

Development

Experts: Think Twice Before Rebuilding In Kauai's Flood Zone

Kauai has historically allowed development along rivers and in coastal areas vulnerable to flooding.

By Brittany Lyte    / About 13 hours ago



Surrounded by waterfall-drenched mountains, private homes standing on the soft sands of Hanalei's shimmering half-moon bay represent wealth — and risk.

In mid-April, risk became reality when an overnight storm produced the most rainfall recorded during a 24-hour period in U.S. history. All that water unleashed landslides, dissolved roads into massive sinkholes and damaged nearly 350 homes on Kauai.

On the makai side of Weke Road, several multimillion-dollar homes overlooking Hanalei Bay were reduced to buckled wrecks. Highly visible,

they are symbols of the area's always significant flood danger — and focal points of the debate over allowing development in hazardous areas.



A home along Hanalei Bay's shoreline that was pushed off its stilts by floodwaters.

Last week, Gov. David Ige [requested a federal disaster declaration](#), saying the destruction required a level of response beyond the capabilities of the state and local governments.


“There are two camps at the county,” said Andrew Hood, a Honolulu-based groundwater hydrologist with extensive knowledge of the Hanalei floodplain. “One is, ‘Let’s rebuild and get stuff going as fast as we can,’ and the other is, ‘Let’s slow down and take the steps to figure out how we can look at the information about this event and better use it for wise use planning.’ I really can’t say what’s going to happen.”

Past Practices

Kauai has historically allowed development in areas next to coastlines and rivers vulnerable to flooding. But in recent years this laissez-faire approach has become more stringent as scientific research related to climate change has prompted the adoption of new building and zoning requirements.

Those who wish to rebuild homes destroyed by the flood will have to comply with newer standards.

Owners of homes located within the floodway of the Hanalei River, for example, will not be allowed to rebuild in place, said Kaaina Hull, deputy planning director for Kauai County. Homes located within the wider floodplain may have to build up higher than before.



“I think it’s up to policymakers to make rules and laws that protect us from ourselves.”
— Makaala Kaaumoana

Some of the flood-ravaged houses on Weke Road were built prior to the adoption of a county shoreline ordinance in 2005 that requires structures to be set back 60 feet from the highest wash of the waves.

“Some of those houses on Weke Road, they can’t rebuild where they are right now,” Hull said. “New regulations recognize that some of these homes are in hazard areas and now impose requirements that ensure that these structures are not completely destroyed in the future.”

County planners have also been discussing whether the flood risk in some coastal neighborhoods needs to be reassessed.

Hull said Friday he does not know if any of the Weke Road homeowners are seeking to rebuild. None of them could be reached for comment.

It’s still unclear which homes would be allowed to rebuild in place under the county’s newer standards. Even if some homes meet the current requirements, some experts and officials are wary of allowing residents to rebuild.

“We just witnessed the power of the Hanalei River and other streams in the watershed,” said Ruby Pap, coastal land use extension agent for the [University of Hawaii Sea Grant Program](#). “I believe this is reason enough to think twice before rebuilding in place.”

“Some homeowners may be willing to take the risk because they have the means to do so and they love where they are,” Pap said. “A couple of those homes along Weke not only lost homes, but lost property — there are giant holes where their properties used to be that are now filled with ocean water. So if they were to rebuild in place they would have to restore the land, then rebuild.”

Kauai County Council members Mason Chock and JoAnn Yukimura said they are exploring new policies to better protect homeowners.

“I would love it if the homeowners there on Weke Road were interested in selling the property to the county,” said Yukimura, who is campaigning for mayor. “Even if they have unlimited money, it doesn’t make sense to rebuild there.”

Makaala Kaaumoana, executive director of the nonprofit [Hanalei Watershed Hui](#), said she hopes the flood has engendered the political will necessary to reduce the number of structures in hazardous locations.

“My concern is when one homeowner’s behavior is putting others at risk,” Kaaumoana said. “But we all know that in Poipu, after hurricanes Iwa and Iniki, they wanted to build right back where they were. That’s what humans do. I think it’s up to policymakers to make rules and laws that protect us from ourselves.”

Epic Rainfall

In ancient Hawaii, the soaking rains of Hanalei were revered for their duration, intricate falling patterns and variations in intensity. On the night of April 14 and the morning of April 15, their modern-day power was on full

display in an extraordinary storm that weather forecasters [did not see coming](#).

The soil in Hanalei was saturated even before 4 feet of rain began falling. Heavy rainstorms in previous days had undermined the soil's ability to absorb the new rainfall.

At one point in the night, Hanalei received 5.5 inches of water in an hour, according to Hood, the hydrologist who is working on a forensic analysis of the flood.



Vehicles and a public bathroom facility were toppled by floodwaters near the entrance to Hanalei Pier.


“As a hydrologist, I will tell you I never thought I would live to see this much rainfall falling across one place in such a short period of time,” Hood said.

Surprisingly, rainfall totals were higher near the coast than inland where average rainfall tends to be greater.

A rain gauge at Waipa measured 49.7 inches of rainfall — a new national record — in 24 hours. On Mount Waialeale, the wettest place in the country on average, a [U.S. Geological Survey](#) rain gauge located at 5,150 feet above sea level measured 9 inches of rain for the same period.

Historically, the primary source of flooding in Hanalei is the Hanalei River. It drains Mount Waialeale, which has an astonishing average annual rainfall total of 394 inches.

But the primary source of the April flood was rain that fell directly on Hanalei town. That, combined with the swelling river, produced fast-moving rapids that ripped several North Shore homes off their foundations.



“The question of where we build and whether it’s wise to build in a certain place is all premised on a constant climate, and we don’t have a constant climate anymore.” — UH geology professor Thomas Giambelluca

“It’s a nice flat place to build everything and put in your crops, but that whole valley was formed by periodic flooding,” said Chuck Blay, a geoscientist on Kauai. “The whole town is in the floodplain. So it shouldn’t be totally surprising that the flood plain would flood. You might see that level of flooding once or twice in your lifetime, but on a larger scale that level of flooding in Hanalei Valley is pretty frequent.”

It's impossible to definitively determine whether climate change contributed to the storm.

In Hawaii, the influence of climate change on rainfall is still being studied. But research suggests that the islands could start to experience fewer but more intense storms, said Thomas Giambelluca, a professor of geography at the University of Hawaii Manoa.

One thing is certain, though. The historical climate information that is the basis for determining flood risk and building requirements is no longer valid, Giambelluca said.

“The question of where we build and whether it's wise to build in a certain place is all premised on a constant climate, and we don't have a constant climate anymore,” Giambelluca said. “It is not relevant to look to the past to predict the future because we can't assume that the future will be anything like the past. We need to add a much bigger margin of safety because the game has changed completely.”

‘We Should Not Build In Harm's Way’

When disaster strikes, the desire to return to normalcy can make it difficult to think beyond the status quo.

“If there's no structure there, that's sometimes the best defense” of setting new restrictions, said Eric Simmons, an engineer for the [Federal Emergency Management Agency](#). “Now we're also talking the issues of property rights and cost, so while it may be the best defense, it may not be the easiest solution.”

Governments tasked with regulating post-disaster construction often face criticism, especially if the public perceives that regulations are infringing on individual property rights. On the other hand, the burden of funding a residential rebuild in a danger zone often falls to taxpayers, and taxpayer-subsidized flood insurance may cover the risk of future disaster.

Gregor Blackburn, a branch chief focused on floodplain management and insurance at FEMA's regional office in Oakland, California, said residents facing a massive rebuilding project on the heels of disaster should think hard about what they want their community to look like.



Anthony Quintano/Civil Beat

Flooding in the Hanalei Valley after the April deluge. Scientists say the historic floodplain is not a safe bet for rebuilding multimillion-dollar homes.

“National disasters ruin a lot of things and economies can be one of them,” Blackburn said. “We at FEMA encourage in all communities that when coming up from the depths of a disaster like this, rebuild with an eye toward future resiliency and with an eye toward future avoidance of harm. These are locally driven decisions. Some may be harder than others, especially if you’re going to restrict somebody’s ability to build on their land that is maybe too close to a flooding source.”

Bradley Romine, a coastal geologist with the UH Sea Grant College Program, is heading up a team that’s drafting post-disaster reconstruction guidelines for the state’s counties to follow after future destructive storms.

“I understand there’s a need to get communities back up and running as soon as possible, get people back in their homes, back on their feet and get the economy working again,” Romine said. “But we’re hoping people will take a step back and consider how we can use disaster as an opportunity to redevelop smarter development that will be more resilient for future disasters.”

The study, focused mainly on sea level rise, is funded by the National Oceanic and Atmospheric Administration’s [Coastal Resilience Grants](#) program and is due out in April 2019.

Romine noted a series of guidelines and protocols for coastal storm reconstruction developed in 2016 by Sea Grant in cooperation with Maui County.

The first of its kind in Hawaii, [the Maui report](#) includes 70 recommendations for the county to consider when addressing the reconstruction and repair of buildings and homes damaged by a hurricane or major coastal storm.

Jim Buika, the Maui County shoreline planner and a former FEMA earthquake specialist, is working to incorporate the work into a draft county ordinance.

“We should not build in harm’s way and we should move out of harm’s way when the things we already built in harm’s way get damaged,” Buika said. “But there’s politics in place and there’s economics involved. If these kind of policies aren’t on the books as law, it can be hard to implement them on the spot after a disaster occurs.”

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Hawaii Passes Bill Banning Sunscreen That Can Harm Coral Reefs

The legislation prohibits the distribution of sunscreens containing chemicals that scientists have found contributes to coral bleaching when washed off in the ocean.

By Elaine Glusac

May 3, 2018

On May 1, Hawaii became the first state to pass a bill banning the sale of sunscreen containing chemicals believed to harm coral reefs.

The legislation prohibits the distribution of sunscreens containing the chemicals oxybenzone and octinoxate that scientists have found contributes to coral bleaching when washed off in the ocean. The Hawaii sunscreen bill now awaits the signature of the governor. The new rules will go into effect Jan. 1, 2021.

An estimated 14,000 tons of sunscreen is believed to be deposited in oceans annually with the greatest damage found in popular reef areas in Hawaii and the Caribbean. In 2015, the nonprofit Haereticus Environmental Laboratory surveyed Trunk Bay beach on St. John, where visitors ranged from 2,000 to 5,000 swimmers daily, and estimated over 6,000 pounds of sunscreen was deposited on the reef annually. The same year, it found an average of 412 pounds of sunscreen was deposited daily on the reef at Hanauma Bay, a popular snorkeling destination in Oahu that draws an average of 2,600 swimmers each day.

Sunscreen isn't the only enemy of healthy reefs; other polluters include ocean warming, agricultural runoff and sewage dumping. But banning harmful chemicals, say environmental advocates, is one variable swimmers can control.

"Hawaii's reefs have been slowly dying over the past 20 years, and that death spiral has been accelerating with the impact of an El Niño-induced mass bleaching events and increased local pollution impacts from both tourism and development," said Craig Downs, the executive director of the Haereticus Environmental Laboratory. "Everyone has come together to support this legislation, from local nurses and doctors, to resorts and airlines, as well as the entrepreneurial spirit of new sunscreen companies to supply reef-safer products."

Makers of traditional sunscreens opposed the legislation, pointing out that the chemicals in question are approved by the F.D.A. and vital to preventing skin cancer.

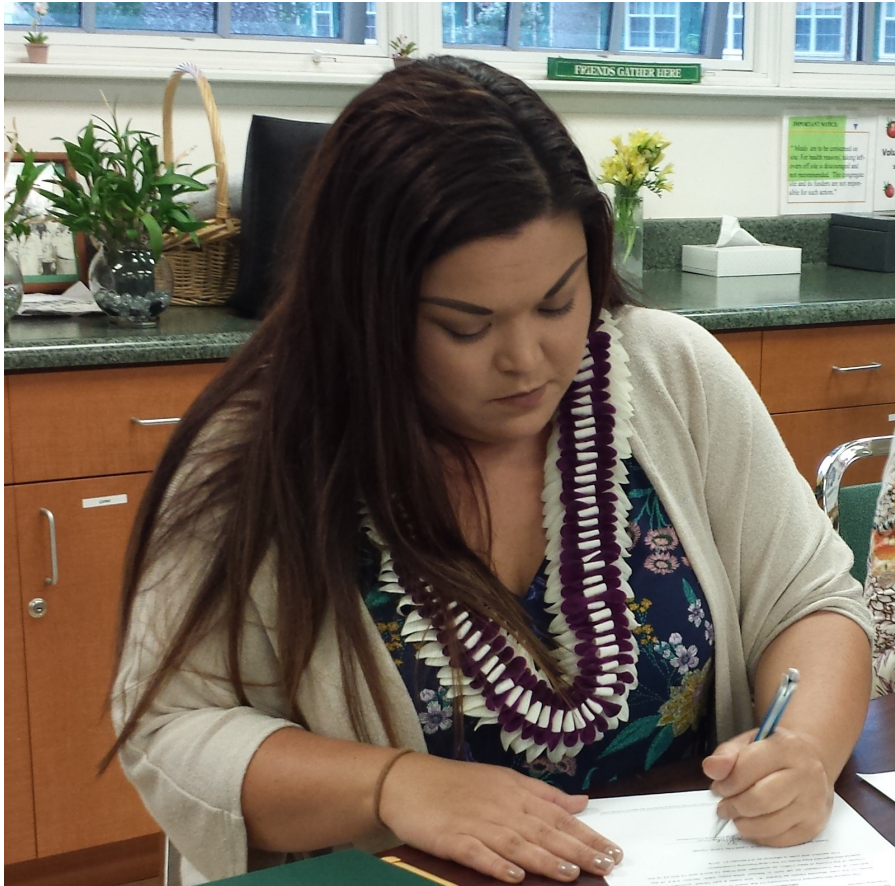
Reef-safe sunscreen alternatives like TropicSport and Raw Elements include mineral sunblocks with zinc oxide and titanium dioxide. They must be “non-nano” in size to be considered reef-safe. If they are below 100 nanometers, the creams can be ingested by corals. Already, many island resorts and attractions, including Hanauma Bay State Park, are urging visitors to use reef-safe sunscreen.

- Maui Now - <http://mauinow.com> -

History Made with Islandwide SMA Boundary on Lānaʻi

Posted By *Wendy Osher* On 04/03/2018 @ 12:44 pm In Maui News | [No Comments](#)

The Lānaʻi Planning Commission has made history by adopting an amendment to the Special Management Area boundary for the entire island of Lānaʻi. This is the first islandwide boundary change in the state since SMA boundaries were adopted in the 1970s.



Chair Kelli Gima signs the decision and order March 21 in Lānaʻi City.

The commission has worked with the Planning Department's Plan Implementation Division since January 2016 to revise the island's SMA boundary to include sites and features that warrant additional protections and reviews that come with inclusion within the SMA. The revised boundary accounts for the tsunami inundation zone, sea level rise and climate change, sand dunes, and cultural and historic features.

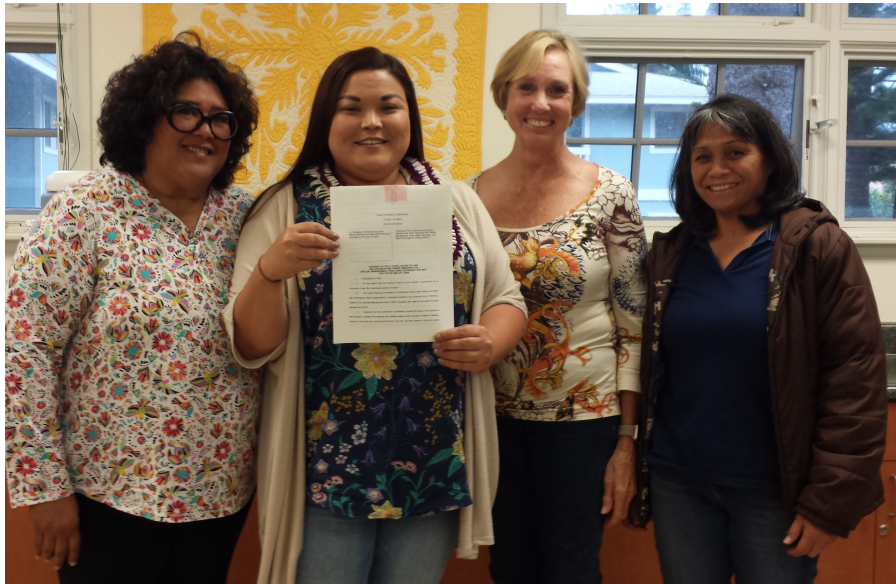
The SMA was created as part of federal and state coastal zone management laws, with the SMA being Hawaii's vehicle to preserve and protect resources within the coastal zone.

The staff report and adopted map can be found at

www.mauicounty.gov/planning. Scroll to "Hot Topics" and click on "Lānaʻi Special Management Area Boundary Amendment."

The commission formally adopted the new boundary at its meeting Feb. 21, 2018. Chairperson Kelli Gima signed the decision and order that formally made the change on March 21, 2018.

"Chair Gima, the entire commission and the Lanai community were involved with this process, which is why it was so successful," division Chief Kathleen Ross Aoki said. "This was a key implementing action in the Lānaʻi Community Plan update. It was a great collaborative effort and



Commissioner Mililani Martin (from left), Chair Kelli Gima, Vice Chair Caron Green and Commissioner Roxanne Catiel are pictured March 21 in Lānaʻi City.

lanai/

will really make the Lanai SMA boundary meaningful. Former Commissioner Stanley Ruidas should also be recognized for keeping this issue on the front burner.”

The department hopes to continue this effort with Maui and Molokaʻi.

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Old Tappan Zee Bridge Gets New Life as Artificial Reef

By Winnie Hu

April 29, 2018

In its next life, the old Tappan Zee Bridge is going to the fishes. Really.

Chunks of concrete and steel that held the three-mile span aloft over the Hudson River for decades will now be scattered among a half-dozen artificial reefs off Long Island. The first bargeload of the Tappan Zee's remains will be carried to its watery grave this week, with about 29 bargeloads to follow through the summer and early fall.

By recycling the Tappan Zee, New York State has not only found an affordable and practical way to dispose of some of its massive parts, but is also significantly expanding a state-managed artificial reef program that aims to provide new habitats to increase the diversity of marine life, promote recreational fishing and diving and bolster economic development.

The state program maintains 12 artificial reefs — two in Long Island Sound, two in the Great South Bay, and eight in the Atlantic Ocean — though only six of them will receive a piece of the Tappan Zee; state officials plan to build up the remaining reefs next year with materials from somewhere else. The old bridge parts will be sunk, along with 30 decommissioned barges, tugboats and tenders from the Erie Canal and upstate waterways as well as steel pipes and scrap materials from state transportation projects.

Gov. Andrew M. Cuomo said a few parting words for the bridge at a news conference recently. “It’s coming down, as you know, and it’s a large structure so it begs the philosophical question: What does a bridge do in life after it is finished its life as a bridge? What is the afterlife? Is there a bridge heaven?”

“Well, there is a bridge heaven,” Mr. Cuomo continued. “Bridge heaven is you spend all your life above the water serving people and then you go to bridge heaven”— which he added — “is you go below the water.”

The Tappan Zee, which opened in 1955, was once a vital crossing just north of New York City, carrying nearly 140,000 vehicles a day at its peak. But eventually the bridge began showing its age, though efforts to replace it dragged on for decades. Finally, Mr. Cuomo stepped in with a

nearly \$4 billion project to build a pair of sleek modern spans, the first of which opened to traffic last August. The replacement bridge is named after the governor's late father, Mario M. Cuomo, who was governor for three terms.

Today, sections of the Tappan Zee stand forlornly as it is picked apart. Though some parts are destined for recycling centers and scrap yards, others are being repurposed. The New York State Thruway Authority, which operated the Tappan Zee, sold 133 concrete-and-rebar panels from the deck of the bridge — at \$1 apiece — to counties and the state Department of Transportation to use for infrastructure projects.



The old Tappan Zee is going to “bridge heaven,” Gov. Andrew M. Cuomo said.
Kevin P. Coughlin/Office of Governor Andrew M. Cuomo

Now concrete and steel from the Tappan Zee's supporting structure will be deposited among the six artificial reefs, which sit on sites ranging from three acres to 744 acres. An aide to the governor said that the bridge's steel trusses may also be used to build up the reefs.

All the materials will be thoroughly cleaned before being submerged in the water, state officials said.

The cost of transporting the materials to the artificial reefs is about \$5 million, according to state officials. That cost is being covered by Tappan Zee Constructors, the team of private contractors building the Tappan Zee replacement bridge, and the New York State Power Authority, which oversees the New York State Canal Corporation, the owner of the vessels that are to be scuttled.

Joe Paradiso, a charter boat captain on Long Island who is president of the New York Sportfishing Federation, said that his group has called for years for rebuilding and expanding the reefs. The underwater structures attract sea bass, fluke, porgies, blackfish and even juvenile lobsters and turtles.

“It’s an ongoing issue,” he said. “Some of these reefs are just depleted and in need of more materials.”

Mr. Paradiso, who used to drive over the Tappan Zee a couple times a year, said that using its parts to build up the reefs will not only benefit those who fish and dive, but also the local businesses that they support, from bait and tackle stores and fuel stations to hotels and restaurants. “Instead of going to a recycling plant or somewhere else, it’s a much better use,” he said.

Bill Ulfelder, the executive director of the Nature Conservancy in New York, said the expansion of the artificial reefs went hand in hand with his group’s efforts to improve the water quality around Long Island, which has long been polluted by runoff from home septic systems and sewage treatment plants, and bring back oysters, clams, mussels and scallops. “The more we can do to clean the water and improve the wildlife,” he said, “it brings back all the things people love about Long Island.”

Mr. Ulfelder, a scuba diver, recalled that when he first moved to New York City nearly a decade ago, he saw a holding yard for old subway cars that he was told were bound for artificial reefs.

“These iconic symbols of New York — subway cars and now the Tappan Zee — can keep on living,” he said. “Now they’re home for fishes, crustaceans and shellfish — other New Yorkers.”

A version of this article appears in print on April 29, 2018, on Page A15 of the New York edition with the headline: Tappan Zee Will Live On, Among Fluke and Porgies