



Whatcom County

Natural Hazards Mitigation Plan



**A MULTI-HAZARD, MULTI-JURISDICTIONAL PLAN DEVELOPED FOR
THE BENEFIT OF ALL CITIZENS AND GOVERNMENTAL
JURISDICTIONS WITHIN WHATCOM COUNTY**

**Prepared by:
Whatcom County Sheriff's Office Division of Emergency Management**

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Geographic Information Systems Maps

Summit GIS developed maps for the initial (July 2004) version of the Whatcom County Natural Hazards Mitigation Plan. These base maps were then updated for the 2010 and 2015 Whatcom County Natural Hazards Mitigation Plans by the Whatcom County Planning and Development Services Geographical Information Systems (GIS) services, unless indicated otherwise.

The datasets used in the maps in this Plan were from the following sources:

- Washington Department of Natural Resources – Hydro information, Fire Hazard and History data
- Federal Emergency Management Agency – Floodplain Boundaries
- National Oceanic and Atmospheric Administration – Tsunami Grids
- U.S. Geological Society – Volcano Lahar and Blast Zone Boundaries
- Whatcom County Planning and Development Services – City Limits, County Boundaries, Geologic Hazards Railroads, Roads



AUTHORITY

This Plan Is Adopted By:

Entity	Approving Authority	Date Adopted	Ordinance
City of Bellingham	Mayor Kelli Linville & City Council Members	10 Aug 2015	Council Minutes
Port of Bellingham	Executive Director Rob Fix & Port Commission	18 Aug 2015	Resolution #1344
City of Blaine	Blaine City Council	25 Jul 2016	Resolution 1689-16
City of Everson	Mayor John Perry & City Council Members	11 Aug 2015	Resolution #542-15
City of Ferndale	Mayor Gary Jensen & City Council Members	21 Sep 2015	Resolution # 15-09-21-B
Meridian School District	Tom Churchill, Superintendent	12 Aug 2015	Mtg Minutes
Whatcom County Fire District #11 (Community of Lummi Island)	Whatcom County Fire District #11 Board of Commissioners	11 Aug 2015	Resolution 2015-231
City of Lynden	Mayor Scott Korthuis & City Council Members	21 Jul 2015	Resolution 926
City of Nooksack	Mayor Jim Ackerman & City Council Members	17 Aug 2015	Resolution 294
City of Sumas	Chamber President Ron Fadden & City Chamber Members	27 Jul 2015	Resolution #753
Whatcom County	County Executive Jack Louws & Whatcom County Council Members	04 Aug 2015	Resolution 2015-029
Whatcom County Flood Control Zone District	County Executive Jack Louws & Whatcom County Council Members	04 Aug 2015	Resolution 2015-028
Lake Whatcom Water & Sewer District	Patrick Sorensen, General Manager	30 Sept 2015	Resolution #818



INTRODUCTION

In 2015, Whatcom County's Division of Emergency Management (DEM) undertook the process of updating the *Whatcom County Natural Hazards Mitigation Plan* (cited herein as "Plan"). Natural hazards mitigation process was instigated by the Code of Federal Regulation (CFR) 201.6 (see Appendix A), enacted in October 2002 and amended in September 2004. The purpose of the Plan is to facilitate a net reduction in the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during immediate recovery from a disaster.

Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), 42 U.S.C. 5165, as amended by the Disaster Mitigation Act of 2000 (DMA) (P.L. 106-390), provides for States, Tribes, and local governments to undertake a risk-based approach to reducing risks to natural hazards through mitigation planning. The National Flood Insurance Act of 1968, as amended, 42 U.S.C. 4001 *et seq*, reinforced the need and requirement for mitigation plans, linking flood mitigation assistance programs to State, Tribal and Local Mitigation Plans.

After a presidential major disaster declaration, mitigation funding becomes available. The amount is based on a percentage of the total federal grants awarded under the Public Assistance and Individuals and Households Programs for the entire disaster. Projects are funded with a combination of federal, state, and local funds. Information on this program and application process is disseminated at public briefings and by other means.

Section 322 of the amended Stafford Act essentially states that as a condition of receiving a disaster loan or grant:

"The state **and** local government(s) shall agree that natural hazards in the areas affected shall be evaluated and appropriate action taken to mitigate such hazards, including safe land-use and construction practices. For disasters declared after November 1, 2004, all potential applicants (sub-grantees) must have either their own, or be included in a regional, locally adopted and FEMA approved all hazard mitigation plan in order to be eligible to apply for mitigation grant funds."

The regulations governing the mitigation planning requirements for local mitigation plans are published under 44 CFR §201.6. Under 44 CFR §201.6, local governments must have a FEMA-approved Local Mitigation Plan in order to apply for and/or receive project grants under the following hazard mitigation assistance programs:

- Hazard Mitigation Grant Program (HMGP)
 - The Hazard Mitigation Grant Program (HMGP) provides funds to States, Territories, Indian Tribal governments, local governments, and eligible private non-profits (PNPs) following a Presidential major disaster declaration.
- Pre-Disaster Mitigation (PDM)
- Flood Mitigation Assistance (FMA)

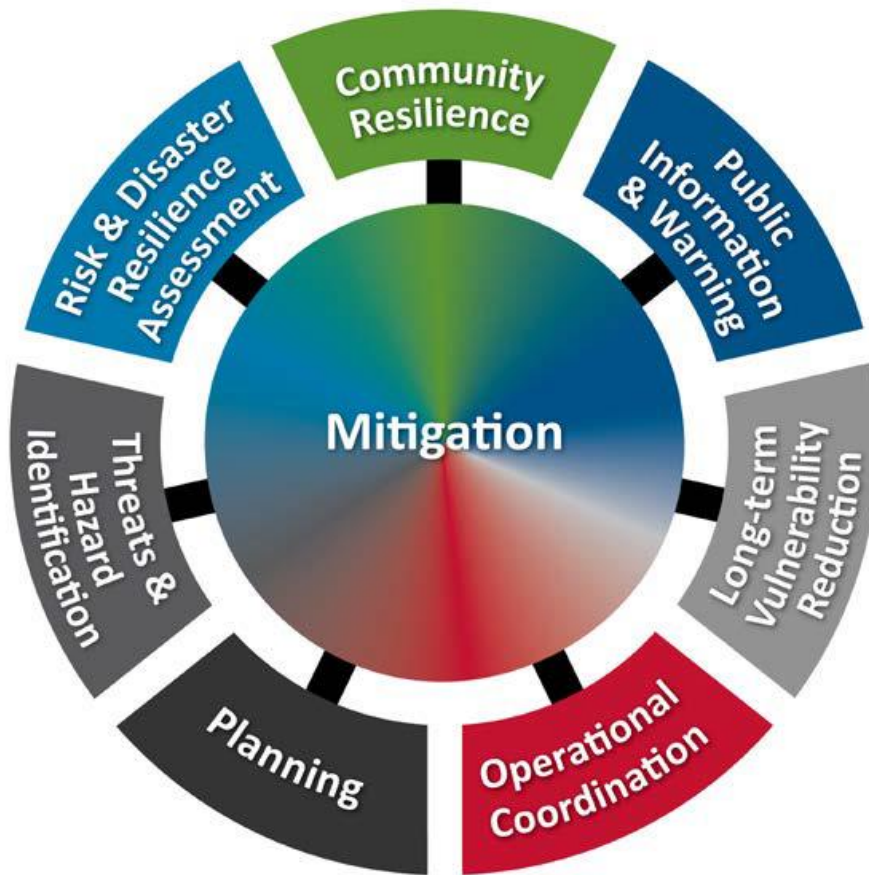
The Pre-Disaster Mitigation (PDM) Program and Flood Mitigation Assistance (FMA) programs provide funds



annually to States, Territories, Indian Tribal governments, and local governments. Although the statutory origins of the programs differ, both share the common goal of reducing the risk of loss of life and property due to natural hazards.

Mitigation is the cornerstone of emergency management. It is an integral part of the ongoing effort to lessen the impacts disasters can have on people's lives and property through damage prevention and flood insurance. The impact on human lives and communities is lessened through measures such as building safely within the floodplain or removing homes from the floodplain altogether; engineering buildings and infrastructures to withstand earthquakes; and creating and enforcing effective building codes to protect properties from floods, hurricanes, and other natural hazards.

The mitigation plan contains a five-year action plan matrix, background on the purpose and methodology used to develop the mitigation plan, profiles of Whatcom County and participating jurisdictions, sections on the natural and technological that occur within the county, and multiple appendices.





WHATCOM COUNTY BACKGROUND

Whatcom County, the northwestern most county of Washington State, comprises an area of 2,120 square miles. It is bordered to the north by Canada and to the west by the Strait of Georgia, a deep-water ship transit, and another waterway called the Rosario Strait. The eastern half of Whatcom County is composed of the North Cascades Mountain range, which occupies roughly two-thirds of the entire County. No Whatcom County roads that originate in the western half of the County connect to the eastern half; towns in eastern Whatcom County can only be accessed by driving more than 60 miles through Skagit County to the south. An unusual characteristic of Whatcom County is that not all of its populated areas are contiguous with the mainland part of the County; these areas include Point Roberts and Lummi Island. Only 4.5% of the land area is incorporated, while the majority is unincorporated. According to the U.S. Census Bureau, the population of Whatcom County grew from 201,140 in 2010 to an estimated 209,790 in 2015, a 4% increase. 69% of this increase occurred within the incorporated areas of Whatcom County. Development has followed a similar pattern.

The Washington State Growth Management Act (GMA) was adopted by State Legislature in 1990 (Revised Code of Washington Chapter 36.70A) to address the threat that uncoordinated and unplanned growth posed to the environment, sustainable economic development, and the quality of life in Washington, including the minimizing the risks natural hazards pose to local communities. The GMA requires state and local governments to manage Washington's growth by identifying and protecting critical areas and natural resource lands, designating urban growth areas, preparing comprehensive plans and implementing them through capital investments and development regulations. According to the code, critical areas include frequently flooded areas and geologically hazardous areas, natural hazards specifically addressed in the Whatcom County Natural Hazard Mitigation Plan. The GMA regulates development in these areas, and has the potential to affect hazard vulnerability and exposure at the local level. Whatcom County and its planning partners are in compliance with the provisions of the GMA and other regulations (e.g., Endangered Species Act, Clean Water Act, Shoreline Management Act, and the Washington State Building Code) that limit development in frequently flooded and geologically hazardous areas.

The Natural Hazard Mitigation Plan is constantly under review and efforts are made to reflect changes in priority. For example, the FEMA BiOp (September 2011) further restricts and/or prohibits development within flood prone areas unless it can be demonstrated the development will "not likely to adversely affect" listed species and/or their habitat. This has resulted in an increase in public awareness of natural hazards, in part due to the hazard mitigation plan. The amount of development occurring in the floodplain peaked in 2013 with 135 permits, but has dropped through 2015 to 98. Another example is that Whatcom County Planning and Development is considering restrictions on development in lahar impact areas. There has been at least one occasion where a business was denied a permit to use lahar areas for growing crops, although this is under appeal in 2016. This suggests the impact of the hazard mitigation plan may be having its intended impact in planning.

The NHMP both informs and is informed by Whatcom County Planning and Development policies and regulations and other planning documents, including the Whatcom County Comprehensive Plan (February 2014; specifically Chapter 11). While development has continued to occur within Whatcom County, the Natural Hazards Mitigation Plan has been used as one of the documents to determine the impacts that the hazard(s) may have in areas that are being developed.



An understanding of the geography, weather, industries, and characteristics of Whatcom County is critical to an ability to mitigate the natural hazards identified in this Plan. Some of these characteristics are discussed below.

A. CLIMATE

Annual precipitation varies greatly, depending on elevation, as follows:

1. Lowlands: rainfall varies from 30 to 40 inches
2. East toward the Cascade Mountains: precipitation increases
3. Near Mount Baker (elevation 10,778 feet): 140 inches, snow is possible year round

B. GEOGRAPHY

Major geographic features of Whatcom County are grouped as follows:

1. **Lowlands (West of Cascade Foothills):** These lowlands are part of the Fraser/Nooksack river-deltas system. This system runs north from the Chuckanut Mountains to the mouth of the Fraser River, where Vancouver, British Columbia (B.C.) is sited. To the south (beyond the Chuckanut Mountains, in Skagit County) is the delta of another great river, the Skagit River. These river deltas are important to Whatcom County because of their related flood, earthquake, and volcano hazards.
2. **Mount Baker Foothill Communities:** Scattered through the rural area along the Valley Highway (Highway 9) and up through the foothills along the Mount Baker Highway (State Route [SR] 542), crossing all three forks of the Nooksack River, are the Mount Baker Foothill communities of Van Zandt, Acme, Wickersham, Welcome, Kendall, Maple Falls, and Glacier.
3. **Nooksack River:** There are more than 1,325 miles of stream in the Nooksack River, its tributaries, and associated independent streams. The river originates in the mountains as three forks (North, Middle, and South) that converge near Deming. Its watershed basin comprises most of the County's eastern lands. The river corridor links the various landscapes of Whatcom County.
4. **Coast and Islands:** There are 134 miles of seacoast in Whatcom County: 51% is steep, eroding sea bluff (such as the mountain view coast at Birch Point); 16% is rocky shoreline, which includes parts of Lummi Island; 17% is accreting (building up or extending shoreline); and 5% is estuarine shore.
5. **Lakes:** There are 245 lakes in Whatcom County: four large reservoirs inside the Federal Lands (Ross, Diablo, Gorge, and Baker Lakes) and two large natural lakes in the Chuckanut region (Lake Whatcom and Lake Samish). Seven lakes are more than 100 acres in size:
 - a. Whatcom (5,000 acres)
 - b. Samish (825 acres)
 - c. Terrell (440 acres)
 - d. Silver (185 acres)
 - e. Padden (150 acres)



- f. Wiser (125 acres)
 - g. Judson (112 acres)
6. **The North Cascades Mountains:** Roughly two-thirds of eastern Whatcom County is federally managed land contained in the North Cascades Mountains, which is controlled by the U.S. Forest Service and the National Park Service. The Cascades extend from Canada's Fraser River south beyond Oregon. They shape the climate and vegetation over much of the Pacific Northwest.
- a. The Mount Baker/Snoqualmie National Forest lies east of the foothills and west of the "North Unit" of North Cascades National Park.
 - b. The North Cascades Park is located adjacent to the east portion of the Mount Baker/Snoqualmie National Forest.
 - c. East of the National Park is the Pasayten Wilderness, administered through the Okanogan National Forest. This is a road-less area.
7. There are about 350,000 acres of National Forest Lands within Whatcom County. Three roads connect western Whatcom County with the federal lands:
- a. The Mount Baker Highway (SR 542) provides access to the Mount Baker Recreation Area.
 - b. The Middle Fork Road (a secondary, more primitive entrance) leads to the hiking and camping region on the south and west sides of Mount Baker, including the Twin Sisters area.
 - c. Highway 20 (through Skagit County) is the principal access to Baker Lake, as well as to North Cascades National Park.

Two parts of the North Cascades National Park Complex are located in Whatcom County:

- a. The North Unit (Picket Range) – roadless, primitive, high country .
- b. Ross Lake National Recreation Area – Seattle City Light with three dams on the Skagit River.

C. TRANSPORTATION

1. Major Roads

- a. Interstate 5 (I-5), which connects Mexico to Canada, runs north and south through Whatcom County.
- b. SR 9 traverses north and south, crossing the South and North Forks of the Nooksack River.
- c. Mount Baker Highway (SR 542), from Bellingham, intersects SR 9 and winds east to Mount Baker.

2. Marinas

- a. In Bellingham, Squalicum Harbor is the second largest marina in Puget Sound. More than 1,800 pleasure craft, commercial boats, and fishing vessels are moored here.
- b. In Blaine, Drayton Harbor includes pleasure craft and a fishing fleet.
- c. Point Roberts is accessed by water from the Strait of Georgia or by land through Canada.
- d. Semiahmoo Marina contains approximately 300 slips and is located near the Canadian border.
- e. Private marinas are located along Bellingham Bay (including Fairhaven), Lummi Island, Gooseberry



Point, Sandy Point, Birch Bay, and Eliza Island.

3. Rail

- a. Bellingham is on Amtrak routes from Seattle and Vancouver, B.C.
- b. Rail freight corridors along SR 9 and the Puget Sound shoreline (i.e., along Chuckanut Bay to Bellingham) connect freight from the south into Canada, with additional sidings that connect these two routes.
- c. There is rail along the I-5 corridor to Blaine and northwest to the Cherry Point vicinity.
- d. Rail from Cherry Point to Custer links with the I-5 rail corridor.

4. Vessel Traffic Lanes

- a. Oil tankers
- b. Ships
- c. Barges
- d. Tug boats
- e. Commercial fishing vessels
- f. Recreation boats
- g. U.S. Coast Guard vessels
- h. Vessels accessing dry docks in Fairhaven

5. Ferry Crossings

- a. The Alaska Marine Highway System Ferry departs from Bellingham to Alaska.
- b. The Whatcom County Ferry crosses Hales Pass from Gooseberry Point to Lummi Island (an approximately 8-minute transit time).
- c. Plover Ferry crosses from Blaine to Semiahmoo Spit; this ferry is open seasonally on the weekends from Memorial Day to Labor Day.
- d. Commercial sight-seeing ferries to the San Juan Islands and Victoria, Canada, depart from the Bellingham Ferry Terminal.
- e. Canadian Ferries cross northwestern Whatcom County waterways: Tsawwassen through Strait of Georgia, to Channel Islands, and to Sidney on Vancouver Island, B.C.

6. Rivers

- The Nooksack River and many tributaries and independent streams are used by canoes, kayaks, small fishing boats, and for rafting float trips.

D. AIR TRANSPORTATION

1. Bellingham International Airport: Commercial jets use a 6,700-foot runway
2. Blaine Municipal Airport: 2,100-foot runway



3. Lynden Municipal Airport: 2,450-foot runway
4. Vancouver International Airport, an "air hub" with worldwide nonstop flights, is 45 miles north in Vancouver B.C.
5. Sea-Tac International Airport is 90 miles south in Seattle, Washington

E. LAND TRANSPORTATION

1. Whatcom Transportation Authority (WTA)
2. Greyhound bus
3. Private charters/shuttles
4. Taxis
5. Car rentals

F. SERVICES

1. Hospital
 - Peace Health St. Joseph Medical Center and the Outpatient Center are the two hospitals in Whatcom County, both located in Bellingham.
2. Local Media
 - a. Two local television stations: KVOS TV on Channel 12 and KBCB International Programming for Northwest Washington State on Channel 24
 - b. Several companies provide television cable services
 - c. Telephone companies:
 - (1) Qwest Communications in Bellingham
 - (2) Whidbey Telephone Company in Point Roberts
 - (3) Verizon Northwest in the remainder of Whatcom County
 - d. Ten radio stations: AM/FM
 - e. Emergency Alert System Station: KGMI (790 AM)
 - f. One daily newspaper
 - g. Seven weekly newspapers
 - h. Two monthly publications
3. School Districts: Public Education, Kindergarten through 12th grade
 - a. 35 elementary schools
 - b. 11 middle schools



- c. Nine high schools
 - d. Numerous private schools
4. Colleges/Universities
- a. Bellingham Technical College
 - b. City University
 - c. Northwest Indian College
 - d. Western Washington University
 - e. Whatcom Community College
 - f. Washington State University Cooperative Extension – Whatcom County
 - g. Charter College
5. Utilities
- a. Electricity: Puget Sound Energy, Public Utility District (PUD) #1, Blaine PUD, Sumas PUD, and Bonneville Power (to direct-service customers)
 - b. Gas: Cascade Natural Gas, Williams Natural Gas Pipeline, Arco Natural Gas Pipeline, and Olympic Pipeline
 - c. Water: approximately 350 public water systems in Whatcom County; Bellingham, Lynden, Blaine, Glacier, Nooksack, and Sumas have their own water districts; and some smaller communities rely on private wells and lakes
 - d. Cogeneration plants: three natural gas-fired cogeneration plants are located in Whatcom County: Sumas Cogeneration Company LP in Sumas; Tenaska Cogeneration Plant in Ferndale; and Encogen Cogeneration Plant in Bellingham



Whatcom County Major Disaster Declarations 2009-2014				
Year	Level of Community Impact (Estimated)	Date	Disaster Types	Federal Disaster #
2009	H	30-Jan-2009	Severe Winter Storm, Landslides, Mudslides, and Flooding	1817
2009	M	2-Mar-2009	Severe Winter Storm and Record and Near Record Snow	1825
2010-2014	No Major Disaster Declarations			
2015	M	15-Oct-2015	Severe Windstorm	4242
2015	M	20-Oct-2015	Wildfires and Mudslides	4243

NOTE: THE LEVEL OF IMPACT ESTIMATES, HIGH, MEDIUM, LOW ARE USED IN LIEU OF READILY AVAILABLE MONETARY VALUES. IN FUTURE PLANS WE HOPE MORE DETAIL CAN BE INCLUDED.