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Back-to-back storms raise questions about future downpours

Daniel Cusick, E&E News reporter • Published: Tuesday, November 28, 2017



Floodwaters from the Skagit River cover a road north of Seattle. Charles Biles/Skagit Valley Herald/Associated Press

Rural communities in Washington's Skagit River Basin were still assessing damage yesterday from two Thanksgiving week megastorms that flooded low-lying areas and scoured away hundreds of feet of bluff in the town of Lyman, leaving several homes uninhabitable.

Conditions that began last Tuesday with rain and warmer-than-average temperatures across snow-covered terrain escalated dramatically by Thanksgiving Day, when a second storm dumped up to 8 additional inches of rain, swelling the Skagit to more than 5 feet above flood stage.

The event prompted emergency evacuations in several towns along the river, which drains 1.7 million acres from the Cascade Range of northwestern Washington to lower-elevation forest and farmland east of Skagit Bay, about 60 miles north of Seattle.

Some of the most severe damage was in the small town of Hamilton, a low-lying community where roughly 100 properties were flooded and streets were inundated with water, according to Doug ten Hoopen, director of the Skagit County Department of Emergency Management.

"It's not a new thing for Hamilton, but this was the highest water they've seen in more than a decade," ten Hoopen said. "For people who moved into that area over the last 11 years, this was their first experience with it."

Experts say the deluge was caused by an "atmospheric river" that concentrates large volumes of Pacific Ocean

moisture into narrow bands that can produce downpours.

Such patterns are common, experts say, and November in the Pacific Northwest is often wet with rivers running at average or above-average flows.

What made last week's weather unusual, according to National Weather Service senior hydrologist Brent Bower, is that two major rain events set up in quick succession along the same weather band, resulting in a one-two punch of precipitation that the Skagit was unable to absorb, even as the Army Corps of Engineers held back water at three dams to reduce downstream flooding.

"The fact that these two rain events were piled on top of each other, that was really the big factor," Bower said in an interview from Seattle's National Weather Service forecast center. "But we also had a couple of really cold periods the week before where we had gotten a fair amount of snow down to mid-elevations."

That snow, which ranged in depth from 1 to 5 feet, was largely converted to runoff by warm temperatures and widespread rainfall, he said.

Climate experts cautioned yesterday against drawing firm conclusions about the role that atmospheric warming had in juicing the Skagit Basin storms. In fact, some of the ground conditions that contributed to the Skagit flooding — such as a mid-elevation snowpack in November — actually run counter to climate model predictions of how warming could affect the Cascades.

However, those same models clearly indicate that rain events in basins like the Skagit will become more severe over the coming century, and that larger, more intense rain events could lead to more river flooding and damage to nearby property and infrastructure.

"Did climate change contribute to this particular flood event?" said Guillaume Mauger, a research scientist with the University of Washington Climate Impacts Group and member of the Skagit Climate Science Consortium. "There is probably some percentage effect from climate change."

But, he added, "I would reframe that question and say, 'What does this flood help us learn about what to expect in the future? In what way is this a dress rehearsal for future events?'"

But some local officials are less interested in long-term lessons than in short-term fixes. They are imploring state and federal agencies, including the Army Corps, to move quickly to address current flood damage and future risk by hardening portions of the Skagit River channel that are vulnerable to erosion.

"We are not at flood stage anymore, so that's a step in the right direction," Lyman Mayor Eddie Hills said Monday afternoon. "But we're still losing land out there, and people are still going to lose their homes, so we're nowhere near done dealing with this."

"There's no clay or hardpan [under the bluffs]," Hills added. "It's all sand, and it disappears fast when water hits it. But nobody would listen when I called an emergency on Wednesday," before the worst flood damage occurred. "Now they're starting to rethink it."

Hills said officials are working with federal officials to try to secure government buyouts of the affected Lyman properties, none of which are insured against flood damage. He has also called on the Army Corps of Engineers to take immediate action to secure the eroding riverbank before roads and pipelines begin washing out.

Bill Dowell, a spokesman for the Army Corps' Seattle District office, said the agency was in fact in "flood fight" mode when the storms struck. But he said federal law does not allow emergency flood control measures unless infrastructure, such as roads and bridges, is at risk.

"There was a lot of damage to private property, but the corps has no authority to address that," he said. "We only have authority when there is public infrastructure involved."

The Army Corps did, however, take steps to hold back water on three dams on the Skagit, resulting in a flow reduction of roughly 25,000 cubic feet per second, or the equivalent of about 3.5 feet of additional floodwater at downstream gauges, according to Dowell.

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