

MEMORANDUM

Date: February 24, 2022
To: Chehalis Basin Board
From: Andrea McNamara Doyle, OCB Director
Re: **UPDATED** Frequently Asked Questions about January 2022 Flooding Event

The following FAQ addresses common questions that have been raised, and that we anticipate will continue to be asked, as residents and communities respond to the recent flooding events of early January.

At this time, we are continuing to collect information about damages and other impacts. This document will be updated as more information becomes available.

** indicates a response that will be updated as more information is available*

UPDATED/NEW: indicates information that has been added after this FAQ was initially circulated

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1. WHAT HAS THE CHEHALIS BASIN STRATEGY DONE TO MAKE A DIFFERENCE DURING FLOOD EVENTS LIKE THIS?

Since 2017, the Chehalis Basin Strategy has invested \$50.1 million in flood preparation and mitigation across the Basin, and completed 38 flood damage reduction projects. These projects have focused on both preparing residents and communities for flooding, and slowing down floodwaters to reduce flood damage.

Responding to a flood emergency often costs four to seven times more than investing in preventative measures, which save \$6 for every \$1 spent. Planning and preparedness has been a vital part of the Chehalis Basin Strategy to date. Planning investments play an important role by helping us to identify where flood risks are highest, and positioning Chehalis Basin governments, communities, and residents to be better able to respond and ultimately become more resilient.

Examples of flood preparedness projects and actions include:

- Upgrading and maintaining the Flood Warning System which provides critical safety alerts to Chehalis Basin residents.
- Installing raised farm pads, or “critter pads,” to safeguard farms, livestock, and farm equipment on dry land during flooding.
- Consulting property owners to help them protect their assets from flood damage, using techniques like floodproofing, vent correction and installation, and elevating homes.
- Consulting with residents and businesses to help them lower flood insurance premiums. These reduced insurance fees can save businesses tens of thousands of dollars annually.
- Supporting Basin-wide flood safety and preparedness by hosting workshops for Chehalis Basin permit officials and emergency management staff about floodplain regulations and regulating after a disaster.

The Chehalis Basin Strategy has also invested in a number of projects that simultaneously restore aquatic species habitat and address flooding by restoring natural floodplain processes. Some examples of this include Satsop River and Skookumchuck River restoration projects, as well as correcting fish barriers and culverts along stretches like the West Fork Chehalis River.

*2. DID CHEHALIS BASIN STRATEGY PROJECTS PERFORM AS EXPECTED DURING THIS FLOOD EVENT? DID THEY HELP MITIGATE FLOODING AND FLOOD DAMAGE? **

This information is being gathered on an ongoing basis. At this time, we are able to share the following status reports:

- Nearly 25,000 individuals and households logged in to and utilized the [Chehalis River Basin Flood Warning System](#) during the event to receive emergency updates, and the flood inundation maps available on that site received almost 75,000 hits.
- Numerous farm pads were used to protect livestock and farming equipment. There was no notable livestock loss reported during this flood event, compared to widespread losses during the 2007 and 2009 floods.
- The Raymer Street Pump Station in Hoquiam successfully pumped water (51,000,000 gallons!) continuously out of the Raymer drainage basin for 30 hours, keeping the area safe and dry during the flood event. *Design and permitting is currently underway for two new pumps in Hoquiam, as well as one in Aberdeen.*

- The Chehalis-Centralia airport pump system, completed in 2018 to protect the airstrip, privately owned recreational aircraft, and businesses located behind the levee, pumped 518 million gallons of water during the flood event, protecting \$45 million worth of public infrastructure and private assets while keeping more than 1,000 jobs from interruption.
- The recently installed protections around the Montesano Wastewater Treatment Plant worked well to safeguard the plant and prevent sewage spills. Before this project was implemented the plant along the bank of the Wynoochee River was in serious jeopardy of being compromised due to the bank eroding at a rate of 17 feet per year, threatening to breach the plan and potentially send millions of gallons of raw sewage down the Wynoochee to the Chehalis River and Grays Harbor.
- The North Shore Levee operated as designed, with no failures. *Further improvements are underway for the main and west (Hoquiam) segments, with construction taking place during summer 2023.*
- **NEW:** The Cloquallum Creek Erosion Project, which is a small-scale project designed to prevent significant erosion during flood events, performed successfully. The home and drainfield next to the project site were protected, and no further erosion or encroachment occurred.
- **NEW:** While the Lower Satsop right bank conservation project is not yet complete, it seems to have survived the flooding intact and appears to have played a role in slowing flood-driven erosion.
- **NEW:** Flood proofing projects in Bucoda successfully protected homes from taking on water. These projects included flood vent installations and corrections in 11 homes, home foundation retrofits, and three home elevations.

The Chehalis Basin Strategy is designed to operate on multiple scales—from small to large. We do expect that projects already on the ground helped to reduce flood volumes and damage overall during this recent flooding; as project construction continues and projects are installed to work at mid-level and large scales, the Basin will become more prepared for flooding of this severity. This multi-scaled approach is at the heart of the Chehalis Basin Strategy’s long-term plan to protect Basin communities from flood damage.

3. WHY DON'T WE HAVE ANY SOLUTIONS YET FOR CATASTROPHIC FLOODING, WHEN WE CLEARLY HAVE A NEED FOR THEM?

Reducing flood damage in the Chehalis Basin is urgent. Because of its incredible importance, it also requires serious thought and consideration. The actions we take today must protect the region both now and for future generations. While we continue to experience flooding today, the Chehalis Basin Strategy must also take the future into account in its planning so that our investments stand the test of time and help not just us, but also our generation’s grandchildren.

The Chehalis Basin Board is developing the best available technical information for their decision in 2023. In the past year, the Chehalis Basin Strategy has made significant progress toward identifying a long-term solution for catastrophic flooding.

The proposed emergency flood protection facility, or dam, is currently undergoing a final state and federal environmental review as part of NEPA and SEPA, after which point the Chehalis Basin Board will determine whether to move the project into its next stage of review.

Currently, a Chehalis Basin Strategy work group is leading an effort to thoroughly examine alternatives to the dam. This “non-dam” solution for flood damage protection could include one or more possible combinations of voluntary structure relocations, buyouts, elevations, floodproofing, and small-scale levee actions. These actions will be considered as potential dam substitutes, but could also supplement protection in the Basin even if a dam does move forward.

This effort is happening in parallel to final state and federal environmental reviews of the proposed dam, to provide the Chehalis Basin Board with a full understanding of all available options to protect against catastrophic flooding.

*4. WHAT IMPACT WOULD THE PROPOSED CHEHALIS RIVER FLOOD PROTECTION DAM HAVE MADE DURING THIS FLOOD EVENT, HAD IT BEEN INSTALLED? **

NEW: The proposed dam would activate based on forecasted flood flow—specifically, when flows at the Grand Mound gauge are forecasted to equal or exceed 38,800 cubic feet per second (cfs) within the next 48 hours. Based on water level data gathered at Grand Mound, the proposed dam would have been activated for this event at 1 a.m. on Friday, Jan. 5.

Preliminary modeling shows that given the event’s precipitation levels and subsequent rainfall, the dam and temporary reservoir would have been active for 29 days, from Jan. 5 to Feb. 3. Some key moments in this timeline would include:

- Jan. 5, 3 a.m. - Flood gates begin to close.
- Jan. 8, 2 a.m. - The Grand Mound gauge location reaches peak flow and flows begin to drop.
- Jan. 8, 10 a.m. - Flows drop below the 38,800 cfs trigger level, causing reservoir drawdown (lowering the reservoir’s water levels) to begin.
- Feb. 3, 7 a.m. - The 25-day drawdown process, which includes managing drawdown speed to account for debris, is complete and gates reopen.

It’s still too early in the analysis process to measure precisely how much of a difference would have been made by the proposed dam during this flooding event, and it will require substantial time and effort to update the needed models. At this time, we do know the Jan. 2022 flooding was a moderate-intensity flood event along the Chehalis River. Because the proposed dam is designed to prevent damages from major and catastrophic flooding, we expect this event would not have been severe enough for it to have played a significant role in reducing damages.

5. DID THE SKOOKUMCHUCK RIVER DAM PLAY ANY ROLE IN REDUCING FLOOD DAMAGE?

While the Skookumchuck dam has provided incidental protection from flood damage in the past, it was not designed for flood protection. In this instance, the dam’s retention pool—the area where water is

held back and stored—was already full and spilling water before the flood event, meaning the dam did not have any capacity for additional flood storage.

6. HOW WERE FISH POPULATIONS AFFECTED IN THE AREAS OF THE CHEHALIS BASIN THAT EXPERIENCED RECORD-HIGH WATER LEVELS DURING THIS FLOOD EVENT? *

NEW: While impacts are possible, it is too early to know to what degree fish populations may have been affected. However, we do know that when flooding overwhelms sewage systems and releases pollutants into waters, as it did in Centralia, this exposure can be harmful to fish and other aquatic species. Projects like the Montesano Treatment Plant, described in Question #2, are designed to protect sewage systems from floodwaters. Farm pads, described in Question #2, also help protect fish by enabling farmers to move and temporarily store equipment and agrichemicals (e.g., fuel, fertilizers, pesticides, etc.) out of the reach of floodwaters.

The Washington Department of Fish and Wildlife may have a more comprehensive understanding of possible impacts this summer.

7. WHAT WAS THE ECONOMIC IMPACT OF THIS FLOOD EVENT TO THE CHEHALIS BASIN? THE STATE OF WASHINGTON? *

NEW: Local governments across the Chehalis Basin have been able to develop the following preliminary damage estimates based on damages reported as of the end of January:

Lewis County

- \$3,996,744 in public damages (*damages reported by cities and other taxing districts in Lewis County*)
- \$1,613,774 in individual damages (*reported by 141 residents and 10 businesses*)

Thurston County

- \$2,640,000 damages total (*public infrastructure and private*)
- \$1,400,000 in private industry damages (*reported by 100 residents and two businesses*)

Grays Harbor County

- \$800,000+ in public damages (*across 12 jurisdictions*)
- \$3,127,145 in primary residence damages (*structure loss and personal property loss*)
- \$265,200 in business damages (*structure loss and loss of furnishings, inventory, etc.*)

8. WHAT IS THE OFFICE OF CHEHALIS BASIN AND WASHINGTON DEPARTMENT OF ECOLOGY'S ROLE IN RESPONDING TO FLOODING DISASTERS LIKE THE ONE WE JUST EXPERIENCED?

During a flood emergency, the Washington Department of Ecology and other state agencies have a support but not a lead response role. Generally in Washington, county governments have immediate responsibility for responding to flooding.

While Ecology and its Office of Chehalis Basin do not have a direct response role, they do offer support that includes:

- On-the-ground Washington Conservation Corps (WCC) support and some emergency funding.
- Supporting local and tribal governments in cleaning up hazardous materials, managing solid waste debris and animal carcass disposal, and other environmental threats and issues.
- Providing local governments limited emergency funding for immediate actions to protect the environment through our Flood Control Assistance Account Program and Terry Husseman Account.

9. WHY AM I SEEING INCONSISTENT REPORTS ABOUT THE SIZE OF THE JANUARY FLOOD EVENTS?

You may have noticed what might seem like inconsistent information about the intensity of the January flooding in local media and reports. This is because there is more than one way to measure flooding, and our understanding of a flood can look differently depending on which method is used.

During the recent flood events, **flood flows** were as high as they've ever been recorded in some places (such as the Newaukum River), and much lower than record levels in other places (such as the Chehalis River at Grand Mound). The same was true for **flood stages**, where some rivers in the basin crested at their highest recorded level (like the Skookumchuck River near Bucoda), yet were significantly below peak levels in other areas (like the Chehalis River near Doty).

Here's the difference between these two forms of measurement:

- **Flows** measure the *rate* of water that's flowing through a specific area—a ratio of how much water there is and how quickly that water is moving. Flows are measured in cubic feet per second (cfs), and may also be referred to as discharge. Flow or discharge data are most useful to compare current flows to peak flows during other historic flood events.
- **Stages** measure the *height, or elevation*, of flooding in a specific location, and are reported in feet. Stage or elevation data are most useful to monitor real-time flood developments.

While no two floods are ever identical, experts who have compared the January 2022 event to previous major and catastrophic floods in the basin (like 1996, 2007 and 2009) are reporting that this year's event is most similar to the January 2009 event.

10. HOW DID THE JANUARY FLOOD EVENTS COMPARE TO OTHER MAJOR FLOODS IN CHEHALIS BASIN HISTORY?

Every flood is different. However, we are able to make some comparisons to historic flooding events—specifically the well-documented major floods of Jan. 2009, Dec. 2007, and Feb. 1996—using currently-available data.

The below chart compares these flood events using frequency measurements at different locations across the Chehalis Basin. The “100-year flood” designation can be understood as a flood whose magnitude has a 1 in 100 chance of happening during any given year—in other words, this is considered a relatively rare and significant event. Similarly, a 25-year flood has a 1 in 25 chance of happening during any given year.

	Newaukum River near Chehalis	Skookumchuck River near Bucoda	Chehalis River near Doty	Chehalis River near Grand Mound
Jan. 2022	100-year flood	25-year flood	10-year flood	10-year flood
Jan. 2009	25- to 50-year flood	10- to 25-year flood	10-year flood	10-year flood
Dec. 2007	25- to 50-year flood	<i>N/A (low flood levels)</i>	500-year flood	150-year flood
Feb. 1996	50-year flood	50-year flood	100-year flood	100-year flood

Referencing this data, we can see the Jan. 2022 flooding was fairly similar to the Jan. 2009 flood event, with the exception of greater-magnitude flooding on the Newaukum River near Chehalis.