

Defenses decayed

Neglected levees pushed past limits

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First of three parts

Seen from the back yards of hundreds of homeowners, the levee that lines the Sacramento River looks strong and stout, ready to hold back a river that once flooded the Valley from side to side.

Seen from a boat, the levee is a mess. At seven points from the Pocket to Land Park, the current has scoured holes in the riverbank. In some places it has undercut trees that could fall into the river during a flood, taking a chunk of the levee with them.

The aging levees that protect Sacramento not only are a nagging worry, they are a symptom of a much larger problem.

Seven years after a deadly storm soaked the Central Valley, killing six people and driving 120,000 from their homes, state leaders and lawmakers are cutting funding for flood protection. They are putting off long-needed upgrades to a century-old system that safeguards the state capital, even as developers build thousands of homes in deep flood plains - some of which were under water in 1997 and, before that, in 1986.

Although Sacramento has long been ranked one of the most flood-vulnerable cities in the country, these latest trends intensify that risk.

"We are looking down the barrel of a very nasty gun," said State Reclamation Board member Jeff Mount during a recent meeting about the status of state flood management. "Maybe we will get lucky. Maybe we won't. But I think we have a crisis."

Over the past three months, The Bee has interviewed more than 100 leading flood-control specialists, engineers, legislators and local residents, while reviewing boxes of state and federal documents. Although authorities disagree on the extent of the threat, all confirm that the state's flood-control system is in serious disarray, for the following reasons:

* In just four years, state leaders and lawmakers have cut the flood management budget of the Department of Water Resources by 74 percent, from \$116 million to \$30 million. DWR now admits it can't meet many of its flood-control obligations, which include maintenance of essential flood channels, such as the Yolo Bypass that shunts water around Sacramento.

* Budget cuts and environmental regulations have also compromised repairs of 1,600 miles of state-controlled levees that are part of the Sacramento and San Joaquin flood-control projects. A recent U.S. Army Corps of Engineers study found

183 spots along the Sacramento River where levees have visibly eroded, including 25 sites deemed "critical." Some of these erosion sites increase the flood threat to such heavily populated areas as downtown Sacramento, the Pocket - in south Sacramento - and Natomas, to the north.

* California taxpayers face increasing liabilities for flood-control structures that agencies haven't adequately inspected and repaired. Two weeks ago, the state Supreme Court upheld an appeals court decision that found California responsible for a 1986 levee break in Yuba County. That one case could cost taxpayers hundreds of millions of dollars, and a similar case - involving a 1997 levee break in Yuba County - is scheduled for trial in October.

Who's minding the store?

Seasonal and erratic, floods have long inspired fits of alarm and indifference. As author John Steinbeck once wrote about his home state, "It never failed that during the dry years the people forgot about the rich years, and during the wet years they lost all memory of the dry years."

That amnesia is institutional.

Following the devastation of the 1997 floods, Gov. Pete Wilson convened a blue-ribbon panel that recommended sweeping changes. Helped by \$120 million in emergency federal money, the U.S. Army Corps of Engineers repaired 600 damaged levee sites in 10 months. By 1998, the agency's Central Valley flood control budget had jumped 33 percent.

Despite those efforts, flood agencies have yet to institute the type of comprehensive fixes that the Governor's Flood Emergency Action Team recommended back in 1997. In the intervening years, Wilson left office, and Gov. Gray Davis found himself mired in electricity crises, 9/11 security problems and the state's fiscal meltdown.

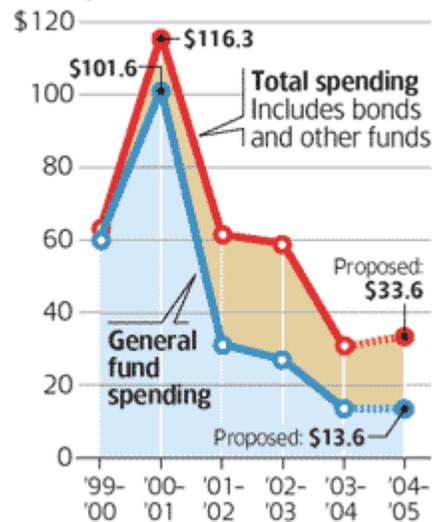
With the Central Valley enjoying a series of relatively storm-free years, flood control "became pre-empted by everything else," said state Sen. Mike Machado, D-Linden.

A big problem, say many flood experts, is that multiple agencies are involved with - but not fully responsible for - flood control.

In California, the Corps of Engineers builds most flood-control projects and levees but is not responsible for maintaining them. Those duties are delegated to the state Reclamation Board and DWR, which further delegate some maintenance to local reclamation districts, which are often strapped for funds.

Shrinking budget

State expenditures on flood management (in millions of dollars):



Source: Legislative Analyst's Office

Sacramento Bee

That's not the end of it either. Other bureaucracies include the Federal Emergency Management Agency, which administers the flood insurance program and produces the arcane - and sometimes outdated - maps that determine the 100-year flood plain, where insurance is required. Then there are regional entities such as the Sacramento Area Flood Control Agency (SAFCA), which raise money through a special assessment and try to work through the bureaucratic tangle.

Although the state is ultimately responsible, many California lawmakers have never wanted to pay to protect land-use decisions made by local governments.

"What has happened over the years is a total lack of programmatic clarity on who pays, and who doesn't," said Phil Isenberg, a former Sacramento mayor and state legislator. "If you were an anthropologist from Mars, you would shake your head in wonder and say, 'Gosh, everyone is involved and nobody is in charge.' "

Levees the weakest link

Not all is bleak in the world of fighting floods. Since 1990, flood control agencies have fortified 82 miles of levees in and around Sacramento at a cost of \$265 million, most of it federal money. Congress also has approved a modification of Folsom Dam - so it can release more water before a dangerous deluge - and a "mini-raise" of the dam itself, to hold back more water.

When completed, those Folsom projects will bolster Sacramento's protections, but they won't eliminate the threat from the American River. Moreover, they do little to address the Valley's most deadly source of flooding over the years: the Sacramento River and its tributaries.

Since 1955, levee breaks along two of these tributaries, the Yuba and Feather rivers, have killed more than 60 people and destroyed thousands of homes and businesses. In Natomas and the Pocket, levees along the Sacramento River came within inches of bursting during the 1986 flood, and they continue to be plagued by seepage and erosion.

"These levees scare the heck out of me," said Curt Aikens, general manager of the Yuba County Water Agency, which doles out funds for Yuba flood-control improvements.

In 1995 and 1997, DWR crews helped save parts of West Sacramento and other cities by spotting levee leaks and dispatching crews with sandbags. But because of recent budget cuts, state officials now doubt they could repeat that performance. As DWR flood chief Stein Buer told the Reclamation Board in November, "I don't feel particularly confident we could take on a '97 flood at this point."

Levees - earthen structures that attempt to keep a river within its banks - are an engineer's nightmare. Gophers dig holes in them. Boat wakes erode them. In Sacramento alone, levees protect more than \$20 billion worth of property and 400,000 lives, but they often hide a mound of uncertainties.

Many homeowners assume that levees are engineered like dams. Not so. Whereas engineers are careful to anchor dams into bedrock, early farmers used mules and wagons to dredge sediments out of the river and build the first levees. As a result,

modern levees often are built on a layer cake of sand and mining debris, where water can seep, and undermine the entire levee, during a big flood.

Generally, the most troublesome Central Valley levees are in rural areas, which have neither the clout nor the tax base to secure money for repairs. Places downstream of old mining sites - the Bear River in Yuba County, Cache Creek in Woodland - have perennial seepage problems. But even in urban areas, levees can leak surprises.

Consider the Pocket and Greenhaven.

Home to 48,000 people, the Pocket-Greenhaven area occupies a bend of the Sacramento River five miles south of downtown. The neighborhood was developed in the 1970s and 1980s, when builders were allowed to construct homes right up to the levees' edge.

In the early 1990s, the Corps of Engineers spent \$40 million fortifying Pocket levees to reduce seepage, which flowed into people's yards in 1986. By 2002, however, the Sacramento Area Flood Control Agency had found 25 places from Freeport to South Land Park where water had continued to seep, or "boil up." So SAFCA last year spent an additional \$10 million plugging the worst leaks.

All this would be easier if levee inspectors had X-ray vision. Instead, engineers rely mainly on an age-old technique - geologic core samples - to see if a levee is solid or largely composed of sand and gravel. If by chance their probes miss a sand layer by a few inches, a serious threat can be overlooked, only to be discovered when the river is in full flood.

"I hate to criticize my profession, but our whole system of evaluating these levees sucks," said Francis "Butch" Hodgkins, who is preparing to retire from SAFCA after 11 years. "We keep picking off the worst spots after every successive storm, and that is a hell of a way to run a flood-control system."

Most people who live behind levees rarely hear about these concerns. In fact, some local residents see levees as a recreational amenity and seek out homes in their shadow.

The lure of the river

One recent sunny morning, Pocket residents Nicole and Maurice Makram walked their dog, Sam, along the Sacramento River levee and outlined why they picked a home right next to it.

"We have some kayaks, and you can take them right over the levee and plop them in the river," said Nicole Makram, 31. "Our dog loves to swim in the river, and this trail is just wonderful."

The Makrams moved here from St. Louis, where water nearly inundated the city during the 1993 Midwest floods. Even so, Nicole Makram says she didn't hesitate in buying a house next to a mighty river. "I didn't have any trepidation at all," she said.



Nicole and Maurice Makram walk their dog, Sam, on the levee in the Pocket area of Sacramento. The couple said they had no fear of buying a home near a mighty river.

Sacramento Bee/Randy Pench

Fred and Denise Haddix felt pretty much the same way up until New Year's of 1997. At the time, the Haddixes were living 20 feet away from the Feather River levee, in the town of Arboga south of Marysville.

Over the years, authorities had assured the Haddixes and other residents that they would soon fix assorted leaks in the Arboga levee. DWR and the corps had scheduled a major upgrade in 1998.

But the flood arrived in 1997 - on Jan. 2, to be exact.

On that night, Denise Haddix stayed in bed, reading, while Fred headed outside to watch the water rise. Workers for the state and Reclamation District 784 had found a small boil where water was seeping through the levee, but no evacuation had been ordered.

Shortly before 8 p.m., Fred rushed indoors and told Denise that emergency workers had abandoned their vigil.

"Run!" Fred heard one of the workers yell. "The levee is about to go."

Moments later, the Feather River broke through its banks, destroying the Haddixes' home and damaging more than 100 others in Yuba County. The Arboga couple barely escaped. Denise fled with emergency crews while Fred drove his truck through the torrent to reach the top of the ruptured levee.

To this day, Fred Haddix recalls the horrid sounds and sights of that night. A roaring current. Power lines falling. Transformers exploding as they hit the water.

"I still have nightmares about it," he said over a cup of coffee at a diner in Citrus Heights, near where his family now lives. "At the time, the whole thing didn't seem real."

Like scores of Yuba County residents, the Haddix family lost nearly everything in the 1997 flood. Since their home didn't sit in a federally designated 100-year-flood plain, they hadn't been required to buy flood insurance, so they didn't. The soggy shell of their 3,000-square-foot home survived, but government contractors had to tear it down to rebuild the broken levee. DWR paid the Haddixes \$45,000 for what once had been a \$200,000 house.

As bad as it was, it could have been worse. Three people died because of the levee break, including Marion Anderson, wife of Gene Anderson, who manages Reclamation District 784. Anderson spent several sleepless days fighting the flood while rescuers searched for his lost wife. Now Reclamation District 784, along with the Department of Water Resources, is a defendant in a lawsuit filed by 500 of Anderson's neighbors.

Lawrence Mann, a San Francisco attorney who represents those plaintiffs, said responsibility for levee repairs will figure heavily in the case, which could go to trial this summer. Nearly a half century ago, he said, the state took control of the Sacramento Flood Control Project and agreed to maintain it and work with the federal government on any problems.

"The state had known for years that the Arboga levee had severe foundational problems," Mann said. "The state scheduled it for repair but didn't do the work. Because of that deferred maintenance, three people died."

Every few years, a convergence of meteorological forces creates powerful storms off the coasts of Hawaii. A dipping jet stream picks up these swirls of warm moisture and slams them into the Sierra.

Early flood planners knew little about the origin of these winter typhoons, now popularly known as "Pineapple Express" storms. At the turn of the century, leading engineers estimated the Sacramento River could generate a flood flow of 300,000 cubic feet per second. But by 1907, a flood that swamped Yuba City and nearly inundated Sacramento generated twice that flow.

From the storm came an ambitious replumbing scheme, the brainchild of a feisty newspaper publisher from Colusa, Will Green.

As early as the 1860s, Green had noticed that seasonal overflows from the Sacramento River tended to spill into natural sloughs and channels. He advocated a system of weirs and bypasses to mimic those natural contours and, after decades of debate, Congress finally approved the Sacramento River Flood Control Project in 1917.

Upstream of Sacramento, the project's most important feature is the Fremont Weir, a low-tech, 1.7-mile-long concrete lip that directs most of the swollen Sacramento River into the Yolo Bypass.

During big floods, the weir carries the equivalent of 6,000 boxcars of water a minute under Interstate 80. That's about four times the water that flows past Natomas and the state capital when the Sacramento River is engorged.

These days, the Fremont Weir is a picture of neglect. The weir's channel is clogged with a million cubic yards of sediment. Trees and shrubs have sprouted, creating a rich habitat for wildlife but compromising the bypass's original purpose - a rapid conveyance for flood flows.

"On the Sacramento River, we are awfully lucky that plans made back in the early 1900s have worked for the last 100 years," said George Basye, a Sacramento lawyer who specializes in flood issues. "But there is no guarantee this system will work forever."



In late February, water from the Sacramento River and Sutter Bypass flows over the Fremont Weir, distinguished by the churning whitewater. The 1.7-mile-long concrete lip that directs Sacramento River overflow into the Yolo Bypass is a picture of neglect, its channel clogged with 1 million cubic yards of sediment. Funding for cleanup is uncertain.

Sacramento Bee/Randy Pench

Political infighting

Indeed, many experts believe that the Sacramento River Flood Control Project - ingenious for its time - is outdated and in need of major overhaul, not patchwork repairs.

When first conceived, the flood system was constructed with narrow channels, partly to keep water velocities high to flush out mining debris. Now that mining sediment is largely gone, and the tight channels are contributing to the erosion and high costs of maintaining levees.

In addition, big Sierra storms have been arriving more frequently and producing more runoff than ever imagined.

"That system is stressed way beyond what everyone thought it was designed to do," said Mark Charlton, deputy district engineer for the Army Corps of Engineers.

Five years ago, the corps launched a \$35.8 million state-federal effort - known as the Comprehensive Study - to redesign these flood channels, marrying flood control with environmental protection. Like many initiatives that followed the 1997 flood, the study raced along for a few years, then was stalled by budget cuts and political sniping.

Near Colusa and Fresno, groups of farmers and riverfront landowners have attacked the idea of setting back levees and widening the flood channel, fearing loss of property. Meanwhile, many California lawmakers and officials have started questioning state investment in flood projects, arguing that the expenses should be shouldered by locals.

Mary Nichols, who served as state resources secretary from 1999 to 2003, said she tried for years to secure state funding to clear out the Fremont Weir and finance other flood projects but was blocked by others in the Davis administration.

"There is an ideological war going with the Department of Finance and budget overseers in the Legislature," said Nichols, now director of the University of California, Los Angeles, Institute of the Environment. "Some folks in Finance don't believe that fixing levees is something the state should have to pay for."

According to sources in both agencies, the dispute has dragged on for years. Finance Department officials argue that cities and counties should pick up more costs since they directly benefit from flood-control projects. DWR officials argue that the state is obligated under the water code to maintain certain regional flood-control structures and could face huge legal liabilities if it ducks those duties.

Arguably, the state's retreat comes at the worst possible time for local reclamation districts, which have no control over land use but are charged with maintaining most levees across the Valley. According to state records, several of these districts regularly flunk state inspections for levee maintenance. Some have been flunking for years.

According to DWR inspection reports reviewed by The Bee, Sacramento-area levee districts generally receive high marks, but down in the Delta it is a different story. Since 1997, DWR has found that Delta districts such as RD 150 (Merritt Landing), RD 307 (Lisbon), RD 369 (Libby McNeil), RD 551 (Pearson District), RD 554 (Walnut Grove) and RD 563 (Tyler Island) regularly do a poor or fair job of maintaining levees.

One of the lowest-ranked districts is RD 556, south of Walnut Grove, which is responsible for 11 miles of levee around Upper Andrus Island but has no employees and a \$50,000 annual budget.

Christopher Lee, an orchard owner and president of RD 556, said the district is short of money but also is tangled in a bureaucratic turf battle. DWR wants levees cleared of brush, he said, but state Fish and Game biologists sometimes object when local farmers bring out the weed whackers.

Lee said he'd rather spend his district's money upgrading water pumps instead of haggling with both agencies.

"You gotta ask yourself, 'What is wrong with this picture?' " said Lee, a country lawyer who grows cherries and pears in the Delta. "It's like Alice in Wonderland."

Pay now or pay later

Finger-pointing is commonplace in the flood control world. But recent court cases suggest that judges have little patience for the blame game.

In 2002, the 6th Appellate District of California found that Monterey County and three other counties were responsible for damage from a 1995 flood that

overwhelmed levees on the Pajaro River, near Watsonville. The counties claimed they faced restrictions from regulatory agencies in cleaning out vegetation in the flood channel, but the court ruled that the counties hadn't tried hard enough.

Then in November, the 3rd District Court of Appeal found the state liable for the 1986 levee break in Yuba County. In that case, the local reclamation district had warned DWR that the levee was suspect, having been built on old mining sediments. But according to the court, DWR ignored the warning, making the state responsible for the levee's collapse.

In the wake of such rulings, legal experts say California could face billions of dollars in liabilities. The choice, many say, is either to keep paying those damages or to invest in a 21st century flood-control system - before the next big one.