

**Potential Flood Management Planning Issues  
Identified in the Update 2009 Outreach Process**

As part of the outreach effort for Update 2009 of the California Water Plan, comments on the flood-related Resource Management Strategies have resulted in the identification of a wide range of potential flood management planning issues. This document identifies potential planning issues that could be addressed as part of:

Statewide Flood Management Planning: DWR should consider this issue in the upcoming report on Statewide Flood Management Planning (tentatively titled “Recommendations for Sustaining Integrated Flood Management”) which is proposed to be completed by January 1, 2012.

Central Valley FPP: Consistent with guidance from the legislature, this issue will be considered in the Central Valley Flood Protection Plan (CVFPP).

IRWM: DWR should consider inclusion of this issue in the guidance provided for expansion of regional flood planning in Integrated Regional Water Management (IRWM) plans that would accompany planning grant guidelines.

Issues and Recommendations	Planning Activity			Notes
	Statewide Planning	Central Valley FPP	IRWM	
<b>A. LAND USE</b>				
1. Develop new State General Plan Guidelines to include a floodplain management element that reflects sustainable floodplain management.	X			Per the FloodSAFE strategic plan, DWR is planning to provide technical assistance to local agencies to assist their compliance with AB 162.
2. Assist communities to better understand how to incorporate future flood risk reduction and natural floodplain enhancement efforts in planning, development and zoning decisions, including the following local strategies:	X	X	X	Risk Notification Program, Best Available Maps, and Alluvial Fan Task Force will all communicate flood risk information to the public.
3. Develop and integrate of floodplain management regulations into local land use and conservation plans.	X	X	X	
<b>B. DEVELOPMENT PLANNING</b>				
1. Ensure that 100-year flood risks are fully understood and properly mitigated through the CEQA process and with affirmative findings by the local government at the time new development is approved	X	X	X	
2. Require a floodway analysis for all subdivisions and large scale developments proposed for floodprone areas, in addition to developing the 100-year flood data.	X	X	X	
3. Prohibit construction in the 100-year floodplain. Require all new development to result in no impact on water surface elevations and velocities.	X	X	X	
4. Incorporate the concept of No Adverse Impact (NAI) in local zoning ordinances, subdivision regulations, building and health codes and special purpose ordinances designed to protect floodplain resources and provide for flood risk reduction or mitigation.	X	X	X	

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<b>C. PLANNING FOR STRUCTURAL FLOOD FACILITIES</b>				
1. Consider the use of structural projects as a measure of last resort and only after non-structural measures have been considered.	X	X	X	
2. Require owners of structural measures to demonstrate long-term financial and technical ability to carry out operation and maintenance tasks for the life of the structure.	X	X	X	
3. Require development of a multi-hazard plan and an emergency action plan for dam or levee structure addressing how other hazards affect the structural measure (earthquake, subsidence, river sedimentation, erosion, etc.).	X		X	Need to coordinate with OES on LHM and SHM plans.
4. Communication of the residual risk associated with structures, including dams, levees, diversions and reservoirs, should be an important part of any project.	X	X	X	
5. When the construction, repair or reconstruction of a structural measure is contemplated, consideration should be given to incorporating non-structural measures into the protection system and to preserving existing natural functions to avoid adverse impacts to the natural system.	X	X	X	
6. Plans for structural projects should be developed from a watershed perspective to determine the appropriate, complementary structural and nonstructural approaches; the true long-term costs of maintenance; design elements that would account for cumulative impacts of the presence of the structure; the ecological and recreational benefits of nonstructural options; and ways to protect natural functions and resources.	X	X	X	CVFPP will utilize basin-wide approach.
7. Levees should be designed to a high standard, must be maintained and inspected, should be used only as a method of last resort for providing a limited means of flood risk reduction for existing development, and should not be used to facilitate the development of currently undeveloped floodprone lands.	X	X	X	CVFPP will increase levee standards and identify other methods to provide flood protection.
8. Levees should not be constructed in floodways. To the maximum extent possible, levees should be set back from rivers when they are constructed or reconstructed. Clear guidance should be established about the type and amount of vegetation that is consistent with proper levee maintenance.	X	X	X	
9. The design of levees should include improved methods of providing resiliency, such as fail-resistant spillways to prevent catastrophic overtopping or levee failure.	X	X	X	DWR has recently developed draft Proposed Interim Levee Design Criteria for urban and urbanizing areas protected by the state-federal project levees.
10. Account for increased runoff caused by climate change and future development in local policies and regulations or guidelines for new construction freeboard requirements.	X	X	X	Already addressed in Water Plan Update '09

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<b>D. LOCAL/REGIONAL FLOOD PLANNING</b>				
1. Develop comprehensive floodplain management plans through a process that involves local governments, business people, landowners, developers and citizens.	X		X	
2. Prioritize restoration and protection efforts on those floodplains identified as having the greatest flood risks and significant natural and beneficial functions, including ecosystem benefits and recharge area protection. Quantify benefits, as appropriate, that balance flood risk reduction with water supply and ecosystem values gained from project implementation.	X	X	X	The CVFPP will consider restoration of floodplains and the potential for dedicated flood-bypasses. FloodSAFE Strategic Plan includes a foundational objective to improve ecosystem processes on # acres of floodplain by December 31,2018.
3. Identify riparian and coastal floodplain areas to be acquired or restored that would contribute to the reduction of future flood risk and damages and lead to the [minimization] of environmental damages.	X	X	X	
4. Incorporate future conditions and cumulative impacts into the identification, mapping and regulation of flood risk areas, including changes in the watershed, its floodplain and its hydrology; climate change and variability including sea level rise; subsidence; and other similar phenomena.	X	X	X	Also to be reflected in all feasibility level planning investigations.
5. Encourage local and regional partnerships and collaboration among agencies and stakeholders in developing watershed-based solutions to flood risk management through multi-objective strategies. Enhance the IRWM program with flood risk management priorities for sustainable floodplain management			X	Already addressed in Update 2009 Objective #1 (IRWM), Objective #6 (IFM) and related actions.
6. Identify and prioritize projects that provide for flood risk reduction through restoration and enhancement of coastal floodplains, including the use of coastal wetlands and estuaries.	X		X	
7. Encourage the development of coastal flood management plans for each coastal region (some of these already exist), building on the Coastal Zone Management Act, aimed at reducing flood risk while providing for better water quality, protection of the habitats and wetlands, and reduced vulnerability to other coastal hazards.	X		X	
8. Critical facilities should be required to consider both the mapped flood risk as well as quantify the watershed-based runoff that affects their site.	X		X	
9. All local programs should encourage infiltration to reduce stormwater runoff and reduce flood risk.	X		X	
10. Address the 38 recommendations of the Floodplain Management Task Force	X	X	X	

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<b>E. STATEWIDE GUIDANCE ON FLOOD PLANNING</b>				
1. Evaluate/inventory the existing major flood control structures statewide, including levees, and develop a comprehensive program of rehabilitation, maintenance, inspection, replacement and removal as needed.		X	X	The Central Valley Flood Protection Plan will include an inventory of existing facilities within that area.
2. Establish a State riparian zone policy to clarify the importance of and the steps needed to protect, maintain and restore the areas along our rivers and streams so that they can not only provide their natural benefits to today's population but also survive as sustainable ecosystems into future generations.	X	X		The FloodSAFE Strategic Plan includes a foundational objective to establish an interagency mitigation banking program that provides lasting environmental benefits by January 1, 2012.
3. Develop State guidance on the use of structural measures in flood risk management, incorporating the following principles:	X	X		The statewide flood planning report will include guidance on the use of structural and non-structural measures.
5. Consider 500-year level of protection as the minimal design standard for all large flood control structures, and 200-year standard for smaller structures.	X			SB 5 established a 200-year level of protection for urban areas in the Central Valley and the statewide flood planning report will provide recommendations on the potential to increase flood protection standards statewide.
6. Develop guidance on the inspection and certification of levees.		X		Substantial levee inspection work is ongoing in the Central Valley, as a prelude to the Central Valley Flood Protection Plan
7. Engage in a statewide task force effort to update the California Building Code with special provisions relating to special flood hazard areas such as alluvial fans.	X			The Alluvial Fan Task Force is charged with developing planning tools to evaluate the hazards associated with alluvial fan flooding including debris flow, erosion, and post-wildfire conditions. Final report is due March 2009.
8. Develop statewide policy relating to the evaluation of flood protection requirements in new development proposals for facilities that are built in dam and levee failure zones.	X			
9. Develop a statewide strategy, policy and guidance on the protection and restoration of the natural and beneficial functions of floodplains as an integral part of all state, tribal and local government programs, actions, planning, policies, regulations and grants.	X			
10. Develop State guidance for evaluating projects using benefit analysis that includes recreation benefits, avoided damage to land use (erosion, crop losses, etc.), increase in real estate values due to proximity to open space, ecosystem improvements, and revenue generation from tourism.	X	X		
11. Highlight the importance of coastal resource protection in statewide flood management policy and guidance, as a means of effective flood protection. Develop and/or improve guidance for coastal areas on managing coastal floodplains in maximizing flood risk reduction, including guidance on land use requirements and building codes for construction in the coastal zone.	X		X	

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12. Develop policy for coastal areas and guidance on shoreline flood protection; the use of hard structures to protect shorelines should be avoided, unless it can be demonstrated that no adverse impacts will result from the long-term presence of the structure and of similarly situated structures.	X			
13. Identify needs for improved coordination and partnerships among all levels of government and other parties to facilitate the protection and restoration of floodplains (see stormwater and watershed programs below, among others.)	X	X	X	
14. Identify regulatory constraints, conflicts and overlap in the implementation and maintenance of flood management and floodplain restoration projects. Coordinate with the appropriate federal and state agencies to develop statewide guidance for the maintenance of levees, detention ponds and natural channels.	X	X		
15. Address the challenges flood management programs face in obtaining environmental permits to build and maintain projects. Identify ways DWR can assist local agencies to engage regulatory and public stakeholders to plan projects and obtain approvals for projects.	X	X		
16. Engage in a coordination effort with the State's water quality programs (implementing EPA's NPDES program). Form an inter-agency task force to look for ways to integrate the respective programs.	X			Need to coordinate with the water plan RWQCB representative on integrating flood/water quality issues.
17. Develop and/or update State guidance on multi-hazard planning. Establish a statewide multi-hazard task force to develop and update tools and strategies for multi-hazard planning and response.	X			FEMA and OES have developed guidance on multi-hazard planning and Congress has linked future disaster assistance to the preparation of such plans.
18. Ensure that results of risk analyses are explained tactfully without reference to specific frequencies of protection (e.g. 100-year Flood).	X	X	X	
19. Identify non-structural approaches to flood management and their applicability in different environments, including urban, suburban, rural, and agricultural land uses.	X	X		
20. Emphasize long-range planning as an element of flood management, including identification and mapping of current and foreseeable flood risks, consideration of urban development patterns, preservation of floodplains and floodplain storage, evaluation of capital needs for future facilities, maintenance of existing facilities, replacement of aging infrastructure, and sources of funding.	X	X	X	
21. Identify the liabilities associated with flood management and the State's ability to limit these liabilities. In the absence of a common standard (such as the "common enemy" standard) the current patchwork of legal decisions discourages agencies from constructing flood management projects.	X	X		The issue of flood liability has been acknowledged in the flood-related RMS narratives.

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22. Improve the analytical approaches to floodplain management by providing scientific and technical assistance, including economic guidance, to organizations with floodplain management responsibilities. Develop quantitative methods to determine the value of floodplain resources and functions.	X	X		
23 In collaboration with representatives from the Tribal communities in California, examine opportunities for flood risk management on Tribal lands where downstream and upstream impacts are significant.	X		X	SBX2 1 requires inclusion of tribal groups in IRWM plans (for those tribes with land within the IRWM planning region)
24. Establish a technical assistance outreach effort aimed at sharing of technical information and data with Tribal communities.	X	X		
<b>F. RESEARCH NEEDS</b>				
1. Examine the technical feasibility and applicability of geologic floodplains as a basis for determining flood risk as opposed to 100-year or other existing probability-based standards.	X		X	The Alluvial Fan Task Force is charged with developing planning tools to evaluate the hazards associated with alluvial fan flooding including debris flow, erosion, and post-wildfire conditions. Final report is due March 2009.
2. Evaluate the statewide implementation of ASFPM's No Adverse Impact (NAI) approach - a "do no harm" policy based on the concept that the action of any community or property owner should not adversely impact others, now and in the future. NAI fosters long-term sustainability of floodplains and contributes to local natural disaster resilience.	X			
3. Collaborate with the Farm Bureau and other agencies to evaluate agricultural policies and their impact on flood losses and on the management of floodplain resources and functions. This may include an inventory of conservation practices and projects, opportunities for conservation and for flood risk reduction.	X	X	X	
4. Collaborate with NRCS to evaluate opportunities for conservation easements and identify restoration strategies that meet both conservation and agricultural goals.	X	X	X	
5. Identify the processes, occurrences, impacts and associated vulnerabilities of arid region hazards such as flooding, erosion, debris flow and post-wildfire conditions.	X			The Alluvial Fan Task Force is charged with developing planning tools to evaluate the hazards associated with alluvial fan flooding including debris flow, erosion, and post-wildfire conditions. Final report is due March 2009.
<b>G. FLOOD AND HAZARD MAPPING</b>				
1. Develop and/or update coastal floodplain maps and incorporate erosion zones - areas subject to erosion - and subsidence.	X		X	
2. Develop open source tools for estimating flood damage and damage associated with other hazards similar to FEMA's HAZUS program for estimating damages. Flood zones should include flood depth and water velocities. Data on flood prone structures, the number/location of dams and levees, population at risk, and all location of structures protected by levees should be identified.	X	X		

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3. A comprehensive, statewide GIS database on flood management should be established and shared with local agencies and communities. Incorporate floodplain resources in floodplain maps (groundwater storage basins, riparian zones, geologic data, and other key natural floodplain resources). Incorporate land use and watershed boundaries.	X	X		DWR is already developing the State Levee Database to inform the CVFPP, which currently includes levee, flood mapping and other information which can be linked to other geospatial data.
4. Develop updated flood hazard maps in all parts of the State. Future conditions and cumulative impacts should be incorporated accounting for changes in the watershed, its floodplain and hydrology; climate change impacts; subsidence, location and condition of levees, and failure zones of dams, levees, diversions and reservoirs.	X	X	X	Updated flood hazard maps have been developed for the Central Valley.
5. Areas subject to special flood hazards, such as alluvial fans, should be included on flood hazard maps. Integration of geologic hazards into the floodplain mapping process is also necessary, as land subsidence, landslides, mudflows and other geologic phenomena can exacerbate flood hazards. Fire hazards and debris flow hazards should also be included.	X			
<b>H. FUNDING</b>				
1. Funding should be provided for effective agricultural conservation programs that promote the protection and enhancement of the natural and beneficial functions of flood prone lands and of watersheds.	X	X	X	
2. Identify key funding needs and priorities statewide and at the regional scale for flood risk reduction through long-term strategies that maximize water as a resource.	X			The development of the statewide flood planning report will include a funding strategy to implement to recommendations.
3. Provide funding for initiatives that support flood risk reduction through sustainable floodplain management, including land use development strategies, multi-objective floodplain management projects, data collection, river forecasting, geographic information systems, flood mapping, stream gauging programs, flood warning programs, and climate change research and analysis.	X			The development of the statewide flood planning report will include a funding strategy to sustain regional flood management planning.
4. Consider the limitations imposed on local flood control agencies by the 1996 Proposition 218 (and the 1978 Proposition 13 before it). Identify potential funding sources and recommend legislative action needed to address funding. This should include reform of Proposition 218, and discussion of on-going funding for the state flood control subvention program. Identify the need to assist local flood control agencies with contingency funding for evacuations and emergency repairs.	X			Flood-related RMS narratives did include acknowledgement of funding difficulties.