CENTRAL VALLEY FLOOD MANAGEMENT PLANNING PROGRAM

FloodSAFE CALIFORNIA

Central Valley Flood Protection Plan

Reader's Guide to the Draft Management Action Evaluations

A management action is a specific structural or nonstructural strategy, action, or tactic that contributes to the Central Valley Flood Protection Plan (CVFPP) goals and addresses identified flood management problems in the Systemwide Planning Area, including any identified deficiencies in the State Plan of Flood Control.[1] Management actions may range from potential policy or institutional changes, to recommendations for operational and physical changes to the flood management system. Management actions may address one or more CVFPP goals and are the "building blocks" for regional solutions and eventually systemwide solutions.

An initial set of management actions was developed by consolidating a large number of compiled actions and recommendations from published studies and reports, and input from Regional Conditions and Topic Work Groups during CVFPP Phase 1 activities. DWR subject-matter experts provided a preliminary evaluation of the environmental, economic, technical, and social consideration of the identified management actions. Each management action was evaluated against a uniform set of criteria to allow for a consistent comparative analysis. A draft *Management Actions Evaluation Form* was prepared for each management action. The following is a description of each section of the *Management Actions Evaluation Form.*

Management Action Title – *Includes the name of the management action.*

ID – *A unique index for the management action that is used to track and reference management action, and does not indicate any ranking or importance.*

Description – *Describes problem addressed by management action, and its desired outcome and methodology.*

- **Problem –** *Describes the problem or class of problems that the management action is designed to address.*
- **Desired Outcome –** *Describes the desired and/or anticipated outcome of implementing the management action.*
- **Methodology –** *Describes the specific steps involved in executing the management action. May include a range of implementation methods.*

CVFPP Goals – *Indicates the draft 2012 CVFPP Goal to which the management action most significantly contributes. Because each management action has the potential to contribute to more than one goal, all applicable goals are identified.*

Recommendations – *Identifies whether or not the management action should be retained for further evaluation in the CVFPP planning process, and identifies specific features of the management action which may require further evaluation.*

Advantages and Disadvantages – *Summarizes the key advantages and disadvantages of the management action, determined from the qualitative analyses of economic, environmental, social, technical, community, and regional considerations.*

[1] Refer to the CVFPP Interim Progress Summary No. 1. California Department of Water Resources, May 2010.

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Economic Considerations – *Describes the economic considerations associated with the management action.*

- **Capital Cost –** *Management actions will have a range of requirements for initial capital, from policy changes with low capital costs to large infrastructure projects with substantially higher capital costs. This section describes the anticipated capital costs associated with the implementation of the management action.*
- **Annual Cost to Operate/Maintain/Repair**. *Ongoing operations, maintenance, and repairs to the existing flood management system represent a substantial portion of flood management costs. These costs also include often expensive permitting and mitigation. Management action is evaluated qualitatively, based on its potential to increase or decrease the annual costs to operate, maintain, and/or repair the flood system.*
- **Potential for Cost-Sharing**. *Multiple local, State, and federal agencies share responsibility for flood management in the Central Valley. Many management actions provide potential for the State to share costs with these other agencies. This section identifies potential cost-sharing partners and opportunities associated with each management action.*
- **Flood Fighting**. *Although California Emergency Management Agency (CalEMA) is the State's lead on overall emergency response, California Department of Water Resources (DWR) is the lead State agency for flood fight assistance and flood emergency response. Section 128(a) of the California Water Code authorizes DWR in times of storms or floods to take any remedial measures necessary to avert, alleviate, repair, or restore damage or destruction to property having a general public or State interest. In this section, management action is qualitatively evaluated on its potential to increase or decrease costs for flood fighting.*
- **Emergency Response and Recovery Costs**. *Flood emergency operations costs include mobilization of emergency response personnel and resources, evacuation costs, as well as the monitoring and notification activities that trigger mobilization when a flood may occur. Post-flood recovery includes programs and actions that restore public infrastructure and services, provide aid to individuals, and facilitate other forms of assistance to individuals, businesses, and communities. In this section, management action is qualitatively evaluated on its potential to increase or decrease costs for emergency response and recovery programs.*
- **Effect on Damage to Critical Public Infrastructure**. *Management actions have the potential to impact critical public infrastructure such as roads and utility corridors. In many cases this will be region specific, and evaluation is not possible on a Valleywide scale. Where possible, management action is evaluated for its potential to have an effect on damage to critical public infrastructure.*
- **Effect on Floodplain and Economic Development**. *In the Central Valley, population growth is driving demand for new development. Much of the new development is occurring in areas that are susceptible to flooding. In this section, management action is evaluated on its potential to alter projected trends in economic development in floodplains.*

- **Effect on State Flood Responsibility**. *The flood management system in the Central Valley includes 1,600 miles of levees that protect more than half a million people, 2 million acres of cultivated land, and approximately 200,000 structures with an estimated value of $47 billion.[2] In this section, management action is evaluated on its potential to increase or decrease State flood responsibility.*

Environmental Considerations – *Describes environmental considerations associated with the management action.*

- **Rehabilitate Key Physical Processes and Ecological Functions.** *The construction of dams, levees, bank revetments, engineered channels and related flood management facilities has altered natural flow regimes, resulting in changes to the natural hydrologic, geomorphic, and biologic processes in the Sacramento and San Joaquin river basins. In this section, management action is qualitatively evaluated on its ability to rehabilitate these processes and functions.*
- **Adverse Environmental Impact.** *Flood management actions, especially structural management actions, have the potential to adversely impact the environment while meeting other flood management goals. Each management action is evaluated on its potential to create adverse environmental impacts such as habitat loss and alteration of key physical processes.*
- **Permitting Considerations**. *The process for obtaining permits and mitigating the potential impacts of flood management actions can be costly and complex, involving extensive coordination with multiple agencies. In this section, management action is evaluated on the relative expense and complexity of required permitting.*
- **Opportunity to Reduce Adverse Environmental Impacts Associated with Operation, Ongoing Maintenance, and Repairs of Flood Management System.** *Flood maintenance activities can sometimes conflict with the attainment of ecosystem goals. Levee and floodway maintenance and repair practices and policies, and operation of the flood management system often reduce or eliminate habitat complexity within the river corridors on which many native aquatic and terrestrial species are dependent. In this section, management action is evaluated based on its potential to reduce the environmental impacts associated with operation, ongoing maintenance, and repairs of the flood management system.*

Social Considerations – *Describes social considerations associated with the management action.*

- **Public Safety**. *Protection of public safety is a key component of the FloodSAFE Vision. Management action is evaluated to determine its impacts on public safety, based on the extent to which the action has potential to reduce frequency of flooding (i.e., increase the level of protection), and reduce damages when flood occurs.*
- **Potential to Provide Other Benefits**. *Management actions have the potential to provide other benefits not specifically listed in the CVFPP Goals. Examples of other*

[2] A California Challenge – Flooding in the Central Valley. A Report from an Independent Review Panel to the Department of Water Resources, State of California. October 15, 2007.

benefits include water supply, recreation, and open space. A qualitative description of each management action's potential to provide these supplementary benefits is provided.

- **Likelihood of Implementation**. *Certain management actions may meet multiple CVFPP Goals, but implementation may be unrealistic for political, institutional, and/or cultural reasons. Management action is evaluated based on the likelihood of its implementation. Specific political, institutional, and/ or cultural constraints with potential to restrict implementation are identified.*

Technical Considerations – *Describes technical considerations associated with the management action.*

- **Redirected Hydraulic Impacts**. *Redirected flood impacts occur when a project moves the risk of flooding from one area to another area. For example, improvements to flood protection in one area can result in increased flood flows in a downstream area; therefore increasing the flood risk downstream. Management action is qualitatively evaluated with respect to its potential to redirect hydraulic impacts.*
- **Residual Risk**. *Residual risk is the portion of risk that remains after flood control structures have been built. Risk remains because of the likelihood of the measures' design being surpassed by floods' intensity and of structural failure of the measures.*[3] *Residual risk can be mitigated by management actions that reduce life loss and property damages when flooding occurs. In this section, management action is evaluated on its potential impact on residual risk after implementation.*
- **Climate Change Adaptability**. *The potential consequences of climate change can have significant effects on the State.*[4] *Sea level rise and changes in precipitation patterns and extreme events due to climate change will alter Central Valley hydrology and bring new flood management challenges. In this section, management action is evaluated with respect to its potential to increase the adaptability of the flood management system to the impacts of altered climatic regimes.*

Regional Applicability

Each of the five CVFPP planning regions (Upper Sacramento, Lower Sacramento, Delta, Upper San Joaquin, and Lower San Joaquin) has a unique set of existing planning conditions and constraints, as outlined in the "Regional Conditions Report – A Working Document." In this section, each management action is assessed to determine applicability in the five CVFPP planning regions. For example, increasing on-stream flood storage capacity by building new storage facilities is not applicable in the Delta region, but may be used to reduce hydraulic impacts to the Delta.

[3] Risk Management and Critical Infrastructure Protection: Assessing, Integrating, and Managing Threats, Vulnerabilities and Consequences. Moteff, John. Washington DC: Congressional Research Service, 2005.
[4] 2009 California Climate Adaptation Strategy. California Natural Resources Agency. December 2009

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Urban, Small Community, and Non-Urban Considerations

Urban, non-urban, and small communities each have unique sets of existing conditions and constraints on potential flood management actions. As a result, not all management actions are applicable for all community types. In addition, the implementation of some management actions needs to be tailored to the different communities due to their unique conditions. Management action is assessed to determine its potential impact and suitability for each type of community.

Integration with Other Programs

There are many ongoing local, regional, State, and federal projects and programs addressing flood management improvements in the Central Valley. Implementation of some of the management actions are carried by multiple entities through a number of projects and programs. This section identifies projects and programs that are relevant to the implementation of management action.

References

This section identifies key references used in the development and evaluation of the management action.