CHAPTER VI: PROGRAM RECOMMENDATIONS

This chapter presents program recommendations for *river corridor* management in the Methow basin. The recommendations address the current and potential problem areas and maintenance needs identified in Chapter III and the issues identified in Chapter V. Issues, problem areas, and needs are addressed in the context of this plan's goals and objectives and of the County's resources. A phasing plan and list of responsible agencies and funding sources have been included in this chapter, which is intended to provide a holistic management program for the Methow basin's *river corridors*. Once this plan has been adopted, Okanogan County will be eligible to apply for funds to implement the plan's recommendations from the state's Flood Control Assistance Account Program. Applications for the biennium beginning in June, 1997 will be due early in 1997.

A. Program Recommendations

Flood warning and emergency response

Discussion

A flood warning and emergency response system can reduce deaths, injuries, and property damage by giving *floodplain* residents time to evacuate and, where practical, to protect their possessions when flooding is imminent; and by ensuring that emergency service personnel are on hand where and when needed. A well-designed system can provide for notification of people at greatest risk and make them aware of evacuation routes and safety measures in advance.

Okanogan County's emergency management program is housed in the Sheriff's Office. Emergency plans and operational procedures are addressed in the County's Emergency Management Operations Plan. The plan is reviewed annually during the month of February. It provides guidance for coping with natural, technological, and war-caused disasters, but does not contain specific flood warning or evacuation plans.

The local Emergency Broadcast Station is KOMW, broadcasting from Omak. Reception is good south of Twisp, but poor to non-existent in the upper part of the Methow Valley and in the Twisp and Chewuch river valleys. The Sheriff's Office relies on deputies to relay information in areas beyond the station's range. KOMW is in the process of installing a translator, which may improve reception in some areas.

Emergency management personnel monitor river levels during the period when flooding is most likely each year, receiving gage readings daily from the National Weather Service, making occasional visual checks of river level, and following up on citizen reports of flooding or high water.

Emergency management staff have not yet developed emergency preparedness materials and programs for distribution to the public. They do have some information on post-flood clean up, including a list of local contractors qualified to perform the necessary work.

Recommendations

• Amend the Emergency Management Operations Plan to make it clear that KOMW's range is limited, and clarify the responsibilities of Sheriff's deputies for informing those members of the public who are out of range of the station. Using the County's GIS (in conjunction with local knowledge and ground truthing), develop and maintain call lists or an automatic dialing system to ensure that all citizens whose lives or property may be at risk are informed in case of an emergency.

• During periods when flooding is likely, use the local media (Methow Valley News and radio station KVLR) to let people know that KOMW is the official emergency station, and how they will be contacted if they live out of range. Radio station KOZI (Chelan) can also be received in the Methow Valley, and may provide another means of disseminating information.

• At Lost River Airport Tracts, present flood awareness information to landowners to give them an opportunity to prepare for flooding and inform them about emergency plans. The Homeowners' Association holds general membership meetings twice a year, which would provide a good forum for reaching landowners and answering their questions.

• Make contact with people in other high risk areas to be sure they are informed and know what to do in case of a flood.

• Emergency work (including recovery work) is to be consistent with the goals of this plan. Develop emergency guidelines to direct the Washington State Department of Transportation, the County Public Works Department, and contractors in the performance of urgent repairs. Hold a workshop to promulgate the guidelines. Brief staff and contractors in years when flooding is likely.

• Planning and Emergency Management staff will meet (and conduct site visits together) to incorporate the goals and policies of this plan in emergency operations. Meetings should ensure that Emergency Management staff members know Planning's concerns and have the opportunity to incorporate them in future planning. Planning and Development staff should be invited to attend the annual meetings at which the Emergency Management Operations Plan is revised, and Planning should ensure that Emergency Management personnel have a list of *critical facilities* as they are defined in the County's Flood Damage Prevention Ordinance. If necessary, coordination meetings should be held with staff from other agencies involved in flood emergency preparedness to ensure understanding of responsibilities and roles.

• Develop and institute a community-wide disaster awareness program, designed to reach all sectors of the population.

• Ensure that any recovery information that is disseminated is consistent with the goals and policies of this plan.

• Develop a manual on Emergency Flood Response and Reconstruction/Restoration Activities Within the Shoreline Environment. Topics to be addressed should include, but are not limited to, roads and bridges; debris removal; erosion control; bank stabilization; and demolition, repair, and reconstruction of structures. When complete, the manual should be incorporated in or appended to this plan.

Development regulations

Discussion

Development regulations are a standard tool for guiding land use, both within and outside *river corridors*. Special regulations often apply to river corridor lands because of the hazards and resources associated with them. (See Chapter IV for a discussion of pertinent regulations.) Regulation has become unpopular with the general public. A number of new regulations have been enacted in recent years, and the large number of requirements and permitting agencies has created confusion and a measure of dissatisfaction with the permitting process. The Citizens' Advisory Group is opposed to new regulations, and none are recommended here. This section does call for three amendments to the Okanogan County Flood Damage Prevention Ordinance. It also recommends as options several other regulatory changes.

Recommendations

• Amend the Flood Damage Prevention Ordinance to allow no more than a 50% cumulative increase in building footprint size[1] when existing structures in areas of special flood hazards are *substantially improved*. One function of floodplains is to provide space in which water can spread out when rivers overflow their banks. When structures are built in floodplains, the space available for water is reduced, and flood levels may rise downstream to compensate for the loss. Limiting the footprints of buildings in the floodplain is a way of keeping the floodplain available to floodwaters.

• Amend the Flood Damage Prevention Ordinance to require that, in all areas of special flood hazards, new construction and *substantial improvement* of any residential structure shall have the lowest floor, including basement, elevated one foot or more above *base flood elevation*.

• Amend the Flood Damage Prevention Ordinance to require that, in all areas of special flood hazards, new construction and *substantial improvement* of any commercial, industrial, or other nonresidential structure shall either have the lowest floor elevated one foot or more above the level of the *base flood elevation* or shall be floodproofed so that below one foot above the *base flood* level the structure is watertight. Currently, the Flood Damage Prevention Ordinance requires both residential and non-residential

[1]Percentage increase in size to be based on the size of the building footprint when the amended ordinance goes into effect.

structures to be constructed at or above *base flood elevation*. Elevating structures to one foot above base flood elevation (BFE) provides a higher level of protection than does the current practice for two reasons. First, BFEs are mathematical predictions. They are inherently imprecise, and are only intended to be accurate within six inches—that is, *base flood elevation* may actually be six inches higher or six inches lower than indicated in the *Flood Insurance Study*. Second, elevation above the base flood elevation provides a margin of safety against floods greater than the 100-year event, such as those that occurred in many parts of eastern Washington this year. In addition, insurance rates are lower for residential structures elevated to one foot above *base flood elevation* than for structures at BFE.

• Adopt one or more of the five options listed below for further limiting development in the floodplain. There has been a great deal of discussion about whether to further limit floodplain development. Limiting development in the floodplain is generally seen as supporting a range of goals and values, including protection of life and property, flood attenuation, soil conservation, and habitat, aesthetic, and recreation values. Although development regulations curtail individual freedom and property rights, they are also a means for preventing individuals from creating hazards to others and costs to the public at large. A number of citizens have commented that they are not in favor of continued taxpayer support for individuals who make poor choices. As discussed in Chapter III, floodplain development has created problems and risks. The options listed seek to balance the positive and negative aspects of regulation in addressing those problems and risks. Although some members of the Citizens' Advisory Group expressed reluctance to impose more stringent regulations than those that already apply, the existing and potential risks and hazards suggest that adopting one or more of the following options would be advisable.

¤ Amend the Zoning Code and/or the Flood Damage Prevention Ordinance to prohibit structures for human habitation in areas inundated by the 100-year flood throughout the Methow basin.

¤ Amend the Zoning Code and/or the Flood Damage Prevention Ordinance to prohibit structures for human habitation in high hazard portions of areas inundated by the 100-year flood throughout the Methow basin.

¤ Amend the Zoning Code and/or the Flood Damage Prevention Ordinance to prohibit structures for human habitation in high hazard portions of mapped floodplains throughout the Methow basin.

¤ Amend the Zoning Code and/or the Flood Damage Prevention Ordinance to prohibit structures for human habitation in mapped floodplains throughout the Methow basin.

¤ Amend the Zoning Code and/or the Flood Damage Prevention Ordinance to prohibit *all* structures in mapped floodplains throughout the Methow basin.

In deciding which option or options to adopt, the questions to be addressed include:

• Should construction of non-residential structures, as well as structures for human habitation, be limited? Limiting construction of structures for human habitation is a safety measure, designed to reduce risks to life and health. In addition, since most new development in the Methow valley is residential, it effectively limits the amount of floodplain construction. Limiting construction of non-residential structures as well as those for human habitation will further protect floodplain functions and values, but will not affect human safety to the same extent.

• Should development within high hazard areas be limited? FEMA's mapping methodology does not account for flood hazards related to erosion, high velocity, or debris in the water. In the Methow valley, there are areas at risk from those factors both within and outside the floodplain (see Chapter III). Current regulations do not include measures to increase protection of life or property in such high hazard areas.

• Should "up-and-out" development be prohibited? In the Methow Review District, construction of structures for human habitation is allowed on high spots within areas of special flood hazard. Such "up-and-out" development is vulnerable both to isolation (if the surrounding floodplain is inundated) and to inundation (if flood levels higher than the predicted *base flood elevation* occur). In high hazard areas, "up-and-out" structures may also be at risk due to erosion, high velocity flows, and debris in the water.

• Should (current and future) limitations on development that apply to the Methow Review District be extended throughout the Methow River basin? Current regulations rely on an arbitrary jurisdictional boundary (the Methow Review District boundary, which coincides with the boundary of School District 350). Watershed functions do not respect that boundary; making regulations consistent throughout the basin will make it easier to manage the watershed as a unit.

Mapping

Discussion

Accurate floodplain maps are important tools, both for floodplain planning and for disaster response and recovery. The Flood Damage Prevention Ordinance is Okanogan County's primary tool for regulating development in floodplains. The ordinance applies to all areas of special flood hazard identified in FEMA's current *Flood Insurance Study* for unincorporated Okanogan County. Thus, the Flood Insurance Rate Maps and Flood Hazard Boundary Maps published as part of the *Flood Insurance Study* form the basis for decisions about construction in the floodplain. Where the floodplain has not been mapped by FEMA, the County has no authority to regulate development based on flood hazards, even though the danger may be as great as that in mapped areas. There are unmapped floodplains adjacent to the Twisp and Chewuch Rivers and

Gold Creek, and vulnerable structures with the potential to affect other properties and the system at large continue to be built.

FEMA's floodplain maps identify only those areas subject to inundation, not alluvial fans, flash flood areas, other land where flood-related erosion is likely, or areas prone to ice jams. Erosion has caused substantial damage during past floods, with many structures lost when the land on which they stood was undermined. The only loss of life due to flooding in the Methow basin occurred when a river bank collapsed south of Twisp. While the County's Critical Areas Regulations make some provision for regulation of construction in stream erosion areas, many hazard areas are unregulated. Okanogan County has no maps that identify hazard areas other than the 100-year floodplains identified by FEMA.

Recommendations

• Develop *river corridor* maps.

• Have flood boundary maps developed for reaches of the Twisp and Chewuch Rivers in which no floodplain mapping has been done and for Gold Creek. Once the maps have been prepared, they should be adopted by FEMA and the County. Currently, the top priority is development of a flood boundary map for private land on the Chewuch River, because of the high rate of development in that area.

• Have *detailed studies* done of areas where flood elevations are not available. Currently, the top priorities are: 1) Twisp River; 2) lower Methow River, because of the high rates of development in those areas.

• Develop maps of houses and other structures in the floodplain (including "up-and-out" structures) for use during rescue and disaster recovery operations. Enter the data in the County's Geographic Information System and update periodically.

• Map all areas in the Methow basin that are potentially unstable as a result of rapid stream incision or stream bank erosion. Use those maps in determining Geologically Hazardous areas (Landslide Hazard areas) per the Critical Areas Regulations (GMA).

• Map streams and alluvial fans with potential for rapid inundation, high velocity flows, or debris flows. Explore options for reducing hazards associated with alluvial fans, erosion-hazard areas, and flash flood areas. Mapping guidelines and a discussion of options are included in Appendix G.

• Map potential ice jam areas, and explore options for reducing hazards related to ice-jam flooding. See Appendix G for a discussion of options.

• Enter hazard data in the County's Geographic Information System and have them available for planners' use in advising the public.

• Develop a *cumulative effects* model and a land change map that can be used to track cumulative effects of development and land alterations in floodplain areas and analyze the impacts of proposed development. Use the map and model to assess potential floodplain encroachments, per Okanogan County's Flood Damage Prevention Ordinance. Enter the data in the County's Geographic Information System and update periodically.

• Adopt any revised flood studies when they are published.

• When *base flood elevation* data for an area are not available from FEMA (that is, a *detailed study* has not been done), Okanogan County may use data from other sources to administer the County's Flood Damage Prevention Ordinance. Have such *base flood elevation* data adopted by FEMA.

Outreach programs

Discussion

One point that has become very clear during the process of developing this plan is that there is a strong need to increase public awareness with regard to *river corridors* in the Methow Valley. Both Citizens' Advisory Group and Technical Advisory Committee members believe that education must be a component of the County's efforts to manage its *river corridors*. Outreach programs include a variety of education, public involvement, and partnership development activities. A well-thought-out and carefully targeted program of public involvement and education can be an effective and relatively inexpensive way to increase public awareness of flood hazards and *river corridor* functions, and involve valley residents in the process of planning for the future of their river resources. In addition, education and involvement can prevent resource damage that would be difficult and expensive to mitigate. Both public involvement and development of partnerships build good relationships that can help reduce conflict. By taking a pro-active stance, the County can ensure that the needs of a variety of users are considered in the planning process *and* meet the goals of this plan more efficiently.

Education programs are intended to disseminate information that will help people make choices about ways of addressing hazards and resources. By increasing awareness, education gives people an opportunity to learn what they need to know to make good decisions—what factors are involved and how to analyze the issues and decide what is right for them. Education will serve both to increase public health, safety, and welfare and to generate support for policies intended to maintain and improve corridor conditions. In response to a question in our *river corridor* survey about what should be done to protect against flood damage, one respondent wrote "Land owners know the risk..." In fact, many residents may be unaware of Methow Valley rivers' potential for flooding and the dangers inherent therein. The County can reduce government involvement and costs by ensuring that land owners *do* know the risks inherent in their actions. Public education helps to promote awareness of the hazards and values associated with river and creek corridors in the Methow River basin. In many cases, education will be the only way to prevent violations of County codes

resulting from ignorance, as when riparian vegetation clearing precedes any permit application. In addition, an informed public will be better prepared to respond to emergencies, and act in a manner that benefits rather than harms the river and its basin. Brochures, newspaper articles, and seminars are examples of efforts that can enhance citizens' understanding of the forces at work in the basin's *river corridors* and provide the basis for land use and flood preparedness choices.

Public involvement activities are designed to open communications with citizens and involve them in making decisions about *river corridor* issues. Public involvement increases the likelihood that the County's plans will reflect the needs of all who have interests in the basin and helps to build understanding between people with different objectives. Public meetings, workshops, task forces, and advisory groups are examples of vehicles for public involvement.

Finally, partnership development involves working cooperatively with other agencies and citizen groups. Partnerships offer both tangible benefits and ones that are less easily assessed. Working cooperatively with other agencies and with citizen groups can enable the County to use its resources more efficiently and to realize the goals of this plan in ways that might not otherwise be possible. Because *river corridors* are affected by whatever happens within the watershed, planning across agency lines will be more effective than working within jurisdictional boundaries. In addition, partnerships offer an opportunity to simplify planning and permitting processes—a need expressed by both Citizens' Advisory Group and Technical Advisory Committee. Sharing information and communicating about needs, issues, and goals are ways of working in partnership with others.

Recommendations

Outreach was a recurring topic of discussion at Citizens' Advisory Group and Technical Advisory Committee meetings. Both groups talked about a number of ideas. The Technical Advisory Committee, in particular, emphasized using a broad range of programs to reach as many people as possible. Many of the recommendations below are based on ideas raised by the two advisory groups. Availability of staff and funds will play a strong role in determining which recommendations will be implemented, and in setting the timetable for implementation.

Education

Each educational program must be carefully targeted to reach people who will be influenced by it. Members of the general public are currently inundated with information; effort should not be wasted in adding to the overload, but spent wisely. Citizens' Advisory Group members, while agreeing on the importance of education, also questioned the level of responsibility the County should take in making people aware of hazards and limitations associated with their land. They did not favor making a large investment in informing all citizens. Among the groups to be targeted are people who now live in the floodplain, new buyers of floodplain land, owners and new buyers of *river corridor* land, permit applicants, real estate agents, lenders, builders and developers, surveyors, and students. Programs aimed at the general public can be appropriate as well.

One specific recommendation of the Citizens' Advisory Group was that educational materials avoid jargon and use simple language that can be understood by all. The educational materials and programs that result from adoption of this plan should be carefully designed to make it easy for members of the public to understand what is being said. Asking CAG members to participate in developing or reviewing materials to ensure they are easily understood is an option that should be explored.

Members of the Citizens' Advisory Group also asked that the Office of Planning and Development ensure that its staff understand the various permitting processes and timetables and be able to answer questions and explain the permitting process. Specific recommendations and comments were as follows: have someone available to answer questions; have someone locals can talk with with whom they have rapport; cooperative attitude on part of agency people is important; flexibility is important—have staff able to use judgment/work as problem solvers. Group members noted that it is difficult to work effectively with staff members who have not been on the job long—high turnover rates impede the flow of communication between County staff and the public. The education program should include guidance for County staff in educating those with whom they come in contact.

The recommendations in this section are listed in approximate order of priority. The phasing plan should be seen as flexible; if opportunities arise to implement lower-priority recommendations, they should be considered. In addition, County staff may find other opportunities for educating citizens about flood hazards and *river corridor* values and involving them in decisions about corridor management. Such opportunities should be explored to the extent that resources permit. Any program adopted should be consistent with the Outreach Policies stated in Chapter V.

• Develop a fact sheet on "Working Near Water" for distribution to people interested in doing work in the *river corridor*. The fact sheet can be used as a cover sheet for JARPA applications and distributed alone to people not applying for permits. The sheet should provide information on timing, regulations, and the permitting process, and may include a flow chart and/or checklist.

• Develop a booklet on flood hazards and preparedness for distribution to people who now live in the floodplain, new buyers of floodplain land, and floodplain permit

applicants. The publication might be produced in cooperation with other interested agencies and groups and/or as part of the Methow Institute Foundation's ongoing "Good Neighbors" series.

• Advertise in *Methow Valley Building and Construction*, the *Methow Valley News*'s annual builders' guide. A one-eighth page ad can alert people planning to buy land near a river or creek to find out whether the land is in the floodplain, and advise those planning to build in the *river corridor* to look at the "Working Near Water" fact sheet for a rundown on permit requirements.

• Add comments referencing available informational materials to site analyses prepared for parcels in the *river corridor*. On request, the Office of Planning and Development will prepare a site analysis for any parcel of land in the County. The site analyses tell real estate agents and prospective land buyers whether the parcel in question is in the floodplain. A comment line on any site analysis for land in the floodplain can direct people to the "Working near Water" fact sheet, flood hazard and preparedness booklet, and other educational materials for more information.

• Distribute brochures on flood-prone property to lenders, real estate agents, builders, and developers. The Tennessee Valley Authority has developed guides for lenders, for real estate professionals, and for builders and developers. The brochures are intended for use throughout the country, and are available free of charge from the TVA. Samples are included in this plan as Appendix E.6. The Office of Planning and Development should distribute them in the Methow Valley, and retain a supply for distribution.

• Make brochures on working near water and on flood-prone property available to members of the general public. Examples include: "So you want to work near the water", Washington Departments of Fish and Wildlife; "Flood hazards: Be aware; be prepared" (publication no.91-BR21); and "Permit handbook: Commonly required environmental permits for Washington state" (publication no. 90-29) both, Department of Ecology. Samples, publication numbers, and ordering information are included in Appendix E.6.

• Develop a booklet designed to increase awareness of stream and riparian function and stewardship for *river corridor* land owners and prospective land owners. The booklet should address ways in which landowners can enhance function and explain activities that are harmful to the system.

• Develop a brochure for landowners on preserving property by using bioengineering to prevent streambank erosion. The Illinois State Water Survey has developed a brochure for DuPage County, Illinois that can serve as a model. A copy is included in Appendix E.

• Develop a summary of available brochures that will guide people in selecting the ones most pertinent to their situations. The summary should indicate the depth as well as the

range of material covered in each item—i.e., indicate whether the material is simple or more complex.

• Use the Office of Planning and Development's Home Page to educate citizens about *river corridors* and flood hazard management. Include items that explain permitting processes, development criteria, the Open Space Taxation Act, and so on.

• Assist in distribution of information about the Stewardship Incentive Program (SIP), a cost-sharing program that can help landowners cover the cost of planting in *riparian zones*, streambank stabilization, planting wetland plants, and planting *buffer zones* around *wetlands*.

• Work with the Okanogan Conservation District to make people aware of opportunities for working with the District, and to develop and distribute materials on *riparian zone* stewardship and restoration.

• Mail information on floodplain status with tax bills.

• Use newspaper articles and radio coverage to improve awareness of the *river corridors* and their functions. For instance, articles in the *Methow Valley News* could raise awareness of flood hazards and associated issues and be a cost-effective means of disseminating information to a large number of people. Radio coverage during the spring runoff period could be used to raise awareness of flood potential.

• Develop a speakers' bureau. Seek opportunities to address local groups (e.g., Kiwanis) and provide speakers; enlist "old-timers" and others with special knowledge to speak to classes and community groups about their experiences with the river (including flooding).

• Develop and make available to landowners a brochure on special considerations for building on alluvial fans and in other areas subject to erosion, debris flows, and flash floods.

• Develop school programs and/or curricula that will educate children about floods and other aspects of *river corridor* function. Several environmental education programs make available materials that could be used or adapted for use to educate school children about floodplain issues. (Children will help educate the adults with whom they live, as well as learning themselves.)

• Develop reach-specific fact sheets that will help landowners understand the unique qualities of each river reach, and any limiting factors that will help guide design and stewardship on land adjacent to the reach in question.

• Develop a fact sheet on various stewardship opportunities, incentive programs, and funding possibilities.

• Develop a display for public places.

• Develop a video for presentation to students and community groups and at public meetings. Consider using footage from, e.g., the 1995 Leavenworth area floods. The Leavenworth floods happened in our region, at an unusual time of year, and are a good example of both unexpected flooding and the destructive power of floodwaters.

• If the County or the Office of Planning and Development starts a newsletter, place items relating to flood hazard and *river corridor* management in the Methow basin in that newsletter.

• Work with the Washington State Department of Transportation on road signs showing levels of past flooding, which are an effective way of reminding drivers of the danger of flooding.

Involvement

Many of the preliminary remarks on education apply to involvement as well. Programs must be carefully targeted, although the general public should have ample opportunities to participate as well. Programs should be carefully designed to clarify issues and invite real involvement. As with education, the recommendations are listed in approximate order of priority and should be seen as a starting point—they are meant to guide future work, not limit opportunities. In addition to the recommendations below, involvement is recommended as part of several other components of this plan, such as reach-scale planning.

• Establish a River Corridor Management Forum composed of informed residents (and perhaps non-resident landowners) to oversee implementation of this plan, coordinate with other planning and implementation efforts (e.g., Basin Plan implementation; Habitat Conservation Plan development), and participate in reach-scale planning and education. Members of the Citizens' Advisory Group who are willing to do so may form the core of the Forum.

• Establish a Reach Watch program, through which residents volunteer to help their neighbors plan and implement projects. The program should establish a framework, but allow citizens to organize themselves.

• Sponsor a biannual workshop on flood hazards, *river corridor* values, and relevant regulations for real estate agents, lenders, and appraisers. Encourage disclosure of floodplain status.

• Participate in the public involvement component of the Chewuch Restoration Project currently underway.

• Sponsor a workshop on flood hazards, *river corridor* values, and relevant regulations for builders, developers, and surveyors.

• Involve local young people in implementation of this plan when appropriate. For instance, teenagers may be able to help with inventory and monitoring; having children develop disaster preparedness kits (with the help of local volunteers) could be part of the program. Outreach should extend both to schools and to extracurricular fora such as scouts, Campfire, and local nature camps.

• Sponsor field trips (e.g., to existing riparian restoration sites; to natural areas where *river corridor functions and values* can be illustrated).

• Involve citizens in mitigation planning for County and State public works projects in the *river corridor* (e.g., bridges, revetments).

• Where project proponents are willing, involve local volunteers in implementation of *river corridor* restoration projects. Possibilities include involving citizens in the restoration work being through the Jobs for the Environment program or in bioengineering projects done on private land.

• Sponsor or participate in community events such as Methow Valley as a Classroom (contact Sandy Moody at 996-9205), National Fishing Day (contact Jenny Molesworth at 996-4026), or Art in the Park (contact Laura Fine-Morrison at 997-4004). Publicize the events as a part of Washington WaterWeeks (contact Washington WaterWeeks at (360) 786-1002).

• Develop an oral history project to record old-timers' flood memories; use the results in education and involvement programs. Videotaped interviews with "old timers" might be used, along with historic photographs of the *river corridor* and local flood events, to make a video for use as part of local education programs and displays.

Partnerships

The need to streamline government processes became very clear while this plan was being developed. Partnerships provide one way of doing that—when agencies and other groups collaborate, they are less likely to duplicate efforts or work at cross purposes. Some specific partnership needs have become clear during the development of this plan, and are spelled out in the recommendations below. Other possibilities will emerge over time, and should be considered as they arise.

• Establish an ongoing Technical Advisory Committee to address *river corridor* issues and coordinate cross-jurisdictional responsibilities. The Committee should meet semi-annually, in early spring and after the field season.

• Work with other permitting agencies (e.g., Department of Ecology, Department of Fish and Wildlife, U.S. Army Corps of Engineers) to streamline permitting processes.

• Work with the Okanogan Conservation District to develop and promote riparian grazing management strategies conducive to *river corridor* health—perhaps in conjunction with an incentive program.

• Work with the Forest Service on watershed analyses, and on *river corridor* issues that concern both agencies.

• Continue to work with the Yakama Indian Nation, the U.S. Fish and Wildlife Service, the Department of Fish and Wildlife, and the Public Utility Districts to address fisheries resource issues in the basin.

• Work with the Methow Valley Land Trust and other similar groups on implementation of the education recommendations in this section.

• Work with local citizens to plan projects that will support the intent of this plan. For instance, Citizens' Advisory Group members have proposed both tree-planting and disaster-preparedness programs. County staff should work to further feasible proposals and ensure they are consistent with the goals and objectives of this plan.

• Work with interested groups to plan *river corridor* projects consistent with the intent of this plan. The Pacific Watershed Institute is currently working on restoration projects in the Chewuch drainage; is beginning work in the Twisp drainage; and may in future undertake projects in other parts of the watershed. Jeanette Smith is the contact person for those projects; her telephone numbers are 996-3452 (local) and (206) 328-8814 (Seattle). Bob Bugert, at (509) 663-8121, is working for the Mid-Columbia PUDs on a Habitat Conservation Plan for four eastern Washington watersheds, including the Methow. In all cases, projects undertaken in the Methow basin should be consistent with the goals and objectives of this plan, including participation by local citizens. This plan, supported by staff involvement, should serve as guidance for other *river corridor* projects as well.

• Work with other agencies (e.g., Department of Transportation, Department of Fish and Wildlife) to develop interpretive facilities.

• Work with the Department of Fish and Wildlife to enhance fishing access sites and campgrounds so that those facilities better meet the goals of this plan.

• Work with the State Department of Parks and Recreation to encourage development of river recreation access sites that meet the goals of this plan, the Comprehensive Recreation Plan for the Methow Valley, and the Recreation Element of the County's Comprehensive Plan.

Incentive programs

Discussion

Incentive programs are non-regulatory approaches to protecting *river corridor functions and values*. Unlike development regulations, they are voluntary. Options include a variety of tax and stewardship incentives. Disincentives, such as assessment for emergency assistance costs related to location in a flood-prone area, are another way of encouraging landowners to take responsibility for their decisions and the impacts of those decisions on others.

Incentive programs have the benefit of offering greater participation and decision making on the part of property owners than do development regulations. However, the incentives offered must be sufficient to alter private land-use decisions if the programs are to be effective. There may be a cost to local government in lost revenues when lands are enrolled in the current use taxation program, although it could be offset in the long run if land preservation enhances the Methow Valley's recreation-and-tourism-based economy. As an example, in King County, the loss in tax revenues from participation in the Open Space program has been small enough to be offset by an increase in the levy rate amounting to $1.21 annually for a $150,000 house.

Methods

Cost-sharing programs

Cost-sharing programs offer various kinds of assistance to landowners who practice good stewardship. Assistance may be technical or financial, or may involve donations of labor or materials.

Land donation

Landowners who make donations may be eligible for income and estate tax relief. The extent of benefits depends on the kind of donation, the donor's financial situation, and prevailing federal tax law at the time the donation is made.

Donations of land can take several forms, including outright donation; bargain sale, in which the land is conveyed at a price below fair market; donation with a reserved life estate, which allows the landowner to continue to live on the land throughout the course of his or her life; and bequest.

Conservation easements

A conservation easement is a legal agreement between a land owner and a qualified organization (typically a non-profit organization, such as a land trust, or a government agency) to restrict the type and amount of development that can take place on the property. Granting a conservation easement is a voluntary way for a landowner to preserve land with significant environmental or historic preservation values. The land remains in private ownership; unless a specific grant of public access is included in the easement, the public has no more right to trespass on land covered by an easement than on any other private property. Each easement is tailored to meet the needs of the landowner and preserve the values of the piece of land in question. The easement runs

with the land, providing legal protection in perpetuity. In actuality, easements can be lost over time if the terms are not enforced.

For many landowners, the principal incentive for conservation easements is the federal tax benefits that may be available. Others may be attracted by the opportunity to preserve places they see as special for future generations. In the federal tax code, conservation easements are considered charitable donations, subject to certain requirements. The landowner receives a tax credit for giving up certain rights of ownership. Estate taxes may be reduced as well.

Tax incentive programs

The property tax system tends to encourage the conversion of agricultural and open space lands to more developed uses. Most states assess real estate for property taxation on the basis of "highest and best" use. As development pressures increase, higher assessments increase rural landowners' property taxes. Land development can adversely affect not only natural resources and the associated values and amenities, but also an area's economic base. Tax incentive programs recognize the value society places on undeveloped land, whether it is farmland or natural open space, and offer tax relief to landowners who allow that value to be retained. Most states offer such programs, under which eligible lands are taxed on their current-use value rather than market value. The programs can be divided into four categories: preferential assessment programs, deferred taxation programs, voluntary restrictive agreement programs, and mandatory zoning and planning programs. Washington state uses a deferred taxation program, the Current Use Taxation Program, discussed under the heading "Existing incentive programs" below.

Existing incentive programs

Washington State Stewardship Incentive Program

The Stewardship Incentive Program (SIP) is a cost-sharing program that reimburses landowners for part of the cost of implementing resource protection and improvement practices. SIP is intended to provide financial incentives to non-industrial private landowners to manage their properties using an integrated, multi-resource approach. SIP is a federally-funded program, administered in Washington by the Department of Natural Resources. While the program is intended primarily to support work on forested lands, riparian and other wetland areas capable of supporting trees may be eligible as well. SIP 6, the program for riparian and wetland area protection and enhancement, cost shares planting of *riparian zones*, streambank stabilization, planting wetland plants, and planting *buffer zones* around *wetlands*. Programs for soil and water protection, fisheries habitat enhancement, wildlife habitat enhancement, and forest recreation enhancement are open only to owners of forest or closely associated lands. An Approved Forest Stewardship Plan is required before a landowner can receive SIP funds; cost sharing is available for plan development. Landowners are reimbursed at predetermined flat rates for each practice (e.g., site preparation; trees and planting) implemented. Further information is available from the DNR Forest Landowner Assistance Coordinator in Colville, telephone (509) 684-7474.

Washington State Ecosystems Conservation Program

The Washington State Ecosystems Conservation Program is a partnership between the U.S. Fish and Wildlife Service and the Washington State Department of Fish and Wildlife that provides funding or other assistance, on a cost-sharing basis, for protection, restoration, enhancement, or creation of fish and wildlife habitat by private landowners. *Wetlands* and *riparian zone* projects are administered by the Fish and Wildlife Service. (The Department of Fish and Wildlife administers the upland habitat program.) One of the goals of the program is to develop partnerships between landowners, the Fish and Wildlife Service, and other agencies and groups (such as conservation organizations). Cooperators other than the Fish and Wildlife Service may provide additional funds, materials, or labor. Further information is available from the Service's Moses Lake office, telephone (509) 765-6125.

Methow Valley Land Trust

The Methow Valley Land Trust is a non-profit organization developed to accept donations of land and conservation easements, legally hold those assets, and maintain and monitor them. *Wetlands* and other lands that offer substantial wildlife benefits are among those of special interest to the local land trust.

The Current Use Taxation Program

Washington state law provides an incentive for protection of environmentally sensitive areas. In 1970 the legislature enacted the Open Space Taxation Act (RCW 84.34), which allows property owners to reduce property taxes for private land classified as open space. Eligibility is based on historical use. Lands that are classified as open space under the statute are assessed under their current use rather than their "highest and best" use for purposes of property taxes. The program is considered a deferred taxation program because if land is withdrawn from classification, or if the use of the property changes, the owner must pay the additional taxes for the period of time his or her property was designated as open space.

To obtain a current use classification of open space, a property owner must apply to the County's Office of Planning and Development. The current use assessed value will depend on the type and amount of public access (encouraged, but not required) and the type and amount of resource found on the parcel. Credit for resource restoration is available as well. The County's Public Benefit Rating System is used to determine the current use assessed value. The system establishes priority resources and a ranking system for evaluating properties. The list of priority resources includes shoreline areas designated in the County's Shoreline Management Master Program. It also includes fee recreation areas, such as those in the Methow Valley trail system, some of which are within the *river corridor*.

Recommendations

• Amend the Open Space Tax Program/PBRS to provide incentives for owners of flood-prone properties to participate.

• Encourage *river corridor* landowners to participate in the revised Open Space Tax Program. The Open Space Tax Program offers landowners incentives for choosing not to use land because of identified hazards or values. Participating in the program offers a reduction in assessed value to ensure that property owners receive just compensation for the property value they lose in making a contribution that benefits the community.

• Encourage landowners to participate in cost-sharing programs for stewardship, enhancement, restoration, and management that are offered by other agencies.

• Explore the possibility of developing a special assessment district that would assess floodplain landowners for emergency services related to their use of the floodplain.

Property protection

Discussion

There are a number of ways in which landowners can protect houses from flood hazards. They include relocation, purchase and demolition, elevation, floodproofing, and insurance. Relocation—moving a structure to higher ground—is the surest and safest way to protect it from flooding. It can be expensive (in the range of $25,000-$50,000 per house), but is worth considering in high hazard areas where the only safe approach is to move buildings out of harm's way. Some government funding is available. Relocation also creates open space within the *meander belt*, improving flood storage and conveyance and giving the river room to function naturally without threatening property. An alternative is purchase and demolition of floodplain structures by a government agency. Purchase and demolition is most appropriate for buildings that are too expensive to move or that are not worth the expense of moving. Like relocation, purchase and demolition converts problem areas to assets by creating open space. Relocation and purchase and demolition projects are desirable options for high hazard areas; they should be seriously considered for sites above the Weeman Bridge and any other very hazardous areas. However, cost is a major drawback, as is the requirement for increased government involvement.

Elevation is a suitable property protection method where the flood hazard is limited to shallow flooding with low water velocities. Raising a house above the flood level is the best on-site property protection method for existing structures in areas not subject to extreme hazards. Water flows under the building, causing little or no damage to the structure or its contents. Elevating a building is less expensive than moving it, with costs averaging $15,000 to $25,000, and is less disruptive for the owners. During a flood, an elevated building may be isolated and without utility service, and therefore unusable. Elevation to a safe level may not be feasible in areas such as the Lost River Airport Tracts where very dangerous conditions may occur and sediments are subject to substantial movement during floods. Floodproofing can be used to protect buildings that cannot be elevated or moved. When a building is floodproofed, all areas below the flood protection level are sealed against floodwaters *or* the building is constructed so that floodwaters can flow through any enclosed areas below the *Base flood elevation*. Walls are coated with waterproofing compounds or plastic sheeting, and openings are

closed, either with removable shields or with sandbags. Either elevation or floodproofing can be used to protect new, as well as existing, structures. New residential structures are currently required to have the lowest floor elevated to or above *base flood elevation*. (In the Methow Review District, zoning prohibits construction of new dwellings in areas below the *Base flood elevation*.) New non-residential structures must be elevated or floodproofed.

Insurance provides protection against financial loss in case of flood damage. Under the National Flood Insurance Program (NFIP), flood insurance is available to landowners in communities that comply with minimum standards for floodplain management; Okanogan County and the Towns of Twisp and Winthrop all participate. Community participation allows any local insurance agent to sell flood insurance policies under rules and rates set by the Federal Emergency Management Agency. Under the NFIP's Community Rating System, discounted rates are offered in communities that undertake activities beyond the minimum standards. Discounts range from 5% to 45% depending on the community's efforts. Community officials must apply to the NFIP to get credit for their efforts and qualify citizens for rate discounts.

Recommendations

• Apply to the NFIP to receive credit under the Community Rating System for floodplain management activities. Local landowners' flood insurance premiums will be reduced if Okanogan County and the Towns of Twisp and Winthrop receive credit for floodplain management activities in which they already participate. Many of the recommendations in this plan will, when implemented, qualify the communities for additional credit and corresponding rate reductions.

• Educate landowners about flood hazards and the availability of flood insurance. Without flood insurance, landowners will have to bear at least some of the cost of flood damage themselves. Federal disaster relief funds will provide some help to people whose primary residences are damaged, but will not cover all costs associated with flood damage. Vacation houses and rental properties are not eligible for federal disaster relief; only if the owners carry flood insurance will they be protected.

• Encourage elevation and floodproofing of existing floodplain structures and publicize funding sources. Elevation and floodproofing are more likely to be undertaken if landowners know where to go for financial assistance.

• Encourage relocation of existing floodplain structures.

Watershed management guidelines

Discussion

How land is managed within the Methow River watershed affects both habitat quality and flood characteristics. Many areas in the Methow river system are functioning well; maintaining properly functioning condition will help further the goals of

this plan. Riparian grazing management, stormwater management, and clearing and grading practices are three components of land management that play roles in determining how the Methow, Twisp, and Chewuch Rivers and their tributaries function. Riparian grazing management is a tool for ranchers that helps protect and restore *riparian areas* while allowing continued use by livestock. Careful management reduces the degradation of riparian resources and increase in runoff rates that can accompany grazing. The Natural Resource Conservation Service works with ranchers at no charge to plan management strategies. Funding for implementation of those strategies may be available from a variety of sources. Stormwater management refers to practices intended to prevent new development from increasing runoff rates. Typically, land development reduces infiltration of rain and snowmelt. The increased runoff can increase flood volumes. Groundwater levels and habitat quality are also affected as more water runs off rather than being held in the basin. Finally, clearing and grading activities associated with property development may cause erosion and siltation, increase runoff and flood volumes, reduce flood storage capacity, and damage habitat. Managing clearing and grading activities can minimize impacts.

The importance of each of the three components in the overall health of the system will change as land uses change. For instance, grazing on the valley floor is on the wane, and will probably become a less prominent factor over the next few decades. Development is increasing, which will increase the impacts of stormwater management and clearing and grading practices.

Recommendations

• Develop and distribute stormwater management, clearing and grading, and riparian management guidelines for landowners—perhaps in partnership with the Okanogan Conservation District. The guidelines should help landowners and developers make land use decisions that minimize adverse impacts on river and stream corridors.

• Modify the County's Public Benefit Rating System to provide additional incentives for effective riparian grazing management.

• Work with other interested agencies to support the raising and keeping of livestock in the basin in a manner that minimizes the adverse impacts of livestock on river and stream corridors. Partners might include the Natural Resource Conservation Service, providing expertise; the Washington State Department of Fish and Wildlife, providing stewardship incentives, and the U.S. Fish and Wildlife Service, providing implementation funding.

Structural projects

Discussion

Structural techniques are those that involve modification of conditions on the ground. In the past, structural modifications have been invasive and emphasized control of natural systems. Over the past 30 years, more cost-effective techniques have

been developed. They are intended to work with natural systems to support habitat and aesthetic as well as flood hazard management objectives. Decisions about what technique or techniques to use at a given site should be based on context analysis, extending at least through the adjacent *riparian zone*. The degree to which projects are able to replicate natural conditions will depend in part on existing and proposed land use in the vicinity of the proposed structural modification; for instance, where a road or bridge is to be protected, instream work may be proposed to deflect flows. In such cases, the structure should be located and designed to support instream and riparian functions and values. In all cases, careful analysis and design are essential to ensure that the structural modification is suited to the site.

The recommendations in this section are intended to provide guidance for developing and evaluating proposals so that structural projects undertaken in the Methow basin will be consistent with the goals of this plan. They address three types of projects: those in which the County is involved, those proposed by other agencies, and those proposed by private parties, including landowners and nonprofit organizations.

Structural modifications include dikes and a variety of stabilization and restoration techniques. Each approach is described briefly below. Specific techniques are discussed in Appendix F, which also contains a project assessment system for use in assessing the impacts of structural proposals.

Stabilization projects

Stabilizing streambanks is one way to protect land and structures in problem areas. Stabilization projects may also involve instream modifications, especially where infrastructure is at risk. As with all structural approaches, a thorough understanding of the site and the forces operating there is a vital prerequisite to any action on the ground.

Traditionally, stabilization techniques have tended to degrade habitat and aesthetic values, reduce flood storage capacity, and increase flow velocities downstream. However, carefully designed stabilization projects using newer techniques can help protect land and infrastructure while stabilizing a stream and improving its function relative to a range of values. Such projects are less expensive to install and maintain than old-fashioned methods such as *riprapping*. Careful design and cost:benefit analysis should be a part of stabilization project planning. Design costs associated with complicated stabilization projects may be higher than those for bank armoring; other projects will not require a great deal of design work.

Dikes

Dikes protect low-lying areas from inundation by flood waters by constraining the channel. Typically, they have been built at channel's edge. However, streamside dikes result in loss of instream and riparian values, and change channel *energetics*. By constraining the river, they reduce flood storage and conveyance and diminish other values in the *river corridor*. They can cause backwater flooding upstream and increase flow velocities downstream. Habitat is destroyed as a result of vegetation removal and changes in sedimentation patterns. Thus, although a dike may protect certain properties, risk to other properties can be increased. Dikes that are set back so that at

least part of the floodplain retains its connection to the river can reduce the impact of diking. (See Figure VI.1.)

In addition to their effects on physical and biological systems, dikes can create a false sense of security if landowners do not know what level of flood they have been designed to protect against, and expect more security than a particular structure can offer. Dikes are expensive to build and maintain. Initial construction costs are very high, and the structures, once installed, require recurrent maintenance. Dikes may be cost effective where many high-value structures are protected, or where they provide another benefit (as when trails are built on dikes to improve public access to shorelines). They may also be useful where bridges or essential roads

Figure VI.1
Traditional and Set-Back Dikes

are at risk. Costs are likely to be too high to justify them solely for protection of existing floodplain residences.

Restoration projects

Restoration projects provide a means for improving the functional quality of a degraded or disturbed stream system. Where a channel has been constrained or cleared, or the integrity of the *riparian zone* compromised, restoration techniques can be used to improve the river's capacity to handle flood flows, stabilize groundwater levels, prevent erosion and scouring, and support fish and wildlife. In any situation in which restoration is proposed, the project must be designed to suit the specific conditions at the site. It is never appropriate to select a technique without thoroughly analyzing the problem site in context. Techniques may be combined or modified. In many cases restoration projects offer outstanding benefits. Restoration offers a range of benefits consistent with the goals of this plan.

Recommendations

• On public and private projects, encourage use of bioengineering techniques, rather than *riprapping* and other single-objective bank stabilization techniques. Bioengineering techniques are more effective and less expensive than *riprap*, and support a wider range of corridor values. Where bank stabilization is indicated, solutions that support riparian and instream values and do not contribute to accelerated flows downstream should be encouraged.

• On public and private projects, discourage the use of dikes and levees. Develop guidelines that encourage project proponents to assess the impacts of diking, including impacts on downstream properties. Guidelines should encourage use of setback structures (as shown in Figure VI.1), and mitigation to protect downstream landowners' property rights, *if* dikes or levees must be built.

• The Office of Planning and Development will develop a formal process to assist the Public Works Department in coordinating planning of any work within stream corridors, starting early in the design process.

Cooperative efforts will result in transportation projects that support both the goals of this plan and those of the County's Transportation element. One goal of the Transportation element is to "Establish an efficient, safe and environmentally sensitive road system that supports desired development patterns." Policies associated with that goal include "Avoid, to the degree possible, locating roads in sensitive areas to minimize environmental disruption and construction costs" and "Design roads to minimize impacts on hydrologic systems, including surface and groundwater." Coordinated planning will support the Public Works Department in adhering to those policies.

In addition, inter-departmental cooperation will enhance funding possibilities by developing projects that meet multiple objectives. Coordination early in the design process will enable creative approaches that will expand options for funding.

• Use the project assessment system (see Appendix F) to assess projects in which the County participates, including Public Works, Engineering, and Roads projects and projects proposed under the Habitat Conservation Planning/Watershed Planning process.

• Encourage the Department of Transportation and other agencies to use the guidelines presented in this plan, and to work with the County's Office of Planning and Development, to develop projects that will improve river and riparian function and will not contribute to problems in the *river corridor*.

• Encourage project proponents to consult with the County prior to applying for permits. Analyze proposals using the project assessment system in Appendix F and offer an "FYI" evaluation that can be used, on a voluntary basis, to modify proposals so that environmental disruption is minimized.

Woody debris management

Discussion

Woody debris management is a sensitive subject because large woody debris plays an extremely important role in the river environment, but also has the potential to damage land and infrastructure. In the past, the U.S. Army Corps of Engineers has responded to flooding by removing debris, simplifying stream channels in hopes of increasing conveyance capacity. Large quantities of wood were removed from the Methow, Twisp, and Chewuch Rivers following the floods in 1948 and 1972. The physical and biological impacts have been dramatic.

Wood removal changes channel dynamics in ways that can increase damage. In addition, woody debris forms the basis of the aquatic food chain. It is also an important structural component of habitat—branches and logs create pools and hiding places that fish use during various parts of their life cycles. In terms of habitat values and natural channel dynamics, it would be preferable to allow woody debris to accumulate in the channel and *riparian areas*. Indeed, some biologists have proposed adding wood to the system to replace that removed during years of timber harvest and during flood clean-up.

Leaving debris in streams would be consistent with regulations intended to provide for protection of natural resources. However, in some places, that might put infrastructure (e.g., roads and bridges) at risk. Woody debris often floats downstream during high flow periods. It can accumulate at bridges, where mats of wood collect against piers. (See Figure VI.2.) Such debris accumulations can deflect water toward adjacent piers or toward an embankment, or can intensify the effect of the current on pier foundation soils, causing scour. Logs have caused damage to bridges in the past. The risk of damage has been reduced in recent years by policies providing for armoring of embankments and design of bridges to accommodate entrained debris. Currently, Town of Winthrop, Okanogan County Public Works and Washington State Department of Transportation employees monitor such debris accumulations during high water periods and floods. Town and County personnel remove debris that threatens local

infrastructure. DOT employees usually dislodge material that may pose problems, although the Department has a permit to remove logs when necessary.

Most debris piles are not hazardous; few will move from year to year. Removal of debris piles from rivers would not be acceptable because of the effects on habitat biology, channel dynamics, and river character. However, in order to avoid adverse impacts to infrastructure, it will be advisable for County officials to work with responsible agencies and County departments to plan for management of debris so that accumulations of large wood that develop upstream of vulnerable sites do not become threats during flood events. A thoughtful and sensitive approach to debris management will be required to achieve a safe and acceptable balance.

Figure VI.2
Woody Debris Mats above the Carlton Bridge

Recommendations

• In cooperation with other interested agencies (e.g., the Department of Fish and Wildlife, the Department of Ecology, the Department of Transportation, and the Corps of Engineers) develop a risk-assessment process whereby a team will regularly evaluate debris that has the potential to threaten land or infrastructure (roads, bridges, etc.) and recommend action where necessary.

Team members should represent a range of disciplines—for example, a hydraulic engineer, a geologist, and a biologist—and be qualified to assess the impact of their proposals on the stream and riparian environment. If the Natural Resources Conservation Service develops a local Stream Team, that group may be able to serve. Team members should work with maintenance personnel during flood events to make decisions when structures are threatened.

If large woody debris must be moved, it should either be dislodged so it can continue down through the system, or removed and put back into the system at the next available downstream location. If it is not practical or reasonable to return the materials to the channel, they should be incorporated into the adjacent riparian corridor, if possible. When woody debris is replaced in the river channel or corridor, its placement should not create new direct or imminent threats to property or infrastructure. Large woody debris pieces should be left intact.

In conjunction with the risk assessment process:

¤ Develop guidelines for management of debris being carried by the river, including that which may pile up against bridge piers or otherwise threaten infrastructure.

¤ To ensure the expertise and concerns of all parties are considered, involve maintenance personnel in the decision-making process when debris management activity is indicated.

¤ Provide training and guidance for personnel involved in debris management so they understand the impacts of their work on the river and land.

• When woody debris is to be removed from private land, work with landowners to ensure their rights are respected and their concerns addressed to the extent possible.

• Maintenance personnel should have adequate guidance and leadership to take action during emergencies when fast action is needed. Develop emergency debris management guidelines and, if possible, involve the risk assessment team in emergency debris management decisions.

Operations and maintenance

Discussion

River corridor operations in Okanogan County have been focused on maintaining roads and bridges. The County has done no work on dikes since sometime in the 1980s. Road and bridge repairs are done as needed during and after emergencies. *Riprapping* has been the accepted method of protecting structures, but can have deleterious effects on flooding, habitat quality, and aesthetic and recreational values. The County's Public Works Department has expressed concern about the effects of maintenance and repair activities elsewhere in the system, but lacks the technical expertise to assess the impacts of the work.

Bridges are inspected annually for erosion and scour damage. The County's Public Works Department is currently conducting an in-depth scour survey that will continue for several years. The intention is to monitor changes in conditions and use the data to apply for funding to make necessary repairs. In addition, the Department is making plans to assess the intrusion of fill associated with County facilities on floodplains.

It is unclear exactly what dikes the County is responsible for maintaining; Public Works personnel are currently working to determine what maintenance and access agreements are in place. The dikes in question in the Methow Valley are located on the *right bank* of the Methow River north of Twisp, and on the right bank of the Methow River between Mazama and the Weeman Bridge. Work on dikes was suspended 10-15 years ago because of apparent discrepancies between the U.S. Army Corps of Engineers' standards for dike maintenance and the Department of Fish and Wildlife's

habitat preservation requirements. The Corps requires that all trees larger than 4 inches in diameter be removed from dikes it has certified; the DFW favors retaining riparian vegetation that provides habitat benefits. FEMA will not provide disaster relief funds for repair of dikes not maintained to Corps standards and certified by the Corps. Public Works personnel are working to clarify requirements so that maintenance work can be undertaken. The County has a very limited amount of money available for dike maintenance (currently estimated at $11,000-$12,000). County crews and equipment could be used for dike maintenance only if the Road Fund is reimbursed. The Public Works Department is looking into possibilities for using displaced workers, inmates, or youth crews to provide low-cost labor for dike maintenance.

Recommendations

• Inventory County facilities (dikes, bridges, and armored embankments) in the *river corridors* and determine the County's role in maintaining them. Where necessary, update or enter into maintenance agreements. Ensure that legal access is available. Maintain accurate, up-to-date records and make conditions of maintenance and access agreements available to County personnel responsible for maintaining facilities so that they are aware of their responsibilities.

• Assess the dike north of Twisp and develop a plan for short-term and long-term maintenance. The planning process should address a range of alternatives including relocating (reconfiguring or setting back) the dike, removing the dike, and using instream structures in designing a solution. Public access and recreational use of adjacent land (some of which is owned by the Town of Twisp) should also be considered. The dike and adjacent areas have been used for ski trails in the past. If necessary, a long-term plan for acquisition of land or easements should be developed and funding sought.

• In cooperation with U.S. Army Corps of Engineers and Washington State Department of Fish and Wildlife representatives, assess the current condition of any other dikes in the basin and develop a maintenance plan.

• Regularly assess the condition of County dikes and armored embankments. Facilities should be inspected annually and following any flood events that may have caused damage. A standard reporting form (including written and photographic documentation) should be used to establish records for use in applying for disaster relief and maintenance funding.

• Seek funding for maintenance of County flood control facilities, including design of appropriate alternatives to current configurations where warranted. Where feasible, seek funding to convert *riprap* to structural treatments that will have less impact on *river corridor* function. (See p. 114 and **Error! Bookmark not defined.** for discussions of structural treatments.)

• Develop an Operations and Maintenance Manual for Activities Within the Shoreline Environment. Topics to be addressed should include, but are not limited to, permit requirements; assessment of off-site impacts; roads and bridges; debris removal; erosion control; dike maintenance; bank stabilization; and demolition, repair, and reconstruction of structures. Guidance in complying with the relevant provisions of the Shoreline Management Program, Critical Areas Regulations, and Flood Damage Prevention Ordinance should be included. When complete, the manual should be incorporated in or appended to this plan.

• Treat any removal of debris from the channel as recommended in the section of this plan on Debris Management (see page 114).

• Involve the nascent Okanogan County Stream Team in annual assessments so that repair and maintenance decisions can be made based on multi-disciplinary analysis. The Stream Team is a group of local, state, and federal government employees specializing in various aspects of stream and riparian function that offers *river corridor* assessment and design services to interested land owners and managers at no cost.

Recreation: trails and river access

Discussion

The Methow Valley's *river corridors* are used for a variety of recreational activities. River access and open space in the river corridor are important to both local residents and visitors. Many respondents to the County's 1995 River Corridor Survey reported using rivers and the adjacent areas for aesthetic appreciation, wildlife observation, fishing, camping, and boating. Rivers can draw tourists to the area, encourage visitors to stay longer, or simply enhance the quality of visits. Expenditures for travel and tourism support local jobs, personal income, and government tax revenues. As the role of recreation and tourism in the Methow Valley economy increases, provision of adequate, carefully-designed facilities will become increasingly important to the welfare of the natural systems as well as the continued success of the area as a tourist destination. *River corridors* are extremely important to the welfare of wildlife populations because of their richness and diversity. Protecting the habitat value of *riparian areas* is important to maintaining the valley's economy because of wildlife's appeal to hunters and tourists, as well as residents. The 1993 Methow River Basin River Access study noted problems with erosion, habitat destruction, and litter accumulation at some river access sites.

Both the Parks and Recreation Element of the County's Comprehensive Plan and the Comprehensive Recreation Plan for the Methow Review District identify river access and trails as recreation needs for the Methow Valley. *River corridors* are appropriate for many trail uses, and trails support a number of activities that are currently popular. Seventy-one percent of River Corridor Survey respondents favor trails in the *river corridor*.

Recommendations

• Conduct a lake and river facilities feasibility study, as discussed in the Parks and Recreation Element of the County's Comprehensive Plan. Consider the goals and objectives of this Plan and the site analyses in the Methow River Basin River Access study in assessing potential sites and facilities.

• Continue to work in partnership with the Methow Valley Sport Trails Association, the Methow Institute Foundation, and the U.S. Forest Service on trail projects.

• Develop cooperative planning relationships with other agencies and among County departments to improve river access and foster development of trails and other *river corridor* facilities.

• Encourage use of *river corridor* trails for transportation as well as recreation through development of trails that link populated areas without compromising riparian resources.

• Educate recreational users of the Methow Valley's *river corridors* in safe use that does not damage natural resources.

Methow River corridor northwest of Mazama Bridge

Discussion

As discussed in Section III.C, parts of the Methow River corridor northwest of the Mazama Bridge (see Figure III.5) are subject to special flood hazards. Because of those hazards, TAC members have concluded that the Methow River's meander zone in the area just south of the confluence with the Lost River is not a safe place for residences. The exact extent of the unsafe area has not been determined; it probably extends south past the Lost River Airport Tracts. Structural solutions are unlikely to provide adequate protection given the dynamism of the system in that reach. In addition, they would be likely to interfere significantly with channel function and dynamics and with habitat values. Hazard potential downstream could be expected to increase, resulting in potential losses to landowners outside the area of concern.

TAC members have recommended that no more building permits be issued in the parts of the Lost River Airport Tracts Second Addition that are within the meander zone, as it may in future be defined. They also advise working to remove existing residential structures from the area deemed most hazardous. In addition, they agreed that the County should take actions to reduce risk to life and property, ensure that hazard potential is not increased, protect channel function and dynamics, and protect the public interest in healthy river function throughout the *river corridor* upstream from the Mazama Bridge.

Current regulations do not allow the County to deny residential building permits based on location within the floodplain if the building site can be shown to be above *base flood elevation* ("up-and-out"). The Office of Planning and Development will need to provide evidence supporting decisions to deny permits on the basis of special

hazards. In addition, the County will need to ensure that any restrictions on building do not constitute takings.

Removing existing structures from hazard areas is likely to be even more problematic than denying permits. Residents of floodplain areas are typically disinclined to relocate. If a willing seller is found, negotiating acquisition of a floodplain residence is a long process requiring a substantial commitment of time. Financing land acquisition would be difficult as well. The County does not currently have the resources to acquire and maintain land. In addition, the County Commissioners want to keep as much land as possible on the tax rolls, and thus are unlikely to authorize land purchases. If individual land owners are willing, acquisition by a third party is a possibility.

Recommendations

• Map all areas that are potentially unstable as a result of rapid stream incision or stream bank erosion throughout the *river corridor* north of the Mazama Bridge. The USGS may be able to do the work under its cost-share program. If that is not feasible, the County should seek alternative funding. The USGS cost-share program is described in Appendix E.5.

• Stop issuing building permits for structures for human habitation in areas that are shown to be hazardous, using the map of potentially unstable areas to determine which sites are not safe for residences. The landslide hazards section of the County's Critical Areas Regulations states that areas identified as Landslide Hazard Areas, including all areas that are potentially unstable as a result of rapid stream incision or stream bank erosion, shall not be developed.

• Sponsor acquisition of undeveloped floodplain land (or easements) when the following conditions can be met: the acquisition will result in no change in County tax revenues (that is, funds must be available to make payments in lieu of taxes); no cash will be required from the County (any match required must come from other sources); there will be no maintenance responsibilities on the part of the County.

• Develop a flood warning and evacuation system for the area.

• As part of the Public Education and Involvement component of this plan, work to inform *meander belt* residents. Topics should include hazards associated with the area; the warning and evacuation system and how residents can prepare to evacuate; and river-corridor regulations, such as those pertaining to diking within the shoreline zone. Work with the Lost River Airport Tracts Homeowners' Association (which holds general membership meetings twice a year) to address problems specific to that development. Make special efforts to contact individuals living in the highest-risk areas.

• In cooperation with the Forest Service and the Lost River Airport Tracts Homeowners' Association, have the dike down-river from the confluence of the Methow and Lost Rivers assessed and develop a strategy for addressing the problems associated with it. The USGS may be able to do the assessment work under its cost-

share program, with the County's share of the cost coming from already-appropriated FCAAP funds. If that is not feasible, the County should seek alternative funding. The USGS cost-share program is described in Appendix E.5. A trained negotiator should be involved in strategy development, and the County should participate in seeking funding to implement the strategy agreed upon by all parties. Resident and non-resident landowners who are likely to be affected should be invited to participate in the acquisition planning process.

• Develop guidelines for assessment of any diking proposal.

• Use legal counsel to assess the County's present liability. Take actions necessary to minimize that liability.

Other issues

Discussion

Watershed processes are complex; an understanding of the entire basin may be needed to develop solutions to many of the existing and potential problems in the Methow River basin. Much of the work required to gain such an understanding is beyond the scope of the current planning effort. A systematic program of study designed to assess conditions, find problems, and identify critical resources in the Methow River basin and in river and creek corridor areas will be required to develop long-term, balanced solutions.

Recommendations

• Develop a program to inventory resources and conditions and monitor change. Specifically:

¤ Chronicle past activities to help establish linkages between those activities and *river corridor* condition.

¤ Monitor activities in the upper basin (as they have the potential to affect channel form and processes downstream).

¤ Inventory resources in the *river corridor*, including river and stream classification, vegetative cover indexing, riparian vegetation condition analysis, *wetlands* assessment. River and stream classification should be based on assessment of channel morphology, including measurements of width, depth, sinuosity, velocity, discharge, channel slope, channel roughness, and sediment loading. The hydrogeology of the middle and lower Methow River should be studied as well.

¤ Inventory corridor condition/trouble spots.

¤ Establish reference reaches.

¤ Monitor structural improvement projects as installed. Monitor non-structural improvement projects as they are implemented.

¤ Monitor trouble spots where no action is taken.

¤ Assess and monitor the flood-damage potential of the river (i.e., calculations should not continue to be based on numbers derived when conditions in the basin were different than they are now).

• Based on the results of inventory and monitoring, have floodplains re-studied and new FEMA maps prepared when changes in the basin suggest the existing maps are no longer accurate.

• Assess the impact of human use and naturally-occurring upper-watershed disturbances (e.g., fire) on ecosystem structure and function and, specifically, on the capacity of the river and its floodplain to accommodate flooding.

• Determine what changes must take place throughout the watershed to improve function to the level necessary to support the goals and objectives of this plan. For example, if *aggradation* (increase in streambed level due to deposition of sediments) is a problem, will sediment trapping and removal solve it, or must revision of the road network take place? If lack of riparian vegetation is a problem, will vegetation restoration solve it, or must upper basin hydrology be restored to create conditions favorable to improved bank conditions? Basic research may be required to determine limiting factors—e.g., for fish survival.

• With landowners, work to develop systems of public access and restoration and stabilization plans compatible with the results of the studies discussed above. Plans for each reach should specifically address existing and potential problems in that reach, and should be responsive to the results of the River Corridor Survey from the reach.

B. Phasing Plan

The Multi-Objective River Corridor Plan for the Methow Basin will be implemented in phases, proposed in the table below. Recommendations in the table correspond with those in the preceding section. In some cases recommendations have been abbreviated; page numbers in parentheses following each item show where the complete descriptions can be found. No dates are shown for the future phases (II-IV); implementation will depend on availability of funding. The Phasing Plan is intended to reflect current priorities. Those priorities should be considered flexible, and tasks undertaken when it is logical to do so—for instance, if funding becomes available for a particular project. Work on tasks in Phase I is expected to begin in the current biennium. Some tasks may extend through more than one phase. Only the phase in which the task is to be started is marked.

Figure VI.3
Multi-Objective River Corridor Plan for the Methow Basin
Phasing Plan

Recommendations	Phases			
	1996-1997	Future phases		
		II	III	IV
Flood warning and emergency response				
Amend the Emergency Management Operations Plan to address flood warnings for people out of range of KOMW. (see p. 96)	X			
Use the local media to inform people of flood danger. (see p. 96)	In case of flooding			
At Lost River Airport Tracts, present flood awareness information. (see p. 96)	X			
Make contact with people in other high risk areas. (see p. 96)	X			
Ensure that emergency work is consistent with the goals of this plan. (see p. 96)		X		
Incorporate the goals and policies of this plan in emergency operations. (see p. 96)		X		
Develop and institute a community-wide disaster awareness program. (see p. 96)		X		
Ensure that recovery information is consistent with the goals and policies of this plan. (see p. 96)		X		

Develop a manual on Emergency Flood Response and Reconstruction/Restoration Activities Within the Shoreline Environment. (see p. 97)		X		

Development regulations				
Amend the Flood Damage Prevention Ordinance to allow no more than a 50% increase in building footprint size when existing structures in areas of special flood hazards are *substantially improved*. (see p. 97)	X			
Amend the Flood Damage Prevention Ordinance to require that, in all areas of special flood hazards, new construction and *substantial improvement* of any residential structure shall have the lowest floor, including basement, elevated one foot or more above *base flood elevation*. (see p. 97)	X			
Amend the Flood Damage Prevention Ordinance to require that, in all areas of special flood hazards, new construction and *substantial improvement* of any commercial, industrial, or other nonresidential structure shall either have the lowest floor elevated one foot or more above the level of the *base flood elevation* or shall be floodproofed so that below one foot above the *base flood* level the structure is watertight. (see p. 97)	X			
Amend the Zoning Code and/or the Flood Damage Prevention Ordinance to further limit floodplain development. (see p. 98)			X	
Mapping				
Develop *river corridor* maps. (see p. 100)	X			
Have flood boundary maps developed for unmapped reaches of the Twisp and Chewuch Rivers and for Gold Creek. (see p. 100)	X			
Have detailed studies done of areas where flood elevations are not available. (see p. 100)	X			
Develop maps of houses and other structures in the floodplain (including “up-and-out” structures) for use during rescue and disaster recovery operations. (see p. 100)		X		
Map all areas in the Methow basin that are potentially unstable as a result of rapid stream incision or stream bank erosion. (see p. 100)	X			
Map streams and alluvial fans with potential for rapid inundation, high velocity flows, or debris flows. Explore options for reducing hazards associated with alluvial fans, erosion-hazard areas, and flash flood areas. (see p. 100)		X		
Map potential ice jam areas, and explore options for reducing hazards related to ice-jam flooding. (see p. 100)		X		

Mapping (*continued*)				
Enter hazard data in the County's Geographic Information System and have them available for planners' use in advising the public. (see p. 100)		X		
Develop a *cumulative effects* model and a land change map that can be used to track cumulative effects of development and land alterations in floodplain areas and analyze the impacts of proposed development. (see p. 101)		X		
Adopt any revised flood studies when they are published. (see p. 101)	As needed			
Have elevation surveys adopted by FEMA. (see p. 101)			X	
Outreach programs				
Education				
Develop a fact sheet on "Working Near Water" for distribution to people interested in doing work in the *river corridor*. (see p. 103)	X			
Develop and distribute a booklet on flood hazards and preparedness for people who now live in the floodplain, new buyers of floodplain land, and floodplain permit applicants. (see p. 104)	X			
Advertise in *Methow Valley Building and Construction*. (see p. 104)	X			
Add comments referencing available informational materials to site analyses prepared for parcels in the *river corridor*. (see p. 104)	X			
Distribute brochures on flood-prone property to building and real estate professionals. (see p. 104)	X			
Make brochures on working near water and on flood-prone property available to members of the general public. (see p. 104)	X			
Develop a booklet designed to increase awareness of stream and riparian function and stewardship. (see p. 104)	X			
Develop a brochure for landowners on preserving property by using bioengineering to prevent streambank erosion. (see p. 104)	X			
Develop a summary of available brochures that will guide people in selecting the ones most pertinent to their situations. (see p. 105)	X			
Use the Office of Planning and Development's Home Page to educate citizens about *river corridors* and flood hazard management. (see p. 105)		X		
Assist in distribution of information about the Stewardship Incentive Program. (see p. 105)	X			

Outreach programs				
Education (continued)				
Work with Okanogan County Conservation District to make people aware of opportunities for working with the District, and to develop and distribute materials on *riparian zone* stewardship. (see p. 105)		X		
Mail information on floodplain status with tax bills. (see p. 105)		X		
Use newspaper articles and radio coverage to improve awareness. (see p. 105)		X		
Develop a speakers' bureau. (see p. 105)		X		
Develop and make available to landowners a brochure on special considerations for building on alluvial fans and in other areas subject to erosion, debris flows, and flash floods. (see p. 105)			X	
Develop school programs and/or curricula that will educate children about floods and other aspects of *river corridor* function. (see p. 105)			X	
Develop reach-specific fact sheets that will help landowners understand the unique qualities of each river reach. (see p. 105)			X	
Develop a fact sheet on various stewardship opportunities, incentive programs, and funding possibilities. (see p. 105)			X	
Develop a display for public places. (see p. 106)				X
Develop a video for presentation to students and community groups and at public meetings. (see p. 106)				X
Place items relating to flood hazards and *river corridor* management in a County newsletter. (see p. 106)				X
Work with the state Departments of Transportation and Ecology on road signs showing levels of past flooding. (see p. 106)				X
Involvement				
Establish a River Corridor Management Forum. (see p. 106)	X			
Establish a Reach Watch program. (see p. 106)	X			
Sponsor a biannual workshop on flood hazards, *river corridor* values, and relevant regulations for real estate agents, lenders, and appraisers. (see p. 106)	X			
Participate in the public involvement component of the Chewuch Restoration Project currently underway. (see p. 106)	X			
Sponsor a workshop on flood hazards, *river corridor* values, and relevant regulations for		X		

builders, developers, and surveyors. (see p. 106)				
Outreach programs				
Involvement (continued)				
Involve local young people in implementation of this plan when appropriate. (see p. 107)		X		
Sponsor field trips. (see p. 107)		X		
Involve citizens in mitigation planning for public works projects in the *river corridor*. (see p. 107)		X		
Where project proponents are willing, involve local volunteers in implementation of *river corridor* restoration projects. (see p. 107)		X		
Sponsor or participate in community events. (see p. 107)			X	
Develop an oral history project to record old-timers' flood memories; use the results in education and involvement programs. (see p. 107)			X	
Partnerships				
Establish an ongoing Technical Advisory Committee. (see p. 107)	X			
Work with other permitting agencies (e.g., Department of Ecology, Department of Fish and Wildlife, U.S. Army Corps of Engineers) to streamline permitting processes. (see p. 107)		X		
Work with the Okanogan Conservation District to develop and promote riparian grazing management strategies conducive to *river corridor* health. (see p. 108)		X		
Work with the Forest Service on watershed analyses, and on *river corridor* issues that concern both agencies. (see p. 108)	X			
Continue to work with the Yakama Indian Nation, the U.S. Fish and Wildlife Service, the Department of Fish and Wildlife, and the Public Utility Districts. (see p. 108)	X			
Work with the Methow Valley Land Trust and other similar groups on implementation of the education recommendations in this section. (see p. 108)		X		
Work with local citizens to plan projects that will support the intent of this plan. (see p. 108)			X	
Work with interested groups to plan *river corridor* projects consistent with the intent of this plan. (see p. 108)	As projects arise			
Work with other agencies to develop interpretive facilities. (see p. 108)			X	
Work with the Department of Fish and Wildlife to enhance fishing access sites and campgrounds so that those facilities better meet the goals of this plan. (see p. 108)			X	
Work with the State Department of Parks and Recreation to encourage development of river recreation access sites that meet the goals of this plan, the Comprehensive Recreation Plan				X

for the Methow Valley, and the Recreation Element of the County's Comprehensive Plan. (see p. 108)				

Incentive programs				
Amend the Open Space Tax Program/PBRS. (see p. 111)			X	
Encourage *river corridor* landowners to participate in the revised Open Space Tax Program. (see p. 112)				X
Encourage landowners to participate in cost-sharing programs. (see p. 112)			X	
Explore the possibility of developing a special assessment district. (see p. 112)				X
Property protection				
Apply to the NFIP to receive credit under the Community Rating System for floodplain management activities. (see p. 113)			X	
Educate landowners about flood hazards and the availability of flood insurance. (see p. 113)	X			
Encourage elevation and floodproofing of existing floodplain structures and publicize funding sources. (see p. 113)			X	
Encourage relocation of existing floodplain structures. (see p. 113)				X
Watershed management guidelines				
Develop and distribute stormwater management, clearing and grading, and riparian management guidelines for landowners. (see p. 114)			X	
Modify the County's Public Benefit Rating System to provide additional incentives for effective riparian grazing management. (see p. 114)			X	
Work with other interested agencies to support the raising and keeping of livestock in the basin in a manner that minimizes the adverse impacts of livestock on river and stream corridors. (see p. 114)				X
Structural projects				
On public and private projects, encourage use of bioengineering techniques, rather than *riprapping* and other single-objective bank stabilization techniques. (see p. 118)			X	
On public and private projects, discourage the use of dikes and levees. (see p. 118)	X			
The Office of Planning and Development will develop a formal process to assist the Public Works Department in coordinating planning of any work within stream corridors, starting early in the design process. (see p. 118)			X	

Use the assessment system in Appendix **Error! Reference source not found.** to assess projects in which the County participates. (see p. 119)			X	

Structural projects (*continued*)				
Encourage the Department of Transportation and other agencies to use the guidelines presented in this plan, and to work with the County's Office of Planning and Development to develop projects that will improve river and riparian function and will not contribute to problems in the *river corridor*. (see p. 119)			X	
Encourage project proponents to consult with the County prior to applying for permits. (see p. 119)	X			
Woody debris management				
In cooperation with other interested agencies, develop a risk-assessment process whereby a team will regularly evaluate debris that has the potential to threaten land or infrastructure (roads, bridges, etc.) and recommend action where necessary. (see p. 121)			X	
When woody debris is to be removed from private land, work with landowners to ensure their rights are respected and their concerns addressed to the extent possible. (see p. 122)				X
Maintenance personnel should have adequate guidance and leadership to take action during emergencies when fast action is needed. (see p. 122)			X	
Operations and maintenance				
Inventory County facilities (dikes, bridges, and armored embankments) in the *river corridors* and determine the County's role in maintaining them. (see p. 123)	X			
Assess and plan for maintenance of the dike north of Twisp. (see p. 123)	X			
In cooperation with U.S. Army Corps of Engineers and Washington State Department of Fish and Wildlife representatives, assess the current condition of the County's dikes and develop a maintenance plan. (see p. 123)		X		
Regularly assess the condition of County dikes and armored embankments. (see p. 123)	X			
Seek funding for maintenance of County flood control facilities. (see p. 123)	X			
Develop an Operations and Maintenance Manual for Activities Within the Shoreline Environment. (see p. 123)	X			
Treat any removal of debris from the channel as recommended in the section of this plan on Debris Management. (see p. 124)		X		
Involve the nascent Okanogan County Stream Team in annual assessments so that repair		X		

and maintenance decisions can be made based on multi-disciplinary analysis. (see p. 124)				

Recreation: trails and river access				
Conduct a lake and river facilities feasibility study, as discussed in the Parks and Recreation Element of the County's Comprehensive Plan. (see p. 125)				X
Continue to work in partnership with the Methow Valley Sport Trails Association, the Methow Institute Foundation, and the U.S. Forest Service on trail projects. (see p. 125)	As projects arise			
Develop cooperative planning relationships with other agencies and among County departments to improve river access and foster development of trails and other *river corridor* facilities. (see p. 125)			X	
Encourage use of *river corridor* trails for transportation as well as recreation through development of trails that link populated areas without compromising riparian resources. (see p. 125)				X
Educate recreational users of the Methow Valley's *river corridors* in safe use that does not damage natural resources. (see p. 125)			X	
Methow River corridor northwest of Mazama				
Map all areas that are potentially unstable as a result of rapid stream incision or stream bank erosion throughout the *river corridor* north of the Mazama Bridge. (see p. 126)	X			
Stop issuing building permits for structures for human habitation in areas that are shown to be hazardous. (see p. 126)		X		
Sponsor acquisition of undeveloped floodplain land (or easements) when the following conditions can be met: the acquisition will result in no change in County tax revenues (that is, funds must be available to make payments in lieu of taxes); no cash will be required from the County (any match required must come from other sources); there will be no maintenance responsibilities on the part of the County. (see p. 126)	When conditions can be met			
Develop a flood warning and evacuation system for the area. (see p. 126)	X			
As part of the Public Education and Involvement component of this plan, work to inform *meander belt* residents. (see p. 126)	X			
In cooperation with the Forest Service and the Lost River Airport Tracts Homeowners' Association, have the dike down river from the confluence of the Methow and Lost Rivers assessed. (see p. 126)			X	
Develop guidelines for assessment of any diking proposal. (see p. 127)		X		
Use legal counsel to assess the County's present liability. Take actions necessary to		X		

minimize that liability. (see p. 127)				

Other issues				
Develop a program to inventory resources and conditions and monitor change. (see p. 127)			X	
Based on the results of inventory and monitoring, have floodplains re-studied and new FEMA maps prepared when changes in the basin suggest the existing maps are no longer accurate. (see p. 128)	As needed			
Assess the impact of human use and naturally-occurring upper-watershed disturbances (e.g., fire) on ecosystem structure and function and, specifically, on the capacity of the river and its floodplain to accommodate flooding. (see p. 128)			X	
Determine what changes must take place throughout the watershed to improve function to the level necessary to support the goals and objectives of this plan. (see p. 128)				X
With landowners, work to develop systems of public access compatible with the results of the studies discussed above. (see p. 128)				X

C. Implementation Plan

The following table states the County department responsible for implementing each of the Phase I recommendations. The anticipated source of funds is noted for projects that will require outside funding. Implementation of future phases (II-IV) will be scheduled as funding becomes available. The funding manual (Appendix E.5) catalogues potential funding sources. Once this plan has been adopted, Okanogan County will be eligible to apply for funds to implement the plan's recommendations from the state's Flood Control Assistance Account Program. Applications for the biennium beginning in June, 1997 will be due early in 1997.

Figure VI.4
Multi-Objective River corridor Plan for the Methow Basin
Implementation Plan

Recommendation	Responsible Agencies and Funding Sources
Flood warning and emergency response	
Amend the Emergency Management Operations Plan to address flood warnings for people out of range of KOMW. (see p. 96)	Sheriff's Department
At Lost River Airport Tracts, present flood awareness information. (see p. 96)	Sheriff's Department, Office of Planning and Development
Make contact with people in other high risk areas. (see p. 96)	Sheriff's Department
Development regulations	
Amend the Flood Damage Prevention Ordinance to allow no more than a 50% increase in building footprint size when existing structures in areas of special flood hazards are *substantially improved*. (see p. 97)	Office of Planning and Development
Amend the Flood Damage Prevention Ordinance to require that, in all areas of special flood hazards, new construction and *substantial improvement* of any	Office of Planning and Development

residential structure shall have the lowest floor, including basement, elevated one foot or more above *base flood elevation*. (see p. 97)	

Recommendation	Responsible Agencies and Funding Sources
Development regulations (*continued*)	
Amend the Flood Damage Prevention Ordinance to require that, in all areas of special flood hazards, new construction and *substantial improvement* of any commercial, industrial, or other nonresidential structure shall either have the lowest floor elevated one foot or more above the level of the *base flood elevation* or shall be floodproofed so that below one foot above the *base flood* level the structure is watertight. (see p. 97)	Office of Planning and Development
Mapping	
Develop *river corridor* maps. (see p. 100)	Office of Planning and Development
Have flood boundary maps developed for unmapped reaches of the Twisp and Chewuch Rivers and for Gold Creek. (see p. 100)	Office of Planning and Development. FEMA has allocated some funds for use during Federal Fiscal Year 1997. FCAAP funds may be available to supplement the money from FEMA.
Have detailed studies done of areas where flood elevations are not available. (see p. 100)	Office of Planning and Development. Studies during Phase I will be done by the U.S. Army Corps of Engineers at no cost to the County. FEMA has allocated funds for additional mapping during Federal Fiscal Year 1997. FCAAP funds may be available to supplement the money from FEMA.
Map all areas in the Methow basin that are potentially unstable as a result of rapid stream incision or stream bank erosion. Use those maps in determining Geologically Hazardous areas (Landslide Hazard areas) per the Critical Areas Regulations (GMA). (see p. 100)	Office of Planning and Development. The USGS can do the work under its cost-share program, with a 50% match required from the County. FCAAP funds may be available to pay the County's share of the cost.

Recommendation	Responsible Agencies and Funding Sources
Outreach programs	
Education	
Develop a fact sheet on "Working Near Water" for distribution to people interested in doing work in the *river corridor*. (see p. 103)	Office of Planning and Development; work will be done under the current FCAAP grant
Develop and distribute a booklet on flood hazards and preparedness for people who now live in the floodplain, new buyers of floodplain land, and floodplain permit applicants. (see p. 104)	Office of Planning and Development
Advertise in *Methow Valley Building and Construction*. (see p. 104)	Office of Planning and Development
Add comments referencing available informational materials to site analyses prepared for parcels in the floodplain. (see p. 104)	Office of Planning and Development
Distribute brochures on flood-prone property to building and real estate professionals. (see p. 104)	Office of Planning and Development
Make brochures on working near water and on flood-prone property available to members of the general public. (see p. 104)	Office of Planning and Development
Develop a booklet designed to increase awareness of stream and riparian function and stewardship. (see p. 104)	Office of Planning and Development; work will be done under the current FCAAP grant
Develop a brochure for landowners on preserving property by using bioengineering to prevent streambank erosion. (see p. 104)	Office of Planning and Development
Develop a summary of available brochures that will guide people in selecting the ones most pertinent to their situations. (see p. 105)	Office of Planning and Development
Assist in distribution of information about the Stewardship	Office of Planning and Development

Incentive Program. (see p. 105)	

Recommendation	Responsible Agencies and Funding Sources
Outreach programs	
Involvement	
Establish a River Corridor Management Forum. (see p. 106)	Office of Planning and Development. Funding may be available from the Public Power Council.
Establish a Reach Watch program. (see p. 106)	Office of Planning and Development
Sponsor a biannual workshop on flood hazards, *river corridor* values, and relevant regulations for real estate agents, lenders, and appraisers. (see p. 106)	Office of Planning and Development. Supplemental funding may be available from the Department of Ecology.
Participate in the public involvement component of the Chewuch Restoration Project currently underway. (see p. 106)	Office of Planning and Development
Partnerships	
Establish an ongoing Technical Advisory Committee. (see p. 107)	Office of Planning and Development
Work with the Forest Service on watershed analyses, and on *river corridor* issues that concern both agencies. (see p. 108)	Office of Planning and Development
Continue to work with the Yakama Indian Nation, the U.S. Fish and Wildlife Service, the Department of Fish and Wildlife, and the Public Utility Districts. (see p. 108)	Office of Planning and Development
Property protection	
Educate landowners about flood hazards and the availability of flood insurance. (see p. 113)	Office of Planning and Development
Structural projects	
On public and private projects, discourage the use of dikes and levees. (see p. 118)	Office of Planning and Development
Encourage project proponents to consult with the County prior to applying for permits. (see p. 119)	Office of Planning and Development

Recommendation	Responsible Agencies and Funding Sources
Operations and maintenance	
Inventory County facilities (dikes, bridges, and armored embankments) in the *river corridors* and determine the County's role in maintaining them. (see p. 123)	Public Works Department
Assess and plan for maintenance of the dike north of Twisp. (see p. 123)	Public Works Department
Regularly assess the condition of County dikes and armored embankments. (see p. 123)	Public Works Department
Seek funding for maintenance of County flood control facilities. (see p. 123)	Public Works Department
Develop an Operations and Maintenance Manual for Activities Within the Shoreline Environment. (see p. 123)	Office of Planning and Development
Methow River corridor northwest of Mazama	
Map all areas that are potentially unstable as a result of rapid stream incision or stream bank erosion throughout the *river corridor* north of the Mazama Bridge. (see p. 126)	Office of Planning and Development. The USGS can do the work under its cost-share program, with a 50% match required from the County. FCAAP funds may be available to pay the County's share of the cost.
Develop a flood warning and evacuation system for the area. (see p. 126)	Sheriff's Department and Office of Planning and Development. May be funded in part by the Corps of Engineers' Planning Assistance to States program.
As part of the Public Education and Involvement component of this plan, work to inform *meander belt* residents. (see p. 126)	Office of Planning and Development

D. Plan Review

The Methow River basin is a dynamic system; conditions will change over time. Needs will also change, as a result of changes in the system, changes brought about by implementation of this plan, and changes in the needs and goals of the people who live here. This plan is intended to be a working document, updated periodically to reflect changes in needs and in our knowledge of how rivers work. The Office of Planning and Development should monitor implementation of the plan and submit a progress report to the Board of County Commissioners each year. The report should include, at a minimum, the following:

- A review of the original plan.
- A review of any floods that occurred during the previous calendar year.
- A review of action items in the original plan, including how much was accomplished during the previous year.
- A discussion of why any action items were not completed or why implementation is behind schedule.
- Recommendations for new projects or revised action items.
- Recommendations for scheduling of new and revised items and items in the original plan.