



**KITSAP COUNTY  
WASHINGTON  
DEPARTMENT  
OF  
EMERGENCY  
MANAGEMENT**

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Multi-Hazard Mitigation Plan  
***August 1999***

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# KITSAP COUNTY MULTI-HAZARD MITIGATION PLAN

## EXECUTIVE SUMMARY

To summarize, this document contains:

- The Kitsap County Hazard Vulnerability Study results;
- Hazard Mitigation Strategy goals and objectives;
- Proposed strategies and actions as recommended by the Hazard Mitigation Steering and Planning Committees to reduce short and long term vulnerability to the identified hazards; and
- Methods of implementing, monitoring, evaluating, and updating the mitigation plan.
- The establishment of a Hazard Mitigation Steering Committee and a Community Wide Planning Team to assist in the further development, prioritization of and implementation of the recommended Hazard Mitigation strategies.

This document also provides a framework for identification of coordination of Hazard Mitigation strategies developed in Kitsap County and with other plans; especially those developed by State and Federal agencies and those plans developed in order to file for Federal disaster assistance, as required by Section 409 of the Robert T. Stafford Relief and Emergency Assistance Act.

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## SECTION ONE: Introduction

### I. Definition of Hazard Mitigation

*Hazard Mitigation* is any action taken to eliminate or reduce the risk to human life, property and the environment posed by a hazard.

Hazard Mitigation may occur during any phase of a threat, emergency or disaster. Mitigation can and should take place during preparedness (before), response (during), and recovery (after) phases.

### II. Purpose of Plan

The purpose of this plan is to integrate Hazard Mitigation strategies into the activities and programs of the Federal, State, County and City governments and to the extent practical, into the activities of private sector organizations.

The plan identifies and evaluates specific Hazard Mitigation strategies to be considered by Kitsap County and its political subdivisions, agencies, and organizations.

The strategies presented are deemed appropriate and effective by recommendation of the Kitsap County Hazard Mitigation/Recovery Plan Steering Committee and the Kitsap County Planning Team.

Upon acceptance by the Kitsap County Emergency Management Council, the selected strategies will be further developed for funding and implementation by the lead agencies. The plan describes the potential sources of Hazard Mitigation Strategy funding, and general procedures to obtain that funding.

The plan is based upon the Kitsap County Hazard Vulnerability Analysis (HVA) that considers the natural, technological, and human caused risks to which Kitsap County and its political subdivisions are vulnerable. The plan describes strategies that government and private sector may utilize as their capabilities to mitigate those hazards.

It is understood the mitigation strategies adopted in this plan are recommendations only, and they must be approved and funded to be implemented as official Hazard Mitigation Strategies to be implemented by Kitsap County and its political subdivisions.

### III. Planning Process

#### Lead Agency and Steering Committee Participation

The Kitsap County Department of Emergency Management shall be the lead agency in coordinating the efforts of the Kitsap County Hazard Mitigation/Recovery Plan Steering Committee and the Kitsap County Community Planning Team in formulating and supporting the Kitsap County Hazard Mitigation Strategy Identification and Plan promulgation and maintenance.

#### Hazard Mitigation / Recovery Steering Committee Tasks

1. Coordinate with the Department of Emergency Management to oversee planning process
2. Prioritize hazards vs. resources
3. Select highest and best mitigation recommendations
4. Review planning drafts, recommendations and updates
5. Develop and implement long and short term goals
6. Integrate the plan with all phases of Comprehensive Emergency Management Planning
7. Provide for the implementation of committee decisions
8. Encourage, coordinate and provide a methodology for the implementation of public input
9. Establish Committee Tasks
  - Determine implementation ability and constraints for proposed Hazard Mitigation planning steps and measures
  - Bring forward community concerns
  - Identify implementation resources
  - Provide for the update of Comprehensive Emergency Management Plans on a scheduled basis
  - Evaluate and carry out mitigation activities
  - Assist in implementation of funding identification and procurement

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Hazard Mitigation Steering Committee and Planning Team 1998/99 Hazard Mitigation Strategy Identification Methodology.

Steering Committee Representatives:

1. Kitsap County Commissioners
2. Kitsap County Public Works
3. Kitsap County Transit
4. Kitsap County Department of Emergency Management
5. Kitsap County Department of Community Development Fire Marshall
6. City of Bremerton Department of Community Development
7. Kitsap County Prosecutor's Office
8. Harrison Hospital
9. Kitsap County Housing Authority
10. Kitsap County Consolidated Housing Authority
11. Economic Development Council of Kitsap County
12. Kitsap County Department of Community Development
13. Kitsap County Public Works Sewer and Storm Water Management
14. Fire District Number 7
15. Assisting the Steering Committee and project development included a Hazard Mitigation Planning Contractor from Dimensions Unlimited Inc.

**\*Note:** The Kitsap County Department of Emergency Management provided the overall coordination and facilitation for the planning project.

Steering Committee Hazard Mitigation Strategy Identification Activities

1. Members from the Steering Committee met with representatives from each City and County representatives in the Community to identify Local Hazard Mitigation Strategy recommendations.
2. The steering committee starting in August of 1998 through April of 1999 met on a monthly basis to identify additional Hazard Mitigation Strategy recommendations and to develop those recommendations received from the political subdivisions.
3. In January of 1999 the Steering Committee assisted in the facilitation of a Community wide Planning Team full day meeting to introduce the Community to the Hazard Mitigation Strategies identified and receive input and prioritization from the Community Wide Planning Team. Over 80 community participants attended the day long working session and examined, prioritized, recommended acceptance or rejection of the Hazard Mitigation Strategies presented.
4. Following the January meeting the Steering Committee again examined and prioritized the Hazard Mitigation Strategies incorporating the result form the

Community Wide Planning Team meeting. The steering Committee further estimated implementation costs to those strategies where possible.

### Kitsap County Emergency Management Planning Team Tasks

1. Meet on an annual basis to review the work of and contribute to the Kitsap County Hazard Mitigation/Recovery Plan Steering Committee activities.
2. Bring forth the concerns and views of the Community to the Steering Committee for inclusion in the Hazard Mitigation and Recovery planning process.
3. Assist in informing the public and community of the Hazard Mitigation strategies recommended by both the Steering Committee and Planning Team.

## IV. Legal Authority

### A. Federal Laws

1. " The Federal Civil Defense Act of 1950"
2. Public Law 96-342 "The Improved Civil Defense Act of 1980"
3. Public Law 91-606 "Disaster Relief Act"
4. Public Law 93-288 "The Robert T. Stafford Disaster Relief Act of 1974"

### B. State Laws

1. Revised Code of Washington (RCW) 38.52
2. RCW 34.4
3. RCW 36.70A.050 and 36.70A.120 Requiring classification of critical areas

### C. Local Codes and Ordinances

1. Kitsap County Ordinance No. 109, 3/24/86
2. Kitsap County Critical Areas Ordinance, May 1998
3. Bainbridge Island Environmentally Sensitive Ordinance, April 1997.
4. City of Poulsbo Chapter 16.20 Critical Area Ordinance, 1992
5. City of Bremerton Critical Lands Ordinance, March 1993
6. Port Orchard Interim Critical Ordinance, 1992
7. Kitsap County, 1980. Ordinance No. 80 - Flood Damage Prevention Regulations
8. Kitsap County Comprehensive Plan, May 7, 1998

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## SECTION TWO: Process

### I. Kitsap County Hazard Vulnerability Analysis

(Refer to separate document or the Kitsap County Department of Emergency Management web page – [www.kitsapdem.org](http://www.kitsapdem.org))

### II Hazard Mitigation Process for Kitsap County

#### A. Hazard Mitigation Planning Process

##### 1. Goals:

These goals form the basis for the objectives detailed below. These goals are shown from the highest priority, at the top of the list, to those of lesser importance.

- Protection of life during and after the occurrence of disasters from identified hazards;
- Preventing loss of life and reducing the impact of damage where problems cannot be eliminated;
- Protection of emergency response capability including:
  - Communication and Warning systems,
  - Emergency Medical Services and Medical Facilities,
  - Mobile Resources,
  - Critical Facilities, and
  - Government Continuity.
- Protection of developed property, homes and businesses, industry, educational opportunities and the cultural fabric by combining hazard loss reduction with the community's environmental, social and economic needs.

- Promoting public awareness of community hazards and mitigation measures and encouraging public participation in the planning objectives.
- Preserving or restoring natural mitigation values such as flood plains
- Protection of natural resources and the environment

### 2. Objectives

The following objectives are meant to serve as a “measuring stick” upon which individual Hazard Mitigation projects can be evaluated. These criteria for evaluation become especially important when two or more projects are competing for limited resources.

Project Criteria Objectives may include, but are not be limited to, the following:

- Assuring the Hazard Mitigation Plan is a functional document that identifies short and long-term strategies and describing each measure including:
  - Identification of person, agency or organization responsible for implementation.
  - Projecting a time frame for implementation.
  - Explanation of how the project will be financed including the conditions for financing and implementation as information is available.
  - Identifying alternative measures, should financing not be available.
- Be consistent with, support, and help implement the goals and objectives of Hazard Mitigation plans already in place for the geographic area in question.
- Be based on the Kitsap County Hazard Vulnerability Analysis.
- Have significant potential to reduce damages to public and/or private property or reduce the cost of Local, State and Federal recovery from future disasters.
- Be the most practical, cost-effective, and environmentally sound alternative after consideration of the options.
- Address a repetitive problem, or one that has the potential to have a major impact on an area, reducing the potential for loss of life, loss of essential services and personal property, damage to critical facilities, economic loss, hardship or human suffering.
- Meet applicable permit requirements.
- Not encourage development in hazardous areas.

- Contribute to both the short and long term solution to the hazard vulnerability risk problem.
- Assuring the benefits of a mitigation measure is equal to or exceeds the cost of implementation.
- Have manageable maintenance and modification costs.
- When possible, be designed to accomplish multiple objectives including improvement of life-safety risk, damage reduction, restoration of essential services, protection of critical facilities, security of economic development , recovery, and environmental enhancement; and,
- Whenever possible, use existing resources, agencies and programs to implement the project.

### 3. Identification of Community Local Background

- Geographical Location: Kitsap County, Washington is located between the Hood Canal and the West side of Puget Sound near the center of the Puget Lowlands Physiographic Province. The County occupies lowlands in the shadow of the Olympic Mountains.
- Area: The area of Kitsap County is approximately 394 square miles.
- Weather Conditions: Kitsap County has a moderate climate with an average yearly temperature of 50 degrees F:
  - The average rainfall is 64 inches
  - Average low temperature is in January at 39 degrees F
  - Average high temperature is in July at 77.6 degrees F
- Topography: The Kitsap Peninsula area is geologically the remnants of a glacial drift plain. The peninsula is deeply dissected by inlets, giving the County roughly 33 miles of fresh water waterfront, and 210 miles of salt-water coastline. (Kitsap County HVA 1998) Landslide and marine bluff failures are relatively common in the low hills on the perimeter of Puget Sound, particularly in unsheltered bluff areas subjected to wave cutting. (Young et al, 1993)

Four main geologic units have been identified in the subsurface; fill, younger alluvium including beach deposits, alluvium associated with the Vashon Glacier, and basaltic bedrock. Low areas have filled with peat and very loose soils over time, and may have been artificially filled during previous development. (Dames & Moore 1997.)

- Creeks and Fresh Water Ways

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## North Kitsap County

Dogfish Creek  
Scandia Creek

Mosher Creek  
Sea Beck Creek

## Central Kitsap County

Barker Creek  
Big Anderson Cr.  
Boyce Creek  
Chicoe Creek  
Clear Creek  
Kitsap Creek

## South Kitsap County

Beaver Creek  
Blackjack Creek  
Curley Creek  
Gorst Creek  
Olalla Creek  
Salmonberry Creek

## Saltwater Landmarks (260 Miles of saltwater shoreline)

Admiralty Bay

- Population: 1997 total population of Kitsap County was 229,400 (this figure excludes military personnel residing on one of the County's four military installations).

## Unincorporated County areas:

158,740 (Includes unincorporated area of Silverdale estimated at 12,000)

## Bainbridge Island:

18,920

## Bremerton:

38,600

## Port Orchard:

6,965

## Poulsbo:

6,175

- Business/Industry: Approximately 50% or slightly less of the population is employed by the following businesses and industry: fishing, construction, manufacturing, tourism, forestry, healthcare, transportation, public utilities, wholesale, retail, financial, insurance real state and services.

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- Government Employment: Over half of the working inhabitants are employed by the Federal, State County or municipal government agencies.

Puget Sound Naval Shipyard	18,000
Naval Submarine Base	10,000
Naval Undersea Warfare Center	2,200
State Agencies	1,740
Naval Hospital, Bremerton	1,122
School District	4,105

- Military Bases and Facilities

Puget Sound Naval Shipyard  
Naval Submarine Base Bangor  
Naval Hospital

- School Districts and Attendance:

<u>School</u>	<u>Students</u>
North Kitsap County	6,900
South Kitsap	11,543
Central Kitsap	13,500
Bremerton	6,425
Bainbridge Island	3,686
Olympic College	7,500

- Indian Tribes

Suquamish  
S'Kallam

- Transportation Links:

Highways 3 & 16  
Washington State Ferry Links  
Bremerton  
Bainbridge Island  
Kingston  
Port Orchard  
Bremerton National Airport  
Served by Commuter Air  
Kitsap Transit System  
Connects to Mason and Jefferson Counties

- Structure of Governments

Kitsap County

- 3 Member Board of Commissioners
- Elected Sheriff
- Elected Prosecutor
- Elected County Clerk
- Elected Treasurer
- Elected Assessor
- Elected Auditor
- Including Silverdale Un-incorporated Area which has a Chamber of Commerce Currently Working towards the incorporation of the area.

Bainbridge Island

- Mayor
- City Council
- City Manager

Bremerton

- Mayor
- City Council

Port Orchard

- Mayor
- City Council

Poulsbo

- Mayor
- City Council

### Others Factors Impacting Community

- Existing Hazard Mitigation/Management/ Damage Reduction Plans
- Existing County Agencies and Programs
- Hazard Mitigation Measures currently implemented
- Financial Constraints and ability to implement mitigation strategies
- State and Federal Lands contained within Kitsap County impacting upon County resources
- Federal and State Transportation links serving Kitsap County and impacting upon County Resources.

## SECTION THREE: Strategies & Recommendations - PRIORITY ONE

### CAT I: IDENTIFIED PRIORITY ONE FLOODING MITIGATION STRATEGIES

1. **Flood Mitigation Strategy:** To develop a strategy to implement a flood control and riparian zone management process that ensures coordination of the municipalities with regard to storm water management standards, zoning requirements and building codes. The necessary steps to implement this strategy are:
  - Review and compare existing flood control standards, zoning and building requirements and determine minimum acceptable standards for all municipalities.
    - Develop inter-jurisdictional mechanisms to ensure that the municipalities are aware of each other's flood prone areas and properly assign conditions of approval to projects that may affect them.
    - Tie this strategy into the implementation of a Community-wide Geographic Information System (GIS).
  - ✓ It is recommended that the lead agencies be Community Development Agencies, City/County/Regional Organizations & Public Works Departments.
  - ✓ Local funding resources are recommended for potential budget availability.

**Implementation Time Frame:** 1 to 3 years

**Implementation Cost:** Estimated Cost \$175,000.00 to develop strategy, review and adopt standards, and set up Memorandums of Understanding (MOUs) . Implementation costs, as part of a regional GIS system would be estimated separately.

2. **Flood Mitigation Strategy:** To convene an annual meeting of interested parties regarding Local, State and Federal regulatory permitting and maintenance activities in flood-prone areas.
  - The purpose of this meeting would be to exchange information, coordinate future projects and examine community-wide affects on flood prone areas.
  - This project could be used to assist in the identification of areas of influence that affect critical risk areas.

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- ✓ The recommended lead agency is the Department of Emergency Management for the development and implementation of this strategy with support from Community Development Agencies, the National Flood Insurance Agency and other agencies as appropriate.
- ✓ Local unidentified funds would be the primary resource with some potential support from State and Federal Agencies.

**Implementation Time Frame:** 1 to 3 years

**Implementation Cost:** \$7,500.00 Annually

- 3. Flooding Strategy:** Develop project proposals to reduce flooding and improve control of runoff in, and upstream from flood prone areas. This may include High Flow Bypass construction in intensely developed areas and buy out programs in frequently flooded areas.

- ✓ The recommendation is for the Departments of Public Works to be the lead agencies.
- ✓ It is recommended that the communities pursue Federal and State grant funds to implement this strategy. Additionally Local matching and operational funds would need to be budgeted to implement the program.

**Implementation Time Frame:** 1 to 3 years

**Implementation Cost:** \$150,000 annually to develop proposals, at this cost estimate the project would be addressed only as a study for implementation. Estimated \$3,500,000.00 including selected construction and buyout costs

- 4. Flooding Strategy:** Identify high-risk areas on Geographic Information System (GIS). Update Local storm water system plans and improve storm water facilities in high-risk areas.

- ✓ Identify flood and drainage problems on public roads.
- ✓ The lead agency would be the Department of Public Works.
- ✓ Local funds and potential private sector funding with possible State or Federal grant funding would be needed to implement the program.

**Implementation Time Frame:** 1 to 3 years and incorporate as ongoing

**Implementation Costs:** \$65,000.00 Annually

**Note:** This recommended budget is \$65,000 annually to be contributed towards an enhanced GIS system. Costs associated with updating individual projects, community plans and facilities are dependent on identification of criteria and number of projects.

- 5. Flooding Strategy:** Identify, update and maintain an inventory of privately owned storm water detention pond culvert & control systems. Develop and implement guidelines to assess the flood risk and system effectiveness for the individual systems.
- ✓ Identify privately owned property, including roads, parking lots, and other facilities, that may be a contributing cause to public flooding. This project would be undertaken in order to expedite flood risk identification and propose specific area problem resolution.
  - ✓ It is recommended that the appropriate County or City Departments of Public Works be the lead agencies. The Public Works Department would coordinate with the State Department of Ecology and those private sector organizations that own the facilities and systems that are identified.
  - ✓ Develop maintenance guidelines for privately owned and maintained roads and work cooperatively with owners to encourage them to enhance maintenance procedures that reduce drainage problems.
  - ✓ Local funding will need to be identified to implement this strategy and it is recommended to be considered for potential Federal Grant Application funds.

**Implementation Time Frame:** The Project carries a 1-3 years priority rating, however the actual work will be ongoing through an estimated 9 years.

**Note:** It is recommended that the project include a study of drainage areas including the study of selected drainage areas for potential mitigation opportunities.

**Estimated Cost of the Initial Study:** \$75,000.00

**Implementation Cost:** An Estimated Budget of \$550,000 annually would be needed for systems identification, mapping, inspection, update of inventory and assessment of effectiveness and risk.

### CAT II: SEVERE STORMS MITIGATION STRATEGIES

- 1. Severe Storms, Earthquake, and Multi-Hazard Strategies:** Encourage the public sector to prepare and maintain 3-day preparedness kits.
- ✓ The lead agency would be the Department of Emergency Management.
  - ✓ Local operations budget funding are to be identified to apply for Hazard Mitigation and other grant opportunities.
  - ✓ Combination of Local funds to be budgeted and potential grant applications.

**Implementation Time Frame:** Portions of this strategy are currently being implemented and they are included in these recommendations to emphasize the importance of the ongoing efforts and to support a future grant application to increase the efforts.

**Implementation Cost:** It is recommended that this strategy be included as part of the annual Department of Emergency Management's Public Education Program

2. **Severe Storm Strategy:** Review and coordinate, to the extent possible, a snow and ice plow/sanding plan that would include coordination with the cities, Kitsap County and the State of Washington Department of Transportation.
- ✓ The strategy would include the identification of critical service routes and a coordinated plan to combine efforts to keep the identified routes available to emergency vehicles and the public, where possible.
  - ✓ The lead agencies would be the Department of Public Works and Fire Agencies, and other emergency services agencies in coordination with the State Department of Transportation and DEM.
  - ✓ Funds are recommended to be identified within Local operational budgets. If the planning effort is expanded it is recommended to request funding from the State DOT as needed.

**Implementation Time Frame:** 1-3 years

<b>Implementation Budget Estimate:</b>	Start-up costs	\$17,500.00
	Annual Costs	\$ 8,500.00

### CAT III: LAND SHIFT MITIGATION STRATEGIES

1. **Land Shift/Agricultural Strategy:** Identify and implement agricultural areas erosion control measures to aid in mitigation of identified land shift related problems.
- ✓ The lead agency would be the Local Conservation District in coordination with the Community Development Departments.
  - ✓ Funding recommendations are to seek State and Federal support funds

**Implementation Time Frame:** 1 to 9 Years

**Implementation Cost Estimates:** Initial Study to identify erosion problem areas and apply mitigation strategies costs are estimated to be \$178,000.00

2. **Land Shift General Strategies:** Identify and recommend landslide mitigation measures for implementation throughout the community.

**Task 1:** Identify potential land shift areas based upon historic data and existing geologic studies of the area.

**Task 2:** Identify the resources to do the study for areas of influence located near critical areas and the contribution those areas of influence exert on the land shift problems in the identified critical areas.

- Recommendation:** This would entail setting up a process by which each jurisdiction would submit the geo-technical and geologic reports received as part of the land use and permitting process to the Kitsap Regional Council for review and indexing. Staff at the Council would need to be knowledgeable in this field and the information on file would need to be readily accessible.
- ✓ Take land shift Hazard Mitigation issues and recommendations to the Emergency Management Council for increased community wide support..
  - ✓ Identify and recommend slide mitigation strategies for existing structures and future remodeling of structures.
  - ✓ Conduct a study to identify potential mitigation steps for the reduction of risk to life and property from landslides.
  - ✓ Study and improve storm drains for slide prone areas.
  - ✓ The lead agency would be the appropriate City or County Community Development Departments.
  - ✓ Establish a regionally funded program to review geotechnical and geologic reports submitted as part of the planning and permitting process.
  - ✓ Develop a Task List to include preferred providers and peer review methodology: Include minimum requirements for preferred providers to include 5 years in soil related work.
  - ✓ Identify slide-prone areas and study specific mitigation steps to reduce existing risk and prevent increased risk. Examples of areas of this type are listed below:
    1. Rolling Bay Walk
    2. Crystal Springs Drive
    3. Rock-a-way Beach
    4. Fort Ward Hill
    5. Prospect Point

6. Kingston Bluff
7. Suquamish Bluff
8. Hood Canal Bluff

- ✓ Pursue pre-disaster and post-disaster Small Business Administration (SBA) loans for the implementation of landslide, slippage, erosion, and subsidence abatement strategies
- ✓ The lead agencies would be the Community Development Departments and Health Districts, Public Works Departments, and the Department of Emergency Management along with Indian Nations where appropriate.

**Note:** Funding for the above mitigation strategy recommendations would be Local unbudgeted funds combined with State and Federal Grants and administrative program funding.

**Implementation Time Frame:** 1 to 3 years with ongoing project projection of 1 to 9 years

**Implementation Cost:** It is recommended that \$150,000.00 be identified to start the engineering and cost studies needed to support this strategy.

### CAT IV: LAW & REGULATORY ISSUES

1. **Law and Regulatory Issues:** Examine the Law and Regulatory issues for mitigation opportunities.

**Implementation Time Frame:** 1 to 3 years

**Implementation Cost:** \$38,000.00 to be accomplished as a part of appropriate law and regulatory drafting staff time.

2. **Critical Area Ordinances:** Identify components in Critical Areas Ordinances that are not being fully implemented. Utilize site visits and develop a program to enhance enforcement of compliance with the Ordinances.
  - ✓ Approach the Critical Areas Ordinance to include maximization of regional solutions and program implementation.
  - ✓ The Lead agency would be the Departments of Public Works, the Community Development Departments, Regional GIS, and the Department of Emergency Management and current code enforcement staff.
  - ✓ The funding for this project would be Local dollars combined with potential State and Federal Grant dollars.

**Comment:** The code enforcement staff currently does site visits for a majority of the applications and the code enforcement staff take action related to the enforcement of the Critical Areas Code. In both cases additional resources would be beneficial.

**Implementation Time Frame:** 1 to 3 years

**Implementation Cost:** Estimated to be an additional 1 1/2 staff positions annually with support costs. \$175,000.00 per year

✓ This strategy would require each jurisdiction to internally review their current enforcement methodology and determine an independent course of action in identification of the deficiencies unique to the jurisdiction and then propose individual remediation strategies.

**3. Critical Area Building Code:** Explore the feasibility of implementing a Critical Area Building Code for single family homes.

✓ Review Remodeling Code in risk areas for opportunities to implement mitigation measures for land shift and other identified risks.

a. Enhance code restrictions as needs are identified.

b. Take the code enhancement recommendations back to the Hazard Mitigation Steering Committee for additional recommendations on an annual basis.

c. Work with Departments of Community Development for additional recommendations.

d. Contact the United States Geological Survey Agency (USGS) for additional information and recommendations.

✓ The lead agencies would be the Community Development Departments.

✓ Regional GIS would be the first step in making sure the information was uniformly available to all parties and thereby allowing better enforcement.

**Note:** Identification of the Critical Areas Ordinances implementation implies a certain current enforcement in the cities and the County. There are a number of issues unique to each entity's CAO, which would require a review and discussion to determine the problems with full implementation. Each jurisdiction would have to internally review their current enforcement methodology and determine their deficiencies and then determine who and how they were going to increase implementation.

**Implementation Time:** 1 to 3 years

**Implementation Cost:** Undetermined at time of publication

4. **Critical Area Ordinance Review:** Review existing Critical Area Ordinances for community-wide consistency and uniform guidance. Utilize regional approaches to programs and solutions where possible.

- ✓ The lead agency would be the Community Development Departments and the Departments of Public Works.
- ✓ Local funding to be identified with a request for matching Federal funds.

**Comments:** It is believed that most of the Cities' CAOs are comparable with the County CAO. The effort to ensure consistency and uniformity could be tied to the Kitsap Regional Coordinating Council as the regional geo-tech body.

**Comments:** It is recommended an effort be made to compare and discuss the Critical Areas Ordinance components of all of the plans reviewed.

**Comments:** Implementation of this strategy is a staffing issue that each jurisdiction will need to address for allocation, time, and funds. It is recognized that, depending on the make-up of the staff, it could take a significant amount of time to implement and may not be feasible with current staffing levels.

**Comments:** The initial task could take months to compare for consistency and then some additional months through the change and adoption phase..

**Implementation Time Line:** 1 to 3 years.

**Implementation Cost:** Study for implementation costs \$250,000.00 to be identified in Local funds for matching and consideration of a Federal Hazard Mitigation Grant.

5. **Earthquake Code Mitigation Measures:** Review current codes and recommend adoption of most current Seismic Safety Codes where they are not already implemented.

- ✓ The lead agency for this mitigation strategy would be the Community Development Departments.
- ✓ Ongoing project using both Local budgeted funds and consideration for potential grant application funding.

**Note:** Most current seismic safety codes are already adopted by the State as well as all Local jurisdictions. Through RCW 19.27, a collaborative USGS-UW Geologic mapping effort is currently underway that is projected to be of benefit to Kitsap County. These efforts are projected to result in future code enhancement recommendations.

**CAT V: EARTHQUAKE MITIGATION STRATEGIES**

1. **Earthquake Mitigation Strategy:** Design and implement an ongoing community-wide public seismic risk assessment program. The Emergency Management Council will have responsibility for this strategy. They will use all applicable Local agencies including the Public Works Departments, Community Development Departments and the Department of Emergency Management to share lead responsibilities for this strategy, as appropriate. This project will require specific task development and may need to be based on the implementation of a Community wide GIS System and/or the implementation of Geologic Mapping Strategy number three.

**Implementation Time Frame:** 1 to 6 Years

**Implementation Cost:** These costs will need to be identified as part of the two above mentioned Hazard Mitigation Strategy implementation costs.

2. **Earthquake Mitigation Strategy:** Identify and study ground motion, landslide, and primary liquefaction community-wide. Include new data from most recent earthquake studies affecting Kitsap County.
  - ✓ The lead agency at the Local level for this project would be the Department of Public Works and the Department of Emergency Management with additional support required from the US Geological Survey and the University of Washington Geology Department.
  - ✓ A special resource to be considered for implementation of this strategy would be to request grant funding to use college and University graduate students for the planning and implementation of the study.
  - ✓ A recommended result of the study would be the ability to create liquefaction hazard mapping.

**Implementation Time Frame:** 1 to 3 years and would be tied to the implementation of Geologic Mapping Mitigation Strategy 3.

**Implementation Cost:** Estimates for support of a graduate student is \$75,000.00. This contribution may be able to be used towards the collaborative USGS-UW Geologic mapping effort to consolidate projects and cost sharing.

3. **Geologic Mapping Mitigation Strategy:** It is recommended that Kitsap County participate in the collaborative USGS-UW Geologic mapping effort. The US Geological Survey and the University of Washington, under the umbrella of the USGS Earthquake Program, have proposed a cooperative project for geologic hazard mapping over the Seattle Fault. This project would include a combination of remote sensing of landforms using airborne laser mapping, Light Detection and Ranging (LIDAR), Geologic mapping, Landslide Hazard mapping and expansion of the Strong Motion Sensor Network.

**Comments:** USGS-UW has projected this work to be of great benefit to all of the jurisdictions in Kitsap County for risk assessment from earthquake, landslide and

related geologic hazards. The raw data produced will also be valuable for Local compliance with the Endangered Species Act (ESA) following the listing of salmon native to Puget Sound and the Kitsap Peninsula.

The Kitsap County Department of Community Development GIS Group recommends Kitsap County lend its full support and encouragement to a cooperative effort that will have a direct impact on the Mitigation Strategies in Kitsap County.

### **Projected Benefits:**

- Earthquake, Landslide and other Geologic Hazard Mapping.
- Watershed and drainage basin mapping necessary for ESA planning.
- Stream and channel location.
- LIDAR and Geologic Mapping support hydro-geologic modeling.
- LIDAR and Geologic Mapping support groundwater resource planning.
- Geologic and Landslide Mapping support assessment of silt and erosion risk for streams and shorelines.

**Note:** The Hazard Mitigation Steering Committee received this recommendation at its final meeting and has not had the opportunity to explore the implementation costs with either the USGS/UW or the Kitsap County GIS Group. The steering committee recommended that this collaborative effort be pursued as it contributes and supports the identified Hazard Mitigation strategies throughout this document..

- ✓ The lead agencies should be the Departments of Community Development in coordination with the Kitsap County Department of Emergency Management and Emergency Management Council as well as the Kitsap County Regional Council.

**Implementation Time Frame:** 1 to 3 years for data collection. 1 to 20 years for data analysis and implementation of applications for ongoing mitigation and building & code considerations.

- 4. Earthquake Mitigation Strategies:** Assess community-wide utility infrastructure with regard to earthquake risk, including public and private utilities (power and telephone systems).
- ✓ Puget Sound Energy, Natural Gas Companies, Public Utility Districts, Private Communications Businesses, Water Purveyors, and Sewer Districts would be identified as the lead agencies or businesses, where appropriate, in relation to the service provided, to implement this strategy.
  - ✓ In some cases, private and public rate increases may be considered for implementation of a proactive seismic safety program.
  - ✓ This program will need to be tied to, and an active participant in, a regional GIS Mapping Project.

**Note:** The Kitsap Regional Coordinating Council (KRCC), in its current state, could not support such a program. It is recommended an assessment be made to identify specific recommendations that would accomplish the Kitsap Region Coordinating

Council's participation. An estimate of what it would take to accomplish KRCC participation is required.

**Implementation Time Frame:** 1 to 3 years

**Implementation Cost:** Estimates to be submitted by the private utility districts through the KRCC

**5. Earthquake Mitigation Strategy:** Develop and implement an incentive program for seismic retrofit.

- ✓ Community Development Agencies and the Building Industry will be the lead agencies for this program. Funding has not been identified. It is recommended that the Federal Emergency Management Agency (FEMA) Mitigation Project Impact be studied for applicable programs for Kitsap County.
- Constraints for this program are based upon the State of Washington authority to approve tax incentives for mitigation programs.
- Local incentives would require cooperation with insurance brokerage firms to lower rates on seismically retrofitted homes.
- ✓ Incentive funding programs can be explored and modeled after Project Impact Communities for community revolving low interest loans, and loan of tools to accomplish the retrofit program.

**Implementation Time Frame:** 1 to 3 years

**Implementation Costs:** An estimated \$36,000.00 in staff time would need to be set aside to explore potential implementation of an earthquake seismic retrofit program.

**6. Reservoirs Earthquake Hazard Mitigation Strategies:** Incorporate information and recommendations on reservoirs identified in seismic studies into Hazard Mitigation plan.

Those studies are: *Report Water System Earthquake Vulnerability Assessment for the City of Bremerton: Dames and Moore Group Company Job No. 05793-007-004, March 14, 1997.* These reports are inclusive of:: *Dam Break Inundation Analysis and Down Stream Hazard Classification: May 1996. (prepared under contract to Dames & Moore by WEScorp)* and *Washington State Department of Ecology Dam Safety Section, Emergency Action Plan for City of Bremerton Reservoir No. 4; May 1996.*

- ✓ Water Purveyors and Public Utility Districts would be identified as the lead agencies for strategy implementation.
- ✓ Funding for this project would need to include both State and Federal funding resources and potential private funding, where appropriate.

**Implementation Time Frame:** 1 to 6 years

**Implementation Cost:** \$2,500,000.00 as per Dames and Moore Order of Magnitude Cost Estimate (p.45 of Water System Earthquake Vulnerability Assessment for the City of Bremerton)

**7. Water System Earthquake Hazard Mitigation Strategy:** Implement a community-wide water main and water delivery system risk assessment. Formulate alternatives to mitigate risk.

- ✓ Lead agencies for this strategy would be the Public Utility Districts, Water Purveyors, City Utilities and public/private system owners or operators, where appropriate.
- ✓ In addition to Local operational budgets, this project would require matching grant funds.
- ✓ Coordinate the risk assessment with the identification of fire hydrants and perform risk analysis for fire protection.

**Implementation Time:** 1 to 3 years

**Implementation Cost:** Not available at time of publication.

**8. Public Safety Earthquake Hazard Mitigation Strategies:** Promote public seismic risk retrofit for commercial sector and residential sector to include foundation bolting, tie downs, and necessary bracing actions.

- ✓ Lead agencies and private groups for this strategy would include the Board of County Commissioners and Mayors through the Emergency Management Council, Housing Authority, Local Chambers of Commerce, Department of Emergency Management, City/County Departments of Public Works, at-risk population service agencies and volunteer organizations.
- ✓ Special Resources considered for this project could include volunteer groups, matching grant applications, private donations and Housing Authority support.
- ✓ Propose the utilization of Small Business Administration pre-disaster mitigation loans for portion of the funding needed.

**Implementation Time:** 1 to 4 years.

**Implementation Cost:** Work toward establishing a moderate, low interest community revolving loan program of 7 to 10 million dollars. Funding for this loan Program would be modeled after the FEMA Project Impact Mitigation Strategies and would be dependent upon the community financial and real estate private sector assistance.

**CAT VI: DROUGHT MITIGATION STRATEGIES**

1. **Drought Mitigation Strategies:** Provide for additional research and compilation of water resource data regarding aquifer recharge areas. Identify long term priorities vs. short-term priorities. The recommendation for implementation would be to partner with water purveyors, well owners, Indian Nations, nursery owners, homebuilders, architectural and professionally certified programs including community vocational education classes.

- ✓ Lead agencies would be the Public Utility Districts, Water Purveyors, and Indian Nations with support from Fire Agencies and Health Districts.

**Implementation Time:** 1 to 3 years

**Implementation Costs:** Funding to be identified.

2. **Drought Conservation Mitigation Strategies:** Identify cost effective Water Conservation Measures to be developed and implemented. Public Utility Districts and Water Purveyors are identified as the lead agencies for mitigation strategy implementation.

- ✓ Fire Agencies, Indian Nations and the Health District are recommended as support agencies to work with the lead agencies.

**Funding Implementation:** Funding Sources: Current Local agency budgets.

**Time Implementation:** 1 to 3 years

**Note:** Portions of this program are currently ongoing and it is recommended that the strategy continue to receive agency and community support.

3. **Drought Mitigation Strategies:** Formulate policies for conservation of water during times of water shortage and drought. Policies to be implemented by governments, citizens and businesses. This type of policy implementation is an ongoing program.

- ✓ The Public Utility Districts, Water Purveyors and Indian Nations are identified as the lead agencies for mitigation strategy implementation with the support of the Fire Agencies and Health Districts.

- ✓ Funding sources identified for policy formulation as an ongoing project with Local budgeted funds is recommended. Future consideration for implementation of policies to potentially require utility rate increases.

**Implementation Time Frame:** 1 to 3 years

**Implementation Cost:** To be projected and identified within current operational project budgets.

**CAT VII: WATER DRAINAGE MITIGATION STRATEGIES**

**1. Water Drainage Mitigation Strategies:** Identify regional road-Hazard Mitigation opportunities.

- ✓ Identify potential road slippage and sink areas related to erosion or slope instability.
- ✓ Establish a general signage program identifying risk areas including detour and emergency rerouting plans for repetitive risk areas.
- ✓ Examine risk to road system structures and identify mitigation strategies to reduce risk.
- ✓ Lead agencies would be the Public Works Departments and Community Development agencies.

**Implementation Time Frame:** 1 to 3 years.

**Implementation Cost:** It is projected that the identification portion of this project could be accomplished as part of the Community Wide GIS Program and would be dependent upon system utilization time. Other portions of the strategy would be prioritized within the current and future department operational budgets.

**2. Water Drainage Mitigation Strategies:** Require private road owners to maintain their facilities in accordance with identified watershed and drainage practices.

- ✓ Lead agency would be the Public Works Departments in coordination with the Community Development Agencies and The Department of Emergency Management.
- ✓ The above mitigation strategies would draw resources from Local funding sources and State and Federal resources, including grant applications.
- ✓ This strategy would be tied to the Law and Regulatory Mitigation Action Strategies for implementation authority.

**Implementation Time Frame:** 1 to 3 years

**Implementation Cost:** Cost is estimated at \$78,000.00 to draft codes and standards to implement this policy.

## CAT VIII: TERRORISM AND CIVIL DISORDER MITIGATION STRATEGIES

1. **Terrorism and Civil Disorder:** Seek funding for basic terrorism training for community responders in relation to proximity to military bases and military transportation routes.
  - ✓ Lead agency to be the Department of Emergency Management in coordination with the appropriate fire, police and military agencies.
  - ✓ Local planning funds and Federal Grant Money should be targeted.

**Implementation Time Frame:** 1 to 3 years

**Implementation Cost:** Kitsap County Department of Emergency Management is currently using operational and program funds to participate in terrorism response planning efforts. An increase in these efforts would require Federal and military funding.

## CAT IX: MULTHAZARD MITIGATION STRATEGIES

1. **Multi-Hazard Mitigation Strategy:** Examine potential road closures related to all risks. Compile a plan that identifies alternate access areas in cooperation with State and community officials. Several Local, State and possibly Federal resources are currently conducting or have already completed this type of study. It is recommended that a Local task force be formed to bring all of the information developed under one comprehensive all-risk road plan.
  - ✓ The Public Works Department and the Department of Emergency Management would share as the lead agencies responsible for this strategy. The Task Force needs to include the transit system, fire, Washington State Ferry System, and members of the regional task force as needed.
  - ✓ This ongoing project needs to be elevated to State and Local task force level.
  - ✓ It is recommended that an intern position be developed to follow-up on and consolidate alternate route plans for road closures that currently exist.

**Implementation Time Frame:** 1 to 9 years

**Implementation Cost:** Intern fees, office and support costs estimated at \$56,000.00

**2. Multi-Hazard Mitigation Strategy:** Develop a Regional Geographic Information System (GIS) program:

**Note:** Both the Hazard Mitigation Steering Committee and the Planning Groups identified this mitigation strategy program as a pivotal project for support and enhancement of community-wide Hazard Mitigation strategies.

- ✓ Develop a Regional GIS Program. Work with County/City and other public GIS System and groups to access information to promote standardization of risk area identification and avoid duplication. Develop the capability to view both City and County risk areas on same map. Identify and incorporate geologic ground movement studies into planning and building codes programs, including both earthquake and landslides.
- ✓ Establish and maintain a technical assistance database to assist implementation of the Regional GIS System and compile data to assist in preparation of specific project benefit/cost analysis and grant preparation.
- ✓ The lead agencies for implementation of this strategy would be the County GIS, Community Development Departments, Departments of Public Works, Eire Marshall's Office, and the currently established County GIS working group.
- ✓ It is recommended that this strategy be elevated to a Task Force-type of implementation, which would include the current Kitsap County GIS users' group, the University of Washington, Indian Nations, and military representatives.
- ✓ Coordinate this strategy with the USGS-UW Geologic mapping effort.
- ✓ It is recommended that the Task Force seek an intern position to support the work of the task force.
- ✓ Resource development for this strategy would require a successful identification of Local funds and identification of State and Federal Grant sources.
- ✓ The project requires the Task Force to identify the output goals and results on a community wide basis.

**Implementation Time Frame:** 1 to 9 years

**Implementation Cost:** The Task Force would be responsible for identifying current GIS resources and the cost of developing these resources into a community wide system. A schedule of charges for usage may be a source of funding as well as charges for supporting development and the private sector.

- 3. Multi-Hazard Mitigation Strategies:** Study and identify areas of geographical/geological influence affecting identified critical area hazards. Add identified areas of influence to critical areas geographic identification as part of the problems to be addressed. (Determine what the science is to identify areas of influence.) This strategy is to be done in coordination with the land shift areas of influence Hazard Mitigation Strategy.

**Note:** It is recommended that consideration be given to make this a MULTI HAZARD demonstration grant project through FEMA.

- 4. Areas of Impact:** Study non-traditional areas of impact such as:

- ✓ Pre-identified critical areas that require monitoring and potential areas of influence near and adjoining these risk areas.
- ✓ Identify single lot property owners who are in an area of influence to an adjoining critical risk area and determine what effects, if any, usage of the adjoining areas of influence have on the critical risk area.
- ✓ The lead agencies would be the Departments of Public Work and the Community Development Departments.
- ✓ Local Funds recommended from future budget appropriations with potential grant application from mitigation sources.
- ✓ Identify infrastructure improvements for specific critical risk areas and identify the level of risk for which these improvements will be effective.
- ✓ Funding sources would be a combination of Local funds and State and Federal matching grants.

**Implementation Time Frame:** 1 to 3 years

**Implementation Cost:** \$50,000.00 is estimated to be the project development cost to identify implementation costs and write the FEMA Demonstration Grant Proposal.

**Note:** This is another mitigation strategy that would require strong participation from a regional GIS.

### CAT X: MULTHAZARD PUBLIC EDUCATION PROGRAMS

- 1. Multi-hazard Public Education Mitigation Strategies:** Enhance and support Public Education Programs including citizen involvement. The program would center around a study of specific risk areas to assist in the identification of risk factors and mitigation strategies for citizen implementation in their specific areas; and further, to make recommendations on retroactive and future mitigation practices to implement in risk areas.

- ✓ The lead agencies for this strategy will be the Public Works Departments, the Community Development Departments, and the Department of Emergency Management..

- ✓ Existing public education funds and unidentified funds potentially using State and Federal grant dollars.

**Implementation Time Frame:** 1 to 9 years

**Implementation Cost:** \$75,000.00 annually with staff time to be shared with the next strategy.

- 2. Multi-hazard Public Education Hazard Mitigation Strategy:** Examine and support ongoing programs for a multi-jurisdictional approach for public education, public awareness and the promotion of public participation. Specific Hazard Mitigation Public Education recommendations are detailed in the following strategies:

- ✓ Implement programs that use Public Education for Hazard Mitigation and emergency preparedness methods. This recommendation emphasizes the continuing support for the programs that exist and the development of further opportunities. It is recommended that these programs provide contents guidance for both 3-day and 14-day preparedness kits and provide individual and community preparedness training.
- ✓ It is recommended that business and family emergency communication and preparedness plans are included in flyers available to the public.
- ✓ Work to develop additional preparedness education and programs to be targeted towards Local business preparedness including how to stay in business without power for 3 days.
- ✓ The lead agency would be the Department of Emergency Management.
- ✓ Existing public education funds and unidentified funds including State and Federal grant dollars.

**Implementation Time Frame:** 1 to 3 years

**Implementation Cost:** Share the above \$78,000.00 identified staff time with an additional \$50,000.00 in support and printed materials annually.

**Note:** Kitsap County Department of Emergency Management currently has a nationally recognized Public Education Program and this recommendation is for the continued support and funding of the program with planned future growth.

- 3. Multi-hazard Hazard Public Education Mitigation Strategy:** Develop a Critical Risk Areas Educational Program including expanding current programs where appropriate to include:

- ✓ Assure an availability of accurate maps and information defining critical areas to the public and private sector.
- ✓ Use advertisements to identify Critical Areas for the public to include mitigation strategies that individuals and businesses can implement.

- ✓ Include lenders and insurance agents' cooperation and participation in the educational process.
- ✓ Lead agency would be the Department of Emergency Management in cooperation and coordination with Local Chambers of Commerce.

**Implementation Time Frame:** 1 to 3 years

**Implementation Cost:** Use existing public education funds. Future funding resources to be identified.

- 4. Multi-hazard Public Education Mitigation Strategy:** Use Public Education Programs and meetings, including Public Access Television, to provide methods to identify and mitigate erosion area problems. Use Public Access Television to educate property owners and renters, both commercial and residential, on the definition and identification of erosion and land-shift problems and identify mitigation measures for protection of private property.

- ✓ The lead agency would be Local Conservation Districts in coordination with the Community Development Departments.
- ✓ Funding recommendations are for State and Federal support funds.

**Implementation Time Frame:** 1 to 3 years

**Implementation Cost:** Estimated to be \$78,000.00 per year

- 5. Multi-hazard Public Education Mitigation Strategy:** Implement a public education program to alert the public on the dangers of and steps to reduce the risk of landslides on private property. Identify and implement public education programs on seismic safety and strengthening for homes, public spaces, schools, and businesses.

- ✓ The lead agency for this program will be the Department of Emergency Management.
- ✓ This strategy is an ongoing project and it is recommended that both Local government budget funding and Federal funds be used to more fully implement the program.

**Recommendation:** That the Department of Emergency Management take the lead to coordinate with all Regional Public Education Programs. This coordination would be to share resources and information on a regional basis and to integration public education program information where possible.

**Implementation Time Frame:** 1 to 3 years

**Implementation Cost:** Specific costs have not been identified at this time for additional time and materials.

## CAT XI: FIRE HAZARD MITIGATION STRATEGIES

1. **Fire Hazard Mitigation Strategies:** Identify Urban Wild Land Fire interface problem areas including the development of an urban fire risk map. This project would be dependent upon a Regional GIS program for mapping components.

- ✓ Study urban fire issues including development of recommendations for requiring fire retardant building materials and sprinklers where possible.
- ✓ The lead-coordinating agencies will be the County Fire Marshall, Department of Emergency Management, Local Fire Agencies and will include the water purveyors, Indian Nations, Department of Natural Resources and Public Works Departments, where appropriate.

**Implementation Time Frame:** 1 to 3 years

**Implementation Cost:** These costs have not been identified at this time but they would include additional working staff for the Fire Marshall's Office and Regional GIS mapping usage time.

2. **Fire Hazard Mitigation Strategies:** Offer community-based loan programs or other identified incentives to replace combustible roofing and to retrofit buildings with fire sprinkler systems.

- ✓ The County Fire Marshall's Office and Local Fire agencies would take the lead in this program in coordination with Public Housing Authorities, and representatives from the private sector.
- ✓ Funding sources are currently unidentified and would require State and Federal assistance.

**Implementation Time Frame:** 1 to 3 years

**Implementation Cost:** It is recommended that this program be treated as a Project Impact type of community-based seed money program. The Community-based loan program would need to be established from both community donations and potential Federal Grant money.

3. **Fire Hazard Mitigation Strategies:** Increase and implement fire public education measures.

- ✓ The County Fire Marshall's Office, in coordination with Local Fire Agencies, would take the lead in this program.

**Project Implementation Time Frame:** 1 to 3 Years

**Implementation Cost:** Budget recommendations are for the use of existing funds should the fire agencies determine if current personnel are sufficient. The Steering Committee recommended a study be considered to determine if a Fire Public Educator is needed on a regional basis.

**CAT XII: TECHNOLOGICAL HAZARD MITIGATION STRATEGIES**

1. **Y2K:** Support the ongoing Y2K Community Preparedness Program for implementation by September 1999.
  - ✓ The Department of Emergency Management is currently the lead agency on this strategy.
  - ✓ The recommendation is to support the Department of Emergency Management's efforts

**Implementation Time Frame:** Current

# KITSAP COUNTY MULTI-HAZARD MITIGATION PLAN

## Priority 1 Category Cost Breakdown

<u>Item</u>	<u>Implementation Cost</u>	<u>Recurring Cost</u>	<u>Other</u>
Flood Strategy 1	\$175,000.00		
Flood Strategy 2		\$7,500.00	
Flood Strategy 3		\$150,000.00	\$3,500,000.00
Flood Strategy 4		\$65,000.00	
Flood Strategy 5	\$75,000.00	\$550,000.00	
<b>TOTAL</b>	<b>\$250,000.00</b>	<b>\$772,500.00</b>	<b>\$3,500,000.00</b>
Sever Storm Strategy 2	\$17,500.00	\$8,500.00	
<b>TOTAL</b>	<b>\$17,500.00</b>	<b>\$8,500.00</b>	
Land Shift Strategy 1	\$178,000.00		
Land Shift Strategy 2	\$150,000.00		
<b>TOTAL</b>	<b>\$328,000.00</b>		
Law & Regulatory 1	\$38,000.00		
Critical Area Ordinances 2		\$175,000.00	
Critical Area Ordinances 4	\$250,000.00		
<b>TOTAL</b>	<b>\$288,000.00</b>	<b>\$175,000.00</b>	
Earthquake 2	\$75,000.00		
Earthquake 5	\$36,000.00		
Earthquake 6	\$2,500,000.00		
<b>TOTAL</b>	<b>\$2,611,000.00</b>		
Water Drainage 2	\$78,000.00		
<b>TOTAL</b>	<b>\$78,000.00</b>		
Multi-hazard 1	\$56,000.00		
Multi-hazard 4	\$50,000.00		
<b>TOTAL</b>	<b>\$106,000.00</b>		
Public Ed 1		\$75,000.00	
Public Ed 2	\$78,000.00	\$50,000.00	
Public Ed 4		\$78,000.00	
<b>TOTAL</b>	<b>\$78,000.00</b>	<b>\$203,000.00</b>	
<b><u>SECTION TOTALS</u></b>	<b><u>\$3,756,500.00</u></b>	<b><u>\$1,159,000.00</u></b>	<b><u>\$3,500,000.00</u></b>
<b><u>GRAND TOTAL</u></b>	<b><u>\$8,415,500.00</u></b>		

## SECTION FOUR: Strategies & Recommendations - PRIORITY TWO

***Definition:** Strategies that were identified as less important than the Priority One rated strategies for consideration and implementation. Priority 2 rated strategies are suited to serve the community's needs and may be considered in the future, should the opportunity arise and funding become available.*

### CAT I: FLOOD HAZARD MITIGATION STRATEGY

1. **Flooding Strategy:** Review and create a floodplain planning, management and over-site program to assure compliance with the National Flood Insurance Program (NFIP) community-wide. The lead agencies for this strategy would be the Community Development Departments and the Departments of Public Works.
  - ✓ Distribute National Flood Insurance Program (NFIP) information in utility bills on an annual basis prior to flood season. The program lead for this strategy would require the National Flood Insurance Program to coordinate with the local utility companies to provide and distribute the information. The Department of Emergency Management would serve as the point of contact and coordination for the NFIP.
  - ✓ Provide expanded NFIP training for development and private property lenders and insurance agents. The primary responsibility would be for the Federal Emergency Management Agency and the NFIP to offer and coordinate a training effort with the Department of Emergency Management to the local finance and real estate groups and associations.
  - ✓ Develop a plan to maintain an available supply of safety and emergency preparedness supplies. Lead agencies responsible for coordinating supplies and resource information on availability of supplies would be the Department of Emergency Management in coordination with the Departments of Public Works, and the American Red Cross. The lead agency for sandbags would be the Departments of Public Works.
  - ✓ Streamline environmental compliance requirements for pre-flood prevention activities. The lead agency would be the Community Development Departments.

2. **Flood Strategy:** Pursue Federal Emergency Management Agency Disaster Housing/Home Repair Program to include mitigation measures for the private sector for multi-hazard risks. The lead agencies for this strategy would be the Department of Emergency Management and the Community Development Departments.
3. **Flood Strategy:** Provide a community wide service to anchor mobile home for qualifying citizens and encourage private individuals to anchor their own mobile homes. Volunteer agencies coordinated by local Service Organizations and the Department of Emergency Management would need to take the lead for this strategy.
4. **Flood Strategy:** Familiarize the community with the risks of “convergence zone” type of flooding. A Convergence Zone is caused when low atmospheric pressure combines with severe weather causing tidal overflow and watershed backup. The lead agencies would be the Department of Public Works in coordination with the Department of Emergency Management.
5. **Flood Strategy:** Encourage businesses and citizens in historic flood areas to raise valuables out of harms way. The Department of Emergency Management would be the lead agency.

### CAT II: SEVERE STORM MITIGATION STRATEGIES

None

### CAT III: LAND SHIFT MITIGATION STRATEGIES

1. **Land Shift General Strategy** Identify and implement community-wide erosion control measures.
  - ✓ Utilize Public Access Television to include programming on how to define the problem and how to mitigate and live with the effects of erosion.
  - ✓ The lead agencies would be the Health Districts, Community Development Departments in coordination with the Departments of Public Works.

#### CAT IV: LAW AND REGULATORY ISSUES

1. **Law and Regulatory Strategy:** Explore mitigation and civil issues for opportunities to require or promote hazard mitigation in the public and private sector. The lead agencies would be the Community Development Departments and Legal Departments
2. **Law and Regulatory Strategy:** Pursue recovery recommendations for Federal Emergency Management Agency (FEMA) to allow the Federal Highway Authority to administer both the on and off road system disaster repair recovery program. Recommended lead agency would be the Departments of Public Works.

#### CAT V through VIII

None

#### CAT IX: MULTI-HAZARD MITIGATION STRATEGIES

1. **Multi-Hazard Mitigation Strategies:** Expand real estate disclosure to include all hazards. Research into this issue to be conducted by the Department of Emergency Management
2. **Multi-Hazard mitigation Strategies:** Examine the feasibility of implementing building codes requiring underground utilities for new development where possible. The lead agencies would be the Community Development Departments.

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## SECTION FIVE: Future Actions & Goals

### I. Summary

The Kitsap County Hazard Mitigation Plan and Identified Hazard Mitigation Program Strategies establishes the framework within which the post disaster and day to day mitigation activities of the community may be carried out on a prioritized and regional basis.

The Plan is based upon the experience of the region through the input of the Hazard Mitigation and Recovery Team Steering Committee, The Department of Emergency Management and the input of the Community Wide Disaster Planning Team.

The plan recognizes the varied conditions that exist and can be found throughout Kitsap County. No single mitigation strategy will effectively meet the needs of all of the communities. However, by embracing the regional coordinated approach and objectives found in this plan, Kitsap County can take significant strides toward the efficient and effective use of its resources to resolve and mitigate the community's identified hazards.

One of the most important accomplishments of the Hazard Mitigation planning project was the process itself, where the participants shared information, resources, and methodologies -- community wide, for the benefit of reducing or eliminating risk to Critical Areas.

## II. Future Actions

**Kitsap County Emergency Management Council:** The Kitsap County Emergency Management Council will review and adopt portions of or all of the Hazard Mitigation Plan and Strategy Recommendations.

1. Each member of the Emergency Management Council will support, and bring back to their individual political subdivisions, the recommendations adopted by the Council for implementation and coordination on a regional basis.
2. The Council will review and adopt, as necessary, the work of the Hazard Mitigation Steering Committee on an annual basis.
3. The Council shall review the quarterly progress reports on the implementation of the adopted Hazard Mitigation Strategies brought forth by the Kitsap County Hazard Mitigation Steering Committee.

**Kitsap County Hazard Mitigation Steering Committee:** The Kitsap County Hazard Mitigation Steering Committee will meet on a quarterly basis to review the progress made on the identification of resources and implementation of the Hazard Mitigation strategies. It shall also seek input on future unidentified Hazard Mitigation programs and strategies.

1. Contact and work with each Hazard Mitigation Strategy's Lead Agency for a quarterly progress report on funding and implementation of the program recommended.
2. Submit a quarterly report to the Emergency Management Council through the Department of Emergency Management on the status of the strategies adopted and implemented.
3. Meet annually, with each political subdivision, to identify new Hazard Mitigation strategies to be pursued on a Regional Basis and review the progress and implementation of those programs already identified.

4. Meet annually with the Community Wide Planning Team to review the progress of the Hazard Mitigation program and bring forth community input on new strategies.
5. Coordinate with and support the Department of Emergency Management's efforts to promote and identify resources and grant money for implementation of the recommended Hazard Mitigation Strategies.

### III. Long Term Goals and Strategies

- Goal 1:** Eliminate or reduce the long-term risk to human life and property from identified hazards.
- Goal 2:** Aid both the private and public sectors in understanding the risks they may be exposed to and finding mitigation strategies to reduce those risks.
- Goal 3:** Avoid risk of exposure to identified hazards.
- Goal 4:** Minimize the impacts of those risks when they cannot be avoided.
- Goal 5:** Mitigate the impacts of damage as a result of identified hazards.
- Goal 6:** Accomplish mitigation strategies in such a way that negative environmental impacts are minimized.
- Goal 7:** Distill Local planning efforts and existing interagency group efforts into a comprehensive set of recommendations for Kitsap County's long-term regional mitigation strategy. Mitigation is most successful when it grows from Local and regional planning activities.
- Goal 8:** Provide a basis for funding priorities for the Hazard Mitigation strategies developed.
- Goal 9:** Establish a framework and data base that the County and its political subdivisions may use to apply for State and Federal Hazard Mitigation Grants.
- Goal 10:** Establish an ongoing process to accomplish Hazard Mitigation Strategy identification on an annual basis. To be effective, mitigation must be a continuing activity.
- Goal 11:** Establish a regional platform to enable the community to take advantage of shared goals and resources and the availability of outside resources for minimizing vulnerability analysis and critical area risks.

#### IV. GLOSSARY OF TERMS

<b>Critical Areas</b>	Environmentally sensitive areas which include wetlands fish and wildlife habitat conservation areas; geologically hazardous areas; areas with a critical recharging effect on aquifers used for potable water; and frequently flooded areas. Critical areas have measurable characteristics which, when combined, create a value for or potential risk to public health, safety and welfare.
<b>Erosion</b>	The process whereby the land surface is worn away by the action of water, wind, ice or other processes, and by geologic events such as gravitational creep or landslides.
<b>Federal Emergency Management Agency Hazard Mitigation Grant Program Floodplain</b>	Authorized Under Section 404 of the Stafford Act. Provides funding for Hazard Mitigation projects that are cost-effective and comply with existing post-disaster mitigation programs and activities. These projects cannot be funded through other programs to be eligible  Areas inundated with water that are typically adjacent to streams, rivers, lakes, and coastlines and are susceptible to strong winds.
<b>Floodplain (100 Year)</b>	Floodplains that have the potential to flood once every 100 years, or that have a one percent chance of flooding equal to or in excess of that in any given year.
<b>Flood Way</b>	An area of land immediately adjacent to a stream or river channel that, in times of flooding, becomes an enlarged stream or river channel and carries the floodwater with the highest velocity.
<b>Hazard Mitigation</b>	Any action taken to reduce or permanently eliminate the long-term risk to human life and property and the environment posed by a hazard.
<b>Hazard Mitigation Plan</b>	The plan resulting from a systematic evaluation of the nature and extent of vulnerabilities posed by a hazard present in society that includes the strategies needed to minimize future vulnerability to hazards.
<b>Landslide Hazard Areas</b>	Areas potentially subject to landslides, based on a combination of geologic, topographic, and hydrologic factors. This includes areas with any combination of bedrock, soil, slope, structure, hydrology.
<b>LIDAR</b>	Light Detection and Ranging Airborne Laser Mapping. LIDAR

compliments other remote sensing such as orthophotography and traditional topographic mapping. LIDAR is able to sense through vegetation (remove the trees) and produce a map of the actual topography.

**Liquefaction**

Liquefaction occurs in areas that have certain soils which lack cohesion and where the water table is close to the surface. Such soils can lose shear strength and flow like a liquid even during earthquakes originating beyond Kitsap County.

**Seismic Hazard Areas**

Areas subject to severe risk of damage because of earthquake-induced ground shaking, slope failure, settlement, soil liquefaction, or surface faulting. Settlement can occur in areas with loose, unconsolidated soil, which can either slide or suddenly drop when shaken.

**Wildfire Urban Interface**

Wildland vegetation and forest areas adjacent to or intermingled with residential developments.