

43 DAYS: DOWNPOURS. DEATH. DESTRUCTION.

A SPECIAL REPORT

LISTEN TO THE RAIN

Six weeks of storms pound home a hard lesson

By Susan Essoyan and Dan Martin
STAR-BULLETIN

“Nature reminds us about who’s in charge here. In nature, rocks will fall, rivers will rise and the forces are real.”

Peter Young

Director of the state Department of Land and Natural Resources

WHEN IT COMES TO overall destruction, Hurricane Iniki’s 1992 direct hit on Kauai remains the high-water mark for weather-related calamity in Hawaii. But the recent torrential rain and the chaos it spawned outdid Iniki in the statistic that matters most. Iniki, which flattened thousands of homes, took six lives. The rain of ‘06, as it might be remembered someday, resulted in seven deaths — or eight, if an ill-fated plunge into the sewage-fouled Ala Wai Harbor is counted. The lesson from those six soggy weeks from late February to early this month now seems obvious: Although the dreaded hurricane generates more hope and awareness, the rain that keeps our islands green can turn just as deadly. The whole event proves that anything

can happen here, and we need to be prepared for the abnormal,” said Andy Nash, director of the Honolulu office of the National Weather Service. But are we? Although the Civil Defense response was relatively hitch-free, few homeowners affected by the floods had flood insurance. And deeper questions are being raised about haphazard development, interference with watersheds, and government neglect that might have magnified the human loss and economic impact. Among the worst examples, the state has no record of ever inspecting Ka Loko Dam, whose collapse killed seven on Kauai, and is investigating whether landowner James Pfleger illegally modified the area’s landscape. The decrepit sewer line that burst in Waikiki dated back to 1964 and was long overdue for replacement. A stream diversion in Hanalei

contributed to flooding there. “The underlying problem was government’s inability to basically do what they were supposed to do,” said Dean Uchida, executive director of the Land Use Research Foundation, a lobbying group for landowners and developers. “In the case of the dam safety program, the state was responsible. In the case of the sewer mains, that was just total neglect.” Peter Young, director of the state Department of Land and Natural Resources, blames budget cuts for doleing a dam inspector position a year ago, leaving him with just 1½ positions. “We were doing what we could with the resources that we had,” Young said. Moves are now afoot to add back two positions, and since the dam break, all dams in the state have been inspected. Please see Rain, F6

- F3 COPING** | Floodwaters recede, but the problems persist for months for many homeowners.
- F4 ENVIRONMENT** | The greatest damage occurs when nature’s force meets man-made structures.
- F6 MARCH MADNESS** | A unique meteorological system “blocked” weather in Hawaii and around the globe.
- F8 BUSINESS** | Some companies benefitted, others got soaked in the persistent rain.
- F9 TOURISM** | Hawaii’s economic engine deals with multiple public-relations nightmares.
- F10 KAUAI** | The Garden Isle works on recovery after suffering the greatest losses in the state.

WATER LOG: PHOTOS OF THE DELUGE | F2 F5 F11

43 DAYS: DOWNPOURS, DEATH, DESTRUCTION.
WATER LOG: PHOTOS OF THE DELUGE



DENNIS OGA / OGD@STARBUCKET.COM

MARCH 31: Kang Chong waded through thigh-high water to take a picture of the waterlogged neighborhood as heavy rain caused a canal to overflow and flood Fern, Hauoli and Punahou streets.



GEORGE F. LEE / GLEE@STARBUCKET.COM

MARCH 31: Water flowed into hallways of low-level condominiums on Keeaumoku Street mauka of Wilder Avenue after a nearby stream jumped its banks.



PAUL BATALIA / SPECIAL TO THE STAR-BULLETIN

MARCH 2: An Oahu Civil Defense volunteer monitored a swollen stream that washed away a large portion of this property in Kaaawa.



DENNIS OGA / OGD@STARBUCKET.COM

MARCH 24: Michael Hofmann and Linda Green were aided by OCC inmates after their home on Punahou Street in Manoa was flooded by water and mud. Inmate Justin Delo Santos threw buckets of mud from the back yard into a truck bed.



THURSDAY, MARCH 2, 2006



FRIDAY, MARCH 3, 2006



FRIDAY, MARCH 10, 2006

43 DAYS: DOWNPOURS. DEATH. DESTRUCTION.
RAIN LEAVES BUT PAIN LINGERS



APRIL 1: Bernalie Lalosi, left, listened to Red Cross workers Tamy Goda and Eric Bias in her flooded home on Punahou Street.

Hard-hit residents cope with long slog back

By Mary Vorsino
mvorsino@starbulletin.com

The day after more than six inches of mud rushed into her Kaawa home in torrential showers on March 2, Dawn Nozawa showed an Oahu Civil Defense worker the mess and was confident she could get it cleaned up in a week. He laughed, then told her she'd be lucky if the work was finished by Christmas. A month of painting, scrubbing and bleaching later, she's starting to believe him.

Three weeks after the flood, she found a cake of mud under the tiles in her boys' room. She's had to pull a whole section of the flooring out. The cleanup also is starting to eat away at the family's finances. They had to throw out beds, clothes, a washing machine and dryer — along with irreplaceable heirlooms. Their refrigerator was the last to quit.

"When is this going to stop?" Nozawa asked on a recent weekday. "Everywhere I turn, there's help and it's so great. But I know it's going to hit us financially."

THE NOZAWAS are one family of dozens statewide left dealing with the grueling, costly aftermath of more than a month of heavy rain. On top of the physical and financial strains, there are the emotional ones: having to face the mess, explaining the disaster to children.

Some storm victims will never be able to sit calmly through a hard thunderstorm again. They will watch rain clouds with trepidation and rush home whenever it pours.

Others will have nightmares, perhaps for months.

And many of those whose homes were flooded by muddy water or battered by landslides in the series of storms that hit the state starting Feb. 19 face thousands of dollars in costs and countless weeks of work ahead.

A handful have lost their homes entirely.

"It just really starts to grind on you," Nozawa said recently, on a particularly frustrating afternoon for the longtime Kaawa resident, who operates a petting zoo on her farm.

COUNSELING

Flood victims also face a deluge of emotions

By Mary Vorsino
mvorsino@starbulletin.com

Mike Wurtz and his Red Cross crisis counselors see people when they are shocked, emotional and angry. During the string of disastrous rains statewide, they saw a lot of people.

"They sometimes can feel lost and bewildered and confused. Sometimes, they get sad. Sometimes, they get hysterical," said Wurtz, the Red Cross of Hawaii's disaster mental health coordinator. "It affects relationships. It affects their sleep."

Wurtz and his team visited dozens of flooded-out homes statewide over the course of the heavy rains, offering distraught victims a calm, reassuring word and resources for more help.

They also told victims to be prepared for a slew of emotions as they worked to clean up and rebuild.

"When something like this occurs, we do a lot of education and advocacy," Wurtz said.

"We try to go over what they're experiencing. I try to teach these people these responses so that they don't overreact. These are normal responses to abnormal experiences."

Over time, most people return to normal. They are able to sleep, to go to work, to smile and laugh. But some have more lasting anguish, which leaves them depressed or constantly tired.

"If they're not able to manage their normal lives after a period of time, they should go and seek help," Wurtz said.

Children who are having problems moving on after

WHEN TO SEEK HELP

After a disaster, counselors say, it's normal to be upset, anxious or shocked. Those feelings should subside over time.

If they don't, victims should seek professional help. They should also talk to a psychologist or a doctor if they have difficulty eating or sleeping, miss work or can't return to normal functioning.

Children who go through a disaster tend to rebound quickly. A parent should seek help for a child who is suddenly not playful or happy for an extended period of time.

Source: American Red Cross

a disaster are usually very quiet, he said, and stop being playful and happy. But parents should not worry too much about kids, Wurtz added, because they are more likely to rebound after a disaster than adults.

Wurtz said that "for the most part" victims of the recent heavy rains have been "recovering well."

He has heard of a few cases that required professional help.

There are some 300 Red Cross-trained crisis counselors statewide, all of whom are volunteers. At any one time, about 20 are available to offer their services to disaster victims.

broke. "Just as I was opening my door, I heard a loud explosion," he said.

"I still cannot forget that sound."

When the wall broke, cement tiles shot out at Lalosi and hit him in the back, leaving him scratched and bruised. Then, a wave of muddy water filled with debris slammed him.

For a moment he was pinned up against his screen door. He managed to break the screen to get through and opened the front door, letting nearly two feet of water into his living room.

Once he had closed the door, he called 911.

Then, he watched the stream, waiting for the waters to recede enough so that he could go outside and check on his neighbors. Three nearby homes had been gutted.

TWO WEEKS after the flood, spurred by rain that also caused a devastating mudslide in Maunaloa Valley and left Kahala Mall under nearly a foot of water, one neighbor is still unable to return, and a second moved back in a few days ago.

The retaining wall behind Lalosi's home was rebuilt last week with the help of some volunteers.

While it was gone, Lalosi barely got any sleep. He kept worrying about the possibility of a repeat. "Hopefully, it's a 100-year flood, because I don't want to go through this again in my lifetime," he said recently, after a shopping trip to pick up more cleaning supplies. "We were in shock for a couple of days. It was another state of mind."

The residents of Maunaloa Valley, near Round Top Drive, know all about shock, fear and lost sleep.

The tight-knit community sustained a series of landslides spurred by heavy rain, which have threatened to cut off the only road in. One large landslide created a new canyon right in front of Leleka Lopes' home.

Lopes said, exhaustion peering through her determined voice. "It's really stressful, especially to listen to the river."

Just the other day, Lopes said, she was shopping in town when she saw clouds settling over Tantalus. She froze, then cut short her trip, jumped in her car and rushed home.

WHEN IT RAINED, IT POURED

FACTS & FIGURES

154

The number of times Fire Department personnel on Oahu had to pump floodwaters out of homes or other private property in March. That compares with 105 such "water evacuations" for all of 2005.

Source: City and County of Honolulu

home.

Subsequent rains flooded their petting zoo, and there was little they could do for the animals. "My llamas were standing belly-deep in water," she said. "My poor sheep, my poor pigs, all the silt would end up in their pens."

Two days after floodwaters from Makihi Stream broke a retaining wall and poured into Ray Lalosi's Fern Street home, the Oahu Civil Defense volunteer realized what had happened — how close he had come to death — and broke down in tears. "Thank God I'm

alive," he told himself.

Lalosi had rushed home from Ala Moana Center on March 31 when he got a call from his brother, saying Makihi Stream was high and threatening to overflow.

Lalosi lives in a studio behind his brother's home, where his 15-year-old nephew was alone when the flooding started. The teenager made it out of the house with the help of his father, who had also sped home that afternoon.

While Lalosi was trying to get into his home through floodwaters, the retaining wall keeping the stream at bay



MARCH 4: Doug Kekana walked up his debris-strewn driveway near Crouching Lion Inn along Kanehameha Highway. Kekana's home narrowly escaped the mudslide. He was unable to leave his home for several days.

CHRY ELEN RUSSELL / CRUSSELL@STARBULETTIN.COM

43 DAYS: DOWNPOURS, DEATH, DESTRUCTION.
ACTS OF NATURE AND MAN COMPOUND DISASTERS

APRIL 6: Gregorio Manique cleared debris in the drained reservoir behind Morita Dam. It is downstream from the Ka Loko Dam, which failed March 14, sending a torrent of water down Waialae Stream that washed out homes and killed seven people. The Morita Dam held despite the massive deluge.

Nature's fury teaches engineers hard lesson

By Diana Leone
dleone@starbulletin.com

The six weeks of storms that Hawaii also delivered destruction to the island's environment. Underground water supplies were restricted, debris was washed out of streams and nutrients from land fed offshore reefs.

The adverse environmental effects of the record drenching tend to be where rushing water met man-made obstacles, observers say. That is where landslides and floodwaters push buildings, roads and sewage systems to the breaking point.

"The environment benefits from rain, even heavy rain," said Don Heacock, the state Department of Land and Natural Resources aquatic biologist on Kauai. "What the environment doesn't benefit from is how mankind changes that environment."

Recent storm-related events provided numerous examples of that action, including:

>> In Hanalei on Oahu's Windward side, a rerouting of Maunaloa Stream jumped its man-made bank after heavy rain March 8 and ran down Hanalei Homestead Road, driving neighbors to use sandbags, boards, concrete blocks and even cars to divert floodwater from their homes.

>> Water stored in Kauai's Ka Loko Reservoir became a deadly torrent when it breached the dam March 14, killing seven people and destroying homes downstream.

>> Some residents of Maaunaloa and Manoa valleys saw their picturesque homes on steep mountainsides and near stream beds become danger zones when landslides and mudslides made repeat visits in late March.

>> World-famous Waikiki beaches were temporarily closed by a bacterial contamination from a man-made raw-sewage spill. One man's death and two women's illnesses might have been caused by pathogens in the waste water.

Though Waikiki beaches reopened by April 4, continued poor water quality in the Ala Wai Canal has prompted canoe clubs that normally use it for workouts to relocate because of health concerns for paddlers.

"I think these events reminded people that we are susceptible to flooding and other kinds of disaster," said Derek Chow, a U.S. Army Corps of Engineers senior project manager on Oahu. "Nothing like a good flood to get everybody's attention."

Already, new flood-control studies are being planned for Kaaawa, Waialeale and Waialeale, Chow said. And ongoing projects to improve flood control in Kahuku, Lale, Hawaii Kai, Aiea Hana and the Ala Wai Watershed should get a boost as well, he said.

In the weeks since the Ka Loko disaster, the state government that had inspected not one dam since 2004 assisted in thorough inspections of every dam in the state.

HEALTH OFFICIALS TRY TO STOP WAVE OF MOSQUITOES

Now that the rain has stopped, the state Department of Health's vector control branch is working to prevent major outbreaks of mosquitoes. Mosquitoes can breed in as little as a few tablespoons of standing water. And besides itchy bites, the insects can transmit potentially fatal diseases such as dengue fever.

Here are some tips for eliminating mosquito breeding grounds from the Health Department's Web site:

- >> Dispose of rubbish that can collect water, such as old tires, plastic bags and yard waste.
- >> Flush bromeliads and other plants that hold water with a garden hose once or twice a week.
- >> Tip over wheelbarrows, pots and containers so they do not collect water.
- >> Clean leaves and debris from rain gutters so they drain properly.

"If we didn't build in the flood plain, we wouldn't be flooded with frequency we have," Chow noted. "We like being close to our waterways. Look at the housing prices on shorelines and streams. It's obvious that's what we're attracted to."

Yet in Hawaii, as worldwide, much of the natural course of streams has been altered with bridges, dikes, dams and channels, Chow said. While these engineering feats might work under ordinary rainfall, when heavy rain comes, "water's going to jump the bank somewhere," he said.

Still, periodic storms remove sediment from streams, leaving "boulders nice, smooth and clean, which allows freshwater algae to grow on them," Heacock said. That algae is the basic food of oopu, fish that are found nowhere else in world.

Fresh water flowing into the ocean triggers juvenile oopu in bays to migrate upstream and breed, said Dan Polhemus, administrator of the state Division of Aquatic Resources. The flushing of the streams also tends to wash out non-native creatures while making things better for the native ones, he said.

One function of natural wetlands and estuaries is to slow down floodwaters and filter out sediment and nutrients — keeping them from overwhelming offshore reefs, Polhemus noted.

On April 2, "Maunaloa Stream flooded in a really intense way. It roared into the marsh, and the marsh sucked the whole thing up. At the end of the day, the beach at Kailua was clean. You saw very quickly the ecosystem services you get out of that wetland."

"Waikiki used to look like that," Polhemus said. "You had a big wetland behind the beach that we've turned into real estate."

Re-creating at least some wetland buffer zone is a key component of Chow's Ala Wai Watershed flood control project.

On Kauai a flyover of Kauai's North Shore shortly after the March 14 Ka

Loko Dam breach seemed to show that the Kailiwhi Stream estuary absorbed some of that flood's force, Polhemus said.

In coming weeks, scientists from the state Department of Land and Natural Resources, National Oceanic and Atmospheric Administration and U.S. Fish and Wildlife Service will survey Kilauea Bay's underwater environment, he said. They will be checking for sediment buildup, algae blooms and reef damage from uprooted trees that might have pounded them like battering rams.

Aquatic biologists also will be watching the areas offshore from the Ala Wai sewage spill for a possible algal bloom. The sewage is not expected to cause any direct kills of coral or fish, he said.

A project to pump offshore sand to Kuloa Beach to widen it was postponed two weeks by the sewage spill but is expected to start tomorrow.

U.S. Geological Survey hydrologist Steve Gaingrich called the spate of rain "probably a pretty good recharge event" for Kauai and Oahu's groundwater reservoirs because in addition to flooding, there were periods of "long-term, steady rain."

That is good for long-term water supplies, even though groundwater levels that dropped to record lows between 2000 and 2004 have since recovered to normal levels, he said.

WEATHER ADVISORY

111

The number of flash flood warnings issued by the National Weather Service. The warnings — flooding is occurring or will do so within the hour — were issued for 26 days during the 43-day period starting Feb. 19.



MARCH 31: Renee Miyao inspected a wall that collapsed outside of her apartment building on Puhonua Street. Water overflowed a canal that channels water from Makiki Stream, some of the water rushed through the area where Miyao is standing.



DEBRA GUA / DODD@STARBULEIN.COM

SEWAGE

State denies posting of warning signs in Waikiki was slow

By Diana Leone
dleone@starbulletin.com

A persistent criticism of state and city officials' response to a record raw-sewage spill into the Ala Wai Canal has been that they were slow to post signs along Waikiki beaches warning people of contaminated water.

Watson Okubo, the state official responsible for deciding when to post those signs, rejects suggestions that political or business pressures delayed any postings.

"Nobody went 'twist my arm to put signs up, and nobody made me take them down," Okubo said last week. Not the Health Department director, not the governor, not the tourism industry.

Okubo, head of the state Health Department's water quality monitoring division, said he has a simple credo regarding his role of protecting public health: Rely on data.

"We have to have a good reason why we post a beach (as closed)," he said.

Here is how Okubo explained when, where and why contaminated-water signs were posted for the 48-million-gallon sewage spill that began after a main sewer line broke March 24 during heavy rain:

>> **March 24:** Okubo's office required city crews to post signs in affected areas, which is routine for a sewage spill. This included Kaula Street, where the leak occurred, the Ala Wai Canal and Harbor, the old heliport parking lot (where surfers access breaks at the mouth of the harbor) and the Magic Island finger. The posting locations were based on the estimated amount of the spill at the time, and ocean currents. City and state officials began daily water quality testing at 28 Waikiki surf and beach sites.

>> **March 26:** The city began dumping sewage to the Ala Wai Canal to prevent backup into Waikiki buildings.

>> **March 29:** Based on a spike in bacteria contamination in water samples analyzed March 28, the beaches fronting the Hilton Hawaiian Village and Hale Koa hotels were closed, and signs were posted.

>> **March 30:** The city stopped dumping sewage into the canal.

>> **April 2:** Additional beaches fronting the Halekulani, Sheraton and Moana hotels were closed and signs posted, based on increased bacterial levels.

>> **April 4:** All beaches were reopened after bacterial levels decreased; the Ala Wai Canal and Harbor remain posted. Monitoring continues.

City officials also defend their actions. "On those first few days, everything was going out to deep water so there was no high bacteria count near the shore," city spokesman Bill Brennan said. "The counts near the beach didn't warrant the posting of signs, according to the Health Department."

43 DAYS: DOWNPOURS, DEATH, DESTRUCTION.
WATER LOG: PHOTOS OF THE DELUGE



CRAIG T. KOJIMA / CKOJIMA@STARBULLETIN.COM

MARCH 2: Six inches to a foot of water covered Kamehameha Highway in front of Kualoa Ranch. MARCH 4: Nicki Olarti, below right, helped clean up the Kaaawa farm of her parents, Dawn and Jerome Nozawa, as Sally the donkey poked around in the front yard. The farm, which houses the animals for Nozawa's Ark petting zoo, was hit by a mudslide.



KEVIN HULSE / SPECIAL TO THE STAR-BULLETIN

MARCH 31: The rain ruined many vacations as water backed up on Kalakaua Avenue in front of the Waikiki Outrigger Hotel.



CINDY ELLEN RUSSELL / CRUSSELL@STARBULLETIN.COM



CRAIG T. KOJIMA / CKOJIMA@STARBULLETIN.COM

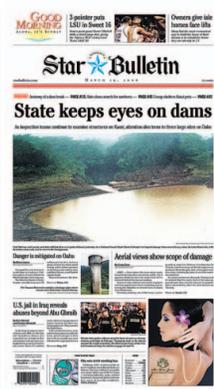
MARCH 13: A van was crushed after high winds toppled utility poles along Farrington Highway in Nanakuli.



WEDNESDAY, MARCH 15, 2006



FRIDAY, MARCH 17, 2006



SUNDAY, MARCH 19, 2006

Rain: Floods raise questions about future development

Continued from F1

But some observers say the rains of '06 should prompt a broad discussion about where and how development should occur.

County governments need to "look hard" at residential zoning laws and regulations that allow homes to be built in flood zones on the base of mountains weakened by development, said Maj. Gen. Robert Lee, who oversees the state's civil defense program.

"On the North Shore (of Oahu), new homes are going up in flood zones right now," he said.

As time goes on and land becomes scarce, pressure to build in more hazardous areas is likely to grow, Lee said.

"We see mountains get cut and then homes are built right at the base, and then you wonder why they're coming into your living room," he said.

The floods serve as a "wake-up call that we need a different paradigm for planning, one that is more sensitive to sustainable development and appropriate use of the land," said Dr. Karl Kim, chairman of the University of Hawaii's Department of Urban & Regional Planning.

FOR EXAMPLE, Kim notes that nature has a way of managing runoff by trapping water in ponds or lakes which trickle down to replenish aquifers.

But in areas like Maunaloa, the man-made system is geared toward "getting as much of that water out of there as possible" through drainage canals, he said. When rainfall is extreme, this leads to what happened on March 31 — when Maunaloa and Maiki streams jumped their banks. Heavy runoff and siltation also damage coastal environments.

Kim advocates a more "holistic" system of catchments and retention basins that absorb the shock of flooding while preserving landscapes, ecosystems and our "precious" water resources.

"We've known for a long time we should be designing with nature, but we've lost that ideal."

Peter Young, director of the state Department of Land and Natural Resources, agrees and notes that such concepts are in use. Niihau Reservoir, for example, was once used for water and irrigation but is now primarily used for flood control. Golf courses in Ewa and Kapolei serve as drainage basins to mitigate flooding.

But he says more could be done, suggesting use of more parks and soccer fields as retention basins.

"The long-term issue that we need to start addressing with our island environment is how we plan and allow development to occur when it borders next to nature," Young said.

"Nature reminds us about who's in charge here. In nature, rocks will fail, rivers will rise and the forces are real. So is the damage."

LEE SAID at least 600 households statewide were affected by flooding. State and county officials have asked the Legislature for \$34 million in emergency funds, and the state has requested a presidential disaster declaration and corresponding federal aid, saying at least \$50 million in damage was done.

Lee expects more homeowners to come forward and the amount of needed federal aid to grow.

Honolulu has talked up \$12.5 million for county crews and other costs, a spokesman said. But remedial work on Round Top Drive, where landslides swamped area homes, and in Palolo Valley could add as much as \$10 million each, work along Maiki Stream also might be necessary.

The full effect on key industries like tourism and farming will take even longer to gauge.

But the Legislature has approved a \$1.5-billion bond for preparedness is a shared one, however, and government cannot do it all.

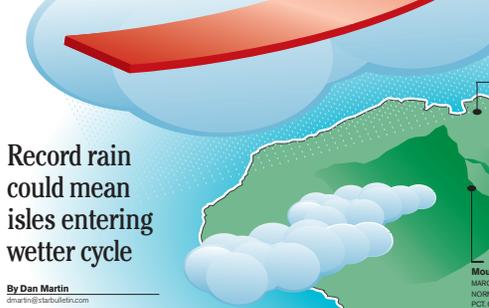
ARCH MESS

For 43 days Hawaii was battered by rain. Hawaii wasn't even a state the last time weather conditions conspired to deal the islands such a lashing. Here's how it happened:

1 A low-pressure system, or "low," at left, moves into the middle of the Pacific west of Hawaii in mid-February. Such systems normally soon move on and dissipate, but this one is held in place by a worldwide gridlock in weather systems, a situation known as a "blocking." Blocking occurs once or twice a year and normally lasts a week to 10 days. This one endured for an unheard-of six weeks.

OAHU AND KAUAI SOCKED BY RAIN ...

Rain gauges around the state, especially on Kauai and Oahu, recorded historic rainfall levels. Totals are in inches. One asterisk (*) denotes a March record, and two asterisks (**) represent a record for any month. Some gauges were installed only in the early 1990s.



2 The low's counterclockwise spin and strong winds pull warm, moist air from the South Pacific and push it toward Hawaii. The moisture turns into rain showers as it encounters cooler air further north near Hawaii.

3 Held in place by adjacent weather systems, including a high-pressure system (above) north of Hawaii that blocked the moisture's northern movement, the low flings one heavy rainstorm after another at the islands throughout March and into early April until global weather systems start to move again.



MARCH 14: The dam wall broke at the Ka Iko Loko reservoir at Kilauea, Kauai, releasing a wall of water that killed seven people. This is where the water flowed out of the reservoir.

Record rain could mean isles entering wetter cycle

By Dan Martin
dmartin@starbulletin.com

Hail on the Big Island. A toister on Lanai. Crumbling dams on Oahu and Kauai. Record rainfall across the state.

If the wild weather of recent weeks seemed like an once-in-a-lifetime event, there is a reason. Experts say the heavy rain and associated weirdness were caused by a rare weather scenario that last played out in the islands 55 years ago.

From late February through March, the weather systems that normally spin and flow around the globe became locked in a sort of global traffic jam that kept them in place across the entire Northern Hemisphere, said Andy Nash, director of operations for the National Weather Service's Honolulu office.

Called "blocking," such gridlock is uncommon, occurring once or twice a year and causing weather systems to overstay their welcome for a week or so before things start moving again. But this one persisted for an unheard-of six weeks.

For Hawaii this meant that a low-pressure system in the western Pacific that would have otherwise moved on after a few days instead stayed put, and on Feb. 19 began flinging one rainstorm after another at the islands.

Heavy rain is nothing new, but the repeated downpours waterlogged the soil in some areas, overtaking its ability to absorb new rains.

"The type of thing is not unprecedented, but what was really unusual was the duration," said Nash. "We were not the only ones to suffer. Flooding raged in Central Europe as a rain system stayed put there. Texas sweltered under a dry spell. Californians suffered from torrential rains of their own."

National Weather Service hydrologist Kevin Kodama, who tracks rainfall around the state, said situations like this occurred "once in a career."

"At least that's the hope. We certainly don't want to see another like this again," he said, referring to the death and damage around the state. The last time a comparable situation occurred here was in March 1951, when weather systems fell into the same pattern in the Pacific.

Monthly or all-time rainfall records were set, many still standing in some areas of the islands.

But last month left its own mark on the record books. Rainfall at Lihue Airport's gauge reached a record 36.13 inches in March, shattering the old monthly mark of 29.91 inches, set in December 1968.

But long-term climate data suggest the inclement weather could portend a wetter era ahead, said University of Hawaii meteorologist Paoshin Chu, who also is Hawaii's state climatologist.

Rainfall patterns in the North Pacific alternate between wet and dry periods, each lasting roughly 28 years, Chu said. Rainfall was higher than normal from the mid-1940s to the early 1970s, when it fell off to below-average levels that persisted through the 1980s and '90s.

Chu said there are signs the drought might have bottomed out around the year 2000 and has begun inching back up, though he adds the trend will not become clear for several years.

"It seems like that's been happening that past couple of years — but who knows for sure?" he said.

Through the first three months of 2006, gauges at Lihue Airport and Port Allen on Kauai and at Honolulu Airport had already exceeded normal rain totals for the entire year.

"What happened last month set a new standard," Kodama said. "Whereas most of March normally is crossed by tradewinds, there were only five days of trades last month, against an eye-opening 22 days with flash-flood warnings."

Nash and his team plan to study what happened and whether there are ways to spot a recurrence.

However, he doubts whether bigger phenomena were at work. The current La Nina episode might have contributed to the blocking by weakening the jet stream, he said, but blaming global warming is a stretch.

But long-term climate data suggest the inclement weather could portend a wetter era ahead, said University of Hawaii meteorologist Paoshin Chu, who also is Hawaii's state climatologist.

Rainfall patterns in the North Pacific alternate between wet and dry periods, each lasting roughly 28 years, Chu said. Rainfall was higher than normal from the mid-1940s to the early 1970s, when it fell off to below-average levels that persisted through the 1980s and '90s.

Chu said there are signs the drought might have bottomed out around the year 2000 and has begun inching back up, though he adds the trend will not become clear for several years.

"It seems like that's been happening that past couple of years — but who knows for sure?" he said.

Neighbors also should talk about where water is likely to flow, and plan a way to drain water from their properties, officials said.

One Kahauna family dodged calamity by doing just that.

Most Aloani grows breadfruit, sweet potatoes and other crops on his 2-acre farm near Waihohe Stream. Earlier this

year, anticipating rain, he dug a 4-foot-deep trench by hand around his property to direct mountain storm runoff into the stream.

"What he did was lead that water that came from the mountain, and he took it straight to the river instead of coming right through the house," said his sister, Paaka Alani Richter, speaking on Aloani's behalf because he speaks only Tongan. "The water was 4 feet high in the area. The city and county came in

and evacuated everybody but left Moti and his family because they were fine."

But it is up to officials to set a good example on preparedness by having its own priorities straight, said Bank of Hawaii Chief Economist Paul Brewsaker, who calls it "hazardous" that the city still is considering property tax breaks even after the city sewage spills spotlighted the need for greater investment in the leaky system.

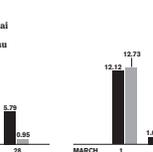
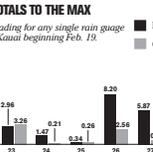
"It's a perverse irony. What I see is greedy homeowners more concerned about saving 1,000 a year — when we already have the lowest property taxes in the country — than they are about pumping millions of gallons of sewage onto the beaches," Brewsaker said.

"Our stewardship of the land is critical. (The sewage incident) is just one part of a big complex of things that we need to be investing in and have fallen woefully behind in," he said.

Those sentiments are shared by the

man who lost the most. Bruce Fehring, a farmer and Realtor, lost his daughter, son-in-law, grandson and four friends to the rumbling wall of water let loose by the Ka Iko Loko dam collapse. To him this was no natural disaster.

"What occurred was not an act of nature. It was a failure of man ... the failure of a dam conceived and built by man and which was legally mandated to be monitored, maintained and inspected by man."



HIGHLIGHTS OF 43 DAYS OF RAIN
FEB. 19: Heavy rain hits Oahu, especially Windward Oahu and Waiānae, and on what turns out to be the heaviest day in a 43-day weather pattern.

FEB. 21: Heavy rain and thunder cause minor flooding on Oahu and Kauai.

MARCH 2: Dozens of Windward Oahu homes are drenched by several days of torrential rain from Waialoe to Kahauleʻo, and in Kauai causes landslides, cuts off roadways, and closes schools. Gov. Lingle declares state disaster. Similar flooding occurs a week later.

MARCH 3: Multiple sewer spills cause rain dump hundreds of thousands of gallons of sewage into Kaneohe Bay and other Windward Oahu waters, prompting health warning.

MARCH 6: Homes are flooded and several homes evacuated on Haunani Homestead in Lāle after a rainstorm stalls over the area.

MARCH 12: High winds topple 12 utility poles in Farrington Highway in Nanakuli, injuring two people, damaging 17 cars and cutting power to more than 700 people.

MARCH 14: Seven people, including a pregnant woman, are swept to their deaths by Kauai's dam collapses in Kilauea, Kauai.

MARCH 18: Dozens of homes and some businesses are evacuated along Kahauleʻo in Koloa after rainfall of up to 1 inch per hour in some spots.

MARCH 19: Heavy rain floods nine Windward Oahu homes and closes roads heading north. Several other homes elsewhere on Oahu also flooded.

MARCH 22: A rare tornado touches down on Lanai. No one is hurt, but a construction trailer is destroyed.

MARCH 24: After a heavy rain, Kilauea's main sewer line breaks, and 375,000 gallons of sewage is spilled over two days; the Ala Wai Canal and Harbor and nearby surf sites are posted with warnings of contaminated water. Also, strong thunderstorms pelt Kona, and other parts of Big Island with rare hail.

MARCH 25: Recurring landslides on Round Top Drive threaten Ala Wai homes in Maunaloa Valley on Oahu.

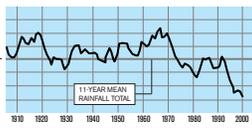
MARCH 26: Heavy showers over Oahu and Kauai trigger six sewage spills. Homes and buildings are flooded. The city begins dumping raw sewage into Ala Wai Canal.

MARCH 28: Some of Hawaii's most popular beaches on Oahu and Kauai are empty as the extent of the Waikiki sewage spill starts to become evident.

MARCH 30: The Ala Wai raw sewage spill, Honolulu's worst ever in its 48 million gallons.

MARCH 31: Intense downpour over Honolulu inundates homes and businesses; Maunaloa and Maiki streams burst banks, flooding streets; Maunaloa swamp Kaunaloa. Waikiki resident Oliver Johnson falls into Ala Wai Harbor, contracting a bacterial infection that kills him a week later.

APRIL 2: State closes additional Waikiki beaches after water quality testing reveals high bacteria counts; city officials close a section of Round Top Drive on Oahu after several mudslides; 12 Waimanaloa families evacuated their homes below the Kilauea Reservoir amid fears the rains weakened dam could collapse. Officials later order the dam breached as a precaution.



MORE RAIN ON THE WAY?
Data compiled by state climatologist Paoshin Chu of the University of Hawaii shows how rainfall levels follow roughly three-decade cycles. These fluctuations are plotted against the 11-year mean rainfall total. His research indicates the most recent cycle might have bottomed out in the year 2000 and that an era of increased rainfall might have begun.

Source: Journal of Climate, 2005. "Interannual and Interdecadal Rainfall Variations in the Hawaiian Islands."

... BUT OTHER ISLANDS ALSO DRENCHED

Although Kilauea and Oahu took the brunt of the bad weather, all islands were affected.

AREA	MARCH	NORM	PCT. OF NORM
Big Island			
Waikiki	12.08	2.90	417%
Mountain View	40.47	19.50	208%
Hilo	26.41	14.40	183%
Glenwood	43.28	20.10	215%
Pahala	31.01	6.30	492%
Maui			
Waialuku	9.06	3.60	252%
Mahinahina	15.63	5.50	284%
Pukalani	6.77	3.30	205%
Kula	11.02	2.50	441%
Kaupo Gap	41.25	11.80	350%
Molokai			
Molokai Airport	8.16	3.70	221%
Makapalapala	10.68	6.10	175%
Kaunakakai	8.59	1.80	477%
Lanai			
Lanai City	14.05	2.90	484%

FOR MORE INFORMATION

If you want to learn more about Hawaii's recent deluge, you can log on to the National Weather Service's Web site at www.nws.gov/hawaii.



GRAPHIC BY DAVID SWANN AND MICHAEL ROYNER / STAR-BULLETIN

43 DAYS: DOWNPOURS, DEATH, DESTRUCTION.
WEATHER BRINGS BUSINESS BOOMS AND BUSTS



APRIL 1: Employees were busy inside Kahala Mall after heavy rain flooded the shopping center. All the floor tiles inside Radio Shack had to be removed. Brittany Ruiz, left, gathered damaged tiles while Ivan Nishimura collected wires to be thrown away.

Extra work for some will not dry up quickly

UNEMPLOYMENT

Weather likely reason for spike in jobless claims

By Dave Segal
dsegal@starbulletin.com

Hawaii might have the lowest unemployment rate in the nation, at 2.5 percent, but for six weeks starting in mid-February, state residents lost money and work time as heavy rain and flooding disrupted lives and businesses.

The unusual stretch of inclement weather likely was behind a 25.3 percent jump in initial jobless claims during that period, state economists say. Before the onset of the rains, jobless claims were down 18.1 percent during the previous six weeks.

"You have to go with the obvious

that it's most likely due to the weather," said Carl Bonham, executive director of the University of Hawaii Economic Research Organization. "The question is what will it look like over the next six weeks, and — if it doesn't go down — whether we're seeing a slowing of job growth. But I don't think we have any evidence of that yet."

While the bad weather could have lingering effects on tourism and agriculture, the construction industry appears to be back in full swing again after experiencing some lost days of work.

Ronald Taketa, financial secretary and business representative of Hawaii Carpenters Union Local 745, said the most significant effect on his union's

6,800 members was that a lot of workers did not take home full 40-hour paychecks during the last two months.

Gerald Yuh, business manager for the 3,200 members of International Brotherhood of Electrical Workers Local 1186, said that from Feb. 22 through March 25, there was a 19 percent average reduction in work hours for the union's seven main contractors due to weather.

Imua Landscaping Co. Inc. foreman Jared Salakelu said work for some of his crew was cut to one or two days over a two-week period.

"Work just got backed up those past two weeks, but it will all come back," he said.

By Allison Schaefers
aschaefer@starbulletin.com

Timing is everything. Just before the heaviest of the rain started, Glenn Hirata took off a portion of his roof in preparation for remodeling his Kailua home.

"Right after I got the roof off, it started to rain and the water began coming in like a sieve," said Hirata, who had to scurry to put a tarp over the gaps in the roof and reconfigure his flashings.

It took days of aggravation before Hirata was able to completely protect his home, but he considers himself lucky because this time, his home did not actually flood — unlike two prior rainy seasons.

All over Hawaii, stories like Hirata's are costing some consumers and members of the construction industry money — but boosting revenues for others. Roofers, leak specialists and mold and mildew removers report that they are the busiest they have ever been, with month-long backlogs.

However, the inclement weather has brought a deluge of negative effects for landscapers, builders, handymen and most construction industry trade workers.

"It's like a domino effect," said Karen Nakamura, executive director of the Building Industry Association of Hawaii. "They can't pour the foundation so they can't put up the framing so they can't do the plumbing, the electrical or the drywall."

Still, not all developers suffered. Kuku'ula, a 1,500-home project in Kaula, fared well with only negligible effects from the rain, said Dick Holtzman, president of Kuku'ula Development Co.

"The rain didn't get us behind at all," Holtzman said, counting his blessings that the project is

still in the planning and infrastructure stages.

Kuku'ula executives' primary concern was for the safety of its employees, many of whom were dealing with flooded homes and fighting rain-drenched and closed roads to get to work.

"We sent some of them home," Holtzman said. "Frankly, if their minds were on their homes and the safety of their families, we thought that was where they should be."

On the flip side, the demand for companies like Teseal, which

"It's like a domino effect.

They can't pour the foundation so they can't put up the framing so they can't do the plumbing, the electrical or the drywall."

Karen Nakamura
Building Industry Association of Hawaii

specializes in fixing above- and below-grade leaks, are going through the roof, said Rick Todd, Teseal president.

"We've had a huge upswing in business," Todd said. "We've just about doubled and we've got a month-long backlog."

Jeff Woodring, owner of Algae-Mildew Busters LLC, said the last 50 to 60 days have been the busiest that his 6-year-old business has ever seen.

"I'm working late every night, and I've had to hire someone to help," Woodring said. "The rains have increased mildew problems to the point that I'll be fairly busy until it starts to dry out in the summer."

GOLF COURSES

Damage and lost business double bogey for links

By Allison Schaefers
aschaefer@starbulletin.com

Golfers always have a story to tell, but when it comes to how courses fared during Hawaii's recent rain of biblical proportions, Oloana Golf Links in Waimanalo might have one of the worst scorecards.

The course, which was forced to close for business from March 26 to April 7 due to the rain, lost about \$60,000 in revenues and sustained about \$40,000 in damage, said Peter Yamashita, general manager of Oloana Golf Links.

"It's quite a story," Yamashita said. "We sustained mud damage on three of our greens and five fairways, and three of our holes were completely covered with mud."

Many other courses around the state — including Kauai's Waialua Golf Course and, on Oahu, the Pal Golf Course,

West Loch Golf Course, Koolau Golf Club, Lanana Hills Country Club and Waialae Country Club — reported serious damage, ranging from algae growth to flooding and mud-damaged greens.

But few could say the rain rose more than 10 feet high like it did at Oloana Golf Links on March 31, when the runoff spilled over from Kalaheo Highway and the Kailua Reservoir.

Oloana Golf Links, which reopened on Wednesday, does not have flood insurance to recoup the damage and cannot make up for the lost revenue, Yamashita said.

"Once the day is over you can't recoup the losses," he said, adding that even now business is slow because clouds are still overhead and people are gun-shy about getting wet.

Though Pukaia

Golf Course on Kauai fared better than many others, the course had to close for about eight days and sustained significant losses, said Paul Ito, Pukaia Golf Course director.

"We did about 50 percent of our normal business," Ito said. "I really felt bad for all the visitors. Normally, it just doesn't rain like that."

While most Hawaii courses lost business due to the rain, at least one — Ko Olina Golf Course, on the dry side of Oahu — actually picked up revenue.

Though it was closed for nearly two days and sustained weed and algae overgrowth, March revenues rose, said Greg Nichols, Ko Olina Golf Club director and general manager.

"We got overflow from the other courses," Nichols said, adding that Ko Olina Golf Club stayed relatively dry because it was designed with elevated greens and large swales to move water off the fairways.

WHEN IT RAINED, IT POURED



APRIL 1: Six-year-old Kellan Anama helped his grandfather Andrew Anama and dad, Ken Anama (not shown), remove mud from their driveway at their home on Nanea Street. Heavy rain flooded property in the area surrounding Punahou, Fern and Nanea streets.

43 DAYS: DOWNPOURS, DEATH, DESTRUCTION.
STORMS CLOG THE STATE'S ECONOMIC ENGINE



MARCH 30: Anne Carroll of Canada could only lie on the beach fronting the Hilton Hawaiian Village as sewage from the Ala Wai Canal contaminated the swimming and surfing areas frequented by the hotel's guests and locals.

Tourism takes a hit after 43-day deluge

By Allison Schaefer
aschaefer@starbulletin.com

Hawaii's visitor industry has survived the rain, but adverse publicity concerning the 43-day deluge appears likely to put a damper on this year's tourism results.

It's been a season of bad news for the industry. First, heavy rain began in mid-February, then the Ka Loko Reservoir burst on Kaula killing seven people on March 14, followed by a sewage spill and the potentially related death last week of a man who fell into the contaminated Ala Wai Boat Harbor. And there were two shark attacks, one on Maui in late February, the other on Oahu last month.

"Almost everyone understands that you'll have sharks and rain in a tropical place, but the sewage spill and the beach closures are the biggest story because they aren't something that you equate with Hawaii," said Keith Vieira, senior vice president of Hawaii and French Polynesia for Starwood Hotels and Resorts Worldwide Inc.

Although the visitor industry got off to a strong start in 2006, this winter's rain and other complications will likely cause the year to fall short of 2005's records, said Frank Haas, director of marketing for the Hawaii Tourism Authority. The state welcomed 7.5 million arrivals and took in \$11.5 billion in visitor spending last year.

State officials have allocated more than half a million dollars for programs designed to maintain the momentum from 2005. However, a state crisis plan is on hold until sustained sunny skies return to the Aloha State, Haas said.

As the rain continued to fall, the state has grappled with the continued impacts of bad weather and subsequent bad publicity that spread through Hawaii's major tourism feeder markets from Europe and Japan to Los Angeles, Chicago, New York and San Francisco and many points in between. "Mostly we are concerned about future bookings," Haas said. "Our arrival counts don't seem to be off."

While call-center volume for tourists tripled throughout the islands during the ordeal, most visitors chose to come to Hawaii anyway and were left early, said state Tourism Liaison Marsha Wienert.

However, there is huge concern on Kaula, the state's hardest-hit island, about the next 60 to 90 days, she said.

"They haven't lost business, but it hasn't picked up at the rate that it normally does, either," Wienert said.

Once rain-related media attention winds down, the state will kick off a public relations campaign that will target the top 20 U.S. feeder markets to Hawaii. The campaign, expected to cost less than \$100,000, will also seek spots on "Good Morning America" and the "Today" show, said Sue Kanoho, executive director of the Kaula Visitors Bureau.

The Hawaii Tourism Authority also has transferred \$550,000 in emergency funds from leftover budget items to be used for recovery and to boost wholesale travel and airline business. While business has not been exactly

sunny for many of Hawaii's tourism-dependent businesses, most hoteliers, wholesale operators and airlines continue to report that tourist counts are holding their own with only limited damage.

The Kaula Marriott Resort & Beach Club on Kaula's Kalapaki Beach was the hardest-hit hotel in Hawaii, with 25 guest rooms still under repair.

Six inches of rain in four hours on March 11 and 12, overwhelmed storm drains and a ravine, said hotel general manager Bill Countryman. Flood water flowed into some guest rooms, a restaurant, and the pool, causing a rough few days where meals were served in a ballroom and guests were moved to other rooms.

Last week, though, it's pretty full and business is good," Countryman said. He added that the rooms, all on the ground floor in one tower, will be refurbished before summer. Work to replace the storm drains is under way.

A few properties, such as Aqua Hotels and Resorts—which lost roughly a quarter of its expected revenue as a result of the deluge—and Starwood Hotels and Resorts, have identified impacts from cancellations and postponed trips. Others will soon follow suit.

"We had a fair amount of cancellations in March, and bookings in April and May have been slower. Overall I think we'll see about a 10 percent decline in revenues," Starwood's Vieira said.

Despite inclement weather, Hawaiian Airlines had fuller flights in March compared with the previous year, said spokesman Keoni Wagner.

"We haven't seen any drop in activity or rise in cancellations," said Amy Terada, vice president of marketing for Pleasant Holidays LLC, Hawaii's largest travel wholesaler.

Still, poor weather, unsafe road conditions and waters polluted by sewage have hurt some of Hawaii's activities and attractions even while bringing a boost in revenues to others. Kanoho said, "Helicopter, boating and water activities took a bit of a dip in business, but we've heard that spa services, the theater, Blockbuster and the museum really benefited."

While indoor attractions like the Bishop Museum have reported an increased head count from tourists due to March rain, outdoor attractions did not fare as well.

Visitor counts last month at the Polynesian Cultural Center were down some 16 percent from the same time last year, said Alfred Grace, senior vice president of sales and marketing. Impacts of shifting business have trickled down to workers, said Andy Lee, spokesman for Unite Here Local 5, the hotel workers union.

"Outdoor workers are making fewer tips because they just don't have the usual volume of people at outdoor places," Lee said.

On the bright side, indoor food-and-beverage servers reported better-than-average tips, he said.

Star-Bulletin reporter Tom Finnegan contributed to this report.

FACTS & FIGURES

0 Number of Kaula residents affected by the flooding who had purchased policies under the National Flood Insurance Program, which covers flooding and landslides. Six percent of those affected on Oahu purchased it. Source: American Red Cross, Hawaii Chapter

WHEN IT RAINED, IT POURED



MARCH 16: James Bashford, Aaron Antone and Ali Nakasono kept on dry ground at a Kahuku bus stop.

PRODUCE

Island vegetable and fruit farmers were severely damaged by the rain

By Betty Shimabukuro
betty@starbulletin.com

A visit to the grocery store shows little evidence of shortages due to the recent rain. Produce bins seem well stocked.

Look a little closer, though. No watermelons. Not much corn. Very few papayas. And that water-cress? Probably from California, not Ala.

Floyd Mikasa, produce director for Times Super Market, said he has had to fly in items such as local greens, Chinese cabbages, green onions and parsley that he would normally buy locally.

Farmers are still determining exactly what they lost to the rain and how long it will take them to recover, Mikasa said. For many it was not just a harvest, but also the chance to replant. "It's a constant cycle, so if you miss a period of 40 days, you're not going to have crops coming up."

He expects it will take 60 to 90 relatively dry days for the situation to return to normal.

Patrick Kirkeby, who manages produce purchases for Safeway, said he had to fly in zucchini,

watercress and head cabbage but that the higher costs were not passed on to consumers.

The rain did bring about shortages that simply cannot be filled by a call to a mainland distributor, however.

"It surely has delayed Oahu's watermelon," Kirkeby said. The season, which should have begun by now, has been pushed back at least a month.

Also in short supply: yellow corn. "In a good, sunny, warm spring, we should have beautiful corn for Easter," Kirkeby said, "but it won't be available for a little while yet. That's big lost sales not only for the farmers, but for us as well."

Tish Ueyehara, marketing director for the wholesaler Armstrong Produce, said the problem will not be over any time soon.

"There is definitely a shortage, as well as quality issues with local produce ... all kinds, everything," she said. "There are going to be fairly large gaps of production as well; it's not just the crop that's in the ground. The effects will be felt for months to come."

Star-Bulletin staff writer Erika Engle contributed to this report.

BUSINESSES

Most of Kahala Mall's many stores are open, but theaters remain closed

By Erika Engle
erike@starbulletin.com

Kahala Mall is open for business, except for the Kahala 8 movie theaters, Borders Express and the Watch Station kiosk.

It is the largest known local business complex with lasting damage from extreme rainfall and flooding on March 31.

General Manager Ron Yoda cannot even guess how much damage the mall suffered.

"The first priority was to get all the water out and get it back online, so we've been incurring a lot of work and, I'm sure, a lot of dollars," Yoda said. "We aren't at that point yet where we're adding up all the dollars."

He said he imagines that many if not most tenants are in a similar situation, but "at some point we might get a cumulative number."

Mail officials have been talking with the U.S. Small Business Administration about assistance.

In her tour earlier this month through the devastated mall, Gov. Linda Lingle "lifted everybody's

spirits. ... She was here on a mission of assistance; it was more than just 'showing face,'" Yoda said.

Assessors are still working on damage estimates for the movie theaters, according to Rachel Saunders, publicist for Consolidated Theatres' parent company, Pacific Theatres Corp. in California. There is no reopening date for the theaters.

Saunders said 21 of the 26 mall theater employees have been re-assigned to other Consolidated theaters, and the rest have decided to "seek other employment."

Other businesses, such as Frog House Restaurant at 1601 Kalia Avenue, also continue to suffer.

The restaurant closed the day of the flooding and the next day, and closed again Tuesday for another round of cleaning due to a bad smell that had developed.

The eatery's refrigerator and water heater, damaged in the flood, have been repaired twice. Each day of closure costs \$2,000 to \$2,500, and losses of spoiled food and soggy supplies have Manager Rocky Lim estimating damage and losses at more than \$6,000.

43 DAYS: DOWNPOURS. DEATH. DESTRUCTION.
THE GARDEN ISLAND SUFFERS WORST LOSSES



APRIL 6: Some efforts have been made to clear debris three weeks after the Ka Loko Dam break that turned Waialapa Stream into a raging torrent. Here, a large Java Plum tree remains in the pool at Ben Guevara's home, which is near the stream. The water carried away part of his house and flooded the rest. Carpet cleaners have been in the home trying to get rid of the damp and mold.

Destruction, death leave lasting scars

By Tom Finnegan
tfinnegan@starbulletin.com

KILAUEA, Kauai - Much of the Garden Island is recovering from the rain of February and March as the sun dries out the land, roads are repaired and waste action clears an ocean fouled by runoff and debris.

It will be months, however, before the North Shore of Kauai is back to normal, while small pockets of Kilauea, especially those near Waialapa Stream, will never be the same.

Waialapa Stream was a gentle waterway, snaking its way through back yards, orchards and farms along Waialapa Road.

But just after 5 a.m. March 14, the dam of a reservoir many Kilauea residents did not even know was there gave way with the force of nearly a half-billion gallons of water, gathering momentum as it traveled downhill and leaving a 150-yard-wide swath of destruction all the way to Kahili Quarry Beach.

IN ITS PATH were two homes on Bruce Fehring's property where seven people lived: Fehring's daughter, Aurora, son-in-law, Alan Dingwall, 2-year-old grandson, Rowan Fehring-Dingwall, and friends Christina Macneess, her fiancé, Daniel Arroyo, property caretaker Wayne Roststein, and Macneess and Arroyo's best friend, Timothy Noonan.

They never had a chance. To date, four bodies remain missing. The dam breach instantly became Kauai's deadliest weather-related calamity, surpassing even 1992's Hurricane Iniki.

"A lot of that debris and the bodies were very quickly swept away," Fehring said last week. "I don't want anyone else to go through this."

He added that he has lugged the half-mile to what used to be a small waterfall and concrete-lined pond to look for evidence of his family's home.

"I can't find any pieces of it," he added.

The concrete pond was ripped away by the force of the water and debris,

KA LOKO DAM

Pflueger in no hurry to rebuild reservoir

By Tom Finnegan
tfinnegan@starbulletin.com

KILAUEA, Kauai - James Pflueger, the owner of Ka Loko Dam, said that if it's up to him, he won't rebuild it.

But 20 farmers, growing mostly organic fruits in the Waialaha subdivisions near Kilauea, get water from the Ka Loko Reservoir that breached March 14. The water comes from a pipeline run by Kilauea Irrigation Co.

They say that the county water system cannot handle their water needs, and, even if it could, it would be cost-prohibitive to do so.

County, state and federal politicians have pledged to support those farmers relying on Ka Loko, and U.S. Sen. Daniel Inouye announced recently that he has secured \$3 million in federal funds to repair and rebuild the irrigation system and to remove debris caused by the breach.

But Pflueger, owner of a majority of the reservoir, said the 116-year-old water feature is an albatross now.

The state attorney general's office has been investi-

gating the cause of the breach, and Pflueger and Kilauea Irrigation Co. have been subpoenaed for records relating to the dam and the reservoir.

Pflueger also told the Star-Bulletin that the people relying on the water to feed their crops are the same ones accusing him of diverting water and doing work to his mauka lands without a permit.

"I need this reservoir like I need a whole in the head," he said last week. The organic farmers, "they're the ones out to get (me). These guys want to kill me and blame me for everything."

Pflueger and his property manager, Gordon Rosa, deny that any work was done to divert streams in mauka lands.

The reservoir was first built by Kilauea Sugar Co. to supply thousands of acres growing sugar. It was built into what is believed to be its current height, 34 feet, in 1913, according to Kilauea Sugar records kept by the Kauai Historical Society. The company stopped growing sugar in the 1970s.

The rest of the reservoir was bought by Pflueger's grandmother, Mary Lucas, between 1895 and 1915, and is held in a trust, of which Pflueger is one of the beneficiaries.

leaving only rebar in its wake. The land has been stripped of its bedrock in places.

The islands are 4 million years old, Fehring noted. "In some areas, vegetation, lush vegetation, will take 4 million years maybe" to grow back.

His neighbors, while still reeling from the loss of life, are trying to get some semblance of their lives back after the tragedy.

Ben Guevara, Fehring's neighbor, lost a chunk of his home when the debris came through. A 3-foot-wide tree sits in what is left of his pool.

There are no remnants of his kotu pond.

And he had carpet cleaners in his home for a week trying to get rid of the damp and mold that are accumulating.

"We are trying to do a little bit" of the cleanup, Guevara said, "but so many government officials are telling us to wait" until it is inspected by disaster officials.

IT'S THE MOSQUITOES and the stench that really get to Guevara, he said. He and his wife cannot stay in their home.

Meanwhile, claims by Fehring and Guevara that their insurance companies have been denied, saying that the breach was an act of God.

Fehring said, however, it was a "failure of man."

The state attorney general's office is investigating the dam breach, trying to find out whether the

state, the owners of the dam or those responsible for its maintenance could have helped cause the breach.

Another Waialapa Stream resident, John Hawthorne, remembers the Anahola Flood in 1991, which killed four people. The March 14 dam breach "was a hundred times worse," he said.

Hawthorne, a plumber and machinist by trade, said he still wakes up every day at 5:20 a.m., when the waters woke him up. He said he and many of his neighbors are in counseling because of the tragedy.

"You can't imagine the noise of all this stuff," he said. "It sounded like a walking artillery

barrage."

Fehring and his neighbors were quick to credit the amazing job of emergency personnel involved in the search efforts. But they worry that as time moves on and the rest of the islands clean up, they will be forgotten.

"It's going to take years for this to rectify itself," said Hawthorne.

While many others on Kauai worried about a possible breach elsewhere, state and federal engineers checked the dams across the county and concluded they were safe.

PEOPLE IN KOLOA were especially worried, since the Waia Dam mauka of the south shore town is the largest reservoir in the state. But reservoir owner Alexander & Baldwin assured residents at a town hall meeting that all was safe.

Kauai Civil Defense Administrator Mark Marshall said that the flooding that enveloped the whole island was a relatively rare event.

While Lihue Airport received 10 times its average rainfall for the month of March, the National Weather Service has still not pinpointed whether the rain on Kauai was a once-in-50-year or once-in-100-year event, Marshall said.

Either way, he said, he was proud of the response by county, state and federal officials. It was also the first time the Emergency Operations Center was used to its full potential.

The center gives emergency workers a tremendous advantage over the days of Iniki, which killed two Kauai residents and four other people.

With real-time data and links to numerous services not previously available, the center was operational on and off from Feb. 20, when the first flash-flood warning was posted, through the end of March. It had as many as 100 people working through the worst of the flooding, making sure, first of all, that people were safe.

It's hard for the government to do anything quick," Marshall said, "but in this case we even surprised ourselves."



APRIL 6: Debris removed from the shallow pools at Lydgate Park was stacked on the beach, allowing residents and visitors a chance to swim. The debris was washed into the ocean by flooding caused by the rain.

WEATHER ADVISORY

38

WHEN IT RAINED, IT POURED

The number of rain gauges around the state monitored by the National Weather Service whose readings last month set all-time or March records, based on preliminary data. Most gauges were installed only in the early 1990s, but some date back more than a half-century. They include:

AREA	TOTAL	PREVIOUS	YEAR
WETTEST MONTH EVER			
Lihue	36.13	22.91	1968
WETTEST MARCH EVER			
Pahala	31.01	28.93	1980
Panaha	40.31	35.21	1920
Waimanalo	24.35	19.43	1963

43 DAYS: DOWNPOURS. DEATH. DESTRUCTION.
WATER LOG: PHOTOS OF THE DELUGE



DENNIS ODA / DODAJ@STARBUCKET.COM



OSAG T. KOIMA / CKOIMA@STARBUCKET.COM

MARCH 16: Nestor Madads, left, cleared debris and rocks above the entrance to the Honolulu-bound lanes of the Wilson Tunnel. MARCH 31: Tantalus residents stood in shock as a wall of volcanic mud slid down onto Maunaloa Road. The mud blocked the road and half-buried a home. Pete Asuncion, right, called a friend after finding his neighbor's cars under the mudslide.



RICHARD WALKER / R1WALKER@STARBUCKET.COM

MARCH 16: Cleanup workers trudged through mud and debris downstream from Morita Dam in Kilauea, Kauai, where a wall of water swept through when the Ka Loko Dam broke two days earlier.

