FLOODSAFE OVERVIEW & ACCOMPLISHMENTS UPDATE

California Water Plan Update 2013
Tribal Engagement Workshop

PRESENTED BY

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DEPARTMENT OF WATER RESOURCES
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Responding to Flood Hazards in California

**RESPONSE & COORDINATION**
In general, emergency response starts with local response agencies. As the ability of local agencies to deal with any emergency are exceeded, they call upon other county, regional, state, and finally federal agencies to provide assistance. For flood related emergencies in California, the California Department of Water Resources’ State-Federal Flood Operations Center (FOC) is legally responsible for coordinating all State level flood response activities.

The following are some of the key agencies that work together to prepare for and respond to flood emergencies in California:

**Flood Response Agency** | **Federal** | **State** | **Local**
---|---|---|---
National Weather Service (NWS) | | | ✓
US Army Corps of Engineers (USACE) | | | ✓
US Bureau of Reclamation (USBR) | | | ✓
Governor’s Office of Emergency Services (OES) | ✓ | | |
California Department of Water Resources (DWR) | | ✓ | |
County Offices of Emergency Services | ✓ | | |
Preservation Districts (PRES) and Flood Control Districts (FCD) | | ✓ | |

**PLANNING BASED ON FLOOD HAZARD-TYPE**
California population centers are principally threatened by 4 types of flood hazards. Each of these hazard types has a different duration and spatial extent. Similar hazard types can benefit from similar preparedness and response strategies. While the legal authority for DWR and the basic resources at its disposal will be the same for any event, type-specific plans will improve DWR’s role in coordinating large-scale emergency response efforts.

**DIFFERENCES OF FLOOD HAZARD-TYPES**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Alluvial Fans</th>
<th>Banked Rivers / Headwaters</th>
<th>Coastal / Tidal Estuaries</th>
<th>Deep Floodplains</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time to Peak</td>
<td>Hours</td>
<td>Hours</td>
<td>Days</td>
<td>Days</td>
</tr>
<tr>
<td>Duration of Flood</td>
<td>Hours</td>
<td>Weeks</td>
<td>Seasonal</td>
<td>Weeks</td>
</tr>
<tr>
<td>Area Flooded</td>
<td>Small</td>
<td>Small</td>
<td>Medium</td>
<td>Large</td>
</tr>
<tr>
<td>Drainage Area</td>
<td>Small</td>
<td>Medium</td>
<td>Variable</td>
<td>Large</td>
</tr>
<tr>
<td>Characteristic Soils</td>
<td>Thunderstrum</td>
<td>Winter</td>
<td>Winter &amp; Spring Tide</td>
<td>Winter &amp; Spring Melt</td>
</tr>
<tr>
<td>High Sediment Load</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Man-Made Levees</td>
<td>Rare</td>
<td>Rare</td>
<td>Variable</td>
<td>Common</td>
</tr>
</tbody>
</table>

**FLOOD HAZARD-TYPES**
The duration and spatial extent of flooding in different hazard types is a function of both the local geography and hydrology.

- **A. Alluvial Fan**: Have no defined river channel. They are formed when fast moving mountain streams slow down on flatter plains.
- **B. Banked Rivers and Headwater Regions**: Typically are located in mountainous and hilly terrain. They have defined natural banks that quickly pass flood waters.
- **C. Coastal / Tidal Estuaries**: Are formed where rivers meet the ocean. They are subject to daily tidal action and often have a complex network of braided channels that form small flood prone islands.
- **D. Deep Floodplains**: Are located in flatlands that are prone to seasonal flooding. Flood waters travel slowly through these areas. These areas are often protected by levees.
A Long History of System Evolution

- CA Gold Rush (1849)
- CA Statehood (1850)
- Fed Arkansas Reclamation Act (1850)
- State Flood Control Act (1861)
- Reclamation District Act (1861)
- Local Levee Construction Era (1860-1910)
- State Flood Control Board (1911)
- Sac River Flood Control Project (1917)
- Stockton Deep Ship Channel (1933)
- Lower SJR and Tributaries Project (1944)
- Shasta Dam (1944)
- Fed Flood Control & Dam Construction Era (1910-1950)
- Folsom Dam (1955)
- Sacramento River Flood Control Project (1917)
- Oroville Dam (1967)
- State Flood Control, Operation and Maintenance Era (1960s -2002)
- Sacramento Flood Control Project (1970)
- Statewide Flood Management Planning Program (2008)
- Central Valley Floods (1997)
- FloodSAFE Era (Post 2003)
- Paterno Decision (2003)
- Hurricane Katrina (2005)
- Props. 1E & 84 (2006)
- Early Implementation Projects (2007- )
- CVFPP (2012) To be updated every 5 years after
- California Flood Legislation (2007)
Reducing Flood Risk

INITIAL RISK

Structural Improvements
- Critical levee repairs
- State-local early implementation projects
- Federal projects
- Emergency supplies and stockpiles
- Improved flood system operation and maintenance
- Delta levee improvements

Non-Structural Improvements
- Levee evaluations
- Central Valley Flood Protection Plan
- Mitigation banking
- Flood corridor easements
- Designated floodways
- Floodplain mapping
- New building standards
- Local agency risk acknowledgement
- Shared liability between State and local agencies
- System reoperation
- General Plan amendments and zoning ordinances

Residual Risk
- Flood emergency preparedness, response, and recovery
- Flood hydrology update/climate change
- Delta flood preparedness, response, and recovery project

Time / Resources

Ongoing Projects
New Projects
FloodSAFE California

*Improve integrated flood management in the State through a system-wide approach, while carrying out regional projects and enhancing core flood management programs, with the following strategic goals.*

- Reduce the chance of flooding
- Reduce the consequence of flooding
- Sustain economic growth
- Protect and enhance ecosystem
- Promote sustainability
Federal, State, and Local Roles

**USACE**: Fed partner, traditional designer/constructor of State-Federal facilities; modifications need federal approval.

**CVFPB**: Lead non-federal sponsor with the USACE for flood protection projects in the Sacramento-San Joaquin Valley; approves annual budget for Delta Levee Subventions Program.

**DWR**: Manages emergency response Statewide through Standardized Emergency Management System; administers Delta Special Projects Program and Delta Levee Subventions Program for local levee maintenance.

**LMA's**: Owner of local levees; maintains local and State-federal project levees.
Improve integrated flood management in the State through a system-wide approach, while carrying out regional projects and enhancing core flood management programs.
**Improve integrated flood management in the State through a system-wide approach**, while carrying out regional projects and enhancing core flood management programs.

<table>
<thead>
<tr>
<th><strong>SYSTEMWIDE FLOOD MGMT. PLANNING</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2006-2008</strong></td>
</tr>
<tr>
<td><strong>4</strong> USACE Feasibility Studies</td>
</tr>
<tr>
<td>- American River Common Features</td>
</tr>
<tr>
<td>- Lower San Joaquin</td>
</tr>
<tr>
<td>- Yuba River Basin</td>
</tr>
<tr>
<td>- West Sacramento</td>
</tr>
<tr>
<td>- Sutter Basin</td>
</tr>
<tr>
<td><strong>5</strong> Systemwide Flood Plans</td>
</tr>
<tr>
<td>- Phases 1 &amp; 2 stakeholder engagement</td>
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<tr>
<td>- Phases 3 &amp; 4 stakeholder engagement</td>
</tr>
<tr>
<td>- State Plan of Flood Control descriptive document</td>
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<tr>
<td>- Flood Control System Status Report</td>
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<tr>
<td>- Central Valley Flood Protection Plan</td>
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<tr>
<td>- Statewide Flood Management Plan</td>
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</tbody>
</table>
Improve integrated flood management in the State through a system-wide approach, while carrying out regional projects and enhancing core flood management programs.

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<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td><strong>6 Levee Evaluation</strong></td>
<td>~ $95 M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• 2,100 miles of levees evaluated</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td><strong>7 Erosion Repairs</strong></td>
<td>~ $295 M</td>
<td></td>
<td></td>
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<tr>
<td>• 118 critical levee sites repaired</td>
<td>✓</td>
<td>✓</td>
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</tr>
<tr>
<td>• 146 proactive levee sites repaired</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>• 4 critical levee sites in progress</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>• 76 proactive levee sites in progress</td>
<td></td>
<td></td>
<td>✓</td>
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<tr>
<td><strong>8 Early Implementation Projects</strong></td>
<td>~ $630 M</td>
<td></td>
<td></td>
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<tr>
<td>• SAFCA projects</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>• TRILA projects</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>• RD 17 (Delta)</td>
<td></td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>• LD 1 / Star Bend Setback</td>
<td></td>
<td></td>
<td>✓</td>
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<tr>
<td><strong>9 Flood Grants / Special Projects</strong></td>
<td>~ $300 M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• 6 flood &amp; ag/habitat projects completed</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>• 20 flood &amp; ag/habitat projects in progress</td>
<td></td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>• $179M reimbursements to local agencies</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>• Delta Subventions &amp; Special Projects</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td><strong>10 USACE Capital Outlay Projects</strong></td>
<td>~ $570 M</td>
<td></td>
<td></td>
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<tr>
<td>• Folsom Dam modifications</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>• American River common features</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>• Marysville Ring Levee</td>
<td>✓</td>
<td>✓</td>
<td></td>
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<tr>
<td>• South Sacramento streams</td>
<td></td>
<td></td>
<td>✓</td>
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</table>
### POST-CVFPP REGIONAL & SYSTEMWIDE ACTIVITIES

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>2012-2014</th>
<th>2014-2016</th>
<th>2016-2018</th>
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<tbody>
<tr>
<td>10</td>
<td>USACE Capital Outlay Projects</td>
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<td>USACE Feasibility Studies</td>
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<td>Systemwide Flood Plans</td>
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<tr>
<td>11</td>
<td>Flood Risk Assessment</td>
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<tr>
<td>12</td>
<td>Urgent Structure &amp; Levee Repairs</td>
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<td>13</td>
<td>Flood System Project Improvements</td>
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<tr>
<td>14</td>
<td>Local Community Flood Project Improvements</td>
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To be discussed in CVFPP
2012 CVFPP Content

- Define flood and related problems
- Describe system, performance and risks
- Set goals and objectives
- Identify and evaluate management actions
- Identify and evaluate potential regional and system solution sets
- Define vision and next steps for improving system
- Set criteria for local compliance related to the adoption of CVFPP
State Plan of Flood Control Planning Area

The CVFPP focuses on improving flood management for the lands currently receiving protection from the State Plan of Flood Control (SPFC).
Systemwide Planning Area

The CVFPP analysis will be conducted on a system-wide basis, and include considerations of other integrated water management functions provided in the same system.
Central Valley Flood Protection Plan (CVFPP) -- 2012 Plan

- Draft CVFPP
- Board Adoption
- Progress Report

Implementation Activities
- Feasibility Studies, Environmental Compliance, Design, Construction

State Plan of Flood Control Descriptive Document
- Draft
- Final

Flood Control System Status Report

CVFPP 5-Year Updates
- 2017 Update

2009 2010 2011 2012 2017

Key: Milestone Document
2012 CVFPP Planning Process

Phase 1
- Define existing and future conditions
- Identify problems and opportunities
- Develop goals, principles, and objectives

Phase 2
- Compile Management Actions
- Develop evaluation methods and screening

Phase 3
- Formulate Regional Solution Sets
- Refine Regional Solution Sets

Phase 4
- Formulate Systemwide Solution Sets
- Compare and evaluate
- Assess level of agreement
- Recommend next steps

Iterative Planning Steps

Technical Analyses

Interim Progress Summary No. 1
Interim Progress Summary No. 2
CVFPP Progress Report
Interim Progress Summary No. 3

2012 CVFPP
Statewide Flood Management Planning

• Include flood management in California Water Plan in 2009 and 2013 updates

• Prepare Recommendations Report for Improving Integrated Flood Management throughout California
  ▪ Project Launch: Fall 2010
  ▪ Preliminary Report: Jan 2012
  ▪ Final Report: 2014