

Mill Creek

Mill Creek is located west of Interstate-5 (I-5) and north of Interstate-405 (I-405) and encompasses 3.72 square miles with 12, 525 residents. The community started as a planned residential development around a golf course. In 1983, the City of Mill Creek incorporated.

Over the next 21 years, Mill Creek went through significant changes and doubled in size. During that time, 14 annexations ranging between 2 and 300 acres in size have been approved by the City. As of February 2001, the City had a total area of 2,379 acres. The City maintains its own police force and contracts with Fire District #7 for fire services to serve the community.

The majority of the developable land within the City of Mill Creek has now been developed or is under construction. Mill Creek has well defined neighborhoods with a diversity of housing types from single-family homes, to condominium and apartments.

The City is bisected by a State Highway: Bothell-Everett Highway or SR 527. The area west of SR 527 includes land planned for the Mill Creek Town Center and high density residential uses. The Mill Creek Town Center is currently under construction, and the majority of the High Density Residential property has been developed. The area to the east of SR 527 is nearly built out with residences.

Future areas of growth and potential annexation for the City lie within the City's Mill Creek East Urban Growth Area, which is generally located to the north of 180th Street SE, south of 132nd Street SE (SR 96), east of 35th Avenue SE, and south of 43rd Avenue SE. This subarea consists of approximately 2.6 square miles and is being rapidly developed with commercial and residential developments under the jurisdiction of Snohomish County.

See *Annex E* for a list of critical structures.

Hazard Identification

Based on past experience, the Mill Creek rates its risk of natural hazards as follows:

HAZARD		RATING (out of 80 possible)
Drought		20
Earthquake		30
Flood		
	100-year	15
	Urban	15
Landslide		24
Severe Storm		28
Tsunami & Seiche		05
Volcano		24
Wildland Urban Interface Fire		10

Drought

Rating: 20

The City's potable water is supplied by both Alderwood Water District and Silver Lake Water District and is relatively stable for short-term (one season) droughts. Citizens may be asked to take conservation measures and limit lawn watering, but the City will still receive adequate potable water for its needs.

The City of Mill Creek rates drought threat as LOW.

Earthquake

Rating: 30

Mill Creek is located in Seismic Zone 3, between several fault lines, and an earthquake is therefore considered to be a significant risk for the City.

As discussed in this document's HIVA, earthquakes occur in Washington State on an almost daily basis. While most quakes are minor, seismologists tell us that we can expect a deep or intraplate earthquake of 7.0 magnitude about every 70 years and an 8.0 or greater subduction quake every 150 to 1,100 years.

Based on this information, when a major earthquake occurs in the region, the City can expect significant damage, injuries, and possibly deaths.

During the Nisqually quake in 2001, the City did not experience any significant damage to City structures or to local residences or businesses. This was due to a combination of factors including the distance away from the epicenter, the direction the shockwave traveled, and relatively short length of time the ground

actually shook. A different combination of factors could lead to very different levels of damage.

Earthquake threat is MODERATE.

Flood

Rating: 15

100-Year

Based on the NFIP FIRM Panels 1330, 1335, and 1040 of 1575, the City of Mill Creek has two flood hazard areas inundated by 100-year flood (Zone A).

The first area subject to flooding (Zone A) is located within a natural habitat tract of the Highlands Trails subdivision near 35th Avenue SE. The total area of this area is approximately 20 acres. This acreage contains several wetlands associated with Thomas Lake, which lies outside of the City limits.

The second area identified for potential flooding is a narrow band including North Creek plus approximately 50 feet on each side of the creek. This area of potential flooding lies within the North Creek wetlands system and is protected from development by the City's Critical Areas Regulations. This area covers approximately 27.5 acres.

100-year flood is not considered to be a high-risk for the City of Mill Creek. This is due in large part to the proactive zoning codes and regulations designed to protect wetlands and limit building within these areas.

Urban

Mill Creek is prone to seasonal urban flooding along North Creek and other streams within the City when excessive rainfall or snowmelt occurs. During times of heavy surface water flows and rain, the water overwhelms the stormwater system, wetlands, lake, and streams. Surface water runoff is intensified by the increasing amount of impervious surface as surrounding areas are developed and the City continues to in-fill.

Flood threat is LOW.

Landslide

Rating: 24

Mill Creek has several geologically hazardous areas related to steep slopes and unstable soils. These areas are made more vulnerable by the fact that Mill Creek is in Seismic Zone 3 and is therefore exposed to the possibility of earthquakes from several fault lines in the area. A large earthquake may destabilize and displace soil causing landslides.

Some areas of the city are also made more vulnerable because of creeks. If the creeks flood, or even have an unusually high waterflow, the water may undercut or wash away sections of the creek banks. Heavy, saturating rains may also cause soil erosion, wash creek banks away, and form sinkholes.

The risk of landslide is MODERATELY LOW.

Severe Storm

Rating: 28

Mill Creek is subjected to severe storms on a regular basis. Windstorms occur several times a year and rainstorms are not unusual. While less common, the City has also experienced heavy snows and freezing rains.

Winds and snow or ice regularly cause tree branches to break and/or trees to fall. This may cause power outages or damage buildings.

The Inaugural Day Storm in 1993 had wind gusts of up to 66 mph. This storm interrupted power to the City for more than three days. Branches and trees were downed and laid across streets, roads, pedestrian walkways and yards. Roofs were damaged from a combination of branches and the wind itself. The City estimated that approximately \$22,000 was spent removing storm debris from City streets, parks, pedestrian walkways and trails. Financial assistance was obtained from the State by the City in the amount of approximately \$9,200 to help pay clean up costs.

Mill Creek's risk from severe storm is MODERATE.

Tsunami & Seiche

Rating: 5

Tsunami and seiche are the least likely of the hazards that Mill Creek could experience. Mill Creek is protected by its distance from the waterfront and is further buffered by the land masses that lie within Puget Sound.

Mill Creek does not have any large lakes that would be a seiche risk.

The level of risk from tsunami or seiche is EXTREMELY LOW.

Volcano

Rating: 24

Mill Creek is unlikely to suffer direct damage from a volcano eruption. In the event of an eruption, Mill Creek may experience ashfall, and this can interfere

with the operation of motor vehicles, require expensive clean-up efforts by the City, and cause respiratory distress to the citizens. The City is highly unlikely to experience any lava flow, lahar activity, or any of the other risks associated with volcanoes.

A secondary effect of a volcano eruption is the influx of refugees into the area. This may be an issue to the City, and the region as a whole, as resources are overwhelmed by numbers of people that the infrastructure is not designed to handle. This includes everything from roads and highways, water and electric utilities, to the regional hospital.

Mill Creek rates its risk from volcano as MODERATELY LOW.

Wildland-Urban Interface Fire

Rating: 10

Wildland-urban interface fire is of some concern to Mill Creek due to the parks, wetlands, greenbelts, and undeveloped land parcels that are scattered throughout the City. The threat is in reverse proportion to the amount of rainfall in the region. When rain is scarce, the fire threat increases.

During the summer of 2003, new records were set for number of days without rain. As a result, the region experienced several fires that were caused by improperly extinguished cigarettes or sparks from machinery being operated next to dry grass. These fires were quickly contained and extinguished, but the close proximity of houses to these wildland areas, and the relative density of the housing units, makes wildland-urban interface fires a significant risk during periods of drought or excessive dryness.

While some risk does occur, Mill Creek rates this threat as EXTREMELY LOW.

This page intentionally left blank.

Mitigation

Existing and Ongoing Mitigation Activities

Mill Creek is taking the following actions in ongoing efforts to mitigate for natural hazards and to maintain public safety.

All Hazards

Codes

Name of Document	Purpose	Review Schedule
Emergency Services – Disaster Coordination	Govern disaster preparedness and disaster response in the City.	Adopted 1994 Updated 1999
Protection of Natural Water Courses	Protect and preserve natural watercourses as major elements of the City’s surface water drainage system.	Adopted 1992 Updated 2001
State Environmental Policy Act – City Environmental Policy (SEPA)	Implement procedures and policies to improve and coordinate plans, functions, programs, and resources consistent with state and county policies for environmental protection.	Adopted 1984 Updated 1997
Establishing and Defining Site Sensitive Areas	Protect the public from damages from landslides, subsidence erosion and flooding.	Adopted 1985 Updated 2000
Submittal of Subsurface and Surface Drainage Plans	Minimize adverse effects of alterations in groundwater quantities, locations, and flow patterns.	Adopted 1985 Updated 2001
Department of Ecology Stormwater Management Manual for Western Washington (Aug. 2001)	Provide guidance on the estimation and control of stormwater runoff quantity and quality.	Adopted 2001
Chapter 18.06: Environmentally Critical Areas and amendments: Ordinances 92-273 and 2001-510	This section of the City of Mill Creek code contains standards, guidelines, criteria and requirements intended to identify, analyze and mitigate potential impacts to the City’s wetland resources.	Adopted 1992 Updated 1992 and 2001.
Chapter 15.04: Uniform Building Code	Construct to the highest standards available.	Adopted 1997. Updated: 2001.
Uniform Fire Code	Construct to the highest standards available.	Adopted 1985
Uniform Mechanical Code	Construct to the highest standards available.	Adopted 1997 Updated 2001
Uniform Plumbing Code	Construct to the highest standards available.	Adopted 1997 Updated 2001
National Electric Code	Construct to the highest standards available.	Adopted 1997 Updated 2001
Mill Creek Comprehensive Plan	Contains community’s vision of the City’s future, provides a statement of long-range goals and policies.	First Adopted January 1992 Updated May 1999
Resolution No. 2002-316: Capital Facilities Improvement Plan		Adopted July 2002
National Flood Insurance Program		Adopted July 9, 1997

Drought

- Encourage Alderwood and Silver Lake Water Districts to educate consumers about drought impacts and ways to minimize water waster.

Earthquake

- Redevelopment shall be built to comply with current earthquake standards in the Uniform Building Code.

Flood

- Work with land owners with property and structures located within flood-prone areas. Continue to enforcement the development and building code to minimize building in flood-prone areas.

Landslide

- None at this time. The City of Mill Creek has not had any landslide incidents.

Severe Storm

- Work with utilities to minimize damage to power and telephone lines from trees.

Tsunami and Seiche

- None at this time.

Volcano

- None at this time.

Wildland-Urban Interface Fire

- Maintain right-of-way to minimize dry grasses and undergrowth.
- Fireworks are prohibited within the City.

Mitigation Action Items

The Mitigation Plan identifies short- and long-term action items developed through data collection, research, and the public participation process. Mitigation Plan activities may be considered for funding through federal and state grant programs and when other funds are made available through the budgeting process or the passage of bonds.

Action items address multi-hazard (MH) or hazard-specific issues. Upon implementation, the coordinating organizations may look to partner organizations for resources and technical assistance.

To help ensure activity implementation, each action item includes several pieces of information in the description. These include:

- *Coordinating Organization*
The coordinating organization is that which is willing and able to organize resources, find appropriate funding, or oversee activity implementation, monitoring and evaluation. The coordinating organizations may be local or regional agencies. Organizations written in *italics* are not participating in this Plan but have an established relationship with this jurisdiction.
- *Timeline*
Action items include both long- and short-term activities. Each action item includes an estimate of the timeline for implementation. *Short-term* action items (ST) are activities that organizations may implement with existing resources and authorities within one to two years. *Long-term* action items (LT) may require new or additional resources or authorities, and may take between two and five years to implement.
- *Ideas for Implementation*
Each action item includes ideas for implementation. This may be individual steps for one project, or it may be several related projects that address the natural hazard.
- *Plan Goals Addressed*
The plan goals are identified to monitor and evaluate how well the Mitigation Plan is achieving its goals once implementation begins.
- *Benefit-to-Cost Review & Priority*
Due to limitations in staff time, and because project priorities may shift based on changes in funding options and local events, a generalized Benefit-to-Cost Review is used. The steps associated with prioritizing the mitigation projects are as follows:

1. The jurisdiction rates the project cost as “high,” “medium,” or “low” in relation to budget and previous projects, and each rating is assigned a numerical value.
2. The project outcome is then rated as “low,” “medium,” or “high,” and each of these ratings is assigned a numerical value.
3. The two values are added together, and the total provides the cost-benefit and the priority.

Example:

If a project has a *medium approximate cost*, and is considered to be *highly effective*, the boxes would be marked as shown below.

Approx Cost	+	Effectiveness	=	Priority / Benefit to Cost Review
<input type="checkbox"/> 1 – High		<input type="checkbox"/> 1 – Low		<input type="checkbox"/> 2 – Lowest
<input checked="" type="checkbox"/> 2 – Medium		<input type="checkbox"/> 2 – Medium		<input type="checkbox"/> 3
<input type="checkbox"/> 3 – Low		<input checked="" type="checkbox"/> 3 – High		<input type="checkbox"/> 4
				<input checked="" type="checkbox"/> 5
				<input type="checkbox"/> 6 – Highest

The priority ratings with the highest numbers are considered to be the highest priorities. As always, however, these are subject to financial realities and may not be carried out in the exact order indicated.

MULTI-HAZARD MITIGATION ITEMS (MH)

ST-01-MH-MC: Identify equipment necessary for safety and operations.

Ideas for implementation:

- Maintain generators. Identify alternate source(s) for key parts and components.
- Research and identify safety gear and equipment necessary for city/employee safety.

Coordinating Organization: Mill Creek Public Works
Estimated Price: \$300
Funding Source: General Fund
Timeline: Ongoing
Plan Goals Addressed: Protect Life & Property; Provide Emergency and Critical Services; Facilitate Continuity & Recovery
Benefit-to-Cost Review: 5

<u>Approx Cost</u>	<u>+</u>	<u>Effectiveness</u>	<u>=</u>	<u>Priority / Benefit to Cost Review</u>
<input type="checkbox"/> 1 – High		<input type="checkbox"/> 1 – Low		<input type="checkbox"/> 2 – Lowest
<input type="checkbox"/> 2 – Medium		<input checked="" type="checkbox"/> 2 – Medium		<input type="checkbox"/> 3
<input checked="" type="checkbox"/> 3 – Low		<input type="checkbox"/> 3 – High		<input type="checkbox"/> 4
				<input checked="" type="checkbox"/> 5
				<input type="checkbox"/> 6 – Highest

ST-02-MH-MC: Continue and enhance hazard education programs.

Ideas for implementation:

- Provide CERT classes and preparedness training.
- Supply educational material for Family Disaster Preparedness.
- Identify other opportunities to enhance local emergency preparedness.

Coordinating Organization: Mill Creek Executive Dept.; *Fire District No.7;*
ESCA

Estimated Price: \$17,515

Funding Source: General Fund

Timeline: Ongoing

Plan Goals Addressed: Protect Life & Property; Increase Public Awareness; Encourage Partnerships; Provide Emergency and Critical Services; Facilitate Continuity and Recovery

Benefit-to-Cost Review: 5

<u>Approx Cost</u>	+	<u>Effectiveness</u>	=	<u>Priority / Benefit to Cost Review</u>
<input type="checkbox"/> 1 – High		<input type="checkbox"/> 1 – Low		<input type="checkbox"/> 2 – Lowest
<input type="checkbox"/> 2 – Medium		<input checked="" type="checkbox"/> 2 – Medium		<input type="checkbox"/> 3
<input checked="" type="checkbox"/> 3 – Low		<input type="checkbox"/> 3 – High		<input type="checkbox"/> 4
				<input checked="" type="checkbox"/> 5
				<input type="checkbox"/> 6 – Highest

DROUGHT MITIGATION ITEMS (D)

ST-03-D-MC: Work with Alderwood and Silver Lake Water Districts to educate consumers about drought impacts and ways to minimize water waste.

Ideas for implementation:

- Insert water conservation information in utility bills.
- Work with schools to educate young people on the importance of water conservation and the impact of drought on watersheds.
- City loans out a Car Wash Kit that removes pollutants from the water and this comes with a brochure for water conservation.

Coordinating Organization: Mill Creek Public Works; Mill Creek Administration; *Alderwood Water District*; *Silver Lake Water District*

Estimated Price: \$10,000 annually

Funding Source: Domestic Water and Drainage Utility Enterprise Funds

Timeline: Ongoing

Plan Goals Addressed: Increase Public Awareness

Benefit-to-Cost Review: 5

<u>Approx Cost</u>	<u>+</u>	<u>Effectiveness</u>	<u>=</u>	<u>Priority / Benefit to Cost Review</u>
<input type="checkbox"/> 1 – High		<input type="checkbox"/> 1 – Low		<input type="checkbox"/> 2 – Lowest
<input type="checkbox"/> 2 – Medium		<input checked="" type="checkbox"/> 2 – Medium		<input type="checkbox"/> 3
<input checked="" type="checkbox"/> 3 – Low		<input type="checkbox"/> 3 – High		<input type="checkbox"/> 4
				<input checked="" type="checkbox"/> 5
				<input type="checkbox"/> 6 – Highest

EARTHQUAKE MITIGATION ACTIONS (E)

ST-04-E-MC: Conduct non-structural retrofit activities.

Ideas for implementation:

- Strap down and secure computers and other office equipment and machinery.
- Secure shelves, lockers, and furniture to walls.
- Conduct walk-throughs to ensure that heavy items are not stored overhead. Secure in place or move to safer locations.
- Mount computer servers on seismic isolation platforms, or use other appropriate technology to secure servers.
- Ensure facility water heaters are strapped securely to wall studs in accordance with current requirements.
- Secure ceiling tiles and light fixtures with wires.
- Secure back-up generator and HVAC equipment.
- Secure ducts and piping.
- Use plastic sleeves on fluorescent lighting tubes.
- Secure artwork.
- Replace untempered glass with tempered glass, or install polyester shatter-resistant film over existing glass.
- Install child-proof latches on drawers and cabinets in appropriate locations.

Coordinating Organization: Mill Creek Facilities Maintenance
Estimated Price: \$5,000 annually
Funding Source: Operations and Facilities Fund
Timeline: 3 years and ongoing
Plan Goals Addressed: Protect Life & Property; Provide Emergency or Critical Services; Facilitate Continuity and Recovery
Benefit-to-Cost Review: 6

<u>Approx Cost</u>	+	<u>Effectiveness</u>	=	<u>Priority / Benefit to Cost Review</u>
[] 1 – High		[] 1 – Low		[] 2 – Lowest
[] 2 – Medium		[] 2 – Medium		[] 3
[X] 3 – Low		[X] 3 – High		[] 4
				[] 5
				[X] 6 – Highest

ST-05-E-MC: Encourage reduction of nonstructural and structural earthquake hazards in homes, schools, businesses, and government offices.

Ideas for implementation:

- Provide information to all Everett School District, City and government departments and school facility managers and teachers on securing bookcases, filing cabinets, light fixtures, and other objects that can cause injuries and block exits.
- Encourage facility managers, business owners, and teachers to refer to FEMA’s practical guidebook: *Reducing the Risks of Nonstructural Earthquake Damage*.
- Encourage homeowners and renters to use *Is Your Home Protected from Earthquake Disaster? A Homeowners Guide to Earthquake Retrofit* (IBHS) for economic and efficient mitigation techniques.
- Explore partnerships to provide retrofitting classes for homeowners, renters, building professionals, and contractors.

Coordinating Organization: Mill Creek Community Development; Mill Creek Maintenance Department; *Everett School District*

Estimated Price: To be determined (low cost)

Funding Source: General funds *and Everett School District*

Timeline: Ongoing

Plan Goals Addressed: Protect Life & Property; Increase Public Awareness; Encourage Partnerships; Provide for Emergency or Critical Services; Facilitate Continuity & Recovery

Benefit-to-Cost Review: 5

<u>Approx Cost</u>	<u>+</u>	<u>Effectiveness</u>	<u>=</u>	<u>Priority / Benefit to Cost Review</u>
<input type="checkbox"/> 1 – High		<input type="checkbox"/> 1 – Low		<input type="checkbox"/> 2 – Lowest
<input type="checkbox"/> 2 – Medium		<input checked="" type="checkbox"/> 2 – Medium		<input type="checkbox"/> 3
<input checked="" type="checkbox"/> 3 – Low		<input type="checkbox"/> 3 – High		<input type="checkbox"/> 4
				<input checked="" type="checkbox"/> 5
				<input type="checkbox"/> 6 – Highest

ST-06-E-MC: Identify public buildings and infrastructure that require structural retrofitting.

Ideas for implementation:

- Conduct a seismic survey of all city-owned buildings and infrastructure.
- Coordinate with State to identify transportation infrastructure in Mill Creek that requires seismic retrofits.

Coordinating Organization: Mill Creek Community Development; Mill Creek Maintenance; *Fire District No. 7*

Estimated Price: \$10,000

Funding Source: Street Fund

Timeline: 2 years & ongoing

Plan Goals Addressed: Protect Life and Property; Provide for Emergency Services; Facilitate Continuity and Recovery

Benefit-to-Cost Review: 6

<u>Approx Cost</u>	<u>+</u>	<u>Effectiveness</u>	<u>=</u>	<u>Priority / Benefit to Cost Review</u>
<input type="checkbox"/> 1 – High		<input type="checkbox"/> 1 – Low		<input type="checkbox"/> 2 – Lowest
<input type="checkbox"/> 2 – Medium		<input type="checkbox"/> 2 – Medium		<input type="checkbox"/> 3
<input checked="" type="checkbox"/> 3 – Low		<input checked="" type="checkbox"/> 3 – High		<input type="checkbox"/> 4
				<input type="checkbox"/> 5
				<input checked="" type="checkbox"/> 6 – Highest

ST-07-E-MC: Identify funding sources for structural and nonstructural retrofitting of structures that are identified as seismically vulnerable.

Ideas for implementation:

- Provide information for property owners, small businesses, and organizations on sources of funds (loans, grants, etc.).

Coordinating Organization: *Mill Creek Business Association; Mill Creek Community Development*

Estimated Price: To be determined (low cost)

Funding Source: To be determined

Timeline: Ongoing

Plan Goals Addressed: Increase Public Awareness; Encourage Partnerships

Benefit-to-Cost Review: 4

<u>Approx Cost</u>	<u>+</u>	<u>Effectiveness</u>	<u>=</u>	<u>Priority / Benefit to Cost Review</u>
<input type="checkbox"/> 1 – High		<input checked="" type="checkbox"/> 1 – Low		<input type="checkbox"/> 2 – Lowest
<input type="checkbox"/> 2 – Medium		<input type="checkbox"/> 2 – Medium		<input type="checkbox"/> 3
<input checked="" type="checkbox"/> 3 – Low		<input type="checkbox"/> 3 – High		<input checked="" type="checkbox"/> 4
				<input type="checkbox"/> 5
				<input type="checkbox"/> 6 – Highest

LT-01-E-MC: Integrate new earthquake hazard mapping data for the City of Mill Creek and improve technical analysis of earthquake hazards.

Ideas for implementation:

- Update GIS system data and conduct HAZUS analysis.

Coordinating Organization: Mill Creek Community Development
Estimated Price: To be determined (medium cost)
Funding Source: To be determined
Timeline: 5 years (as funding allows)
Plan Goals Addressed: Protect Life & Property; Increase Public Awareness; Provide for Emergency or Critical Services; Facilitate Continuity & Recovery
Benefit-to-Cost Review: 4

<u>Approx Cost</u>	<u>+</u>	<u>Effectiveness</u>	<u>=</u>	<u>Priority / Benefit to Cost Review</u>
<input type="checkbox"/> 1 – High		<input type="checkbox"/> 1 – Low		<input type="checkbox"/> 2 – Lowest
<input checked="" type="checkbox"/> 2 – Medium		<input checked="" type="checkbox"/> 2 – Medium		<input type="checkbox"/> 3
<input type="checkbox"/> 3 – Low		<input type="checkbox"/> 3 – High		<input checked="" type="checkbox"/> 4
				<input type="checkbox"/> 5
				<input type="checkbox"/> 6 – Highest

FLOOD ACTION ITEMS (F)

ST-08-F-MC: Identify surface water drainage obstructions within the City of Mill Creek

Ideas for implementation:

- Map culverts
- Prepare an inventory of culverts that historically create flooding problems and target them for retrofitting.
- Prepare an inventory of major urban drainage problems. Continue to identify causes and potential mitigation actions for urban drainage problem areas.

Coordinating Organization: Mill Creek Public Works; Mill Creek
Community Development

Estimated Price: \$5,000

Funding Source: Surface Water Utility

Timeline: Ongoing. 1-2 years

Plan Goals Addressed: Protect Life & Property

Benefit-to-Cost Review: 5

<u>Approx Cost</u>	<u>+</u>	<u>Effectiveness</u>	<u>=</u>	<u>Priority / Benefit to Cost Review</u>
<input type="checkbox"/> 1 – High		<input type="checkbox"/> 1 – Low		<input type="checkbox"/> 2 – Lowest
<input type="checkbox"/> 2 – Medium		<input checked="" type="checkbox"/> 2 – Medium		<input type="checkbox"/> 3
<input checked="" type="checkbox"/> 3 – Low		<input type="checkbox"/> 3 – High		<input type="checkbox"/> 4
				<input checked="" type="checkbox"/> 5
				<input type="checkbox"/> 6 – Highest

LT-02-F-MC: Enhance data and mapping for floodplain information within the city, and identify and map flood-prone areas outside of designated floodplains.

Ideas for implementation:

- Apply for FEMA’s cooperative technical partnership using the 2-foot contour interval floodplain mapping data in the City of Mill Creek’s GIS system.
- Update flood plain maps in the Comprehensive Plan.
- Use mapping data to update the flood-loss estimates for the City of Mill Creek.

Coordinating Organization: Mill Creek Community Development
Estimated Price: To be determined (low to medium cost)
Funding Source: General fund
Timeline: 3 years (as funding allows)
Plan Goals Addressed: Protect Life & Property; Increase Public Awareness; Provide for Emergency or Critical Services; Facilitate Continuity & Recovery
Benefit-to-Cost Review: 4

<u>Approx Cost</u>	+	<u>Effectiveness</u>	=	<u>Priority / Benefit to Cost Review</u>
<input type="checkbox"/> 1 – High		<input type="checkbox"/> 1 – Low		<input type="checkbox"/> 2 – Lowest
<input checked="" type="checkbox"/> 2 – Medium		<input checked="" type="checkbox"/> 2 – Medium		<input type="checkbox"/> 3
<input type="checkbox"/> 3 – Low		<input type="checkbox"/> 3 – High		<input checked="" type="checkbox"/> 4
				<input type="checkbox"/> 5
				<input type="checkbox"/> 6 – Highest

LT-03-F-MC: Develop acquisition and management strategies to preserve opens space for flood mitigation, fish habitat, and water quality in the floodplain.

Ideas for implementation:

- Continue to implement and require conservation easements for the North Creek Corridor by acquiring and managing floodplain open space in The City of Mill Creek.
- Explore funding for property acquisition from federal (e.g., FEMA’s Hazard Mitigation Grant Program), state, regional, and county governments, as well as private and non-profit organizations, trails programs, fish programs, as well as options for special appropriations.
- Develop a regional partnership between flood mitigation, fish habitat, and water quality enhancement organizations and programs to improve educational programs.
- Identify sites where environmental restoration work can benefit flood mitigation, fish habitat, and water quality.
- Work with landowners to develop flood management practices that provide healthy fish habitat.
- Identify existing watershed education programs and determine which programs would support a flood education component.

Coordinating Organization: Mill Creek Planning; Mill Creek Public Works; *Adopt-A-Stream Foundation*

Estimated Price: \$5,000

Funding Source: Surface Water Utility

Timeline: 5 years (as funding allows)

Plan Goals Addressed: Protect Life & Property; Increase Public Awareness; Encourage Partnerships; Provide for Emergency or Critical Services; Facilitate Continuity & Recovery; Protect Natural Systems

Benefit-to-Cost Review: 6

<u>Approx Cost</u>	<u>+</u>	<u>Effectiveness</u>	<u>=</u>	<u>Priority / Benefit to Cost Review</u>
[] 1 – High		[] 1 – Low		[] 2 – Lowest
[] 2 – Medium		[] 2 – Medium		[] 3
[X] 3 – Low		[X] 3 – High		[] 4
				[] 5
				[X] 6 – Highest

LANDSLIDE MITIGATION ACTIONS (L)

ST-09-L-MC: Improve knowledge of landslide hazard areas and understanding of vulnerability and risk to live and property in hazard-prone areas.

Ideas for implementation:

- Incorporate landslide information into GIS mapping, and planning and the City of Mill Creek Comprehensive Plan.
- Amend the Critical Areas Ordinance with measures protect and maintain steep slopes.
- Develop public information to emphasize economic risk when building on potential or historical landslide areas.
- Develop public information brochures to educate the community on how to maintain and enhance slope stability.

Coordinating Organization: Mill Creek Community Development
Estimated Price: To be determined (low to medium cost)
Funding Source: Department of Community Development
Timeline: 1 - 2 years
Plan Goals Addressed: Protect Life & Property; Increase Public Awareness; Provide for Emergency or Critical Services; Facilitate Continuity & Recovery; Protect Natural Systems
Benefit-to-Cost Review: 5

<u>Approx Cost</u>	+	<u>Effectiveness</u>	=	<u>Priority / Benefit to Cost Review</u>
<input type="checkbox"/> 1 – High		<input type="checkbox"/> 1 – Low		<input type="checkbox"/> 2 – Lowest
<input checked="" type="checkbox"/> 2 – Medium		<input type="checkbox"/> 2 – Medium		<input type="checkbox"/> 3
<input type="checkbox"/> 3 – Low		<input checked="" type="checkbox"/> 3 – High		<input type="checkbox"/> 4
				<input checked="" type="checkbox"/> 5
				<input type="checkbox"/> 6 – Highest

ST-10-L-MC: Encourage construction and subdivision design that can be applied to steep slopes to reduce the potential adverse impacts from development.

Ideas for implementation:

- Continue to implement the City’s Comprehensive Plan and Municipal Code that encourages the retention of natural features of the land and minimizes impacts to steep slopes.
- Work with the City of Mill Creek Planning Commission and City Council to develop guidelines to mitigate and prevent landslides.

Coordinating Organization: Mill Creek Community Development
Estimated Price: \$1,500
Funding Source: Department of Community Development
Timeline: 1 year
Plan Goals Addressed: Protect Life & Property; Increase Public Awareness; Encourage Partnerships; Protect Natural Systems
Benefit-to-Cost Review: 6

<u>Approx Cost</u>	<u>+</u>	<u>Effectiveness</u>	<u>=</u>	<u>Priority / Benefit to Cost Review</u>
<input type="checkbox"/> 1 – High		<input type="checkbox"/> 1 – Low		<input type="checkbox"/> 2 – Lowest
<input type="checkbox"/> 2 – Medium		<input type="checkbox"/> 2 – Medium		<input type="checkbox"/> 3
<input checked="" type="checkbox"/> 3 – Low		<input checked="" type="checkbox"/> 3 – High		<input type="checkbox"/> 4
				<input type="checkbox"/> 5
				<input checked="" type="checkbox"/> 6 – Highest

ST-11-L-MC: Limit activities in identified potential and historical landslide areas through regulation and public outreach.

Ideas for implementation:

- Analyze existing regulations regarding development in landslide prone areas.
- Amend the development code if necessary.
- If necessary, identify existing mechanisms for public outreach (e.g., watershed councils, etc.).

Coordinating Organization: Mill Creek Community Development
Estimated Price: To be determined (low cost)
Funding Source: General funds and grants
Timeline: Ongoing
Plan Goals Addressed: Protect Life & Property; Increase Public Awareness
Benefit-to-Cost Review: 6

<u>Approx Cost</u>	<u>+</u>	<u>Effectiveness</u>	<u>=</u>	<u>Priority / Benefit to Cost Review</u>
<input type="checkbox"/> 1 – High		<input type="checkbox"/> 1 – Low		<input type="checkbox"/> 2 – Lowest
<input type="checkbox"/> 2 – Medium		<input type="checkbox"/> 2 – Medium		<input type="checkbox"/> 3
<input checked="" type="checkbox"/> 3 – Low		<input checked="" type="checkbox"/> 3 – High		<input type="checkbox"/> 4
				<input type="checkbox"/> 5
				<input checked="" type="checkbox"/> 6 – Highest

SEVERE STORM MITIGATION ITEMS (S)

ST-12-S-MC: Enhance strategies for public safety during severe storm events.

Ideas for implementation:

- Develop coordinated management strategies for de-icing roads, plowing roads, clearing roads of fallen trees, and clearing debris from public and private property.

Coordinating Organization: Mill Creek Public Works
Estimated Price: \$5,000
Funding Source: Public Works Operations Fund
Timeline: 2 years
Plan Goals Addressed: Protect Life & Property; Provide for Emergency or Critical Services; Facilitate Continuity & Recovery
Benefit-to-Cost Review: 6

<u>Approx Cost</u>	<u>+</u>	<u>Effectiveness</u>	<u>=</u>	<u>Priority / Benefit to Cost Review</u>
<input type="checkbox"/> 1 – High		<input type="checkbox"/> 1 – Low		<input type="checkbox"/> 2 – Lowest
<input type="checkbox"/> 2 – Medium		<input type="checkbox"/> 2 – Medium		<input type="checkbox"/> 3
<input checked="" type="checkbox"/> 3 – Low		<input checked="" type="checkbox"/> 3 – High		<input type="checkbox"/> 4
				<input type="checkbox"/> 5
				<input checked="" type="checkbox"/> 6 – Highest

ST-13-S-MC: Develop and implement programs to coordinate maintenance and mitigation activities to reduce risk to public infrastructure from severe storms.

Ideas for implementation:

- Partner with responsible agencies and organizations to design and implement programs that reduce risk to life, property, and utility systems.
- Develop partnerships between utility providers and City public works agencies to document known hazard areas.

Coordinating Organization: Mill Creek Public Works Department; Alderwood Water District; Silver Lake Water District; Snohomish County PUD; Puget Sound Energy

Estimated Price: To be determined (low cost)

Funding Source: Grants

Timeline: 2 years

Plan Goals Addressed: Protect Life & Property; Provide for Emergency or Critical Services; Facilitate Continuity & Recovery

Benefit-to-Cost Review: 6

<u>Approx Cost</u>	<u>+</u>	<u>Effectiveness</u>	<u>=</u>	<u>Priority / Benefit to Cost Review</u>
<input type="checkbox"/> 1 – High		<input type="checkbox"/> 1 – Low		<input type="checkbox"/> 2 – Lowest
<input type="checkbox"/> 2 – Medium		<input type="checkbox"/> 2 – Medium		<input type="checkbox"/> 3
<input checked="" type="checkbox"/> 3 – Low		<input checked="" type="checkbox"/> 3 – High		<input type="checkbox"/> 4
				<input type="checkbox"/> 5
				<input checked="" type="checkbox"/> 6 – Highest

ST-14-S-MC: Increase public awareness of severe storm mitigation activities.

Ideas for implementation:

- Collect information on available public education materials for protecting life, property, and the environment from severe storm events.
- Distribute educational materials to residents and public and private sector organizations regarding evacuation routes during road closures.
- Target the vulnerable or at-risk populace for disseminating preparedness information. (Seniors, medically fragile, etc.)

Coordinating Organization: Mill Creek Police Department; *Fire District No. 7; Everett School District; Snohomish County PUD; Puget Sound Energy*

Estimated Price: To be determined (low to medium cost)

Funding Source: Grants and General fund

Timeline: Ongoing

Plan Goals Addressed: Protect Life & Property; Increase Public Awareness; Encourage Partnerships

Benefit-to-Cost Review: 4

<u>Approx Cost</u>	<u>+</u>	<u>Effectiveness</u>	<u>=</u>	<u>Priority / Benefit to Cost Review</u>
<input type="checkbox"/> 1 – High		<input type="checkbox"/> 1 – Low		<input type="checkbox"/> 2 – Lowest
<input checked="" type="checkbox"/> 2 – Medium		<input checked="" type="checkbox"/> 2 – Medium		<input type="checkbox"/> 3
<input type="checkbox"/> 3 – Low		<input type="checkbox"/> 3 – High		<input checked="" type="checkbox"/> 4
				<input type="checkbox"/> 5
				<input type="checkbox"/> 6 – Highest

ST-15-S-MC: Enhance weather monitoring to attain earlier severe storm warnings.

Ideas for implementation:

- Identify and coordinate with appropriate organizations to evaluate the need for more weather stations and/or weather instrumentation.

Coordinating Organization: Mill Creek Public Works; *Fire District No. 7*
Estimated Price: To be determined (low to medium cost)
Funding Source: Grants
Timeline: Ongoing
Plan Goals Addressed: Protect Life & Property; Increase Public Awareness
Benefit-to-Cost Review: 4

<u>Approx Cost</u>	<u>+</u>	<u>Effectiveness</u>	<u>=</u>	<u>Priority / Benefit to Cost Review</u>
<input type="checkbox"/> 1 – High		<input type="checkbox"/> 1 – Low		<input type="checkbox"/> 2 – Lowest
<input checked="" type="checkbox"/> 2 – Medium		<input checked="" type="checkbox"/> 2 – Medium		<input type="checkbox"/> 3
<input type="checkbox"/> 3 – Low		<input type="checkbox"/> 3 – High		<input checked="" type="checkbox"/> 4
				<input type="checkbox"/> 5
				<input type="checkbox"/> 6 – Highest

ST-16-S-MC: Encourage development and enforcement of wind-resistant building siting and construction codes.

Ideas for implementation:

- Continue to evaluate current building codes for proficiency in protecting structures from severe storms, including windstorms.
- Adopt the International Building Code (IBC).

Coordinating Organization: Mill Creek Community Development
Estimated Price: \$2,000 +
Funding Source: General funds and grants
Timeline: Ongoing
Plan Goals Addressed: Protect Life & Property; Increase Public Awareness
Benefit-to-Cost Review: 6

<u>Approx Cost</u>	<u>+</u>	<u>Effectiveness</u>	<u>=</u>	<u>Priority / Benefit to Cost Review</u>
<input type="checkbox"/> 1 – High		<input type="checkbox"/> 1 – Low		<input type="checkbox"/> 2 – Lowest
<input type="checkbox"/> 2 – Medium		<input type="checkbox"/> 2 – Medium		<input type="checkbox"/> 3
<input checked="" type="checkbox"/> 3 – Low		<input checked="" type="checkbox"/> 3 – High		<input type="checkbox"/> 4
				<input type="checkbox"/> 5
				<input checked="" type="checkbox"/> 6 – Highest

ST-17-S-MC: Develop and implement programs to keep trees from threatening lives, property, and public infrastructure during severe storm events.

Ideas for implementation:

- Partner with responsible agencies and organizations to design and disseminate education information to property owners to reduce risk from tree failure to life, property, and utility systems.
- Develop partnerships between utility providers and local public works agencies to document known hazard areas.
- Continue to identify potentially hazardous trees in urban areas.

Coordinating Organization: Mill Creek Public Works; Mill Creek Community Development; *Snohomish County PUD*

Estimated Price: To be determined (low cost)

Funding Source: Grants and General funds

Timeline: Ongoing

Plan Goals Addressed: Protect Life & Property; Increase Public Awareness; Encourage Partnerships; Provide for Emergency or Critical Services; Facilitate Continuity & Recovery

Benefit-to-Cost Review: 5

<u>Approx Cost</u>	<u>+</u>	<u>Effectiveness</u>	<u>=</u>	<u>Priority / Benefit to Cost Review</u>
<input type="checkbox"/> 1 – High		<input type="checkbox"/> 1 – Low		<input type="checkbox"/> 2 – Lowest
<input type="checkbox"/> 2 – Medium		<input checked="" type="checkbox"/> 2 – Medium		<input type="checkbox"/> 3
<input checked="" type="checkbox"/> 3 – Low		<input type="checkbox"/> 3 – High		<input type="checkbox"/> 4
				<input checked="" type="checkbox"/> 5
				<input type="checkbox"/> 6 – Highest

LT-04-S-MC: Require electrical utilities to use underground construction methods where possible to reduce power outages from severe storms.

Ideas for implementation:

- Continue to require the use of underground utilities where possible to be consistent with the City of Mill Creek Municipal Code.

Coordinating Organization: Mill Creek Community Development;
Snohomish County PUD

Estimated Price: Included as part of Community Development expenses

Funding Source: General funds

Timeline: Ongoing

Plan Goals Addressed: Protect Life and Property; Encourage Partnerships; Provide for Emergency Services; Facilitate Continuity and Recovery

Benefit-to-Cost Review: 6

<u>Approx Cost</u>	<u>+</u>	<u>Effectiveness</u>	<u>=</u>	<u>Priority / Benefit to Cost Review</u>
<input type="checkbox"/> 1 – High		<input type="checkbox"/> 1 – Low		<input type="checkbox"/> 2 – Lowest
<input type="checkbox"/> 2 – Medium		<input type="checkbox"/> 2 – Medium		<input type="checkbox"/> 3
<input checked="" type="checkbox"/> 3 – Low		<input checked="" type="checkbox"/> 3 – High		<input type="checkbox"/> 4
				<input type="checkbox"/> 5
				<input checked="" type="checkbox"/> 6 – Highest

TSUNAMI & SEICHE MITIGATION ACTIONS (T)

LT-05-T-MC: Cooperate in regional efforts to develop a tsunami and seiche model of the Puget Sound Region.

Ideas for implementation:

- Maintain contact with the Washington State Department of Natural Resources as they develop a new regional model for tsunami and seiche in Puget Sound. The Department of Natural Resources projects that modeling for the south Snohomish County area may be done in 2006.

Coordinating Organization: *Washington State Department of Natural Resources; Mill Creek Community Development*

Estimated Price: To be determined (low cost)

Funding Source: Grants

Timeline: 2 years, approximately

Plan Goals Addressed: Protect Life and Property; Increase Public Awareness; Encourage Partnerships

Benefit-to-Cost Review: 4

<u>Approx Cost</u>	<u>+</u>	<u>Effectiveness</u>	<u>=</u>	<u>Priority / Benefit to Cost Review</u>
<input type="checkbox"/> 1 – High		<input checked="" type="checkbox"/> 1 – Low		<input type="checkbox"/> 2 – Lowest
<input type="checkbox"/> 2 – Medium		<input type="checkbox"/> 2 – Medium		<input type="checkbox"/> 3
<input checked="" type="checkbox"/> 3 – Low		<input type="checkbox"/> 3 – High		<input checked="" type="checkbox"/> 4
				<input type="checkbox"/> 5
				<input type="checkbox"/> 6 – Highest

VOLCANO MITIGATION ACTIONS (V)

LT-06-V-MC: Collaborate to develop ash fall models that are specific to the north King and south Snohomish Counties area.

Ideas for implementation:

- Determine critical activities that must be implemented for varying degrees of ash fall.

Coordinating Organization: *Washington State Department of Natural Resources; Mill Creek Community Development*

Estimated Price: To be determined (low cost)

Funding Source: Grants

Timeline: 2 years

Plan Goals Addressed: Protect Life and Property; Increase Public Awareness; Encourage Partnerships

Benefit-to-Cost Review: 4

<u>Approx Cost</u>	<u>+</u>	<u>Effectiveness</u>	<u>=</u>	<u>Priority / Benefit to Cost Review</u>
<input type="checkbox"/> 1 – High		<input checked="" type="checkbox"/> 1 – Low		<input type="checkbox"/> 2 – Lowest
<input type="checkbox"/> 2 – Medium		<input type="checkbox"/> 2 – Medium		<input type="checkbox"/> 3
<input checked="" type="checkbox"/> 3 – Low		<input type="checkbox"/> 3 – High		<input checked="" type="checkbox"/> 4
				<input type="checkbox"/> 5
				<input type="checkbox"/> 6 – Highest

LT-07-V-MC: Develop and implement policy for maintaining stock of filters for key vehicles and pieces of equipment.

Ideas for implementation:

- Identify key vehicles and equipment such as: back-up generators, fire and police vehicles, HVAC and/or other large or unusual equipment requiring filters.
- Establish policy and budget to maintain spare filters.

Coordinating Organization: Mill Creek Executive Department; Mill Creek Public Works; Mill Creek Police Department
Estimated Price: To be determined (low to medium cost)
Funding Source: General fund
Timeline: 3 years
Plan Goals Addressed: Protect Life & Property; Provide for Emergency Services; Facility Continuity and Recovery
Benefit-to-Cost Review: 4

<u>Approx Cost</u>	<u>+</u>	<u>Effectiveness</u>	<u>=</u>	<u>Priority / Benefit to Cost Review</u>
<input type="checkbox"/> 1 – High		<input type="checkbox"/> 1 – Low		<input type="checkbox"/> 2 – Lowest
<input checked="" type="checkbox"/> 2 – Medium		<input checked="" type="checkbox"/> 2 – Medium		<input type="checkbox"/> 3
<input type="checkbox"/> 3 – Low		<input type="checkbox"/> 3 – High		<input checked="" type="checkbox"/> 4
				<input type="checkbox"/> 5
				<input type="checkbox"/> 6 – Highest

WILDLAND-URBAN INTERFACE FIRE MITIGATION ACTIONS (W)

LT-08-W-MC: Enhance outreach and education programs aimed at mitigating wildland-urban interface fire hazards and reducing or preventing the exposure of citizens, public agencies, private property owners, and businesses to natural causes.

Ideas for implementation:

- Visit neighborhoods and conduct education and outreach activities.
- Conduct specific community-based demonstration projects of fire prevention and mitigation in the urban interface.
- Establish neighborhood “drive-through” activities that pinpoint site-specific mitigation activities. Fire crews can give property owners personal suggestions and assistance.
- Perform public outreach and information outreach by holding open houses at fire stations. Allow the public to visit, see the equipment, and discuss wildland-urban interface fire mitigation with the crews.

Coordinating Organization: Mill Creek Administration; *Fire District No. 7*
Estimated Price: To be determined (medium cost)
Funding Source: Grants
Timeline: Ongoing
Plan Goals Addressed: Protect Life & Property; Increase Public Awareness; Encourage Partnerships; Provide for Emergency or Critical Services; Facilitate Continuity & Recovery; Protect Natural Systems
Benefit-to-Cost Review: 4

<u>Approx Cost</u>	+	<u>Effectiveness</u>	=	<u>Priority / Benefit to Cost Review</u>
<input type="checkbox"/> 1 – High		<input type="checkbox"/> 1 – Low		<input type="checkbox"/> 2 – Lowest
<input checked="" type="checkbox"/> 2 – Medium		<input checked="" type="checkbox"/> 2 – Medium		<input type="checkbox"/> 3
<input type="checkbox"/> 3 – Low		<input type="checkbox"/> 3 – High		<input checked="" type="checkbox"/> 4
				<input type="checkbox"/> 5
				<input type="checkbox"/> 6 – Highest

LT-09-W-MC: Increase communication, coordination, and collaboration between wildland-urban interface property owners, city planners, fire prevention crews, and city officials to address risks, existing mitigation measures, and federal assistance programs.

Ideas for implementation:

- Encourage single-family residences to have fire plans and practice evacuation routes.
- Encourage fire inspections in residential homes by the fire department to increase awareness among homeowners and potential fire responders.
- Encourage a standard for the State Fire Marshall to evaluate fire plans and emergency plans.
- Require fire department notification of new business applications to ensure that appropriate fire plans have been developed.
- Have the City Planners and Planning Commission work closely with landowners and/or developers who choose to build in the wildland-urban interface area to identify and mitigate conditions that aggravate fire hazards, including:
 - Limited access for emergency equipment due to width and grade of roadways.
 - Poor turn-around for emergency equipment.
 - Inadequate water supplies.
 - Spacing, consistency, and species of vegetation around structures.
 - Inadequate fuel breaks, or lack of defensible space.
 - Highly flammable construction materials.
 - Building lots and subdivisions that are not in compliance with state and local land use and fire protection regulations.
 - Inadequate entry/escape routes.
- Encourage all new homes and major remodels involving roofs or additions that are located in the interface to have fire-resistant roofs and residential sprinkler systems.

Coordinating Organization:	Mill Creek Community Development; Mill Creek Executive Department; <i>Fire District No. 7</i>
Estimated Price:	Already part of Community Development budget
Funding Source:	General fund
Timeline:	Ongoing
Plan Goals Addressed:	Protect Life & Property; Increase Public Awareness; Encourage Partnerships; Provide for Emergency or Critical Services; Facilitate Continuity & Recovery
Benefit-to-Cost Review:	4

<u>Approx Cost</u>	+	<u>Effectiveness</u>	=	<u>Priority / Benefit to Cost Review</u>
<input type="checkbox"/> 1 – High		<input type="checkbox"/> 1 – Low		<input type="checkbox"/> 2 – Lowest
<input checked="" type="checkbox"/> 2 – Medium		<input checked="" type="checkbox"/> 2 – Medium		<input type="checkbox"/> 3
<input type="checkbox"/> 3 – Low		<input type="checkbox"/> 3 – High		<input checked="" type="checkbox"/> 4
				<input type="checkbox"/> 5
				<input type="checkbox"/> 6 – Highest

This page intentionally left blank.