



WHATCOM COUNTY FLOOD CONTROL ZONE DISTRICT

Contact Information

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Approving Authority

**County Executive Satpal Singh Sidhu and Whatcom County Council
Members, acting as the Whatcom County Flood Control Zone**

District Board of Supervisors
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(360) 676-6717

Planning Process

The updating process started in early 2021. This process consisted of county wide meetings as well as more focused meetings with district staff and Western Washington University, with the goal of improving the Whatcom County Flood Control District section.

Key Contributor List

- Paula Harris, River and Flood Manager
- Kraig Olason, Stormwater Manager
- Andrew Wiser, Geohazard Specialist, Planner

The information contained in the Natural Hazards Mitigation Plan update regarding hazards, risks, vulnerability and potential mitigation is based on the best science and technology currently available. This information and related data on natural hazards potentially impacting the Flood Control Zone District will be used as a tool when the County updates other plans and programs, such as the following:

- Whatcom County Comprehensive Plan
- Whatcom County Comprehensive Emergency Management Plan
- Shoreline Management Program (part of comprehensive plan)
- Transportation Plan (part of comprehensive plan)



- Urban Growth Areas SubArea Plans
- Zoning Code
- Capital Improvement Program for Whatcom County Facilities

As additional information becomes available from other planning sources that can enhance this Plan, that information will be incorporated through the periodic update process.

Plan Maintenance for Whatcom Flood Control Zone District

The Whatcom County Flood Control Zone District (FCZD) has initiated the Floodplain Integrate Planning (FLIP) process to update and expand the Lower Nooksack River Comprehensive Flood Hazard Management Plan (CFHMP) to include the Upper Forks of the Nooksack River. The Whatcom County River and Flood Division of the Public Works Department is overseeing and coordinating the planning process. An extensive stakeholder group has been established that includes representatives from the resource agencies and special districts involved in river management to contribute to this planning process. Throughout the planning process, regular updates are provided to and feedback solicited from the FCZD Advisory Committee, a citizens committee that includes floodplain residents, mayors of two small cities and interested parties. These meetings are open to the public and are advertised through press releases, emailed agendas to those who request them, and postings on the Whatcom County website calendar. Additional opportunities for public input occur during regular updates to the Whatcom County FCZD Board of Supervisors, which occur during meetings of the Whatcom County Council. Once the CFHMP update is complete, the new risk and mitigation information will be incorporated into the next version of this Plan.



Public Outreach and Education

Program	Yes/No, Year Adopted	Description
Nonprofit organizations or local residents groups focused on hazard mitigation, emergency preparedness, vulnerable populations, etc.	No	
Ongoing public education or information programs	Yes	Provide information of flood hazards and mitigation measures to individuals and as projects develop
School-related programs for natural hazard safety	No	
Public education or information program	Yes	Community Rating System
StormReady certification	No	Whatcom County is a StormReady county.
Firewise Community certification	No	
Public-Private Partnership initiatives addressing disaster-related issues	No	
Other		



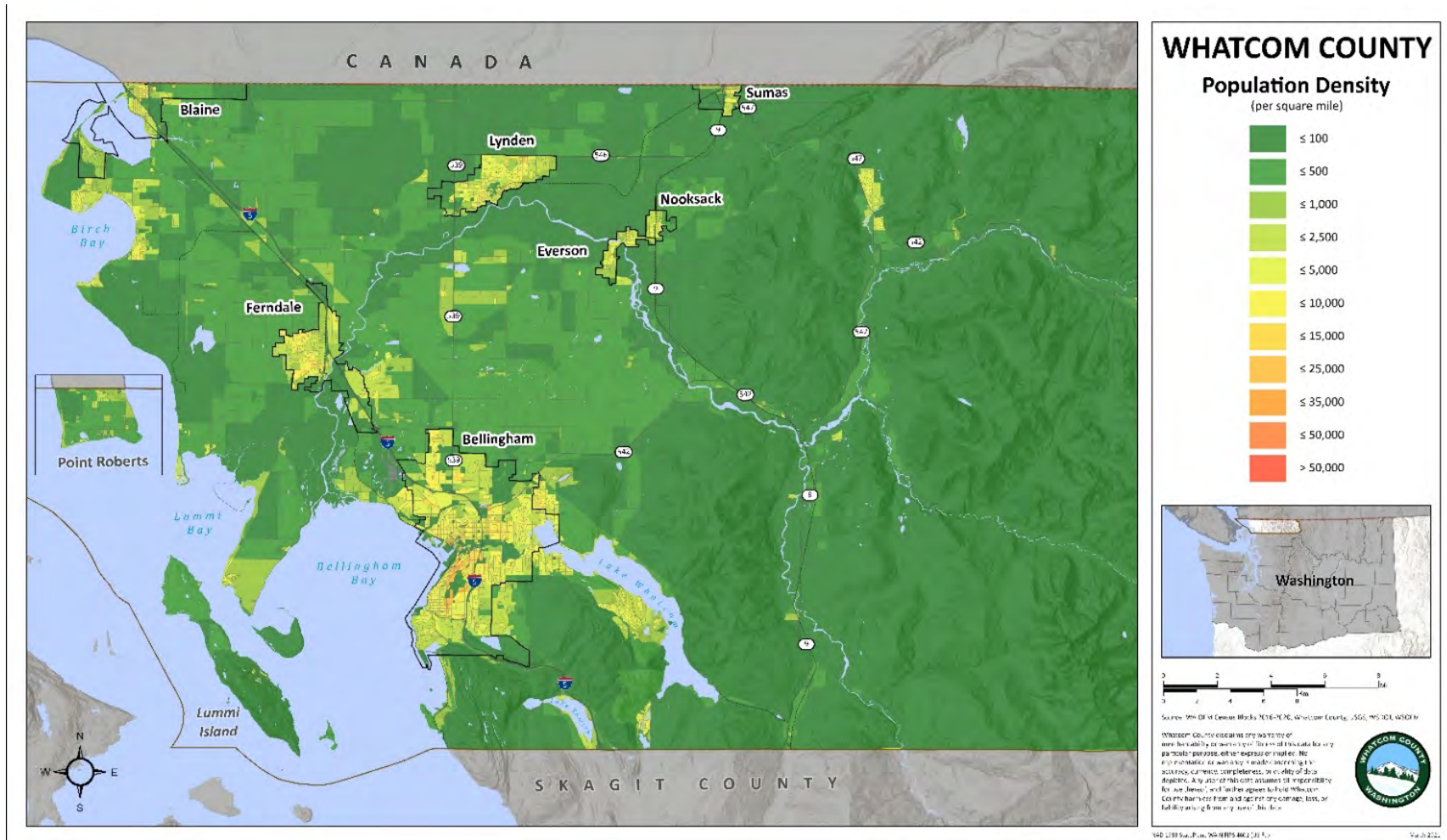
Overview of Whatcom Flood Control District, Hazards and Assets

Geography of The Whatcom Flood Control Zone District

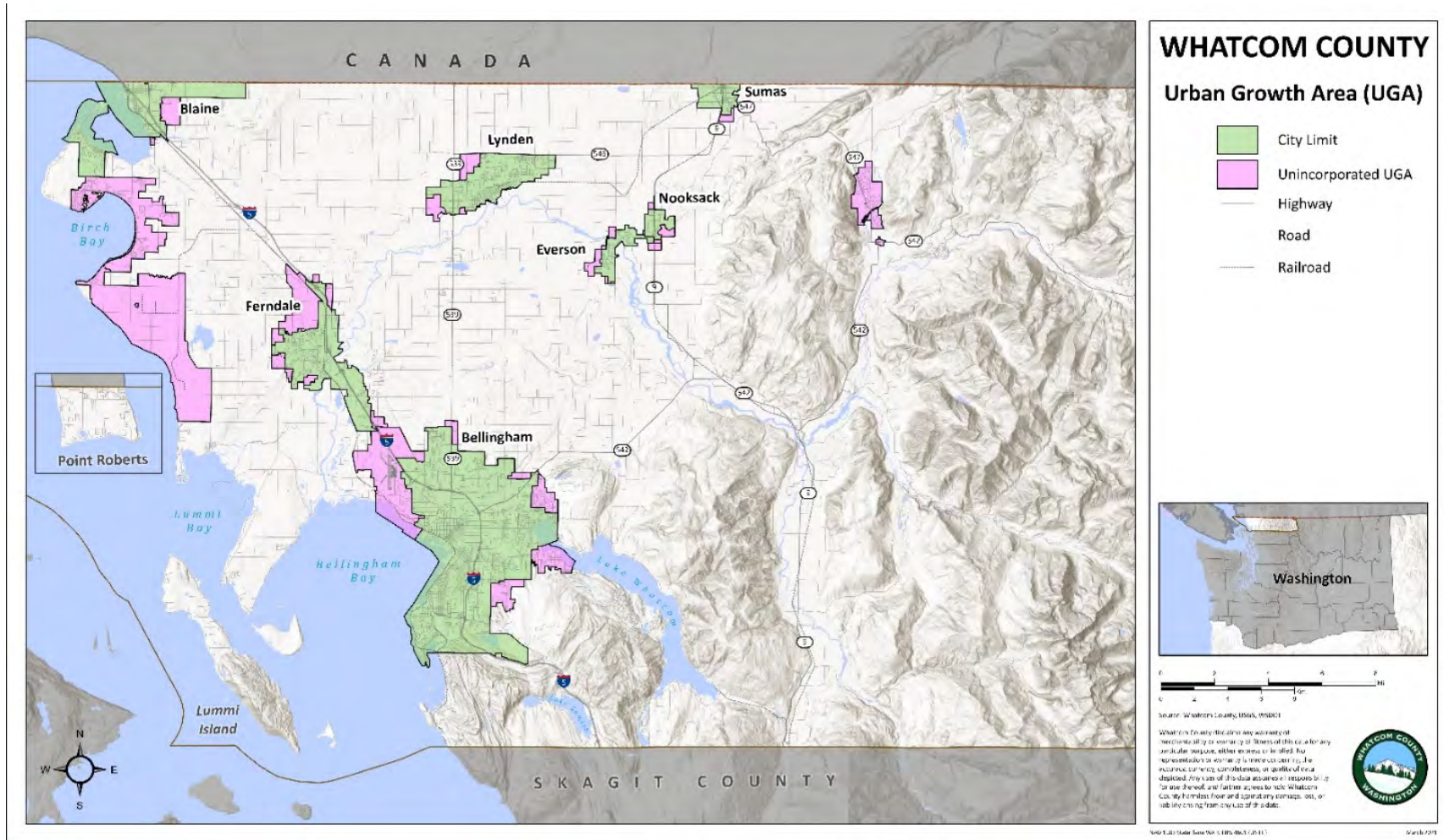
<u>Flood Control Zone District Total Population</u>	<u>228,000 (2020 Census estimate)</u>
<u>Unincorporated Area Population</u>	95,300 <u>(2020 Census estimate)</u>
<u>Flood Control Zone District Total Area</u>	2,120 mi
<u>Flood Control Zone District Incorporated Area</u>	95.4 mi
<u>Flood Control Zone District Unincorporated Area</u>	2,024.6 mi

Growth Trends

This maps below display the district boundaries, population, and the UGA for the Flood Control Zone District, as designated by the Whatcom County Comprehensive Plan.



Washington State Office of Financial Management (OFM) 2020 population and housing estimates for 2010-2020 census block data. This map uses the 2016-2020 average population to show population density per square mile.





Presence of Hazards and their Impacts in the Flood Control Zone District

The Flood Control Zone District encompasses the same area that Whatcom County does, and therefore has the same hazard exposure and impacts. The Flood Control Zone District is primarily concerned with the impacts of flooding and erosion. See the profiles of other jurisdictions or Whatcom County for details on more hazards.

Flooding on the Nooksack River in February of 2020 resulted in significant overflows at Everson that impacted the communities of Everson, Nooksack and Sumas as well as the unincorporated areas. In addition to structural damages to residences and businesses in the Everson-Sumas overflow corridor, the transportation infrastructure in the corridor was impacted for several days during and after the flood.

The Flood Control Zone District's growth is the same as Whatcom County's and the individual communities that make up the district. See their sections for more detail on growth, including exposure to hazards.

In the table below is a list of the major hazards that affect Whatcom County. The second column provides the percentage of the Flood Control Zone District's total area that is exposed to each hazard. The third column indicates the severity of anticipated impacts to community function, considering the credible worst-case hazard scenario. Severity of anticipated impacts considers effects on basic community function such as shelter, transportation, utilities, commerce, industry, agriculture, education, health, recreation, and cultural identity. Severity ranges from none to extreme, as shown in the key below the table. Finally, the last column of the table describes where the hazard impacts the community and which services the hazard would most significantly impact.



	Hazard	% area Exposed	Severity of Anticipated Impacts	Hazard Descriptions
Geological	Earthquake	86.4%	Moderate to High	The risk of earthquakes to the county is moderate to high. Lake shores are especially subject to damage, as well as characteristics of geologic materials in the County have caused major slides that impacted ground transportation.
	Liquefaction	25.5%	Moderate to High	The loss of intergranular strength in saturated, loosely packed sediment due to elevated pore pressures typically generated by seismic shaking during large magnitude earthquakes. Liquefaction can result in a loss of foundation bearing support and significant building damage, as well as lateral spreading, sand boils, and excessive ground settlement with associated disruption of utilities, roadway systems, and infrastructure.
	Landslide	5.8%	Moderate	Multiple areas around the county are at risk of landslides and debris flows due to unstable geologic conditions.
	Volcano	33.9%	High	Many of the populated areas are at risk in the event of a volcanic eruption from Mount Baker and associated lahars.
	Tsunami	1.2%	Low	Portions of the county exposed to the western straits are at risk of tsunami damage, specifically the area around Sandy Point, Lummi Peninsula, and the Nooksack and Lummi River deltas and floodplain upstream to Ferndale.
	Mine Hazards	0.1%	Low	Mine hazards are present throughout the county. Whatcom has a history of coal mining.
Hydrological	Flooding	4.8%	High	The Nooksack River, its upstream forks, alluvial fans on tributaries and coastal areas are subject to flooding. The main coastal communities impacted by coastal flooding are Sandy Point, Birch Bay, Point Roberts, and Lummi Peninsula.



				Damages can include structural damage to residences and seawalls as large debris is carried by waves hitting the shoreline, inundation damage to structures, and debris accumulation and flooding of roadways.
Meteorological	Wildfire	12.3%	Moderate	Certain Communities at Risk have been identified, as well as levels of fire risk.

Severity Scale: **None** = no impact to community function
Low = minor degradation of community functions, not widespread
Moderate = moderate degradation over multiple weeks or widespread
High = degradation or loss over many weeks, widespread



Natural Hazard Maps

Natural hazard maps for the Flood Control District can be found in Section 2, which provides hazard maps for the entire county.

Whatcom Flood Control Zone District Critical Facility List

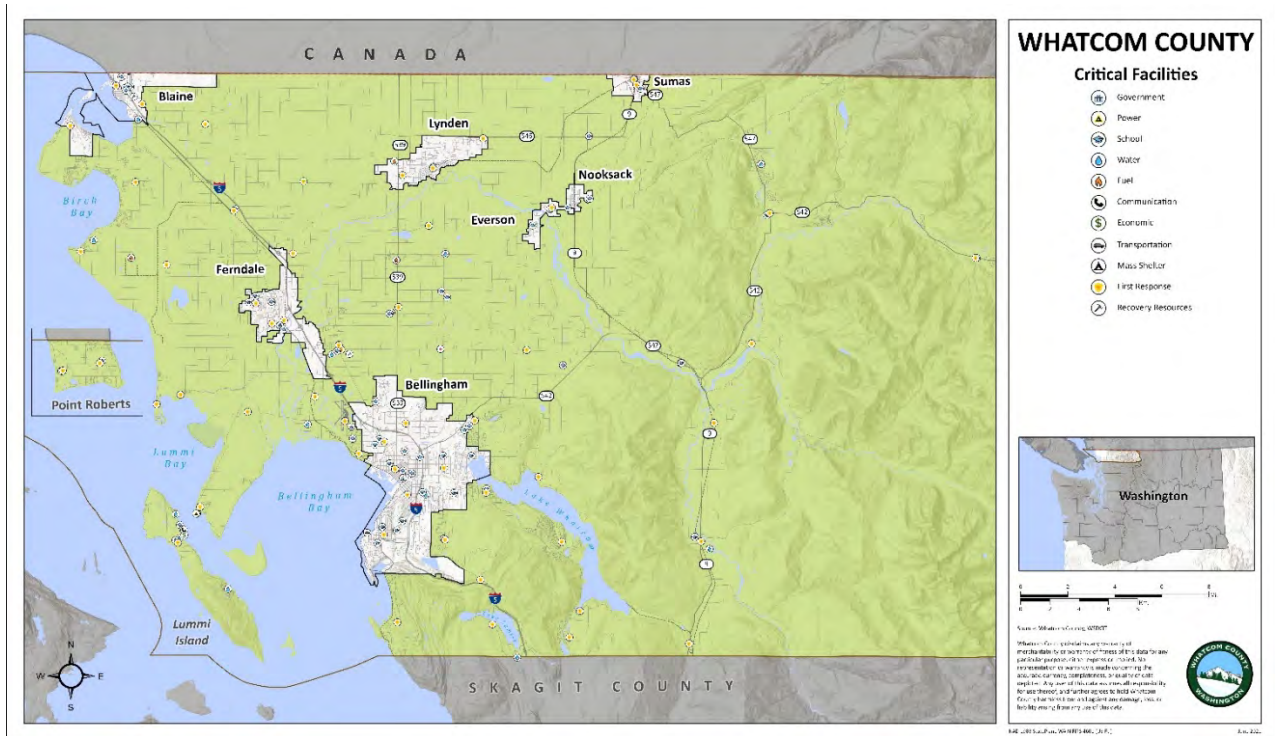
Facility Name	Facility Type	Significance	Location	Assessed Dollar Value	Notes
Columbia Valley Water District	LUS	3	6229 Azure Way, Maple Falls, WA 98266		Water District
Lummi Law & Order	EF	3	Lummi Reservation		Lummi Police
Nooksack Police Department	EF	3	111 W Main St., Everson, WA 98247		Nooksack Police
Northwest Water Works, Inc.	LUS	3	5207 Graveline Rd., Bellingham, WA 98226		Utility: Water
Pole Road Water Association	LUS	3	6912 Hannegan Rd. #105, Lynden, WA 98264		Utility: Water
Schools: Districts 501, 503, 505, 507	EF	1	10 Schools Total		School, possible shelter, distribution site or staging area.
Search & Rescue	LUS	3	1041 W Smith Rd, Bellingham, WA 98226		
Seattle City Light	LUS	3	Newhalem		Utility: Power
Fire Protection District – 38 Total	EF	3	Various		Critical Government Facility
Water District #2 – Bellingham	LUS	3	1615 Bayon Rd, Bellingham, WA 98225		Utility: Water
Water District #7 – Bellingham	LUS	3	1615 Bayon Rd, Bellingham, WA 98225		Utility: Water
Water District #4 – Point Roberts	LUS	3	1405 Gulf Rd, Point Roberts, WA 98281		Utility: Water



Water District #10 – Geneva/Sudden Valley	LUS	3	1220 Lakeway Dr, Bellingham, WA 98229		Utility: Water
Water District #12 – Lake Samish	LUS	3	2195 Nulle Road Bellingham, WA 98229		Utility: Water
Water District #13 – Maple Falls	LUS	3	6229 Azure Way, Maple Falls, WA 98266		Utility: Water
Water District #14 – Glacier	LUS	3	9973 Mt Baker Hwy, Deming, WA 98244		Utility: Water
Water District #18 – Acme	LUS	3	5456 Rothenbuhler Rd., Acme, WA 98220		Utility: Water
BP-Cherry Point Refinery	Fuel	2	4519 Grandview Road		
Birch Bay Water and Sewer (District 8)	LUS	3	7096 Pt. Whitehorn Road		Utility: Water
Birch Bay Water Connection	LUS	3	2701 Bell Road		Utility: Water
Whatcom Unified Emergency Coordination Center	EF	3	3888 Sound Way		Critical Government Facility

Facility Type: EF = Essential Facility; HMF = Hazardous Materials Facility; HPL = High Potential Loss; LUS = Lifeline Utility System

Significance to community function: 1=Moderate; 2= High; 3 =Very High



Map of critical facilities identified by the Whatcom County Flood Control Zone District. Across Whatcom County, critical facilities fell into 15 categories. Unique categories developed for this plan update include mass shelter, assisted living, and recovery resources. Mass shelter includes facilities such as fairgrounds and community centers. Recovery resources are facilities that are required post-hazard event, for example public works and private construction companies. Not all jurisdictions identified or included critical facilities in each category.



Critical Facility Rankings for the Flood Control Zone District

The table below indicates whether each critical facility falls within known hazard zones for earthquake, liquefaction, landslide, tsunami, volcano, riverine flooding, coastal flooding and wildfire zones. A rank assessment in the last column indicates how the relative risk of community impact. This ranking considers the significance of the facility to the community and the number of hazard zones the facility is within. The frequency of each hazard is also considered, such that being in a low frequency hazard zone would receive a lower ranking than that same facility being in a high frequency hazard zone. Ranking is on a scale of 1 to 10, with 1 being the facility with the highest-ranking score, and 10 being a facility with the lowest ranking score in the jurisdiction.

$$\text{Rank} = \text{Significance} * \left[\frac{\text{EQ_Zone}}{\text{EQ_Freq}} + \frac{\text{LQ_Zone}}{\text{LQ_Freq}} + \frac{\text{LS_Zone}}{\text{LS_Freq}} + \dots + \frac{\text{WF_Zone}}{\text{WF_Freq}} \right]$$

Ranking value will be from 0.0 to 1.0, scaled to the highest ranking in jurisdiction.

Significance: 1=moderate; 2=high; 3=very high, as assessed in the critical facilities list in the previous section

Zone: 0=facility not in hazard zone; 1 = facility in the hazard zone

Frequency (e.g. EQ_Freq, LQ_Freq) is the most difficult variable to which to assign a value. Frequency varies based upon the magnitude of a hazard event and varies from one place to another. It was not possible within the time constraints to assess frequency of hazard at each critical facility location. Instead, a qualitative assessment of e hazard frequency across the entire county was made, as shown in the chart below.

Description	Freq Value used in formula	Hazards
Frequent, occurring on the order of decades	3	Riverine flooding (FL); Coastal flooding (COA)
Rare, occurring on the order of centuries	2	Earthquake (EQ); Liquefaction (LQ); Landslide (LS); Wildfire (WF)
Very rare, occurring on the order of millennia	1	Tsunami (TSU); Volcano (VOL)

Note: Severe storm, a very frequent hazard, was omitted because it is ubiquitous and because no hazard map of storm severity was available.



Critical Facilities Ranking Table

Facility Name	Facility Type	Significance	EQ	LQ	LS	TSU	VOL	FL	COA	WF	Rank Assessment
Columbia Valley Water District	LUS	3	1	1	0	0	0	0	0	1	0.45
Lummi Law & Order	EF	3	1	1	0	0	0	0	0	1	0.45
Nooksack Police Department	EF	3	1	1	0	0	0	0	0	0	0.30
Northwest Water Works, Inc.	LUS	3	1	1	0	0	0	0	0	0	0.30
Pole Road Water Association	LUS	3	1	1	0	0	0	0	0	0	0.30
Schools: Districts 501, 503, 505, 507	EF	1	See Whatcom Unincorporated in Section 3 for individual school listings.								0.05-0.33
Search & Rescue	LUS	3	1	1	0	0	0	0	0	0	0.30
Seattle City Light	LUS	3	1	0	0	0	0	1	0	0	0.25
Fire Protection District – 38 Total	EF	3	See Whatcom Unincorporated in Section 3 for individual school listings.								0.3-0.75
Water District #2 – Bellingham	LUS	3	1	1	0	0	0	0	0	1	0.45
Water District #7 – Bellingham	LUS	3	1	1	0	0	0	0	0	1	0.45
Water District #4 – Point Roberts	LUS	3	1	1	0	1	0	0	0	1	0.75
Water District #10 – Geneva/Sudden Valley	LUS	3	1	1	0	0	0	0	0	1	0.45
Water District #12 – Lake Samish	LUS	3	1	1	0	0	0	0	0	1	0.45
Water District #13 – Maple Falls	LUS	3	1	1	0	0	0	0	0	1	0.45
Water District #14 – Glacier	LUS	3	1	1	1	0	1	1	0	1	1



Water District #18 – Acme	LUS	3	1	1	0	0	1	1	0	1	0.85
BP-Cherry Point Refinery	Fuel	2	1	1	0	0	0	0	0	1	0.30
Birch Bay Water and Sewer (District 8)	LUS	3	1	1	0	1	0	0	0	1	0.75
Birch Bay Water Connection	LUS	3	1	1	0	1	0	0	0	1	0.75
Whatcom Unified Emergency Coordination Center	EF	3	1	1	0	0	0	0	0	0	0.30

Notes: **EQ** = Earthquake; **LQ** =Liquefaction; **LS** = Landslide; **TSUN** = Tsunami; **VOL** = Volcano; **FL** = Riverine Flooding; **COA** = Coastal Flooding; **WF** = Wildland Fire



Areas and Assets Exposed, Per Hazard

Flood Control Zone District Exposure to Natural Hazards						
Hazard Susceptibility	Asset County (% of Total)				Critical Facilities Appraised Value (Million)	
	Area (sq.mi.)	Population	Parcels	Critical Facilities		
Earthquake, Shaking Intensity						
<i>MMI IV</i>	7.7%	-	0.03%	-	-	
<i>MMI V</i>	31.7%	15.3%	15.7%	23.6%	\$153	
<i>MMI VI</i>	29.6%	63.5%	66.8%	58.4%	\$1181	
<i>MMI VII</i>	11.7%	13.8%	8.4%	7.9%	\$14	
<i>MMI VIII - IX</i>	5.7%	7.3%	7.4%	10.1%	\$40	
TOTAL	86.4%	99.9%	98.3%	100%	\$1388	
Liquefaction						
<i>Very Low to Low</i>	14.6%	45.4%	41.8%	51.7%	\$215	
<i>Low to Moderate</i>	6.5%	24.4%	27.5%	24.7%	\$1052	
<i>Moderate</i>	-	-	-	-	-	
<i>Moderate to High</i>	4.4%	7.5%	8.5%	7.9%	\$34	
<i>High</i>	0.02%	-	0.04%	-	-	
TOTAL	25.5%	77.3%	77.84%	84.3%	\$1301	
Landslide						
<i>Landslide Low</i>	0.7%	0.2%	0.25	-	-	
<i>Landslide Moderate</i>	1%	0.2%	0.1%	-	-	
<i>Landslide High</i>	2.9%	1.2%	1.9%	1.1%	\$0.1	
<i>Fan Low</i>	0.1%	0.1%	0.06%	-	-	

Geological Hazards



Hydrological Hazards	<i>Fan Moderate</i>	0.3%	0.2%	0.2%	-	-
	<i>Fan High</i>	0.8%	2.4%	1.9%	2.2%	\$3
	<i>Mine Hazard</i>	0.1%	0.4%	2.1%	2.2%	\$17
	TOTAL	5.9%	4.7%	6.51%	5.5%	\$20.1
	Volcanic Eruption					
	<i>Case 1 Debris Flows</i>	1.6%	1.9%	2.1%	2.2%	\$0.5
	<i>Case 2 Debris Flows</i>	0.9%	1.2%	-	-	-
	<i>Case M Flows</i>	2.9%	5.6%	6.3%	7.9%	\$34
	<i>Pyroclastic Flows, Lava Flows, and Ballistic Debris</i>	5.8	0.2%	0.6%	1.1%	-
	<i>Lateral Blast Hazard Zone</i>	22.7%	3.8%	5.5%	6.7%	\$11
	TOTAL	33.9%	12.7%	14.5%	17.9%	\$45.5
	Tsunami, Inundation Zone					
	<i>Low to Moderate Inundation Potential</i>	0.3%	2.2%	0.6%	2.3%	\$2
	<i>Moderate to High Inundation Potential</i>	0.3%	2.4%	0.5%	-	-
	<i>High Inundation Potential</i>	0.6%	0.7%	5.6%	2.3%	\$0.4
	TOTAL	1.2%	5.3%	6.7%	4.6%	\$2.4
	Flooding					
	<i>100-year Flood</i>	3.5%	6.7%	8%	3.4%	\$1
	<i>500-year Flood</i>	0.4%	1.9%	3.4%	4.5%	\$4
	<i>Floodway</i>	0.9%	1.4%	-	-	-
<i>Undetermined (Zone D)</i>	52.1%	0.1%	0.05%	1.1%	\$9	
TOTAL	4.8%	10.1%	11.45%	9%	\$14	



		Wildfire Zones				
Meteorological Hazards	<i>Interface Very Low-Low Structure Density</i>	0.9%	1.9%	7.7%	1.1%	\$0.4
	<i>Interface Medium-High Structure Density</i>	1.4%	23.2%	26.9%	41.6%	\$1208
	<i>Intermix Very Low-Low Structure Density</i>	5.9%	17.2%	1.6%	30.3%	\$112
	<i>Intermix Medium-High Structure Density</i>	4.1%	32.1%	30.4%	22.5%	\$36
	TOTAL	12.3%	74.4%	66.6%	95.5%	\$1356.4



Status of Whatcom County Flood Control Zone District’s 2016-2020 and Ongoing Hazard Mitigation Actions

This section describes the status of mitigation actions that were proposed in the 2016 Mitigation Plan and are now 1) currently being implemented and are ongoing, 2) are now completed, or 3) are now discontinued because they are no longer needed. The actions are organized by hazard and indicate the lead agency, funding source, and status.

Lead Agency	May be more than one lead agency indicating shared responsibility and coordination
Funding Source	Local; State; FEMA; Private; Other
Current Status	Action Discontinued / Action Completed / Action ongoing and expected completion date

Education and Outreach

EO-a. Ensure Welfare and Safety of Residents

For alluvial fans and landslides, additional measures recommended by studies are listed below. In general, the following steps should be implemented to reduce risk of the four geologic hazards – alluvial fans, coalmines, landslides, and seismic hazards – affecting Whatcom County:

- Train local Fire District volunteers on using the County’s reverse 911 notification system to message community members in alluvial fan areas when danger is eminent.
- Limit, and if possible, eliminate new development in high-risk hazard areas.
- If new development is to be permitted, mitigate new construction to address the specific geological hazard.
- Educate existing property owners at risk to help minimize the risk of the local hazards.
- If cost effective, buyout high-risk properties.
- As a last-case resort, consider engineering solutions to manage the specific geologic hazard, if proven effective.

The Whatcom County FCZD has developed hazard mitigation recommendations strategies for several of the more developed alluvial fans, including Canyon Creek and Jones Creek. See the Geologic Hazard section of this Plan for further details.



Lead Agency	FCZD
Funding Source	Local, state and FEMA
Current Status	Ongoing

EO-b. Public service announcements: Broadcast early warning video on local TV

Lead Agency	FCZD and Public Works River and Flood.
Funding Source	Local
Current Status	Ongoing

EO-c. Newsletters: Flood preparedness newsletter and related flood materials, such as homeowner’s retrofit guide, etc. Annual distribution of flood preparedness newsletter to floodplain residents.

Lead Agency	FCZD and Public Works River and Flood.
Funding Source	Local
Current Status	Ongoing

EO-d. Direct Mailings: Direct mailings to lenders/realtors/insurance agents and repetitive flood loss properties annually.

Lead Agency	FCZD and Public Works River and Flood.
Funding Source	Local
Current Status	Ongoing

Drought/heat wave

No actions ongoing, discontinued, or completed for this hazard.

Earthquake

EQ-a. Support County EQ recovery: The FCZD will support Whatcom County in responding to any flood-related impacts that could result from an earthquake.

Lead Agency	FCZD
Funding Source	Local, State and FEMA
Current Status	Ongoing

Extreme Temp

No actions ongoing, discontinued, or completed for this hazard.

Flooding



FL-a. Comprehensive Flood Hazard Management Plan: The mitigation strategies and recommendations for all five reaches of the Nooksack River and other areas prone to flooding are explored in the Flooding section of this Plan. The River and Flood Division, Whatcom County Public Works has published a Comprehensive Flood Hazard Management Plan (CFHMP) for the Lower Nooksack River which details the projects on the lower river downstream of Deming. This plan was prepared for the Whatcom County FCZD and was adopted by the District’s Board of Supervisors. Since its adoption in 1999, the Whatcom County FCZD has been working to implement the plan. A multi-year collaborative process to update the plan and expand it to include the Upper Forks is currently underway.

Lead Agency	FCZD
Funding Source	Local, State, EPA, NOAA
Current Status	Ongoing

FL-b. Adopt and Enforce Building Codes and Development Standards. Whatcom County River and Flood continues to review all developments permits within the floodplain to ensure compliance with Whatcom County Title 17, Flood Damage Prevention and the National Flood Insurance Program.

Lead Agency	Whatcom County Public Works River and Flood and Whatcom County Planning
Funding Source	Local, State, FEMA
Current Status	Ongoing

FL-c. Improve Flood Risk Assessment. In January of 2019, FEMA adopted new floodplain maps for most of the flooding sources in Whatcom County except for the Lower Nooksack River. Work is ongoing to complete and adopt new mapping for the Lower Nooksack River.

Lead Agency	Whatcom County FCZD and Public Works River and Flood
Funding Source	Local, State, FEMA
Current Status	Ongoing

FL-d. Improve Compliance with NFIP. Whatcom County continues to educate the real estate and development community on flood hazards and the requirements for building within special flood hazard areas as part of the Community Rating System. An educational flyer is also being developed to help simplify the steps in permitting developments in the floodplain for property owners and their agents.



Lead Agency	Whatcom County Public Works River and Flood
Funding Source	Local, Private
Current Status	Ongoing

FL-e. Manage the Floodplain Beyond Minimum Requirements. Whatcom County’s flood damage prevention ordinance requires new and substantially improved structures to be elevated one foot above the base flood elevation.

Lead Agency	Whatcom County Public Works River and Flood
Funding Source	Local
Current Status	Ongoing

FL-f. Participate in the CRS. Whatcom County River and Flood administers the CRS program in Whatcom County and continues to maintain a CRS rating of 6, resulting in a 20% discount on flood insurance premiums for unincorporated Whatcom County residents.

Lead Agency	Whatcom County Public Works River and Flood
Funding Source	Local, State, FEMA
Current Status	Ongoing

FL-g. Remove Existing Structures from Flood Hazard Areas. The FCZD acquired three additional residences in Marietta and removed the structures from the parcels. Additionally, the FCZD acquired a large agricultural parcel in the floodplain north of Ferndale for future wetland mitigation and the existing residence was removed.

Lead Agency	Whatcom County FCZD/Public Works River and Flood
Funding Source	Local, State, FEMA
Current Status	Ongoing

FL-h. Improve Stormwater Drainage System Capacity. Improved stormwater conveyance has been the focus of the BBWARM District (Birch Bay area of Whatcom County Stormwater Program) over the past decade. Projects from 2015 through 2020 include: Seaview Drive Drainage upgrade, replaced failing storm conveyance system, 2016 – Birch Point Drainage repair, replaced undersized marine outfall which resulted in regular flooding and landslides,



2017 – upgraded an inlet and increased headwall bank height to reduce regular flooding of a neighborhood, 2018 – regraded ditches and replaced driveway culverts to improve drainage system capacity, 2019 – major capacity upgrade consisting of 3,000 feet of pipe and new outfall.

Another focus area within Whatcom County for stormwater improvements is the Lake Whatcom watershed which provides the drinking water to over 100,000 people. Projects typically focus on conveyance and treatment improvements which seek to reduce phosphorus runoff into the lake. Projects in this area from 2015 – 2020 include: Academy Road Improvements, a water quality treatment facility utilizing “Filtera” media and sand polishing cells, 2016- Cedar Hills/Euclid, a variety of water quality treatment methods including swales, treatment cells and cartridge vaults, 2018 – Agate Bay Phase 1, installation of 3 cartridge filter vaults and conveyance upgrades, 2019 – Agate Bay Phase 2, installation of 3 cartridge filter vaults and conveyance upgrades, 2020 – North Shore/Edgewater cartridge treatment vault and conveyance upgrade.

Lead Agency	Whatcom County FCZD/Public Works Stormwater and Engineering
Funding Source	Local, State
Current Status	Ongoing

FL-i. Conduct Regular Maintenance for Drainage Systems and Flood Control Structures.

Whatcom County Maintenance & Operations continues to maintain the drainage system within the County’s rights-of-way. Whatcom County River and Flood continues to with drainage and diking districts and Subzones to maintain the drainage systems and flood control structures within their districts.

Lead Agency	Whatcom County Public Works Maintenance and Operations
Funding Source	Local
Current Status	Ongoing

FL-j. Protect Infrastructure. The Deming Levee Improvement Project was constructed in 2017; a portion of the upstream end of the levee was set back from the river and raised to protect Nooksack tribal infrastructure, including their sewage treatment facilities for the former casino, as well as the town of Deming. Capital projects aimed at addressing deficiencies and/or repairing damages caused by floods. were conducted on the following levees during the 2016-2020 timeframe: Twin View Levee, Hannegan Levee, Red River Levee, Rayhorst Levee and Marine Drive Levee. Emergency projects were implemented at Rutsatz Road and Truck Road to



prevent erosion damage to the roadways. Sediment traps were constructed on High Creek to reduce flooding of the Mt Baker Highway. A project to reduce the threat of erosion of the Abbott Levee and Abbott Road is currently in final design and planned for construction in 2021.

Lead Agency	Whatcom County FCZD/Public Works River and Flood
Funding Source	Local, state, USACE, Private, Other
Current Status	Ongoing

FL-k. Protect Critical Facilities. Detailed design work is underway for two levee improvement projects to protect critical infrastructure in the Cities of Lynden and Ferndale. Improvements to the Lynden Levee adjacent to their sewage treatment plant are planned for construction in 2021 by the USACE; this work is being done in conjunction with a FCZD project to realign the creek that runs behind and under the levee. Detailed design for improvements to the Ferndale Levee is still in the early stages; this levee protects the City’s water and wastewater treatment plants and the PUD’s water treatment facility. Detailed design and land acquisition is also underway for the Jones Creek deflection berm that will mitigate debris flood hazards to the Acme Elementary School.

Lead Agency	Whatcom County FCZD/Public Works River and Flood
Funding Source	Local, state, FEMA, Private, Other
Current Status	Ongoing

FL-m. Protect and Restore Natural Flood Mitigation Features. Incorporating natural flood mitigation features into flood control structure design has become the new norm. The Deming Levee was set back connecting more floodplain area and a disconnected tributary was reconnected to the river. The Lynden Levee project includes realigning a small tributary behind the levee farther from the wastewater treatment plant facilities and improving habitat. The Abbott Levee project has been designed as habitat structures along the bank that will reduce the risk of the river eroding into the levee prism.

Lead Agency	Whatcom County FCZD/Public Works River and Flood
Funding Source	Local, state, FEMA, Private, Other
Current Status	Ongoing



Alluvial Fans

AF-a. Map and Assess Alluvial Fans Hazards. A detailed hazard assessment was performed for the Glacier-Gallup alluvial fans in the town of Glacier. This work will be used in developing a long-term solution to addressing the levee deficiency on the Glacier Levee and reducing risk to the town of Glacier.

Lead Agency	Whatcom County FCZD/Public Works River and Flood
Funding Source	Local
Current Status	Ongoing

AF-b. Manage Development in Alluvial Fan Hazard Areas. Whatcom County Planning and Development Services continues to review new development proposals in alluvial fans to ensure compliance with the Critical Areas Ordinance.

Lead Agency	Whatcom County Planning
Funding Source	Local, Private
Current Status	Ongoing

AF-c. Promote or Require Site and Building Design Standards to Minimize Risk on Alluvial Fans. Residential development that has occurred in regulated Alluvial Fan Hazard Areas has been subject to recommendations prepared by a qualified professional (Licensed Geologist) intended to mitigate hazards posed to the development and life-safety. Recommendations primarily consist of siting recommendations intended to achieve hazard avoidance to the maximum extent feasible as well as prevent the transfer of risk to adjacent or down-stream properties. In the event that avoidance cannot be accomplished due to site constraints, estimates of debris flow/flood conditions anticipated during a code-defined event (500-year recurrence debris flow) are provided by the qualified professional for incorporation in the foundation and building design by the project structural engineer. Structural measures employed vary based on proximity to the hazard source and the severity of estimated flow/flood conditions, but typically included elevating finish floor above estimated flow/flood depths, deepened foundation embedment with armoring to prevent scour, and increased foundation reinforcement to withstand flood and debris impacts or pier foundations to allow flow through of flood waters and debris.

Lead Agency	Whatcom County Planning
Funding Source	Local, Private
Current Status	Ongoing



AF-d. Remove Existing Buildings and Infrastructure from Erosion/Alluvial Fan Hazard Areas.

One resident on the Jones Creek alluvial fan is being relocated to enable construction of the Jones Creek deflection berm. Once acquired all structures will be removed.

Lead Agency	Whatcom County FCZD/Public Works River and Flood
Funding Source	Local, State, FEMA
Current Status	Ongoing

AF-e. Develop Basin-Specific Plans for Alluvial Fan Hazard Areas. With the Glacier-Gallup hazard assessment now complete, work is underway to evaluate alternatives to address the deficiencies on the Glacier Levee and reduce the risk to the town of Glacier.

Lead Agency	Whatcom County FCZD/Public Works River and Flood
Funding Source	Local
Current Status	Ongoing

AF-f. Construct Mitigation Measures on Alluvial Fan Hazard Areas. Detailed design of the Jones Creek deflection berm is ongoing and will be completed once the final properties needed for construction of the deflection berm are acquired.

Lead Agency	Whatcom County FCZD/Public Works River and Flood
Funding Source	Local, State, FEMA, Private
Current Status	Ongoing

AF-g. Increase Awareness of Alluvial Fan Hazards. Whatcom County Public Works participates with the Acme Fire District during their annual outreach activities with the community of Acme; these have included public meetings, response and evacuation planning and reverse 911 call outs to the community. Community involvement is also an integral part of the Glacier-Gallup project; a community meeting was held at the start of the project in 2019 and more are planned as the project proceeds.

Lead Agency	Whatcom County FCZD/Public Works and Whatcom Unified Emergency Management.
Funding Source	Local
Current Status	Ongoing

Landslide/erosion



No actions ongoing, discontinued, or completed for this hazard.

Landslide Subsidence

No actions ongoing, discontinued, or completed for this hazard.

Lightning

No actions ongoing, discontinued, or completed for this hazard.

Severe Storm

No actions ongoing, discontinued, or completed for this hazard.

Severe Wind

No actions ongoing, discontinued, or completed for this hazard.

Tornadoes

No actions ongoing, discontinued, or completed for this hazard.

Tsunami

TSU-a. Ensure the Welfare and Safety of Residents. With new data available, tsunamis have been identified as a greater threat to Whatcom County and the jurisdictions within than previously thought. Education about tsunamis and acceptance of the threat must precede any plans. Both civic leaders and the public need to understand that there is a threat, and further, have a clear understanding of what the threat entails. Even with the current new data, there is not a clear understanding of the extent of a tsunami threat. More data needs to be obtained, specific to each community along the western border of Whatcom County. There is more tsunami mitigation plan information contained within the tsunami section of this Plan.

The following steps have been implemented to reduce tsunami risk:

- Finish all tsunami inundation mapping for the coast line of Whatcom County.
- Secure tsunami hazard signs from the State of Washington to post in the newly mapped inundation areas.
- Limit, and if possible, eliminate new development in high-risk hazard areas.
- If new development is to be permitted, mitigate new construction to address the specific tsunami hazard.



- As funding permits acquire more tsunami AHAB sirens for the remaining areas threatened by inundation.

The FCZD will support Whatcom County in responding to flooding associated with a tsunami.

Lead Agency	FCZD
Funding Source	Local, state and FEMA
Current Status	Ongoing

Volcanoes

VOL-a. Reduce Risk from Volcanic Activity. Raising awareness and educating both civic leaders and the public in the areas subject to volcano-related damage is very important. Recent statewide campaigns and the news-related stories of volcanoes in the state have sparked interest for those living in the shadow of Mount Baker, Whatcom County’s volcano. More awareness and education needs to take place, especially with regards to warning signals of a volcanic eruption and the types of damage that can occur with an eruption with special attention to Lahars. There is more information about volcano-hazard mitigation planning under the Volcano section of this Plan.

The following steps have been implemented to reduce risk of volcanic activity:

- Finish the Mt. Baker / Glacier Peak Volcanic Eruption Plan, and complete a table top exercise based on it.
- Continue to message the citizens who reside in Glacier and Mt. Baker areas on the risks of living on a volcano.

The FCZD will support Whatcom County in responding to any flood-related impacts that could result from a volcano.

Lead Agency	FCZD
Funding Source	Local, state and FEMA
Current Status	Ongoing

Wildfire

WF-a. Create Mitigation Strategies in Cooperation with State and Federal Departments. In cooperation with fire managers from WDNR, NW Region, three mitigation strategies were developed to address Whatcom County’s fire hazards:



- Inter-Agency Cooperation
- County-wide Wildland Fire Prevention
- Wildland/Urban Interface Communities at Risk

The FCZD will support Whatcom County in responding to any flood-related impacts that could result from any wildfires. More information and details can be found in the Wildland Fire section of this Plan.

Lead Agency	FCZD
Funding Source	Local, state and FEMA
Current Status	Completed

Winter storms/Freezes

No actions ongoing, discontinued, or completed for this hazard.

Multiple Hazards

No actions ongoing, discontinued, or completed for this hazard.



Flood Control Zone District 2021-2025 Hazard Mitigation Strategy

Whatcom County Hazard Mitigation Goals

Whatcom County has identified five overarching hazard mitigation goals, which represent what a community seeks to achieve through mitigation actions.

- Goal 1.** Protect Life, Property and Public Welfare
- Goal 2.** Increase Public Awareness
- Goal 3.** Preserve and Enhance Natural Systems
- Goal 4.** Encourage Partnership for Implementation
- Goal 5.** Ensure Continuity of Emergency Services

These countywide goals help guide any prioritization and implementation of mitigation actions, ensuring that the actions contribute to a community's vision for the future.

Flood Control Zone District-Specific Hazard Mitigation Goals

The 1999 Lower Nooksack River CFHMP included the following community-specific mitigation planning goals for the Flood Control Zone District:

- FCZD Goal A:** Protect lives
- FCZD Goal B:** Minimize damage to public and private property and to public resources
- FCZD Goal C:** Provide a comprehensive understanding of the river
- FCZD Goal D:** Propose projects with a positive environmental benefit
- FCZD Goal E:** Maintain ongoing jurisdictional involvement and cooperation
- FCZD Goal F:** Emphasize long-term solutions
- FCZD Goal G:** Minimize public expenditures related to flooding

Mitigation Action Options

Appendix E of the Whatcom County Natural Hazard Mitigation Plan provides a list of mitigation options. Flood Control Zone District considered mitigation options related to those that Whatcom County itself has considered, especially those related to flooding and alluvial fans, because these hazards have the potential to cause the greatest loss and damage. Not all mitigation options in Appendix E were relevant or a strong priority for the Flood Control Zone District. Some options have already been implemented or are ongoing in Flood Control Zone



District, as documented in the section above on the status of 2016-2020 and ongoing hazard mitigation actions.

Mitigation Action Prioritization

Whatcom County FCZD chose to prioritize its hazard mitigation strategies according to hazard, not by specific facilities. The FCZD is currently very involved with flood hazard mitigation and will continue with flooding as the primary mitigation project priority. Flood-related mitigation related to geological hazards is also a District priority.

The mitigation actions in this section are new actions that Flood Control Zone District has prioritized for the 2021-2025 planning period and beyond. Mitigation options were prioritized based upon review of the following two criteria: 1) The action’s Overall Feasibility based on engineering, environmental, financial and political considerations, 2) The Criticality of the action, based upon a consideration of which actions had the greatest potential to protect life, property and public welfare. Flood Control Zone District is working in cooperation with the County and other participating communities and special districts to develop a systematic methodology that would use multiple evaluation criteria to determine mitigation action prioritization. This new methodology will be used in future updates of this Plan.

In the following Identified Mitigation Actions 2021-2025 table, each priority action is listed by hazard. Each action is followed by planning goals, lead agency, the priority evaluation, timeline, funding source and estimated cost, where such information is available. This information can be used by local decision makers in pursuing strategies for implementation.

Goals	Indicates the hazard mitigation planning goal or goals this action addresses; countywide and/or community-specific
Lead Agency	May be more than one lead agency indicating shared responsibility and coordination
Priority:	H (High); M (Medium); L (Low)
Timeline:	Short-Range (less than 2 years); Mid-Range (2-5 years); Long-Range (more than 5 years)
Funding Source:	Local; State; FEMA; Private; Other
Estimated Cost:	Actual; Estimated



Flood Control District Identified Mitigation Actions 2021-2025

FLOOD CONTROL ZONE DISTRICT IDENTIFIED MITIGATION ACTIONS 2021-2025							
MITIGATION ACTIONS		(1) Goals	(2) Lead Responsibility	(3) Priority	(4) Timeline	(5) Funding Source	(6) Estimated Cost
Hazard	Action Items						
Education and Outreach Education and Awareness Actions	These are actions that inform and educate citizens, elected officials, and property owners about hazards and ways to mitigate them.						
	<i>EO-a. Ensure Welfare and Safety of Residents</i>	1	FCZD	M	O	Local, State, and FEMA	Staff
	<i>EO-b. Public Service Announcements</i>	1	FCZD and Public Works River and Flood	M	O	Local	
	<i>EO-c. Newsletters</i>	2	FCZD and Public Works River and Flood	M	O	Local	
	<i>EO-d. Direct Mailings</i>	2	FCZD and Public Works River and Flood	M	O	Local	
Hazard Specific (Reference: Whatcom County	Actions communities should consider to identify and evaluate a range of potential mitigation actions for reducing risk to natural hazards and disasters.						

Priority: H (High); M (Medium); L (Low)	Timeline: Short-Range (less than 2 years); Mid-Range (2-5 years); Long-Range (more than 5 years); Ongoing	Funding Source: Local; State; FEMA; Private; Other	Estimated Cost: Actual; Estimated
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Exhibit A



FLOOD CONTROL ZONE DISTRICT IDENTIFIED MITIGATION ACTIONS 2021-2025							
MITIGATION ACTIONS		(1) Goals	(2) Lead Responsibility	(3) Priority	(4) Timeline	(5) Funding Source	(6) Estimated Cost
Hazard	Action Items						
Mitigation Ideas)							
Dam/Levee Failures (See: Flooding)	There are no new actions considered/all actions ongoing, discontinued, or completed						
Droughts/Heat Waves	There are no new actions considered/all actions ongoing, discontinued, or completed						
Earthquakes	<i>EQ-a. Support County EQ Recovery</i> The FCZD will support Whatcom County in responding to any flood-related impacts that could result from an earthquake	1, 3, 5	FCZD	L	O	Local, State, and FEMA	Unknown
Extreme Temperatures	There are no new actions considered/all actions ongoing, discontinued, or completed						
Flooding	<i>FL-a Ongoing -- Comprehensive Flood Hazard Management Plan</i>	1, 5	FCZD	M	O	Local, State, NOAA, EPA	

Priority: H (High); M (Medium); L (Low)	Timeline: Short-Range (less than 2 years); Mid-Range (2-5 years); Long-Range (more than 5 years); Ongoing	Funding Source: Local; State; FEMA; Private; Other	Estimated Cost: Actual; Estimated
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FLOOD CONTROL ZONE DISTRICT IDENTIFIED MITIGATION ACTIONS 2021-2025							
MITIGATION ACTIONS		(1) Goals	(2) Lead Responsibility	(3) Priority	(4) Timeline	(5) Funding Source	(6) Estimated Cost
Hazard	Action Items						
	<i>FL-b Ongoing -- Adopt and Enforce Building Codes and Development Standards</i>	1	Whatcom County Public Works River and Flood and Whatcom County Planning	M	O	Local State, FEMA	
	<i>FL-c Ongoing -- Improve Flood Risk Assessment</i>	1	Whatcom County FCZD and Public Works River and Flood	M	O	Local, State, FEMA	
	<i>FL-d Ongoing -- Improve Compliance with NFIP</i>	1	Whatcom County Public Works River and Flood	M	O	Local, Private	
	<i>FL-e Ongoing -- Manage the Floodplain Beyond Minimum Requirements</i>	1	Whatcom County Public Works River and Flood	M	O	Local	
	<i>FL-f Ongoing -- Participate in the CRS</i>	1	Whatcom County Public	M	O	Local, State, FEMA	

Priority: H (High); M (Medium); L (Low)	Timeline: Short-Range (less than 2 years); Mid-Range (2-5 years); Long-Range (more than 5 years); Ongoing	Funding Source: Local; State; FEMA; Private; Other	Estimated Cost: Actual; Estimated
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FLOOD CONTROL ZONE DISTRICT IDENTIFIED MITIGATION ACTIONS 2021-2025							
MITIGATION ACTIONS		(1) Goals	(2) Lead Responsibility	(3) Priority	(4) Timeline	(5) Funding Source	(6) Estimated Cost
Hazard	Action Items						
			Works River and Flood				
	<i>FL-g Ongoing -- Remove Existing Structures from Flood Hazard Areas</i>	1, 3	Whatcom County FCZD/Public Works River and Flood	M	O	Local, State, FEMA	
	<i>FL-h Ongoing -- Improve Stormwater Drainage System Capacity</i>	1	Whatcom County FCZD/Public Works Stormwater and Engineering	M	O	Local, State	
	<i>FL-i Ongoing -- Conduct Regular Maintenance for Drainage Systems and Flood Control Structures</i>	1	Whatcom County Public Works Maintenance and Operations	M	O	Local	

Priority: H (High); M (Medium); L (Low)	Timeline: Short-Range (less than 2 years); Mid-Range (2-5 years); Long-Range (more than 5 years); Ongoing	Funding Source: Local; State; FEMA; Private; Other	Estimated Cost: Actual; Estimated
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FLOOD CONTROL ZONE DISTRICT IDENTIFIED MITIGATION ACTIONS 2021-2025							
MITIGATION ACTIONS		(1) Goals	(2) Lead Responsibility	(3) Priority	(4) Timeline	(5) Funding Source	(6) Estimated Cost
Hazard	Action Items						
	<i>FL-j Ongoing -- Protect Infrastructure</i>	1	Whatcom County FCZD/Public Works River and Flood	M	O	Local, state, U SACE, Private, Other	
	<i>FL-k Ongoing -- Protect Critical Facilities</i>	1	Whatcom County FCZD/Public Works River and Flood	M	O	Local, state, FEMA, Private, Other	
	<i>FL-m. Protect and Restore Natural Flood Mitigation Features</i>	1, 3	Whatcom County FCZD/Public Works River and Flood	M	O	Local, state, FEMA, Private, Other	
	F-1 Incorporate Flood Mitigation in Local Planning	1,2	Whatcom County FCZD/Public Works River and	H	L	Local, state, FEMA	

Priority: H (High); M (Medium); L (Low)	Timeline: Short-Range (less than 2 years); Mid-Range (2-5 years); Long-Range (more than 5 years); Ongoing	Funding Source: Local; State; FEMA; Private; Other	Estimated Cost: Actual; Estimated
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Exhibit A



FLOOD CONTROL ZONE DISTRICT IDENTIFIED MITIGATION ACTIONS 2021-2025							
MITIGATION ACTIONS		(1) Goals	(2) Lead Responsibility	(3) Priority	(4) Timeline	(5) Funding Source	(6) Estimated Cost
Hazard	Action Items						
			Flood and Whatcom County Planning				
	F-2 Form Partnerships to Support Floodplain Management	1,4	Whatcom County FCZD/Public Works River and Flood	H	L	Local, state, NOAA, Private	
	F-3 Limit or Restrict Development in Floodplain Areas	1,3	Whatcom County Public Works River and Flood and Whatcom County Planning	H	L	Local	
	FL-4 Improve Stormwater Management Planning	1,5	Whatcom County FCZD/Public Works Stormwater	M	L	Local, State	
	FL-5 Adopt Polices to Reduce Stormwater Runoff	3,5	Whatcom County Public Works	L	L	Local, State	

Priority:
H (High); M (Medium); L (Low)

Timeline:
Short-Range (less than 2 years); Mid-Range (2-5 years); Long-Range (more than 5 years); Ongoing

Funding Source:
Local; State; FEMA; Private; Other

Estimated Cost:
Actual; Estimated



FLOOD CONTROL ZONE DISTRICT IDENTIFIED MITIGATION ACTIONS 2021-2025							
MITIGATION ACTIONS		(1) Goals	(2) Lead Responsibility	(3) Priority	(4) Timeline	(5) Funding Source	(6) Estimated Cost
Hazard	Action Items						
			Engineering Services				
	FL-6 Establish Local Funding Mechanisms for Flood Mitigation	1, 4	Whatcom County FCZD	L	L	Local	
	FL-7 Elevate or Retrofit Structures and Utilities	1, 4	Whatcom County Departments do not engage in this activity as public funds are not spent on private infrastructure. But these actions may be taken in the future.	L	L	Local, State, FEMA	
	FL-8 Flood proof Residential and Non-Residential Structures	1, 4	Whatcom County Departments do not engage in this activity as	L	L	Local, State, FEMA	

Priority: H (High); M (Medium); L (Low)	Timeline: Short-Range (less than 2 years); Mid-Range (2-5 years); Long-Range (more than 5 years); Ongoing	Funding Source: Local; State; FEMA; Private; Other	Estimated Cost: Actual; Estimated
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FLOOD CONTROL ZONE DISTRICT IDENTIFIED MITIGATION ACTIONS 2021-2025							
MITIGATION ACTIONS		(1) Goals	(2) Lead Responsibility	(3) Priority	(4) Timeline	(5) Funding Source	(6) Estimated Cost
Hazard	Action Items						
			public funds are not spent on private infrastructure. But these actions may be taken in the future.				
	FL-9 Preserve Floodplains as Open Space	1, 3	Whatcom County FCZD/Public Works River and Flood and Whatcom County Planning.	H	L	Local, State, FEMA, Private	
	FL-10 Increase Awareness of Flood Risk and Safety	2	Whatcom Unified Emergency Management	M	L	Local	
	FL-11 Educate Property Owners about Flood Mitigation Techniques	2	Whatcom County FCZD/Public	M	L	Local	

Priority: H (High); M (Medium); L (Low)	Timeline: Short-Range (less than 2 years); Mid-Range (2-5 years); Long-Range (more than 5 years); Ongoing	Funding Source: Local; State; FEMA; Private; Other	Estimated Cost: Actual; Estimated
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Exhibit A



FLOOD CONTROL ZONE DISTRICT IDENTIFIED MITIGATION ACTIONS 2021-2025							
MITIGATION ACTIONS		(1) Goals	(2) Lead Responsibility	(3) Priority	(4) Timeline	(5) Funding Source	(6) Estimated Cost
Hazard	Action Items						
			Works River and Flood.				
Landslide/ Erosion	There are no new actions considered/all actions ongoing, discontinued, or completed						
Land Subsidence	There are no new actions considered/all actions ongoing, discontinued, or completed						
Lightning	There are no new actions considered/all actions ongoing, discontinued, or completed						
Severe Storms	There are no new actions considered/all actions ongoing, discontinued, or completed						
Severe Wind	There are no new actions considered/all actions ongoing, discontinued, or completed						
Volcanoes	<i>VOL-a. Reduce risk from volcanic activity</i>	1, 2, 5	FCZD	M	O	Local, State, and FEMA	Staff

Priority: H (High); M (Medium); L (Low)	Timeline: Short-Range (less than 2 years); Mid-Range (2-5 years); Long-Range (more than 5 years); Ongoing	Funding Source: Local; State; FEMA; Private; Other	Estimated Cost: Actual; Estimated
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FLOOD CONTROL ZONE DISTRICT IDENTIFIED MITIGATION ACTIONS 2021-2025							
MITIGATION ACTIONS		(1) Goals	(2) Lead Responsibility	(3) Priority	(4) Timeline	(5) Funding Source	(6) Estimated Cost
Hazard	Action Items						
Tsunami	<i>TSU-a. Ensure the welfare and safety of residents.</i>	1	FCZD	L	O	Local, State, and FEMA	Staff
Wildfires	<i>WF-a. Create Mitigation Strategies in Cooperation with State and Federal Departments</i>	1, 5	FCZD	Complete	Complete	Local, State, FEMA	
Winter Storms/ Freezes (Severe Winter Weather)	There are no new actions considered/all actions ongoing, discontinued, or completed						
Multiple Hazards	There are no new actions considered/all actions ongoing, discontinued, or completed						
Advanced Mitigation Projects (Dream List)							

Priority: H (High); M (Medium); L (Low)	Timeline: Short-Range (less than 2 years); Mid-Range (2-5 years); Long-Range (more than 5 years); Ongoing	Funding Source: Local; State; FEMA; Private; Other	Estimated Cost: Actual; Estimated
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Priority: H (High); M (Medium); L (Low)	Timeline: Short-Range (less than 2 years); Mid-Range (2-5 years); Long-Range (more than 5 years); Ongoing	Funding Source: Local; State; FEMA; Private; Other	Estimated Cost: Actual; Estimated
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Flood Control District Annual Review and Progress for Hazard-Specific Mitigation Actions 2021-2025

Progress monitoring means tracking the implementation of the hazard specific mitigation actions over time. Each jurisdiction must identify how, when, and by whom action items will be monitored. The responsible agency assigned to each mitigation action is responsible for tracking and reporting on each of their actions.

Annual review and progress reporting includes the following:

- Step One:** Identify mitigation actions that your planning team has identified for the annual review. The planning team has the option to address ALL action items, or only those that should be acted on during each review cycle.
- Step Two:** Use the table below to track annual progress. For each action item selected for annual review insert the appropriate letter that indicates the status of that action item.
- Step Three:** Complete a progress report form as illustrated in Appendix G for each mitigation action item selected for annual review
- Step Four:** Submit the completed form(s) to the Whatcom County DEM.



Flood Zone Control District Hazard-Specific Action Items 2021-2025 – Annual Review and Progress						
Action Items	Status (Choose One & Enter Letter): A. Completed; B. In Progress (on schedule); C. In Progress (delayed); D. Delayed Until Funding Available; E. Canceled					Notes on yearly progress
	2021	2022	2023	2024	2025	
EDUCATION AND OUTREACH						
<i>EO-a. Ensure Welfare and Safety of Residents:</i>						
<i>EO-b. Public service announcements</i>						
<i>EO-c. Newsletters</i>						
<i>EO-d. Direct Mailings</i>						
<i>Add New Action Items if Applicable</i>						
DAM/LEVEE FAILURES						
<i>Add New Action Items if Applicable</i>						
DROUGHTS/HEAT WAVES						
EARTHQUAKES						
<i>EQ-a. Support County EQ recovery</i>						
<i>Add New Action Items if Applicable</i>						
VOLCANOES						
<i>VOL-a. Reduce Risk from Volcanic Activity</i>						
<i>Add New Action Items if Applicable</i>						
FLOODING						
<i>FL-a. Comprehensive Flood Hazard Management Plan</i>						
<i>FL-b. Adopt and Enforce Building Codes and Development Standards</i>						



Flood Zone Control District Hazard-Specific Action Items 2021-2025 – Annual Review and Progress						
Action Items	Status (Choose One & Enter Letter): A. Completed; B. In Progress (on schedule); C. In Progress (delayed); D. Delayed Until Funding Available; E. Canceled					
	2021	2022	2023	2024	2025	Notes on yearly progress
<i>FL-c. Improve Flood Risk Assessment</i>						
<i>FL-d. Join or Improve Compliance with NFIP</i>						
<i>FL-e. Manage the Floodplain Beyond Minimum Requirements</i>						
<i>FL-f. Participate in the CRS</i>						
<i>FL-g. Remove Existing Structures from Flood Hazard Areas</i>						
<i>FL-h. Improve Stormwater Drainage System Capacity</i>						
<i>FL-i. Conduct Regular Maintenance for Drainage Systems and Flood Control Structures</i>						
<i>FL-j. Protect Infrastructure</i>						
<i>FL-k. Protect Critical Facilities</i>						
<i>FL-l. Construct Flood Control Measures</i>						
<i>FL-m. Protect and Restore Natural Flood Mitigation Features</i>						
F-1 Incorporate Flood Mitigation in Local Planning						
F-2 Form Partnerships to Support Floodplain Management						
F-3 Limit or Restrict Development in Floodplain Areas						
FL-4 Improve Stormwater Management Planning						
FL-5 Adopt Polices to Reduce Stormwater Runoff						
FL-6 Establish Local Funding Mechanisms for Flood Mitigation						
FL-7 Elevate or Retrofit Structures and						



Flood Zone Control District Hazard-Specific Action Items 2021-2025 – Annual Review and Progress						
Action Items	Status (Choose One & Enter Letter): A. Completed; B. In Progress (on schedule); C. In Progress (delayed); D. Delayed Until Funding Available; E. Canceled					
	2021	2022	2023	2024	2025	Notes on yearly progress
Utilities						
FL-8 Flood proof Residential and Non-Residential Structures						
FL-9 Preserve Floodplains as Open Space						
FL-10 Increase Awareness of Flood Risk and Safety						
FL-11 Educate Property Owners about Flood Mitigation Techniques						
<i>Add New Action Items if Applicable</i>						
ALLUVIAL FANS						
AF-a. Map and Assess Alluvial Fans Hazards						
AF-b. Manage Development in Alluvial Fan Hazard Areas						
AF-c. Promote or Require Site and Building Design Standards to Minimize Risk on Alluvial Fans						
AF-d. Remove Existing Buildings and Infrastructure from Erosion/Alluvial Fan Hazard Areas						
AF-e. Develop Basin-Specific Plans for Alluvial Fan Hazard Areas						
AF-f. Construct Mitigation Measures on Alluvial Fan Hazard Areas						
AF-g. Increase Awareness of Alluvial Fan Hazards						
<i>Add New Action Items if Applicable</i>						
LANDSLIDES/EROSION						
<i>Add New Action Items if Applicable</i>						



Flood Zone Control District Hazard-Specific Action Items 2021-2025 – Annual Review and Progress						
Action Items	Status (Choose One & Enter Letter): A. Completed; B. In Progress (on schedule); C. In Progress (delayed); D. Delayed Until Funding Available; E. Canceled					Notes on yearly progress
	2021	2022	2023	2024	2025	
LAND SUBSIDENCE						
<i>Add New Action Items if Applicable</i>						
TSUNAMI						
TSU-a. Ensure the Welfare and Safety of Residents						
<i>Add New Action Items if Applicable</i>						
WILDFIRES						
WF-a. Create Mitigation Strategies in Cooperation with State and Federal Departments						
<i>Add New Action Items if Applicable</i>						
WINTER STORMS/FREEZES (SEVERE WINTER WEATHER)						
<i>Add New Action Items if Applicable</i>						
EXTREME TEMPERATURES						
<i>Add New Action Items if Applicable</i>						
LANDSLIDE						
<i>Add New Action Items if Applicable</i>						
LIGHTNING						
<i>Add New Action Items if Applicable</i>						
SEVERE WIND						
<i>Add New Action Items if Applicable</i>						
MULTIPLE HAZARDS						



Flood Zone Control District Hazard-Specific Action Items 2021-2025 – Annual Review and Progress						
Action Items	Status (Choose One & Enter Letter): A. Completed; B. In Progress (on schedule); C. In Progress (delayed); D. Delayed Until Funding Available; E. Canceled					Notes on yearly progress
	2021	2022	2023	2024	2025	
Add New Action Items if Applicable						



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