CITY OF SEDRO-WOOLLEY

INTRODUCTION

The City of Sedro-Woolley, in partnership with other local governments and tribes, has been an active participant in the planning process to develop the **Skagit County Natural Hazards Mitigation Plan**. The City of Sedro-Woolley's portion of the plan reflects committee contributions from the Building, Planning, Engineering, Public Works, and Finance departments. The Planning Department acted as the lead entity. The Associate Planner reviewed the City of Sedro-Woolley portion of the Skagit County Natural Hazards Mitigation Plan in its entirety and forwarded the appropriate portions of the plan to the department head responsible for that section for recommendations and revisions. After collecting the revised information, the Associate Planner compiled and synthesized the appropriate contributions into the City of Sedro-Woolley portion of the 2008 Skagit County Natural Hazards Mitigation Plan. The Planning Director reviewed and approved the revisions. The plan was reviewed to consider the vulnerabilities, risks, and impacts posed by the natural hazards identified in the Skagit County Natural Hazards Mitigation Plan as well as changes to city infrastructure, population, development trends, and recent changes to codes and ordinances. Upon review of Sedro-Woolley's portion of the Skagit County Natural Hazards Mitigation Plan and relevant sections of the Sedro-Woolley Municipal Code and Comprehensive Plan it was determined that the City's mitigation goals and strategies have remained valid and no new priority projects have been identified since the 2003 plan was adopted. The Planning Department will annually monitor and evaluate the City of Sedro-Woolley section of the Plan and the status of mitigation measures (as needed) to insure consistency with the Plan.

These offices and departments have created an overall profile of the City of Sedro-Woolley based on size, population, growth trends, economic base and current/future predominant land uses. From this profile, City of Sedro-Woolley was segmented into 3 distinct "neighborhoods" based on geography, land use, and hazard risk elements that are specific to each. The use of these neighborhood profiles has allowed for the development of area-specific risk assessments and has thereby promoted efficient mitigation planning.

City of Sedro-Woolley Overview:

Contact Information:

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City of Sedro-Woolley
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Population of Jurisdiction:	10,035 per April 1, 2008 Washington Sate Office of Financial Management Estimates
Estimated Geographical Size:	3.8 square miles
Principal Economic Base:	Retail and Commercial
Economic Characteristic:	Economically disadvantaged

The three neighborhoods are defined as follows:

1) The Residential - North Neighborhood is defined according to Land Use/Zoning regulations and is predominantly residential housing. This neighborhood is bordered to the south by Cook Rd. and SR 20.
2) The Residential - South Neighborhood is defined according to Land Use/Zoning regulations and is predominantly residential housing. This neighborhood is bordered to the north by Cook Rd. and SR 20.
3) The Central Commercial/Industrial Neighborhood is defined according to Land Use/Zoning regulations and is predominantly commercial and industrial. This neighborhood encompasses the central area within the city bordered by the north and south residential neighborhoods, and includes the SW arm containing United General Hospital.

The City of Sedro-Woolley, because of geographical, geological and topographical diversities, is subject to a wide variety of hazards. This document is intended to identify the types of hazards that pose a high degree of risk of occurrence, and the mitigation measures that are currently in place to reduce or mitigate loss to health, life, property, and the environment.

The City of Sedro-Woolley has adopted the 2006 edition of the following building-related codes: International Building Code (IBC); International Residential Code (IRC); International Fire Code; International Mechanical Code; International Fuel Gas Code; International Property Maintenance Code; International Existing Building Code; Uniform Plumbing Code; Washington State Energy Code; and the Washington State Ventilation and Indoor Air Quality Code [SWMC 15.04.020]. The purpose of these codes is to provide minimum standards to safeguard life and limb, health, property and public welfare. In addition to the general standards for construction, the Building Code provides for geographically specific requirements for seismic design, high wind design and high snow load design. The Building Code also includes construction requirements for construction in a flood plain.

The City of Sedro-Woolley adopted a revised Flood Damage Prevention Ordinance [SWMC 17.66] in 2004. The purpose of this ordinance is to promote public, health, safety and general welfare and minimize public and private losses due to flood conditions in specific areas by provisions designed; To protect human life and health; To minimize expenditure of public money and costly flood control projects; To minimize the need for rescue and relief efforts associated

with flooding and generally undertaken at the expense of the general public; To minimize prolonged business interruptions; To minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets, and bridges located in areas of special flood hazard; To help maintain a stable tax base by providing for the sound use and development of areas of special flood hazard so as to minimize future flood blight areas; To ensure that potential buyers are notified that property is in an area of special flood hazard; and To ensure that those who occupy the areas of special flood hazard assume responsibility for their actions [SWMC17.66.020].

The City of Sedro-Woolley Critical Areas Ordinance [Chapter 17.65 SWMC] addresses regulations for flood hazard areas and geologically hazardous areas, as well as wetlands, critical aquifer recharge areas and fish and wildlife habitat conservation areas. Within this ordinance are requirements and restrictions relating to flood-prone areas, steep, unstable or otherwise hazardous slopes which could impact human safety during flood, earthquake and sliding events and as a result ongoing erosion. The purpose of this portion of the Critical Areas Ordinance is to safeguard citizens, property and resources through identification of hazardous areas, requirements for mitigation through engineered design and construction methods; and, when design and construction methods cannot reduce risks to acceptable levels, to prohibit building and construction.

Hazard Mitigation analyses conducted by City of Sedro-Woolley staff and Summit GIS (consultants) was based on the best currently available information and data regarding the characteristics of the neighborhoods identified, the natural hazards that threaten the people, property, and environment of these neighborhoods as well as the impacts these neighborhoods have suffered in past disasters. This information includes the following:

- State Office of Financial Management population estimates, April 2008.
- Assessor tax records.
- FEMA Flood Insurance Rate Maps.
- Skagit County GIS data of various types.
- Department of Natural Resources data.
- US Geological Survey elevation and slope data.
- Natural Resource Conservation Soil Data.
- Washington State Geological Survey Geological Data.
- City of Sedro-Woolley native data sets.
- Summit GIS, Inc. data sets.
- Other information as available.

In some cases the experience, knowledge and judgment of local officials representing City of Sedro-Woolley government were used in the planning, including assumptions and approximations that were believed to be reasonable. In addition, straightforward, simplified technical analyses were used for tasks such as estimating property values, determining the size of populations affected,

and so forth. The reliance on the judgment of knowledgeable officials and simplified analyses is considered acceptable at this stage to allow the participating organizations to complete the tasks needed to develop this multi-jurisdictional natural hazards mitigation plan. As the planning continues in future years, or at the time when a proposed mitigation initiative is intended to be funded and/or implemented, the participating organizations/jurisdictions recognize that additional information and analyses may be required.

National Flood Insurance Program

The City of Sedro-Woolley participates in the National Flood Insurance Program (NFIP). The identifying, analyzing, and prioritizing of mitigation measures is based on (and will continue to be based on) continued participation and compliance with the National Flood Insurance Program.

Repetitive Loss Properties

Several properties are located within the floodway and 100 year floodplain as identified in the 1989 F.E.M.A. Flood Insurance Rate Map. These properties are located at the southern most border of the City, next to the Skagit River and in the "arm" of Sedro-Woolley that extends southwest to United General Hospital. However, there are no structures located on these properties that are classified as repetitive loss properties. In 2007, the city purchased and demolished the last remaining residence that was in the floodway.

Incorporating Mitigation Into Other Planning Mechanisms

The City of Sedro-Woolley is governed by the Mayor and City Council members that set policy and oversee the various city departments. The process by which the City will incorporate the requirements of the mitigation plan and other information contained in the Skagit County Natural Hazards Mitigation Plan into other planning mechanisms is as follows:

1. Adoption of the plan by the Mayor and City Council.
2. Inclusion into Comprehensive Plan, when appropriate.
3. Inclusion into other planning mechanisms subordinate to the Comprehensive Plan, when appropriate.

Amendments to the Comprehensive Plan are made following an established public review process defined in the Washington State Growth Management Act.

<u>Current Hazard Mitigation Codes/Plans/Ordinances cited below:</u>

- Comprehensive Land Use Plan
- Adopted Land Use/Zoning Code including the Critical Areas Ordinance
- Adopted Fire or Life Safety Code
- Adopted Building Code (2006 International Building/Residential Code)

City of Sedro-Woolley
2008 Natural Hazard Identification and Risk Estimation

**Based on Mitigation 20/20 Risk Assessment Formula (Area Impacted+Health and Safety Consequences+Property Damage+Environmental Damage+Economic Disruption multiplied by Probability of Occurence)*

***The greater the Risk Score, the greater the risk.*

	Area Impacted	Health & Safety	Property	Environment	Economic	Probability	Risk Score
Earthquake	4	2	2	1	1	2	**20**
Flooding	1	1	1	1	1	5	**25**
High Winds	4	1	2	1	1	5	**45**
Landslide/Erosion	1	1	1	1	1	1	**5**
Storm Surge/Tsunami	0	0	0	0	0	1	**0**
Subsidence,expansive Soils	1	0	1	1	1	1	**4**
Urban Fire	1	1	1	1	2	2	**12**
Wildfire	1	1	2	1	1	2	**12**
Winter Storm	4	1	1	0	1	2	**14**
Volcanic Activity	4	1	1	1	1	2	**16**

Total Jurisdictional Risk Estimation Score:	**153**

Area Impacted:	0=No impact	1=<25%	2=<50%	3=<75%	4=>75%	
Health & Safety:	0=No impact	1=Few injuries	2=Few fatalities, many injuries	3=Numerous fatalities		
Property:	0=No impact	1=Few destroyed or damaged	2=Few destroyed, many damaged or Few damaged, many destroyed	3=Many properties destroyed or damaged		
Environment:	0=Little or No impact	1=Short term	2=Long term	3=No recovery		
Economic:	0=No impact	1=Low costs	2=High direct cost and Low indirect or Low direct and High indirect	3=High Direct and Indirect Cost		
Probability:	1=Unknown but rare	2=Unknown but anticipated	3= <100 year	4=<25 year	5=Once a year or more	

Hazard Type	Mitigation
FLOODING A small portion of the City of Sedro-Woolley is located within the 100-year floodplain, while a moderate amount is located within the 500 year floodplain. Flooding events in 1990, 1995, 2003 and 2006 have come close to causing significant damage to structures and property within the City.	The City's Comprehensive Plan Goals and Policies and the Skagit County Countywide Planning Policies (CPPs) directly address flood hazard reduction: Skagit County and Cities and Towns, in cooperation with appropriate local, state and Federal agencies, shall develop and implement flood hazard reduction programs, consistent with and supportive of the Corps Feasibility Study. (CPP 10.13) The purpose of the Floodplain Management chapter (SWMC 17.66) is to protect human life and property; minimize the expenditure of public money; ensure that those who occupy the areas of special flood hazard assume responsibility for their actions and maintain the city's flood insurance eligibility while avoiding regulations which are unnecessarily restrictive or difficult to administer. Skagit County and Cities and Towns shall work together to provide ongoing public education about flooding in a coordinated and consistent program, and shall adopt a flood hazard reduction plan, that works together with the natural and beneficial functions of floodplains. (CPP 10.15) SW Comp Plan Policy LU 4.1: Promote open space, recreation, and agriculture as the highest and best use of land in flood-prone areas. Policy LU 4.2: Implement a community flood-preparedness program. Under requirements of the state Growth Management Act, the Comprehensive Plan also identifies, designates, and protects wetlands, aquifer recharge areas, and frequently flooded areas. This is done through numerous education, incentive, and protection and conservation measures contained in Comprehensive Plan Critical and Sensitive Areas (CSA) Goals and Policies and Development Regulations (SWMC 17.65 & SWMC 17.66). Policy CSA1.6: Develop funding mechanisms to permit the City acquisition of sensitive/open space

	areas for the public benefit. Integrate public park and/or trail systems with natural areas where appropriate, but ensure that such uses do not degrade the natural function of these areas. Policy CSA2.12: Preserve natural stream environments along the Skagit River. Restrict development within 200 in compliance with the Shoreline Management Act. The purpose of the Floodplain Management is to promote public, health, safety and general welfare and minimize public and private losses due to flood conditions in specific areas by provisions designed; To protect human life and health; To minimize expenditure of public money and costly flood control projects; To minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public; To minimize prolonged business interruptions; To minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets, and bridges located in areas of special flood hazard; To help maintain a stable tax base by providing for the sound use and development of areas of special flood hazard so as to minimize future flood blight areas; To ensure that potential buyers are notified that property is in an area of special flood hazard; and To ensure that those who occupy the areas of special flood hazard assume responsibility for their actions (SWMC17.66.020). In all buildings, construction materials used below the base flood elevation must be resistant to damage by flood waters. (SCC 14.34.160) New residential construction and substantial improvement of any residential structure, including any manufactured home, shall have the lowest floor, including basement, elevated two foot or more above base flood elevation, fully enclosed areas below the lowest floor that are subject to flooding are prohibited, or shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwater. Designs for meeting this requirement must either be certified by a

	registered engineer or architect or must have a minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided, the bottom of all openings shall be no higher than one foot above grade, openings may be equipped with screens, louvers, or other coverings or devices provided that they permit the automatic entry and exit of floodwater. New nonresidential construction and substantial improvement of any commercial, industrial, or other nonresidential structure shall either have the lowest floor, including basement, elevated two foot or more above the level of the base flood elevation; or together with attendant utility and sanitary facilities, shall be flood proofed so that below one foot above the base flood elevation the structure is watertight with walls substantially impermeable to the passage of water; have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy; be certified by a registered professional engineer or architect that the design and methods of construction are in accordance with accepted standards of practice for meeting provisions of this section based on their development and/or review of the structural design, specifications and plans. Such certifications shall be provided to the Planning Director. No encroachments, including fill, new construction, substantial improvements, and other development shall be allowed unless certification by a registered professional engineer or architect is provided demonstrating that encroachments shall not result in any increase in flood levels during the occurrence of the base flood discharge. Construction or reconstruction of residential structures is prohibited within designated floodways, except for repairs, reconstruction, or improvements to a structure which do not increase the ground floor area; and repairs, reconstruction, or improvement of a structure, the cost of which does not exceed 50 percent of the market value of the structure before the "start of construction" on any improvement, or the

	"start of construction" on any repair or restoration of a damaged structure. Work done on structures to comply with existing health, sanitary, or safety codes, as required by the local code enforcement officer, or to "historic structures", as most recently defined by the National Flood Insurance Program, shall not be included in the fifty percent. Through federal and state grants, a significant number of repetitive loss properties, in areas prone to flooding, have been purchased by the County and the buildings either demolished or removed.
EARTHQUAKE The City of Sedro-Woolley is located in seismic zone D-1 as determined by the International Building Code. Damage and loss due to earthquake was experienced as recently as the 2001 Nisqually earthquake.	All new buildings not meeting the strict prescriptive requirements of the IBC are required to have their structural elements designed by a professional engineer or registered architect. Such design is required to include seismic analysis of the building in addition to wind, gravity and other forces. Building permits are issued for repair of seismically damaged buildings, normally based on a site inspection by the field inspection staff. All repair construction must meet the current building code requirements for seismic design. In areas of the County with steep or unstable slopes, or with soil prone to liquefaction, geotechnical reports, prepared by a professional engineer, are required as part of a building permit application. Such reports must include an analysis of the effects of a seismic event.
HIGH WINDS The City of Sedro-Woolley is located in a borderline high wind area. The design wind speed for City of Sedro-Woolley is 85 mph. The entire city is also classified as exposure B (2006 IBC/IRC), where forests and hills provide some protection from winds.	SWMC 15.04.020. The 2006 International Building Code, including provisions for high winds. All new buildings not meeting the strict prescriptive requirements of the building code for adequate wall bracing, are required to have their structural elements designed by a professional engineer or registered architect utilizing the wind design requirements of the building code.

LANDSLIDE Portions of City of Sedro-Woolley are prone to landslide due to steep slopes, soil erosion, fractured rock faces, etc.	Mitigation: Article IV, Chapter 17.65 SWMC includes the standards for geologically hazardous areas. Geologically hazardous areas include erosion hazards, landslide hazards, mine hazards, volcanic hazards and seismic hazards, and shall be designated consistent with the definitions provided in WAC 365-190-080(4). Geologically hazardous areas shall be classified as “known or suspected risk,” or “unknown risk.” A site visit shall be conducted by the director to determine whether: (1) “Areas of Known or Suspected Risk” identified below are or may be present within two hundred feet of the project or activity; (2) the proposed project or activity is or may be within a distance from the base of an adjacent landslide hazard area equal to the vertical relief of such hazard area; (3) the proposed activity may result in or contribute to an increase in hazard; and (4) whether the project or hazard areas pose a risk to life, property, or other critical areas on or off the project area sufficient to require a site assessment. Site Visit Determination. The director shall make a determination using the following progressive order: 1. No Site Assessment. Where the director determines that the project or activity area has no potential for impacting adjacent ownership and property, other types of critical areas, public property (such as roads and other facilities) or living quarters of any kind, including any existing or proposed off-site, the director shall not require additional site assessments prior to approval under the provisions of this chapter. 2. Site Assessment Required. If the director determines during the site visit described in SWMC Section 17.65.410 that the proposed development activity falls within two hundred feet of an “Area of Known or Suspected Risk” and the geologic condition may pose a risk to life and property on or off the project area, then a geologically hazardous area site assessment of the project area by a qualified professional as described in subsection (B)(2) of this section shall be required as part of the complete development permit application. B. Geologically Hazardous Area Site Assessment.

	When required by the director, a site assessment report shall be prepared by a qualified professional. Portions of the report relating to recommended design or mitigation shall be prepared under supervision of a licensed professional engineer. A qualified professional shall mean an engineer, licensed in the state of Washington, with training and experience analyzing geologic, hydrologic, and groundwater flow systems in Washington State; or by a geologist who earns his or her livelihood from the field of geology and/or geotechnical analysis, with training and experience analyzing geologic, hydrologic and groundwater flow systems in Washington State, who has received a relevant degree from an accredited four-year institution of higher education. The geologically hazardous area site assessment report shall classify the type of hazard in accordance with SWMC Sections 17.65.400 and 17.65.410. The site assessment report shall include the following as appropriate: 1. A site plan must be prepared in accordance with the development permit requirements. The site plan shall depict the height of slope, slope gradient and cross section of the site. The site plan shall indicate the location of all existing structures, proposed structures and any significant known geologic features on the subject site. The site plan shall also include the location of springs, seeps, or other surface expressions of groundwater. The site plan shall also depict any evidence of surface or stormwater runoff; 2. A detailed description of the project, its relationship to potential geologic hazard(s), and its potential impact upon the hazard area(s), the subject property and adjacent properties. The description shall make a determination if a geologically hazardous area(s), as described in SWMC Section 17.65.020(C)(5), is present on the subject site. The narrative shall include a full discussion of the geologic factors and conditions on the subject site resulting in the qualified professionals conclusions; 3. An assessment of the geologic characteristics and engineering properties of the soils, sediments, and/or rock of the subject property and potentially affected

	adjacent properties. Soils analysis shall be accomplished in accordance with the Unified Soil Classification System; 4. A description of load intensity including surface and groundwater conditions, public and private sewage disposal systems, fills and excavations and all structural development; 5. An assessment describing the extent and type of vegetative cover to include tree attitude; 6. For Potential Landslide Hazards. Estimate slope stability and the effect construction and placement of structures will have on the slope over the estimated life of the structure. Quantitative analysis of slope stability or slope stability modeling may be required by the director; 7. Additional site assessment standards may be required by the director. C. Site Assessment Conclusions. 1. Where the qualified professional determines that a geologically hazardous condition is not present on the subject site and/or will not occur as a result of the proposed project, will have no potential for impacting adjacent ownership and property, other types of critical areas, public property (such as roads and other facilities) or living quarters of any kind, including any existing or proposed off-site, the director shall not require additional site assessments prior to approval under the provisions of this chapter. The qualified professional shall be required to certify that a geologic hazard is not present on the subject parcel as described in SWMC Section 17.65.020(C)(5). 2. Properties identified by the director and the qualified professional containing geologically hazardous conditions shall require a geologically hazardous area mitigation plan. Critical facilities as defined under SWMC Chapter 14.04 shall not be sited within designated geologically hazardous areas (Exception: volcanic hazard areas). No residential structures shall be located in geologically hazardous areas or their buffers that cannot be fully mitigated. The mitigation plan shall be prepared by a professional engineer or geologist under supervision of a professional engineer and include a discussion on how the project has been designed to avoid and minimize the impacts discussed under Section

	17.65.420(B)(2) of this chapter. The plan shall also make a recommendation for the minimum building setback from any bluff or slope edge and/or other geologic hazard shall be based upon the geotechnical analysis under Sections 17.65.420(B)(2) and (B)(3) of this chapter required. Mitigation plans shall include the location and methods of drainage, locations and methods of erosion control, a vegetation management and/or restoration plan and/or other means for maintaining long-term stability of geologic hazards. The plan shall also address the potential impact of mitigation on the hazard area, the subject property and affected adjacent properties. The mitigation plan must be approved by the director and be implemented as a condition of project approval. Within designated geologic hazards, mitigation plans shall address the appropriate items listed below as required by the site assessment. One or more of the following mitigation standards, as required by the director, shall be included as components of a mitigation plan pursuant to the requirements of SWMC Section 17.65.420 (site assessment report). Other mitigation standards, other than those listed below, may be required by the director depending on the geologic hazard and the site conditions. A. Mitigation Standards. 1. A temporary erosion and sedimentation control plan prepared in accordance with the requirements of SWMC Title 15, Buildings and Construction as amended. 2. A drainage plan for the collection, transport, treatment, discharge and/or recycle of water in accordance with the requirements of SWMC Title 15, Buildings and Construction as amended. 3. All proposals involving excavations and placement of fills shall be subject to structural review under the appropriate provisions as found in the Uniform Building Code. 4. Critical facilities shall not be sited within designated geologically hazardous areas. (Exception: volcanic hazard areas). 5. Surface drainage shall not be directed across the face of a landslide hazard (including ravines). If drainage must be discharged from the hazard area

	into adjacent waters, it shall be collected above the hazard and directed to the water by tight line drain and provided with an energy dissipating device at the point of discharge. 6. All infiltration systems such as, stormwater detention and retention facilities, and curtain drains utilizing buried pipe or French drain, are prohibited in geologically hazardous areas and their buffers unless a site assessment report indicates such facilities or systems will not affect slope stability and the systems are designed by a licensed civil engineer. The engineer shall also certify that the system and/or facilities are installed as designed. 7. Vegetation Removal and Replanting. Removal of vegetation in landslide hazard, erosion hazard and coastal bluff hazard areas shall be minimized. Any replanting that occurs shall consist of trees, shrubs, and ground cover that is compatible with the existing surrounding vegetation, meets the objectives of erosion prevention and site stabilization, and does not require permanent irrigation for long-term survival. 8. A minimum buffer with a width of thirty feet shall be established from the top, toe and all edges of all landslide hazardous areas. Existing native vegetation shall be maintained in accordance with mitigation recommendations within the buffer area. Any modifications to the buffer requirement shall be based on the report and recommendations of the professional geologist under supervision of a licensed professional engineer. The buffer may be reduced to a minimum of ten feet when, supported by a geotechnical report, and the applicant demonstrates to the director that the reduction will adequately protect the proposed development, adjacent developments and uses and the subject critical area. The buffer may be increased by the director for development adjacent to a ravine which is designated as unstable on the Coastal Zone Atlas, Washington, Volume Two Skagit County (1978) or where the director determines a larger buffer is necessary to prevent risk of damage to proposed and existing development (as in the case where the area potentially impacted by a landslide exceeds thirty feet). Normal nondestructive pruning and trimming of vegetation for maintenance purposes; or thinning of limbs of individual trees to provide a view corridor,

	shall not be subject to these buffer requirements. 9. Seismic Hazard Areas. Structural development proposals shall meet all applicable provisions of the International Building Code. The director shall evaluate documentation submitted pursuant to SWMC Section 17.65.420(B)(2) (site assessment report) and condition permit approvals to minimize the risk on both the subject property and affected adjacent properties. All conditions on approvals shall be based on known, available, and reasonable methods of prevention, control and treatment. Evaluation of geotechnical reports may also constitute grounds for denial of the proposal. B. Alterations of the buffer and/or geologically hazardous area. Alterations of the buffer and/or geologically hazardous area may occur for development meeting the following criteria: 1. No reasonable alternative exists; and 2. A site assessment report is submitted and certifies that: a. There is a minimal hazard as proven by evidence of no landslide activity in the past in the vicinity of the proposed development and a qualitative analysis of slope stability indicates no significant risk to the development proposal and adjacent properties; or the geologically hazardous area can be modified or the development proposal can be designed so that the hazard is eliminated or mitigated so that the site is as safe as a site without a geologically hazardous area, b. The development will not significantly increase surface water discharge or sedimentation to adjacent properties beyond predevelopment conditions, c. The development will not decrease slope stability on adjacent properties, and d. Such alterations will not adversely impact other critical areas. C. Noncompliance and Failed Mitigation Plans. 1. Projects found to be in noncompliance with the mitigation conditions issued as part of the development approval are subject to enforcement actions necessary to bring the development into compliance with this chapter. 2. Mitigation plans which do not fulfill the performance required based on the site assessment/geotechnical report findings or otherwise fail to meet the intent of

	this chapter shall be revised and the subject development brought into compliance with the revised mitigation plan. 3. Mitigation Plan Certification. Upon completion of the project, a qualified professional shall certify that the mitigation plan has been properly implemented. The certification shall be required prior to final approval of the project by the director.

Mitigation Goals

In addition to the mitigation goals identified in Section III of this plan, the City of Sedro-Woolley has identified the following jurisdiction-specific mitigation goals:

- Provide for an increased level of safety to the citizens of Sedro-Woolley.
- Provide for an increased level of protection for public infrastructure.
- Work with other neighboring jurisdictions to add additional flow capacity to the Skagit River in order to minimize catastrophic flooding losses

The mitigation goals and strategies and other information contained in the plan have been incorporated into the Critical Areas ordinance, other sections of the Sedro-Woolley Municipal Code and the Comprehensive Plan. See preceding table.

Mitigation Projects

Below is a list of possible mitigation projects that need to be performed in the City of Sedro-Woolley and projects that have been completed since the 2003 Hazard Mitigation Plan. Progress that has been made since the 2003 Hazard Mitigation Plan has also been noted. The following list generally reflects the potential mitigation projects identified during the 2003 Natural Hazard Mitigation Plan development process less the projects that have been completed. The City's mitigation objectives have remained consistent and no new priority projects have since been identified. Funding and other resources, as available, shall be applied to the already identified potential mitigation projects. Prioritization was based on the criteria established in Section III of the Skagit County Natural Hazard Mitigation Plan.

FLOODING

Wastewater Treatment Plant

The sewer treatment plant is located within the 100-year floodplain, and could be disabled if a large flooding event or lahar were to occur. If it were to become

inoperable then a serious human health hazard would exist. Construct a ring dike, flood wall or otherwise mitigate the wastewater treatment plant against a 75-year flood event or volcanic lahars. Dike improvements were made since 2003 to armor the existing dike.

- Responsible Entity – Sedro-Woolley Public Works Dept.
- Funding Source – Sewer funds, other local sources, and state and federal grants
- No funding has been secured to protect the plant from a more severe flooding event or lahar.

Relocate Public Works Shops and Offices

The Street Department shop and offices are located in the floodplain. This should be mitigated in place or moved out of the floodplain. A new Parks Department headquarters was constructed outside the floodplain in 2008 and will allow most of the Parks Department's equipment and operations to be moved out of the flood plain.

- Responsible Entity – Sedro-Woolley Public Works Dept.
- Funding Source – Local sources, and state and federal grants
- Funding not yet available to move the Streets Department

Riverfront Park Landfill Site

Riverfront Park, located at the very southern end of the city limits, is an old abandoned landfill. When flooded, this site has been known to have garbage enter the floodwaters. This site should be excavated and the materials disposed of properly, or mitigated in place.

- Responsible Entity – Sedro-Woolley Public Works Dept.
- Funding Source – Local sources, and state and federal grants
- Not funding yet available

Brickyard Creek Flood Storage and Fish Enhancement

Brickyard Creek has had a significant amount of its floodwater storage capacity eliminated due to development. With very little storage capacity left, any discharges into the stream system immediately surge downstream. Increasing this storage capacity would help to attenuate stream discharges. The Washington State Fisheries Department has identified a potential site for additional flood storage on property south of Jones Road and west of the railroad, known as the Belles property. Transforming this site would help minimize local flooding. This enhancement project would serve multiple functions: flood storage, salmon rearing, wetlands restoration, recreation, and amenities for future adjacent commercial development. A similar project has been identified at a large stretch of Brickyard Creek west of N. Township Street, south of Sapp Road and east of Brickyard Street. The City is actively pursuing the acquisition of this property and designing stream channel and riparian zone improvements to both enhance flood storage capacity and fish and wildlife habitat.

- Responsible Entity – Sedro-Woolley Public Works Dept.

- Funding Source – Local sources, and state and federal grants
- Progress has been made towards completing this project. Funding, staff availability and coordination with outside agencies has delayed its completion.

Alluvial Fan Hazards
Alluvial Fans are known to exist in parts of Skagit County, but there hasn't been an alluvial fan hazard previously identified in Sedro-Woolley. A survey of possible alluvial fan hazards by a Professional Geologist in Sedro-Woolley would help clarify if these hazards exist in Sedro-Woolley or not. Any such properties at risk could then be purchased as a mitigation measure to help reduce future loses.

- Responsible Entity – Sedro-Woolley Planning Dept.
- Funding Source – Local sources, and state and federal grants
- Timeline – Long term (greater than three years after funding is secured)

EARTHQUAKE
Sedro-Woolley City Hall
The City recently constructed a new City Hall at 325 Metcalf Street. City hall is no longer at risk to earthquake damage. There are no longer any anticipated problems that may affect critical facilities as a result of an earthquake event.

VOLCANO
Lahar Early Warning System
The US Geological Survey has designed a number of systems that automatically detect lahars as they descend neighboring valleys. These systems then automatically trigger various types of early warning systems, such as sirens or telephone based warning systems.

- Responsible Entity – Sedro-Woolley Fire Dept.
- Funding Source – Local sources, and state and federal grants
- No funding yet available.

COMMUNICATIONS
Community Early Warning System
Could be built to help provide broad community notice for evacuation in the event of flooding, Lahars, Dam Failures, etc. Such an early earning system would typically be a series of sirens that could be triggered in the event the City needed to be evacuated.

- Responsible Entity – Sedro-Woolley Fire Dept.
- Funding Source – Local sources, and state and federal grants
- No funding yet available.

Telephone Based Early Warning System
A computerized early warning system would automatically dial every telephone number within a specified area, and play a recorded message to whoever picked

up the phone. Such a system could be very useful for a variety of natural and man made problems.

- Responsible Entity – Sedro-Woolley Fire Dept.
- Funding Source – Local sources, and state and federal grants
- No funding yet available.

Tone Radio Based Early Warning System
Tone Radios turn on when triggered by a central transmitter, and then information or instructions are announced over the radio. Such a system is currently used for various types of weather radios, for tornados and severe storms hazard areas. A similar system could be put into place for warning of flooding, lahars, and other related natural hazards.

- Responsible Entity – Sedro-Woolley Fire Dept.
- Funding Source – Local sources, and state and federal grants
- No funding yet available.

Earthquake Early Warning System
Such a system could warn residence of an impending earthquake. Technology doesn't currently exist for such a system, but will likely be possible in the future.

- Responsible Entity – Sedro-Woolley Fire Dept.
- Funding Source – Local sources, and state and federal grants
- No funding yet available.