

Kenmore¹

Kenmore became the 39th city within King County when it incorporated in 1998. The City is located in the northern portion of King County, commonly known as the “Northshore” area. Kenmore is defined by the Lake Washington shoreline as well as hillsides and the Sammamish River valley that ultimately drains to the Lake.

Kenmore contains about 6.1 square miles of land with approximately 9% of the currently incorporated area lying vacant. It has a population of 16,890 people living in 6,783 housing units.² This translates to population density levels of 2,769 people per square mile and about 2 housing units per acre.³

Hazard Identification

Based on past experience and regional histories, the City of Kenmore rates its risk of natural hazards as follows:

HAZARD	RATING (of 80 possible points)
Drought	20
Earthquake	48
Flood	
100-year	24
Urban	25
Landslide	32
Severe Storm	28
Tsunami & Seiche	22
Volcano	24
Wildland Urban Interface Fire	20

Drought

Rating: 20

Drought is not considered to be a high-risk hazard for the City of Kenmore. The City’s potable water is supplied by the Northshore Utility 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.

At greater risk are Lake Washington, and the rivers and streams running through Kenmore. A severe but short-term drought is likely to reduce water levels in Lake Washington and the City’s rivers and streams. Reduced water levels lead to higher water temperatures which, in turn, may make the streams uninhabitable for salmon and other aquatic organisms downstream. With several species of salmon listed as “endangered” or “threatened,” this could delay recovery efforts.

The City of Kenmore considers drought to be a LOW risk.

Earthquake

Rating: 48

Kenmore 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 7.0 magnitude deep or intraplate earthquake 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.

Earthquake is rated as a MODERATE to HIGH RISK.

Flooding

Kenmore does not have any major rivers flowing in or around its borders. It does, however, have a lake, wetlands, and several streams running through it as well as 103 miles of road (impervious surface) and another 150 miles of stormwater system. All of these items contribute to intermittent flooding in sections of the City.

100-Year Flood

Rating: 24

The Sammamish River runs through the City of Kenmore and empties into Lake Washington. The City also has multiple creeks and wetlands located within the city limits, and these are vulnerable to regular, seasonal flooding events. While these events are damaging, they are limited in scope and not catastrophic in nature.

Altogether, the City of Kenmore has 651 acres located in the 100-year floodplain, affecting 451 lots. The total value for this property is \$134,433,800.

Three mobile home parks are among the properties in the floodplain. These are:

- Sarvis Mobile Home Park – 23 spaces
- Lakewood Villa Mobile Home Park – 53 spaces
- Inglewood East Mobile Home Park – 75 spaces

Mobile homes are of particular concern in the flood zone. These residences are usually mounted on blocks and may be more than 20 years old. A flood event may destabilize the structure by eroding soil and cause the mobile home to shift off the supports. Additionally, if water enters the structure, the mobile home may be damaged beyond repair and rendered uninhabitable.

Overall, the risk for a 100-year flood in the City of Kenmore is low-to-moderate. While the City has risk from a major flooding event, it is limited in its impact to the City, and the likelihood of occurrence (1%, by definition) limits the risk still further.

Urban Flooding

Rating: 25

Kenmore is prone to urban flooding on a regular basis. This is due to excessive rainfall or snowmelt which overwhelms the stormwater system, wetlands, lake, and streams. It is intensified by the increasing amount of impervious surface as surrounding jurisdictions and areas upstream develop and Kenmore continues to in-fill.

Flooding is a LOW to MODERATE risk.

Landslide and Soil Displacement

Rating: 32

Kenmore has several geologically hazardous areas related to steep slopes and unstable soils.⁴ These areas are made more vulnerable by the fact that Kenmore 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 cause sinkholes.

Severe Storm

Rating: 28

Kenmore is subjected to severe storms on a regular basis. Windstorms occur nearly every winter, and rainstorms are not unusual. While rarer, 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 winds of 66 mph. This storm interrupted power to the City for more than three days. Branches and trees were downed and laid across streets, roads, and yards. Roofs were damaged from a combination of branches and the wind itself.

Tsunami and Seiche

Rating: 22

Tsunami is the least likely of the hazards that Kenmore could be subject to. The lack of risk from tsunami is due to the fact that Kenmore is not on the oceanfront and is buffered by the land masses in Puget Sound.

Seiche is a somewhat more viable hazard, primarily because of Kenmore's location on the north end of Lake Washington. While some 3,000 feet of the shoreline are part of St. Edward State Park and therefore undeveloped, most of the rest of the shoreline is developed with a combination of homes, businesses, and boating facilities. These are all vulnerable to damage during a seiche event.

Volcano

Rating: 24

Kenmore is unlikely to suffer direct damage from a volcano eruption. In the event of an eruption, the City 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.

Wildland-Urban Interface Fire

Rating: 20

Wildland-urban interface fire is a concern to the City of Kenmore 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, Kenmore and the north King and south Snohomish Counties region experienced several fires that were caused by careless smokers 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.

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Mitigation

Existing and Ongoing Mitigation Activities

The City of Kenmore is taking the following actions in ongoing efforts to mitigate for natural hazards and to maintain public safety.

All Hazards

The City of Kenmore is a member of the Emergency Services Coordinating Agency (ESCA). As such, Kenmore receives emergency management planning and response services.

As part of the preparation and mitigation services, ESCA provides education in the form of Community Emergency Response Team (CERT) training. This training is provided to the citizens of the member Cities and Towns. The goal is to prepare people to be self-sufficient for as much as three days after a major disaster until safety personnel can get to them.

Codes

Table 1: Kenmore City Codes

Name of Document	Purpose	Review Schedule*
Zoning Code Ordinance	Adoption as a minimum standard the most current publications and standards.	2003-2004
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 1998
Shorelines Management Act	Protect against adverse effects to the public health, the land and its vegetation and wildlife by managing shorelines.	Adopted 1998
KMC 18.55.240. Sensitive Area Regulation	Protect the public from damages from landslides, subsidence erosion, flooding and water courses.	Adopted 1998 Currently under review
Surface Water Management Plan	Minimize adverse effects of alterations in groundwater quantities, locations, and flow patterns.	Adopted 1998 Reviewed and revised in 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 1998 Reviewed and revised in 2001
Uniform Building Code	Construct to the highest standards available.	Adopted 1998

Uniform Fire Code	Construct to the highest standards available.	Adopted 1998
Uniform Mechanical Code	Construct to the highest standards available.	Adopted 1998
Uniform Plumbing Code	Construct to the highest standards available.	Adopted 1998
National Electric Code	Construct to the highest standards available.	Adopted 1998
Kenmore Comprehensive Plan	Contains community's vision of the City's future, provides a statement of long-range goals and policies.	King County Comprehensive Plan adopted in 1998. Reviewed and revised for Kenmore Comprehensive Plan – adopted 2001.
National Flood Insurance Program		Adopted October 19, 1998.

* Regulations are updated approximately once every ten years with interim minor updates.

Capital Improvement Plan and Operations and Maintenance Budget.

- Address deficiencies in the public works infrastructure, such as the end of service life of components (piping, valves, and electronics). Several projects are done each year to increase reliability or restore the system to original reliability.

Drought

- Encourage water conservation. The City provides several hundred conservation kits to citizens free of charge each summer. These kits include low-volume shower heads, toilet tank “balloons,” hose nozzles, rain/watering gauges, and information booklets on how to conserve water.

Earthquake

- Bridge inspections and repairs, including seismic retrofitting.

Flood

- NE 193rd Place Storm Drainage Improvements.
- NE 163rd Street Storm Drainage Improvements

Landslide

- Reconstruct and stabilize slopes supporting roadways along SR 522 HOV Enhancement Project, Phase II.

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.
- Restrict fireworks to 4th of July.

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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) and hazard-specific issues. To help ensure activity implementation, each action item includes information on the timeline and coordinating organizations. 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*
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 benefit-to-cost score would be “5” as indicated below. The benefit-to-cost review score is used as a rough proxy to priority.

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/benefit-to-cost review 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-KM: Incorporate the full emergency management cycle – including Planning, Response, Recovery and *Mitigation* – into Kenmore’s planning, policy, and financial processes.

Ideas for implementation:

- Revise and update Comprehensive Plan and other appropriate documents to include mitigation measures.
- Update Capital Improvement Plan. Identify and pursue funding opportunities to implement the mitigation activities.
- Amend the Sensitive Areas Ordinance to minimize damage and destruction from repetitive flooding or landslide. (\$45,000)
- Encourage Utilities to underground their facilities

Coordinating Organization: Kenmore Planning; Kenmore Administration; Kenmore City Council; Kenmore Public Works
Estimated Price: \$45,000 + To be determined (low costs)
Funding Source: General Fund
Timeline: Ongoing
Plan Goals Addressed: Protect Life & Property; Increase Public Awareness; Provide for Emergency or Critical Services; Facilitate Continuity and 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 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-KM: Identify equipment necessary for safety and operations.

Ideas for implementation:

- Maintain generator. Identify alternate source(s) for key parts and components. (\$300)
- Research and identify safety gear and equipment necessary for city/employee safety.

Coordinating Organization: Kenmore Public Works
Estimated Price: \$300 + To be determined (low cost)
Funding Source: General Fund
Timeline: Ongoing
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>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 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-03-MH-KM: Continue and enhance hazard education programs.

Ideas for implementation:

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

Coordinating Organization: Kenmore Executive; *Northshore Fire District*; *ESCA*
Estimated Price: \$27,415
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 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-04-MH-KM: Enhance public safety strategies for debris avoidance and management for natural hazards events.

Ideas for implementation:

- Minimize threat of debris by developing and enhancing right-of-way maintenance programs.
- Educate and encourage property owners to maintain trees located near roadways.
- Develop coordinated management strategies for public safety issues such as de-icing roads, plowing roads, clearing roads of fallen trees, and clearing debris from public and private property.

Coordinating Organization: Kenmore Public Works
Estimated Price: To be determined (low costs)
Funding Source: General 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>
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<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

LT-01-MH-KM: Develop mapping capabilities to better identify hazard areas and assess potential damage.

Ideas for implementation:

- Implement GIS system.
- Incorporate GIS mapping information into zoning and land use processes.
- Use HAZUS to run damage scenarios.

Coordinating Organization: Kenmore Planning
Estimated Price: To be determined (low to medium cost)
Funding Source: General Fund
Timeline: 2008 - 2012
Plan Goals Addressed: Protect Life & Property; Increase Public Awareness; Encourage Partnerships; Provide for Emergency or Critical Services; Facilitate Continuity and Recovery; Protect Natural Systems
Benefit-to-Cost Review: 4

Approx Cost	+	Effectiveness	=	Priority / Benefit-to-Cost Review
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<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

DROUGHT MITIGATION ITEMS (D)

ST-05-D-MC: Work with Northshore Utility District 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.
- The City loans out a Car Wash kit that removes pollutants from the water and this comes with a brochure for water conservation.
- Encourage participation in the Composter Program.

Coordinating Organization: Kenmore Administration; *Northshore Utility District*
Estimated Price: To be determined (low cost)
Funding Source: General funds; Utility funds
Timeline: Ongoing
Plan Goals Addressed: Increase Public Awareness; Encourage Partnerships; Protect Natural Systems
Benefit-to-Cost Review: 4

Approx Cost	+	Effectiveness	=	Priority / Benefit-to-Cost Review
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<input type="checkbox"/> 2 – Medium		<input type="checkbox"/> 2 – Medium		<input type="checkbox"/> 3
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				<input type="checkbox"/> 5
				<input type="checkbox"/> 6 – Highest

EARTHQUAKE MITIGATION ACTIONS (E)

ST-06-E-KM: 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.
- 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: Kenmore Maintenance
Estimated Price: To be determined (low cost)
Funding Source: General Fund
Timeline: 3 years, ongoing
Plan Goals Addressed: Protect Life & Property; Provide for Emergency or Critical 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>
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				<input checked="" type="checkbox"/> 6 – Highest

ST-07-E-KM: Encourage reduction of nonstructural and structural earthquake hazards in homes, schools, businesses, and government offices.

Ideas for implementation:

- Provide information to all Northshore 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: Kenmore Community Development; *Northshore School District*
Estimated Price: \$500
Funding Source: General funds
Timeline: Ongoing
Plan Goals Addressed: Protect Life & Property; Increase Public Awareness; Encourage Partnerships
Benefit-to-Cost Review: 4

<u>Approx Cost</u>	+	<u>Effectiveness</u>	=	<u>Priority / Benefit-to-Cost Review</u>
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				<input type="checkbox"/> 6 – Highest

ST-08-E-KM: Identify city-owned 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 Kenmore that requires seismic retrofits.

Coordinating Organization: Kenmore Public Works; Kenmore Administration
Estimated Price: To be determined (medium cost)
Funding Source: To be determined
Timeline: 2 years & ongoing
Plan Goals Addressed: Protect Life & Property; Increase Public Awareness; Provide for Emergency or Critical Services; Facilitate Continuity & Recovery
Benefit-to-Cost Review: 5

<u>Approx Cost</u>	+	<u>Effectiveness</u>	=	<u>Priority / Benefit-to-Cost Review</u>
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LT-02-E-KM: 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: Kenmore Administration; *Kenmore Business Association;*

Estimated Price: To be determined (low cost)

Funding Source: Grants and partnerships

Timeline: 4 years

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 checked="" type="checkbox"/> 1 – Low		<input type="checkbox"/> 2 – Lowest
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				<input type="checkbox"/> 6 – Highest

FLOOD ACTION ITEMS (F)

ST-09-F-KM: Incorporate Flood Reduction Management Plan and Surface Water Management Plan recommendations into the City of Kenmore’s Capital Improvement Schedule.

Ideas for implementation:

- Identify appropriate and feasible mitigation activities for identified repetitive flood properties. Funding may be available through FEMA’s Hazard Mitigation Grant and Flood Mitigation Assistance Programs and the Pre-Disaster Mitigation (PDM) Program.
- Contact repetitive loss property owners to discuss mitigation opportunities and determine interest should future project opportunities arise.
- Explore options for incentives to encourage property owners to engage in mitigation.
- Complete Swamp Creed Flood Reduction project.
- Assess Roof Coverage area within the City of Kenmore.
- Coordinate with Snohomish County to identify flood reduction projects north of Kenmore.
- Evaluate elevation requirements for new residential and non-residential structures in the floodplain area.
- Explore raising the base elevation requirement for new residential construction to two or three feet – or more – above base flood elevation. (An increased elevation standard is one activity that cities can engage in to receive credit from the NFIP Community Rating System Program.)
- Identify opportunities to upgrade Federal Insurance Rate Map, and arrange for Cooperative Technical Partnership mapping upgrades for select areas.
- Identify alternatives to reduce development in the floodplain.

Coordinating Organization: Kenmore Community Development
Estimated Price: To be determined (medium costs)
Funding Source: To be determined
Timeline: 3-5 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>+</u>	<u>Effectiveness</u>	<u>=</u>	<u>Priority / Benefit-to-Cost Review</u>
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<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-F-KM: Identify surface water drainage obstructions within the City of Kenmore

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: Kenmore Community Development; Kenmore Public Works
Estimated Price: To be determined (low cost)
Funding Source: General fund; utility fund
Timeline: Ongoing. 1-2 years
Plan Goals Addressed: Protect Life & Property; 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 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-03-F-KM: 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 Kenmore’s GIS system.
- Update flood plain maps in the Comprehensive Plan.
- Use mapping data to update the flood-loss estimates for the City of Kenmore.

Coordinating Organization: Kenmore Community Development
Estimated Price: To be determined (low to medium costs)
Funding Source: General fund; grants
Timeline: 3 years (as funding allows)
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

LT-04-F-KM: 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 Kenmore.
- 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: Kenmore Community Development; Kenmore Administration; Kenmore Public Works; *Adopt-A-Stream Foundation*

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; Encourage Partnerships; Protect Natural Systems

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

LANDSLIDE MITIGATION ACTIONS (L)

ST-11-L-KM: Improve knowledge of landslide hazard areas and understanding of vulnerability and risk to life and property in hazard-prone areas.

Ideas for implementation:

- Incorporate landslide information into GIS mapping, and planning and the City of Kenmore Comprehensive Plan.
- 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: Kenmore Community Development
Estimated Price: To be determined (small to medium costs)
Funding Source: General fund
Timeline: 2 years
Plan Goals Addressed: Protect Life & Property; Increase Public Awareness; Encourage Partnerships
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 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-12-L-KM: 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 Kenmore Planning Commission and City Council to develop guidelines to mitigate and prevent landslides.

Coordinating Organization: Kenmore Community Development; Kenmore Planning Commission; Kenmore City Council
Estimated Price: To be determined (small to medium costs)
Funding Source: General fund
Timeline: 1 year
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 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

SEVERE STORM MITIGATION ITEMS (S)

ST-13-S-KM: 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: Kenmore Public Works; *Northshore Utility District; Puget Sound Energy*

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

Funding Source: General fund

Timeline: 2 years

Plan Goals Addressed: Protect Life & Property; Encourage Partnerships; 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

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

Ideas for implementation:

- Collect information on 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: Kenmore Administration; Kenmore Public Works; *Puget Sound Energy*; *Northshore Utility District*

Estimated Price: To be determined (low costs)

Funding Source: 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 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

ST-15-S-KM: 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: Kenmore Community Development; Kenmore Public Works; *Puget Sound Energy*

Estimated Price: To be determined (low costs)

Funding Source: To be determined

Timeline: Ongoing

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

TSUNAMI & SEICHE MITIGATION ACTIONS (T)

ST-16-T-KM: Develop public information to educate citizens on this type of hazard.

Ideas for implementation:

- Collect information on public education materials for protecting life, property, and the environment from seiche events.
- Distribute educational materials to residents and public and private sector organizations regarding evacuation routes during road closures and seiche events.

Coordinating Organization: Kenmore Administration; *Washington Department of Natural Resources*
Estimated Price: To be determined (low costs)
Funding Source: To be determined
Timeline: 2 years
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

Approx Cost	+	Effectiveness	=	Priority / Benefit-to-Cost Review
<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)

ST-17-V-KM: 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: Kenmore Public Works
Estimated Price: To be determined (low costs)
Funding Source: To be determined
Timeline: 4 years
Plan Goals Addressed: Protect Life & Property; Increase Public Awareness; Encourage Partnerships; Provide for Emergency or Critical Services; Facilitate Continuity & Recovery
Benefit-to-Cost Review: 3

<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 checked="" type="checkbox"/> 2 – Medium		<input type="checkbox"/> 2 – Medium		<input checked="" type="checkbox"/> 3
<input type="checkbox"/> 3 – Low		<input type="checkbox"/> 3 – High		<input type="checkbox"/> 4
				<input type="checkbox"/> 5
				<input type="checkbox"/> 6 – Highest

ST-18-V-KM: Develop and implement policy for maintaining stock of filters for key vehicles and pieces of equipment.

Ideas for implementation:

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

Coordinating Organization: Kenmore Executive Department; Kenmore Public Works
Estimated Price: To be determined (low 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: 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

WILDLAND-URBAN INTERFACE FIRE MITIGATION ACTIONS (W)

LT-05-W-KM: 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: Kenmore Community Development
Estimated Price: To be determined (low to medium costs)
Funding Source: Grant
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

¹ City of Kenmore. *Comprehensive Plan* (March 2001).

² Washington State Office of Financial Management.

³ City of Kenmore. *Comprehensive Plan* (March 2001).

⁴ *Ibid.*