

# CHAPTER 1

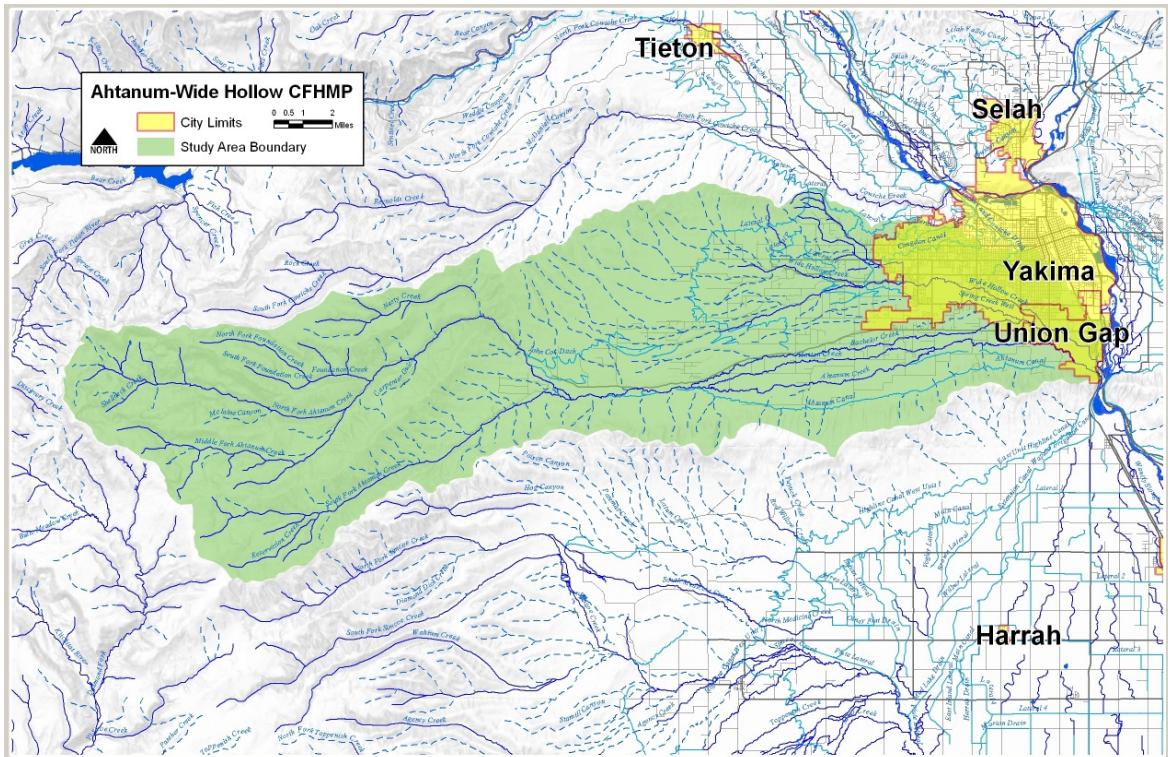
## INTRODUCTION

The rivers and streams within the Yakima River watersheds are valuable resources for Yakima County residents. The Ahtanum and Wide Hollow basins have been centers of irrigation and orchards since the turn of the 20<sup>th</sup> century, contributing to the local economy and receiving diverted flows from the Naches River. Ahtanum Creek also forms the northern boundary of the Yakama Nation Reservation. Both basins are designated by the County Engineer as “Flood Prone” as they have been subject to frequent and extensive flooding.

The two basins experienced accelerating urban and suburban growth for the last 20 years for the Cities of Yakima and Union Gap. Lower value agricultural land previously subject to flood is now being converted to high value residential and commercial development. The two basins have over 80 public bridges accommodating the urban road system and numerous agricultural diversions creating entry paths for flood waters into unexpected areas.

The Yakima County-Wide Flood Control Zone District (FCZD) is addressing this flood risk need by preparing this Comprehensive Flood Hazard Management Plan (CFHMP) for the Ahtanum and Wide Hollow basins. The Plan was developed by the FCZD and its consulting firm, Golder Associates, with cooperation and input from the jurisdictions, the public and all affected public agencies. It covers the entirety of the two basins (see Figure 1-1).

**Figure 1-1 Area Map and CFHMP Area Boundary**



CFHMPs are designed to help a community prevent future damages from flooding through a short term and long term approach. Flood hazard reduction planning, to be successful, must be comprehensive and take into account the entire river system. While flooding in itself is a natural phenomenon that cannot be entirely prevented, there are many approaches to protect lives and property. In addition, any activity in a river or its watershed can change the nature of the river's flooding. Human intervention can exacerbate or reduce the extent of flooding and its effects on human health, property, and the environment. These effects should be well understood before flood control actions are taken as they can worsen the situation.

This CFHMP seeks a balanced short and long-term approach to flood damage protection, resource protection, environmental enhancement, and land development, and involved a broad spectrum of local people and interests in the development of a plan. The process is intended to allow the community to carefully consider and prioritize alternatives for flood hazard management. The extensive local contribution to the flood knowledge and potential solutions by citizens, the two cities, Yakama Nation and all affected public agencies, is contained throughout the plan and discussed in detail in Chapters 2 and 9.

The plan contains 12 chapters and appendices. The chapters are divided into four sections; chapters 1 to 2 delineate plan process and community involvement, chapters 3 through 6 provide the physical and regulatory setting, chapters 7 and 8 concentrate on flooding characteristics and chapters 9 through 12 provide the plan alternatives, recommendations, funding and strategy.

## BACKGROUND

Yakima County is in Central Washington, spanning the width of the middle third of the Yakima River basin, with its upland eastern border formed by the Cascade Mountain Ridge. The county is the state's second largest county in land area, encompassing approximately 4,400 square miles and is bordered by Kittitas and Benton Counties along the Yakima River, by Klickitat, Skamania, and Pierce Counties to the east and by Lewis County to the west.

The Ahtanum and Wide Hollow watersheds (Figure 1-1) extend east from the Cascade Mountains to include the cities of Yakima and Union Gap, ending where the creeks flow into the Yakima River. The northern boundary for the two adjoining basins is formed by Cowiche Mountain, and the southern boundary by Ahtanum Ridge. The creeks, plus their numerous tributaries, flow through this rapidly developing area.

Flooding in the basins normally occurs in winter or spring. Spring floods occur when warm weather and rainstorms accelerate snow melt and runoff. Winter floods, which are often of larger magnitude and less predictable, occur when a combination of rainfall and warm winds on saturated or frozen ground produce large volumes of runoff from snowmelt and rain.

The largest recent flood occurred on February 9, 1996, with damage amounting to several million dollars in the Ahtanum and Wide Hollow drainages and over \$18 million in Yakima

County as a whole (Lacey, E., 1 March 1996, personal communication). Numerous other historical flood events resulted in significant damage, and are documented in this report. A review of historical flood events, identifying recurring flood issues, is detailed in Chapters 5 and 7.

## **AUTHORITY AND SCOPE FOR THE AHTANUM-WIDE HOLLOW CFHMP**

At the request of county citizens, Yakima County formed a County-wide Flood Control Zone District (FCZD) in 1998 to address flooding issues, including the development of CFHMPs for frequently flood damaged areas. The Ahtanum-Wide Hollow Comprehensive Flood Hazard Management Plan (CFHMP) is the third to be developed in Yakima County by the FCZD, following the Upper Yakima River and the Naches River CFHMPs. Completion of the CFHMP makes the local jurisdictions eligible for state funds for emergency and non-emergency activities that reduce property loss and threats to human life and health from flooding.

The County also signed a Memorandum of Understanding with the Yakama Nation in March 2001 for flood control issues (Appendix K). This MOU outlines the cooperative relationship between Yakama Nation and Yakima County regarding flood planning on Ahtanum Creek, which forms the northern boundary of the Yakama Nation Reservation. The Yakama Nation was involved in development of the committees and selection of the consultant.

Funding for the Ahtanum-Wide Hollow CFHMP was provided under an agreement between Ecology and Yakima County, with Ecology contributing 75 percent of the initial plan costs through the state's Flood Control Account Assistance Program (FCAAP) and the Yakima County-wide Flood Control Zone District contributed the remainder of the funds. Golder Associates was contracted as the consultant to assist in the development of the CFHMP in June, 2004.

## **PLAN DEVELOPMENT PROCESS**

Since 1986 state financial assistance for flood control works has been under the authority of the Revised Code of Washington (RCW) Chapter 86.26: State Participation in Flood Control Maintenance, and requires the development of a flood management plan. Since 1991 this funding requires adoption of a plan development process in accordance with the 1991 guidebook from Department of Ecology, entitled "Comprehensive Planning for Flood Hazard Management". A management plan, so developed, is referred to as a "Comprehensive Flood Hazard Management Plan (CFHMP)" and, upon approval by the Department of Ecology, qualifies the agency for funding under Washington Administrative Code (WAC) Chapter 173-145: Administration of the Flood Control Assistance Account Program (FCAAP).

The process for development of the CFHMP is shown on Figure 1-2

## Comprehensive Flood Hazard Management Plan (CFHMP) Process

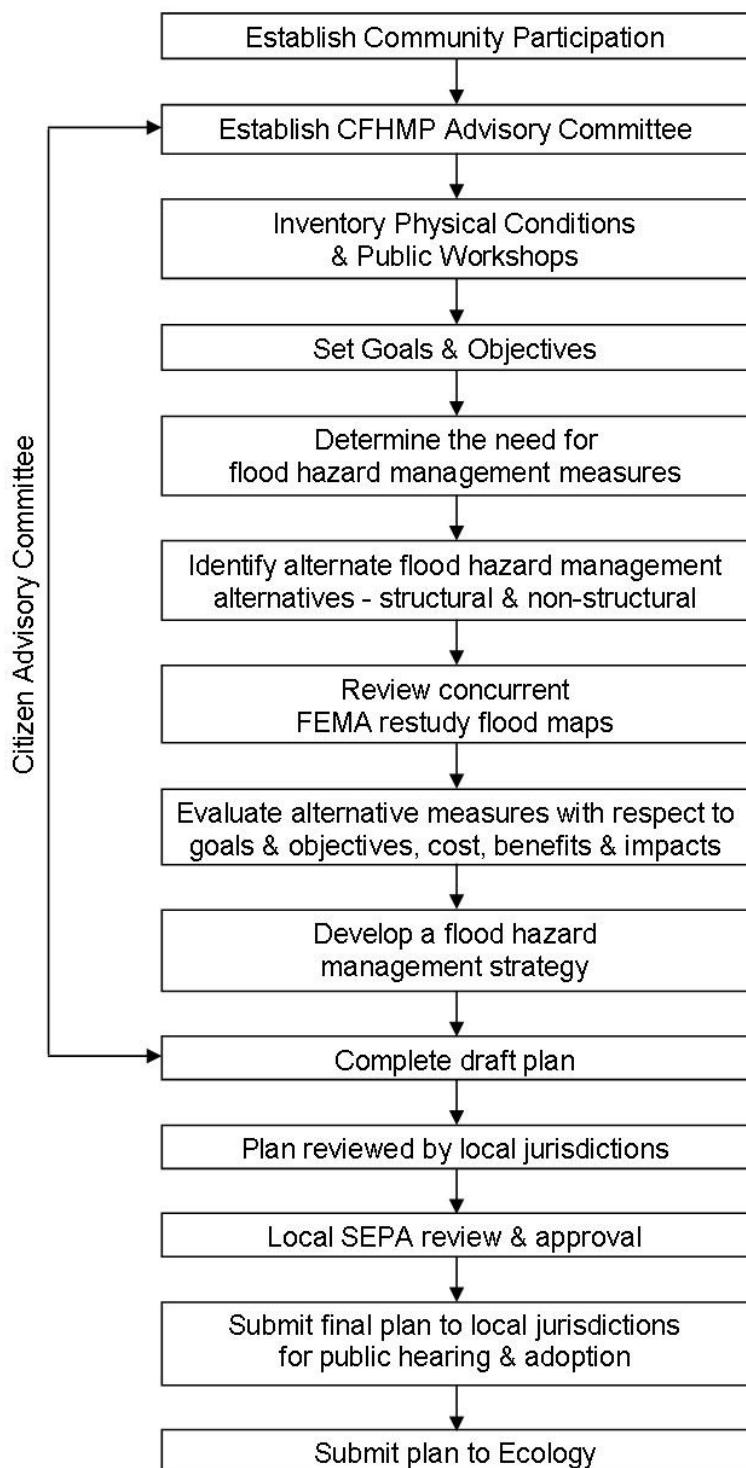


Figure 1-2. Comprehensive Flood Hazard Management Plan Ecology Process (Modified, 1991 Guidebook)

## GROWTH MANAGEMENT ACT

The Growth Management Act is a state statute, separate from CFHMPs, which requires certain cities and counties to develop community comprehensive plans with public input to direct and manage community development and growth. The CFHMPs are functional plans, which are related to state and federal hazard mitigation plans that influence the consideration of natural hazards within GMA Comprehensive Plans and urban growth. The following Table 1-1 taken from “Optional Comprehensive Plan Element for Natural Hazard Reduction”, Washington State CTED, June 1999, provides guiding GMA Hazard Reduction Goals that can be incorporated into the GMA Comprehensive Plan elements.

<b>TABLE 1-1 GMA HAZARD REDUCTION GOALS</b>	
<b>Land Use Element</b>	
<b>GMA Criteria</b>	<b>Hazard Reduction Goals</b>
<ul style="list-style-type: none"> <li>• Land use designations           <ul style="list-style-type: none"> <li>Residential</li> <li>Commercial</li> <li>Industrial</li> </ul> </li> <li>• Storm drainage / water quality</li> </ul>	<ul style="list-style-type: none"> <li>• Minimize residential uses in “harm’s way”</li> <li>• Evaluate lands prone to repetitive flooding in relation to open space uses (wetland restoration, recreation, etc.)</li> <li>• Ensure that all development can be adequately provided with life safety services (water pressure sufficient for firefighting)</li> <li>• Provide for comprehensive watershed management and planning</li> <li>• Require new development to control generated runoff</li> <li>• Mitigate increase hazard risk created by development</li> <li>• Adopt a sediment management strategy</li> </ul>
<b>Housing Element</b>	
<b>GMA Criteria</b>	<b>Hazard Reduction Goals</b>
<ul style="list-style-type: none"> <li>• Market rate</li> <li>• Low cost (including manufactured and mobile homes)</li> <li>• RV parks</li> <li>• Identification of land for new housing</li> </ul>	<ul style="list-style-type: none"> <li>• Minimize residences located in designated areas</li> <li>• Identify areas appropriate to accommodate relocated units</li> <li>• Develop programs to acquire high risk homes</li> <li>• Develop programs to retrofit high risk homes</li> </ul>

<b>Capital Facilities Element</b>	
<b>GMA Criteria</b>	<b>Hazard Reduction Goals</b>
<ul style="list-style-type: none"> <li>• Existing facilities</li> <li>• Future needs</li> <li>• Locations for new facilities including parks and open space</li> </ul>	<ul style="list-style-type: none"> <li>• Acquire lands which have experienced repetitive flooding</li> <li>• Locate new facilities outside of areas prone to flooding, landslides and wildfire and maximize water storage attributes of the site plan</li> <li>• Assess impacts of capital facility locations on emergency response capabilities</li> </ul>
<b>Transportation Element</b>	
<b>GMA Criteria</b>	<b>Hazard Reduction Goals</b>
<ul style="list-style-type: none"> <li>• Arterials and transit routes</li> <li>• Forecasts of traffic for at least 10 years</li> </ul>	<ul style="list-style-type: none"> <li>• Maximize access to disrupted area</li> <li>• Provide for redundancy during disasters</li> <li>• Identify ways to reduce repetitive damage (flood and landslide)</li> </ul>
<b>Utilities Element</b>	
<b>GMA Criteria</b>	<b>Hazard Reduction Goals</b>
<ul style="list-style-type: none"> <li>• Existing and proposed locations</li> <li>• Capacities of existing and proposed utilities</li> </ul>	<ul style="list-style-type: none"> <li>• Reduce disruption and maximize reliability</li> <li>• Maximize firefighting capacity</li> </ul>
<b>Rural Element (county plans)</b>	
<b>GMA Criteria</b>	<b>Hazard Reduction Goals</b>
<ul style="list-style-type: none"> <li>• Rural land designation</li> <li>• Rural development densities</li> </ul>	<ul style="list-style-type: none"> <li>• Utilize tools such as agricultural setback easements in flood-prone area to increase flood storage and minimize contamination of streams by livestock</li> <li>• Adopt safe storage policies to minimize contamination by loose barrels, fertilizers and other products</li> </ul>
<b>Urban Growth Areas</b>	
<b>GMA Criteria</b>	<b>Hazard Reduction Goals</b>
<ul style="list-style-type: none"> <li>• Designation of county-wide UGA</li> <li>• Designation of city UGA</li> <li>• 20-year growth supply of land</li> </ul>	<ul style="list-style-type: none"> <li>• Review growth designations in terms of maximizing flood storage and avoiding potentially unstable slopes and flood risks</li> <li>• review growth designations in relation to implications for fire response and fuel load</li> </ul>

<b>Essential Public Facilities</b>	
<b>GMA Criteria</b>	<b>Hazard Reduction Goals</b>
• Designation process for siting	• Adopt siting criteria which avoid hazardous areas
<b>Designation of Resource Lands</b>	
<b>GMA Criteria</b>	<b>Hazard Reduction Goals</b>
• Agricultural lands • Forest lands • Mineral resource lands	• Adopt best management practices which do not contribute to hazards
<b>Designation of Critical Areas</b>	
<b>GMA Criteria</b>	<b>Hazard Reduction Goals</b>
• Wetlands • Aquifer recharge areas • Fish and wildlife habitat • Frequently flooded areas • Geologically hazardous areas	• Maximize water storage capacities of wetlands • Identify sites which could accommodate water detention • Preserve and supplement wildlife habitat in such a way as to stabilize potentially hazardous sites; • Adopt vegetation management programs which will stabilize unstable land and enhance habitats • Adopt vegetation management programs which will enhance habitat and minimize debris generation • Adopt vegetation management programs which will preserve essential habitat and minimize exposure as “fuel” for potential fires

The CFHMP identifies the community vulnerabilities and hazard issues to develop hazard-related goals (refining the above guiding goals) specific to the plan area and recommendations so that they can be incorporated into the Comprehensive Plans.

With the resulting clearer understanding of the level of hazard avoidance necessary to the local area, cities and counties should define actions or strategies to achieve the goals. These actions and strategies are applied in the implementation of vulnerable area mapping, regulatory codes and standards, and capital investment means. Strategies which can satisfy multiple objectives are important.

Coordination between jurisdictions is a critical tool for implementing watershed-wide planning. It is also an important means to ensure that transportation evacuation route redundancy is achieved, and that incursions into the floodplain can be minimized, while appropriate resource utilization practices are applied in the upper watersheds.

## FCAAP FUNDING REQUIREMENTS FOR CFHMPS

State funds from the FCAAP program can be used for emergency and non-emergency activities that reduce property loss and threats to human health caused by flooding. The existence and local jurisdiction adoption of a CFHMP also allows communities to obtain state and federal funding to replace damaged infrastructure identified in the plan as problematic in a manner consistent with the plan recommendations, as opposed to like for like replacement.

To obtain funds for flood control maintenance and projects through the state FCAAP, jurisdictions must prepare a CFHMP that, as discussed in RCW 86.26.105, determines:

- The need for flood control work
- Considers alternatives to in-stream flood control work
- Identify and consider potential impacts of in-stream flood control work on the state's in-stream resources.
- Identify the river's meander belt or floodway

State law requires that a CFHMP describe the area where any proposed project is located and the types and locations of existing flood problems. The area may include the entire watershed or, at a minimum, the 100-year floodplain within a reach of the watershed. The reach must be of sufficient length that a comprehensive evaluation can be made of its flood problems.

The CFHMP must also identify and rank appropriate structural and nonstructural measures to reduce flood damage and provide the technical basis for these measures.

In addition the local emergency management organization must be administering an acceptable comprehensive emergency operations plan in accordance with the Washington Department of Commerce.

A complete description of the information that a CFHMP must include is contained in WAC 173-145-040.

RCW 86.26.105 allows local authorities up to three years to complete and adopt a CFHMP, in order to be eligible for FCAAP grant funding for projects. A second two-year grant cycle for Phase 2 is also possible, if needed to complete the plan. Ecology must approve the final CFHMP, and the municipalities must subsequently adopt the plan to accrue the above benefits.

Applications for project funding under FCAAP require the county engineer to certify a CFHMP has been completed and adopted or is in preparation. Ecology considers the following CFHMP aspects in FCAAP project funding:

- Consistency with the plan or plan recommendations,
- Priority of project as identified in the plan,
- Implementation of plan or plan recommendations,
- Potential impacts of instream uses and resources.

FCAAP project funding criteria include:

- Intensity of local flood control problems,
- Relationship of public benefits to total project cost,
- The priority established by the County.

## INVOLVING THE PUBLIC AND AFFECTED AGENCIES

Public and inter-agency involvement is critical to the success of a CFHMP for the following reasons (Ecology 1991):

- Proposed measures will affect local property owners, and their support will be needed to take action.
- WAC 173-145-070 calls for review of all FCAAP projects by state agencies including the Washington Department of Fish and Wildlife (WDFW) and the Washington Department of Natural Resources (DNR), as well as by affected Native American tribes and other public entities; all of these parties should be involved in formulating the plan.
- Since watersheds typically cross jurisdictional lines, representatives from neighboring local governments should be involved in the process.
- As the plan must be adopted by the local governments, it is important to build support among the local constituencies.
- The planning process offers an opportunity to educate the public on the issues, opportunities, and public responsibilities of flood hazard management.

### Required Consultation with Other Agencies

A variety of state and federal agencies are involved in key river issues such as fishery resources, wildlife habitat, and public use. The presence of fishery resources, primarily salmon and steelhead, is a primary consideration in performing any flood hazard management activities in and around the waters of the State of Washington. The potential loss of fish habitat resulting from construction in and next to rivers has been a major concern of fisheries agencies, sports fishermen, and Native American groups.

To ensure that fishery resources are maintained, the WDFW has review authority for most phases of FCAAP. Ecology is required to consult with WDFW before approving any CFHMP. Applicants for FCAAP project funds must review their proposals with WDFW, DNR, and affected Native American tribes.

Construction work to be performed in or adjacent to navigable waters of the United States, including wetlands, must be approved by the COE. The COE permit process ensures that all federal, state, and local regulatory agencies with jurisdiction over the project are properly notified and have approved the project. The COE will not approve a project that has been rejected by another permitting agency.

More information on public and agency involvement is contained in Chapter 2.

## COMMITTEES

Two committees, a Steering and an Advisory Committee, were developed as part of the CFHMP process outlined in Figure 1-2. The Advisory Committee developed goals and objectives, then generated, evaluated and prioritized alternatives for inclusion in the plan recommendations. The Steering Committee worked to form the Advisory Committee, steering the early stages of the process including the development of plan goals and objectives and assisted in the development of the flood hazard strategy.

The Steering Committee consisted of staff actively involved in representing the jurisdictions participating in the plan. This included staff from the Yakama Nation, the City of Union Gap, the City of Yakima, and Yakima County.

The Advisory Committee included members of the general public, the development community, the business community, irrigation districts, the Department of Ecology, the Department of Fish and Wildlife, the Yakama Nation, transportation agencies, and citizen environmental and historic preservation groups.

The two committees were combined during the alternatives phase. The Steering and Advisory committees are described in more detail in Chapter 2. An initial output from the Committees was the definition of the plan goals and objectives.

## DEFINING CFHMP GOALS AND OBJECTIVES

Defining goals and objectives provides a framework for carrying out the CFHMP. Goals reflect the broadest expression of a community's desires in preparing the plan; objectives target specific results that fulfill the intent of the goals.

The following mission statement describes the overall goal of the CFHMP:

*The CFHMP is a systematic process to identify and prioritize areas and property susceptible to flood damages, select alternatives to solve identified flood problems, and implement solutions.*

Goals and Objectives for this plan developed are provided in Table 1-1, and were generated by the two committees following the inventory of physical conditions.

Following the basin inventory, the primary causes identified were limited channel capacity that generated overland flow, and their contributing causes that would have to be addressed in flood issue resolution. For example, increase bridge capacity at overflow locations, or increasing flood plain function were considered useful.

From the FEMA hydraulic analyses it was realized during the plan period, that the overflows could not be limited to bridge locations. The initial perspective during development of the goals and objectives to concentrate on bridges was modified to understand that a stronger non-structural approach would be required, i.e., land use zoning vegetation management and utility location would be required.

<b>Table 1-2. GOALS AND OBJECTIVES FOR AHTANUM-WIDE HOLLOW CFHMP</b>	
<b>Goals (to be achieved through objectives)</b>	<b>Objectives</b>
1. Identify flood areas and flood processes	<ul style="list-style-type: none"> <li>Identify the location of critical conveyance channel locations</li> <li>Identify stream reaches which have lost flood conveyance capacity due to changes in streamside vegetation or by human activities</li> <li>Assess existing roads, bridges and culverts for barriers to flow-through and potential abatement of flood damage</li> <li>Identify past erosion and stream migration processes and monitor after storm events</li> <li>Understand and protect the natural function of the system to reduce flood hazard</li> <li>Determine risks and potential mitigations for hollows</li> </ul>
2. Reduce flood damages to citizens, property and infrastructure while maintaining natural functions of stream and floodplain systems	<ul style="list-style-type: none"> <li>Identify structural and non-structural actions for reducing flood hazards that recognize the corridor as a resource and are consistent with long-term river corridor functioning</li> <li>Develop flood hazard management alternatives and strategies to reduce long-term damages</li> <li>Develop short-term flood hazard reduction alternatives consistent with long-term strategies</li> <li>Prefer mitigation recommendations that provide benefit for multiple problems and/or locations or enhance the value of the stream corridor as an asset to the community</li> <li>Improve predictability of channel response to flood events</li> <li>Evaluate impacts of present management of flood control and irrigation diversion structures during flood events, such as the flood gate on Spring Creek in Union Gap</li> <li>Create inundation maps for flood evacuation preparedness</li> <li>Conduct training at first responder and jurisdiction level using Flood Response Plan</li> <li>Facilitate coordination with Emergency Management and Public Works Agencies before, during and after floods (Flood Response Plan)</li> <li>Complete flood forecasting and warning projects in the basin and integrate with Emergency Response</li> </ul>
3. Work within the physical and biological processes in the floodplain	<ul style="list-style-type: none"> <li>Protect existing, or enhance where possible, fish and wildlife habitat</li> <li>Protect the natural function of the system to reduce flood hazard</li> <li>Evaluate the use of setback dikes to allow for a more naturally functioning floodplain</li> <li>Restore creeks to more natural channel (i.e. instream projects to address 90 degree angle corners and channels "perched" high on landscape)</li> <li>Consider mitigation at watershed level or at a minimum reach level across jurisdictional boundaries</li> </ul>

<b>Table 1-2. GOALS AND OBJECTIVES FOR AHTANUM-WIDE HOLLOW CFHMP</b>	
<b>Goals (to be achieved through objectives)</b>	<b>Objectives</b>
4. Achieve land use practices that respect floodplain functions	<ul style="list-style-type: none"> <li>• Use best available flood hazard data for regulation of land development and permitting</li> <li>• Show critical areas and floodplain areas on plat maps corresponding to short/long plat developments (see City of Yakima regulations)</li> <li>• Conduct restudies of FEMA floodplain maps</li> <li>• Ensure that land use plans and regulations protect floodplain functions</li> <li>• Evaluate and ensure County/City enforcement of land use regulations</li> <li>• Coordinate with Yakama Nation on enforcement of land use regulations</li> <li>• Evaluate other development requirements that may impact flood hazard management, such as septic systems and water well siting</li> <li>• Ensure consistency of floodplain regulations within jurisdictions and investigate increasing the consistency between jurisdictions.</li> <li>• Identify and implement incentive program for bioengineered structural solutions to flood hazard mitigation</li> <li>• Work with existing permitting agencies (such as, Fish and Wildlife, USACE, Yakima County Shoreline, Ecology, and the Yakama Nation Water Code Administration) on identifying ways to streamline project permitting process</li> <li>• Encourage coordination and cooperation among all regulatory agencies</li> <li>• Work in creative ways to streamline the regulatory process</li> </ul>
5. Emphasize the value of stream corridors as an asset to the community	<ul style="list-style-type: none"> <li>• Encourage innovative development techniques where natural systems and floodplain function exists</li> <li>• Educate the public and development community on the value of allowing floodplain and stream function to properties- investigate Smart Growth concepts</li> <li>• Encourage open space planning and acquisition, through incentives such as leases, easements, acquisition, etc.</li> </ul>
6. Quantify hazards in our floodplain	<ul style="list-style-type: none"> <li>• Identify erosion and stream migration hazards and evaluate mitigation options as necessary</li> <li>• Create and submit FEMA floodplain map for Shaw Creek</li> <li>• Sustain the mapping program</li> <li>• Compile varied available mapping data into a comprehensive database/library resource that can be used to address future assessments</li> <li>• Identify changing flood condition areas to support new floodplain mapping work</li> <li>• Identify draws that are prone to flash flooding</li> <li>• Avoid contaminating land uses in the floodplain</li> <li>• When designing a flood overflow area, make sure it is not a contaminated area</li> <li>• Minimize impacts of septic systems and other critical facilities on water quality</li> </ul>

<b>Table 1-2. GOALS AND OBJECTIVES FOR AHTANUM-WIDE HOLLOW CFHMP</b>	
<b>Goals (to be achieved through objectives)</b>	<b>Objectives</b>
7. Ensure a sustainable flood plan through public and agency awareness, acceptance, involvement, and education	<ul style="list-style-type: none"> <li>• Communicate and coordinate with local governments and community groups on flood issues/hazards</li> <li>• Provide documented examples of positive steps being taken</li> <li>• Highlight projects that will educate the public on sustainable flood hazard mitigation</li> <li>• Ensure an ongoing educational program that keeps up with current understanding, science, and changes in the watershed</li> <li>• Participate in the CRS (Community Rating System) program</li> <li>• Flood safety preparedness education</li> <li>• Determine where large numbers of animals may be kept during a flood event and distribute information to the public</li> <li>• Develop a stream corridor improvement program consistent with this plan</li> <li>• Increase public awareness and understanding of flooding issues and floodplain functions</li> </ul>
8. Ensure the implementation of the flood plan in a timely manner for both the short and long term	<ul style="list-style-type: none"> <li>• Seek grant funding</li> <li>• Investigate possible cost savings through coordination with other multiple objective projects</li> <li>• Determine possible areas for flood control sub-zones</li> <li>• Address the causes of problems as opposed to the symptoms</li> <li>• Identify and utilize complementary Plans</li> <li>• Consider flood related recommendations from large scale plans such as the Ahtanum Watershed Assessment</li> <li>• Integrate flood hazard reduction into ongoing planning, management programs, and capital facilities plans</li> <li>• Understanding how the landscape is managed</li> <li>• Create and implement educational efforts to inform other organizations about flood risks, plans, and possible mitigation approaches</li> </ul>

The recommendations and implementation strategy contained in Chapter 11 of this CFHMP were generated and are considered to achieve the above objectives. The ability to meet all the objectives is dependent on cooperation amongst multiple jurisdiction and agencies and the ability to fund the recommendations.

A discussion of funding and jurisdiction implementation strategies is contained in Chapter 12.

## RELATED PROGRAMS AND ACTIONS

There are programs conducted in Yakima County and the jurisdictions which directly affected CFHMP development, including the County's Comprehensive Plan, the County-wide Flood Control Zone District activities, the FEMA flood map restudy and the Regional Storm Water Program.

### **Plan 2015—Yakima County's Comprehensive Plan**

*Plan 2015* is mandated under the state's Growth Management Act (GMA), which requires planning by all counties with a population of 50,000 or more, or a population increase of 10 percent or more over the last 10 years. Both apply to Yakima County. *Plan 2015* was approved by the Board of Yakima County Commissioners in 1997, and has gone through several yearly amendments since that time. *Plan 2015* expresses the county's growth, development, and environmental objectives and guides growth in the entire county, particularly in unincorporated areas outside of the Yakima and Union Gap Urban Growth Areas (UGA).

The Yakima County Comprehensive Plan provides protection for water resources and for flooded areas, including needed surface water runoff controls. Therefore, CFHMP and GMA planning have common goals. The following elements of the GMA process will facilitate CFHMP development (Ecology 1991):

- Population forecasts and development projections to predict increased stormwater runoff and flooding problems.
- Floodplain information, such as the identification of critical areas.
- Definition of urban growth boundaries which, if properly located, can minimize the need for flood control structures.
- Integration of flood hazard management measures into a capital improvement program to adequately service new growth.

### **Yakima Urban Area Comprehensive Plan 2025**

When a county is required to plan under the GMA, the cities and towns within that county are likewise required to plan. The *Yakima Urban Area Comprehensive Plan 2025* was adopted by the Yakima City Council and Board of Yakima County

Commissioners in December 2006 to guide development within the Yakima Urban Growth Area, which includes the area of the City of Yakima and its unincorporated UGA. The plan identifies hazards that have the greatest potential to threaten public health and safety and includes floodplains as one of these hazards. The plan states that FEMA and the City of Yakima provide guidelines to ensure that development in or near these areas is compatible with surrounding properties and that risk to upstream or downstream neighbors or the natural functions of floodplains is not created.

## Union Gap's Comprehensive Plan

Similarly, the Union Gap City Council has adopted the *City of Union Gap Comprehensive Plan* as the guidance for growth and development within Union Gap. The plan includes goals and policies to enhance the quantity and quality of surface water, to prevent increased flooding from stormwater runoff, to improve water quality through improved stormwater management, and to prevent the loss of life or property and minimize public and private costs associated with repairing or preventing flood damage from development in frequently flooded areas.

## Shoreline Master Program for Ahtanum-Wide Hollow Jurisdictions

Yakima County and the Cities of Yakima and Union Gap implement the requirements of Washington's Shoreline Management Act of 1971 (SMA) at the local level. Yakima County completed an update of the regional Shoreline Master Program (SMP) in December 2007, with State approval of the program on February 25, 2010. Union Gap adopted the regional Yakima County SMP on August 25, 2008. Yakima is expected to have their SMP updated in 2010. Shoreline jurisdiction is typically tied to the FEMA 100-year flood plain or the floodway when they are designated along the state's largest rivers and streams as identified by the SMA. Ahtanum Creek is designated under the SMA, while Wide Hollow Creek is not. More details are given in Chapter 8.

## Yakima County Revised Flood Insurance Study

The Flood Insurance Study (FIS) defines the 100-year floodplain and floodway, as mandated by the National Flood Insurance Program (NFIP). The NFIP implements a comprehensive set of regulations for mitigating flood damage. Yakima County and the cities of Union Gap and Yakima participate in the NFIP by adopting zoning restrictions and enforcing building standards to limit flood damage in the 100-year floodplain.

The Flood Insurance Rate Maps (FIRMs) showing 100 and 500-year flood extent and the FIS for these basins were issued in 1985 based on data from the 1970's. In 2009 these maps were converted to a digital format (DFIRMs) and adopted by the jurisdictions. The DFIRMs are currently undergoing a restudy and remap using more recent data and anticipated for final adoption in 2011. The current FEMA preliminary maps produced in the current FIS were used as reference in this CFHMP. Committee members and the public at large commented on the work maps, which were used by the consultant in preliminary maps generated in late 2010. The committee also had the opportunity to reprioritize or alter its recommendation based on the FEMA work maps. Additional information about FIS's for jurisdictions included in this CFHMP are included in Chapter 3.

## Yakima County-Wide Flood Control Zone District Activities

As mentioned earlier, the FCZD was formed by Yakima County Commissioners in 1998 in response to several years of damaging floods that severely affected county and city infrastructure, private property and the county budget. Additional information about formation of the district is provided in the Upper Yakima River CFHMP (revised 2007). The district's mission is:

*To reduce the risk of flood damage to public and private property through responsible and efficient surface water management. These activities are provided through regulatory activities, master planning, regional coordination, technical assistance, and implementation and maintenance of structural and non-structural projects.*

The first few years of the FCZD were used to build-up funds for flood emergencies, grant matches, and demonstration projects. Staff was hired specifically for the FCZD beginning in 2001. Since that time the FCZD has been involved in numerous activities detailed in periodic Project Updates. These activities include: production of CFHMPs; FEMA map restudies; application and implementation of mitigation grants; removal of abandoned levees and irrigation structures; work with County Roads on bridge conveyance; participation in regional habitat and water resource plans; demonstration projects on vegetation management; public outreach efforts; and the County Flood Response and Hazard Mitigation (FEMA) Plans.

Most of the activities listed above occur in, or affect the Ahtanum and Wide Hollow drainages. Some of the FCZD's benefit to the communities involves improving communication and coordination of the various governments, agencies and organizations involved with surface water management in Yakima County. These interactions and relationships will help ensure the CFHMPs within Yakima County are effectively implemented.

### **Regional Stormwater Programs**

Due to the unique local soil and arid climate conditions of Yakima the Cities and County have cooperated to create a Regional Stormwater Policy Group, which led to the adoption of a Regional National Pollution and Discharge Elimination System, Phase II permit from Ecology that has prescribed requirements for eliminating and reducing stormwater pollution contribution from the urban areas. The Yakima County Surface Water Division acts as the administrative lead. The three local jurisdictions that contain the Ahtanum and Wide Hollow Creeks are within the regional program.

The standard practice within the “flood-prone” Ahtanum and Wide Hollow basins is to retain and infiltrate the full 25-year flood volume onsite. This has been demonstrated to eliminate 100-year flood peak flow increases from new urban development.