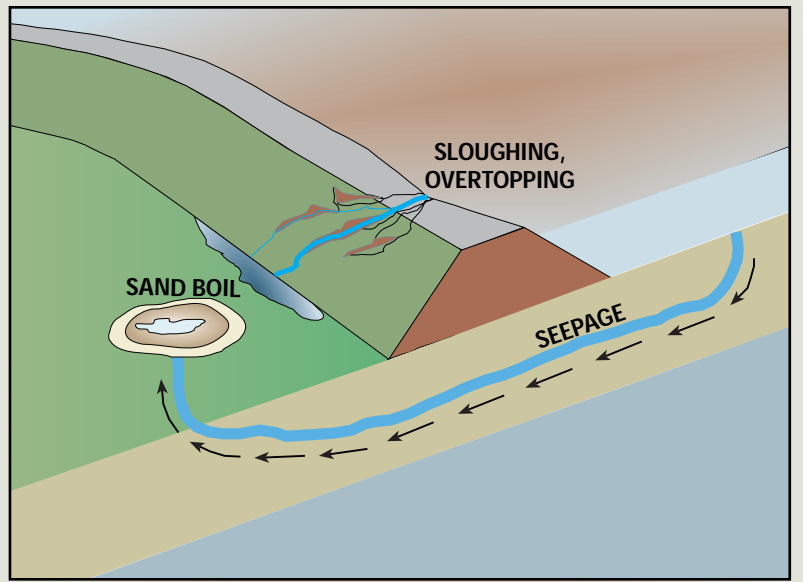


WALLS OF LIFE

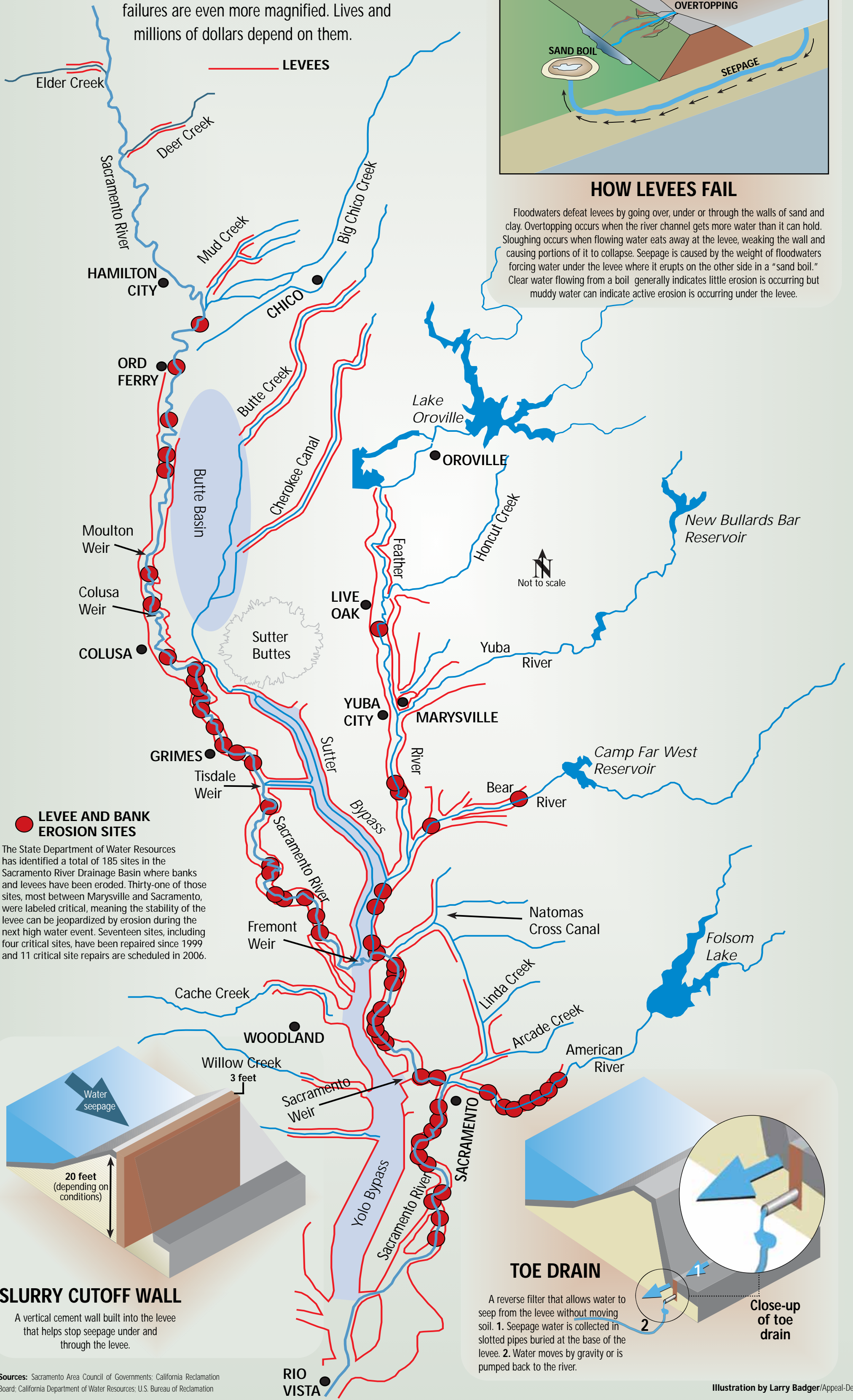
Yuba-Sutter lives behind the Sacramento Valley's flood control levees

They stand as silent sentinels, more that 1,000 miles long, guarding the Mid-Valley from the terror of raging rivers. They are forgotten, earthen mounds that remind us of California's rural past, built to protect farms and orchards. But now they protect densely populated areas. When they fail, as they did in 1997, 1986 and 1955, their failures are even more magnified. Lives and millions of dollars depend on them.

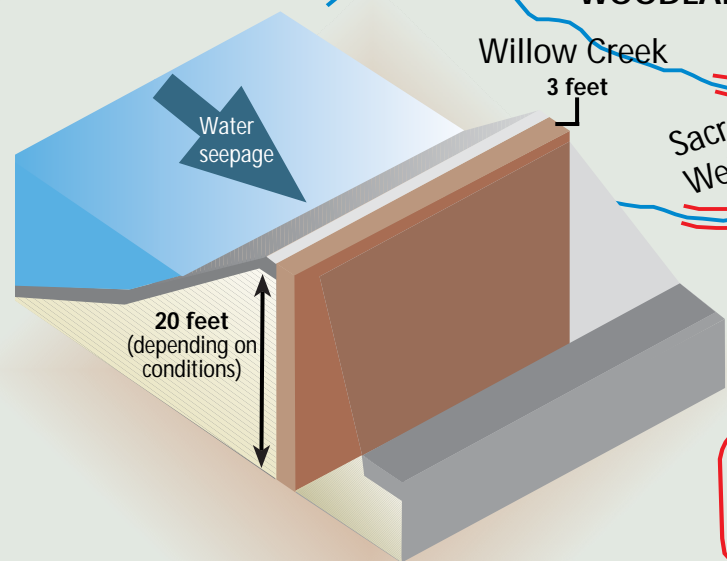


HOW LEVEES FAIL

Floodwaters defeat levees by going over, under or through the walls of sand and clay. Overtopping occurs when the river channel gets more water than it can hold. Sloughing occurs when flowing water eats away at the levee, weakening the wall and causing portions of it to collapse. Seepage is caused by the weight of floodwaters forcing water under the levee where it erupts on the other side in a "sand boil." Clear water flowing from a boil generally indicates little erosion is occurring but muddy water can indicate active erosion is occurring under the levee.

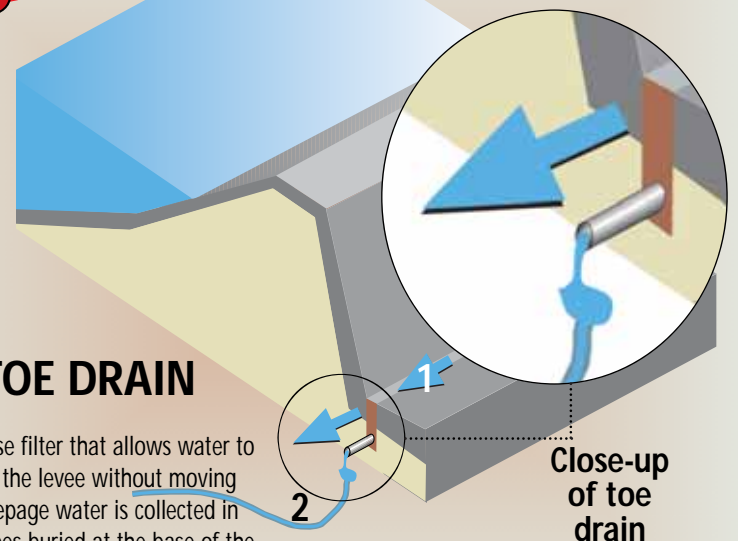


LEVEE AND BANK EROSION SITES
 The State Department of Water Resources has identified a total of 185 sites in the Sacramento River Drainage Basin where banks and levees have been eroded. Thirty-one of those sites, most between Marysville and Sacramento, were labeled critical, meaning the stability of the levee can be jeopardized by erosion during the next high water event. Seventeen sites, including four critical sites, have been repaired since 1999 and 11 critical site repairs are scheduled in 2006.



SLURRY CUTOFF WALL

A vertical cement wall built into the levee that helps stop seepage under and through the levee.



TOE DRAIN

A reverse filter that allows water to seep from the levee without moving soil. 1. Seepage water is collected in slotted pipes buried at the base of the levee. 2. Water moves by gravity or is pumped back to the river.

Sources: Sacramento Area Council of Governments; California Reclamation Board; California Department of Water Resources; U.S. Bureau of Reclamation

Illustration by Larry Badger/Appeal-Democrat