

## Department of Water Resources

### SFMP Program

# Presentation to CWP Flood Caucus on Statewide Flood Management Planning

February 2, 2012

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ENVIRONMENTAL STEWARDSHIP

ECONOMIC STABILITY

# DWR Integrated Water Planning

- Plan for a Specific Project
- Regional
  - Central Valley Flood Mgmt Plan
  - IRWM
- Statewide
  - SFMP Flood Future Report
  - California Water Plan



# SFMP Program Purpose

- Understand California's flood management
- Support local, State, and Federal partnerships
  - USACE is a key member of the project team
- Support integrated flood management strategies
- Coordinate within DWR with other planning efforts
  - Flood Future Report
  - Flood in CWP

# What Flood Future Report is and is not

The Flood Future Report is:

- **Not** a traditional planning document
- Based on **existing readily available information**
- **Not** a formal risk assessment
- High level **recommendations**
- A **guide to flood management decision-making** for California

# SFMP Flood Future Report Goals

1. Inventory and describe the status of existing flood management infrastructure.
2. Assess exposure to flood hazard statewide
3. Identify opportunities for IFM to address flood management issues.
4. Identify challenges and opportunities for improving flood management.
5. Develop a finance strategy for IFM improvements and continuing operations and maintenance.
6. Develop recommendations to guide flood risk management strategic policies and investment decisions.



# SFMP Approach



## Identify Flood Management Issues in California

- Gather Flood Management Information and Inventory Data
- Define & Characterize Existing and Future Hazard



## Explore Options to Address Flood Management

- Identify Regional IFM Opportunities
- Identify Challenges and Opportunities for Improving Flood Management
- Develop Financing Strategies



## Develop Recommendations

- *Institutional*
- *Policy*
- *Financing*
- *Legislative*
- *Other*

# Flood Future Report Components

Component	Main Effort
Gather Information	Fall 2011
Flood Exposure and Risk	Fall and Winter 2011/12
Integrated Flood Management	Winter 2012
Finance	Winter 2012
Recommendations	Winter 2012
Report	Winter and Spring 2012





# Information Gathering

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# Information Gathering Process

- Effort Focused on Developing Agency Partnerships Statewide
- 3 Stage Process:
  - Stage 1 – Internal DWR sources
  - Stage 2 – CEAC, CalEMA, USACE, and FEMA
  - Stage 3 – Local Agencies
    - 129 agencies were contacted covering all 58 counties
    - 63 local agency meetings were held
    - 3,800 documents were collected



# Information Gathering TM Findings (Gvn)

Flood Management in California is complex array of agencies

- Agency structure varies by location and flooding type
- Local agencies have diverse governance structures
  - Local agency funding and responsibilities are often limited by how agency was established (i.e., type of agency, formation language)
  - Propositions 218 and 13 impose restrictions on many flood management agencies
- There is a disconnect between land use planning and flood risk:
  - Decision-makers/ governmental officials and residents need to be better informed about residual risk
  - In some areas, residents that live near flood management structures may not have experienced severe flooding in 30-40 years, leading to lack of awareness of potential consequences.

# Information Gathering TM Findings (COM)

Agencies want improved coordination:

- Among flood management agencies (internal/external)
- Among resource agencies who have conflicting goals and permitting requirements (e.g., Solano County)
- Communicating needs to Federal agencies (USACE, USEPA, FEMA, Reclamation)
- Communicating impact of land use decisions on residual flood risk to public and governmental officials
- Coordination between agencies in a region on IRWM, mapping efforts, and systemwide solutions

# Information Gathering TM Findings (Data)

Locals agencies would like assistance with:

- Modeling and understanding how to perform risk assessments
- Gathering data (e.g., stream gage, LIDAR) for performing studies
- Design standards, flood plain and habitat data/mapping standardization, and mapping assistance
- Understanding FEMA levee accreditation and zoning standards
- Developing HMPs and addressing permitting issues (mitigation)
- Data sharing site for electronic flood information
- Updating building codes, land-use ordinances, and complying with AB 162
- Addressing climate change including prediction methods, data, and modeling

# Information Gathering TM Findings (EM)

- EM programs are non-structural measures that can reduce flood impacts
- EM in California is not effectively coordinated amongst all responsible agencies

# Information Gathering Highlights

- Flood Management Agency structure varies by location and flooding type
- Funding and responsibilities are often limited type of agency
- Propositions 218 and 13 impose restrictions on many flood management agencies
- Disconnect between land use planning and flood risk
- Agencies want improved coordination (planning and permitting)
- Data and tools are needed
- Emergency management is often not effectively coordinated



# SFMP Flood Hazard Exposure Analysis

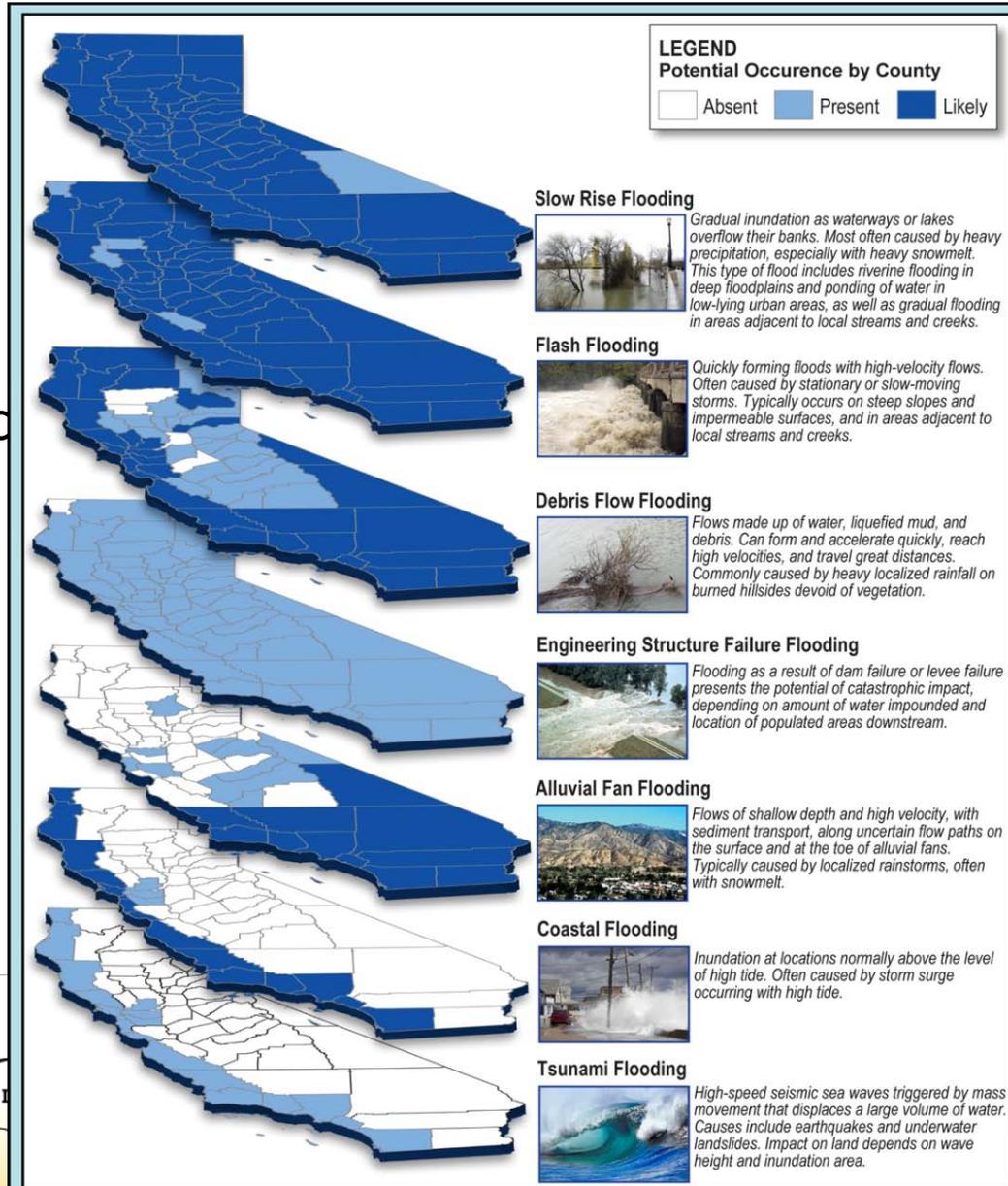
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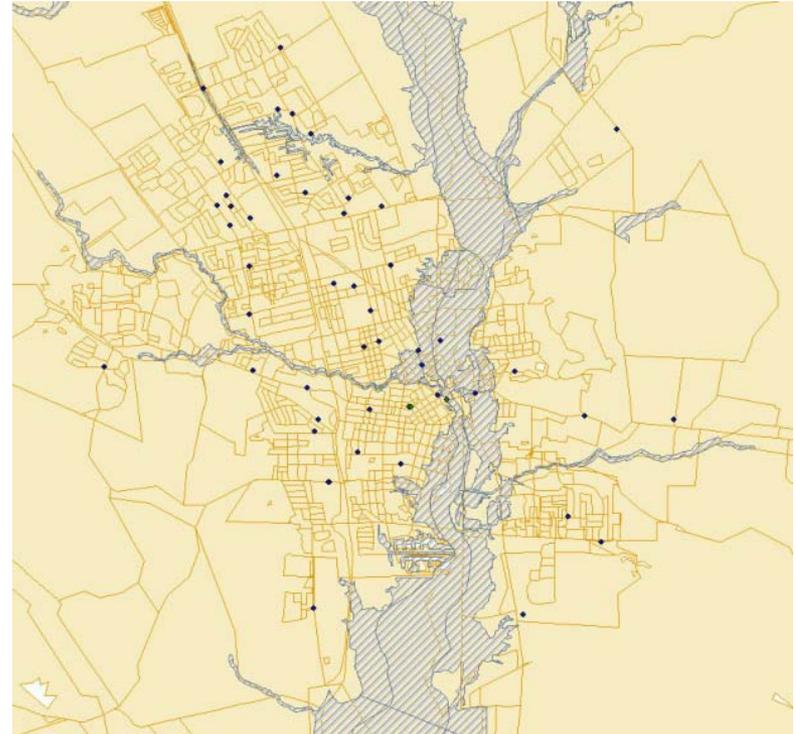
# What Are the Types of Flood Threats?

- What are the types of Flood Hazards?
  - Alluvial, Coastal, Banked Rivers, Deep Floodplain, etc
- How significant is the hazard?
- What are the Exposure Types?
- Where Are the Hazards?



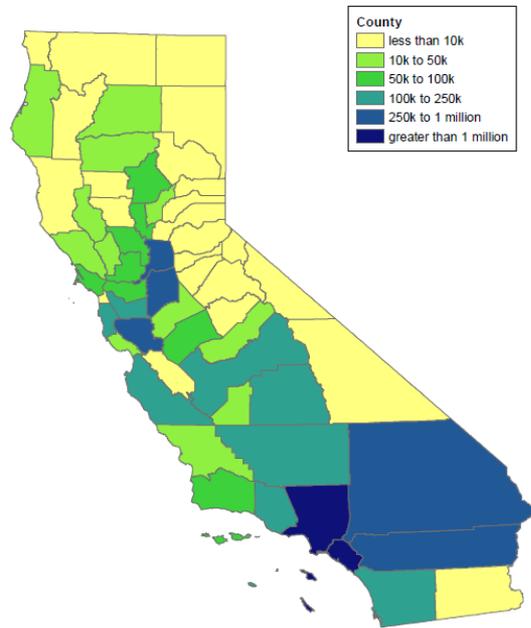
# Flood Hazard Exposure

- Arc GIS Based Analysis of lives and property in harm's way
- Not depth-based damages
- Qualitative discussion of Loss of function (displacement costs, loss of income and services)



# Flood Hazard Exposure

Floodplain	Area Analyzed	Exposed
100 year 500 year	<ul style="list-style-type: none"> <li>•CWP Hydrologic Region</li> <li>•Counties</li> <li>•Legislative District</li> <li>•Congressional Districts</li> <li>•IRWM Regions</li> <li>•Delta Zones</li> </ul>	<ul style="list-style-type: none"> <li>•Number of People</li> <li>•Number and Value of buildings</li> <li>•Number of acres and value of crops</li> <li>•Number of critical facilities</li> </ul>



# Preliminary Flood Hazard Exposure Results Summary

## Overview of Preliminary statewide results

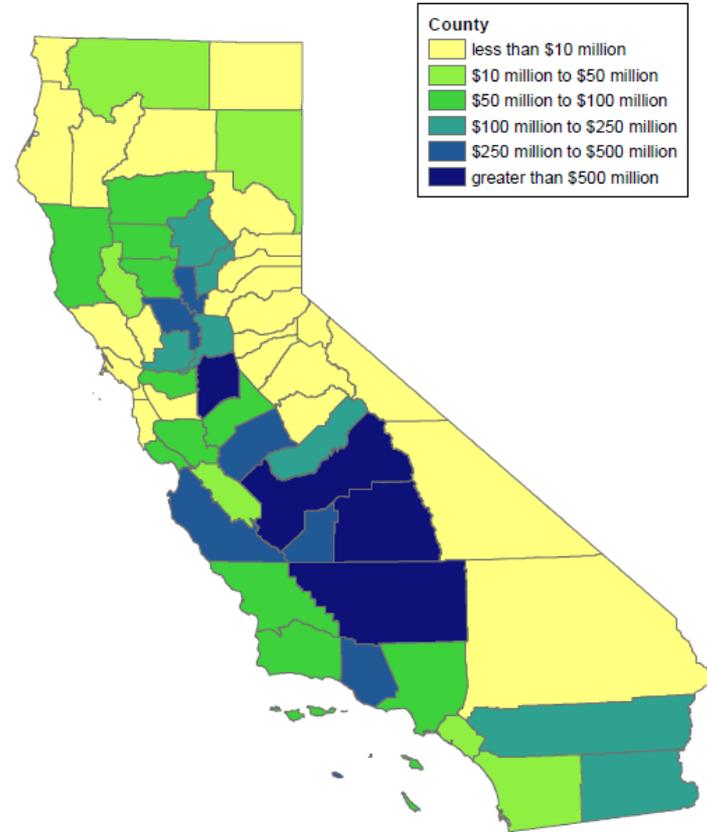
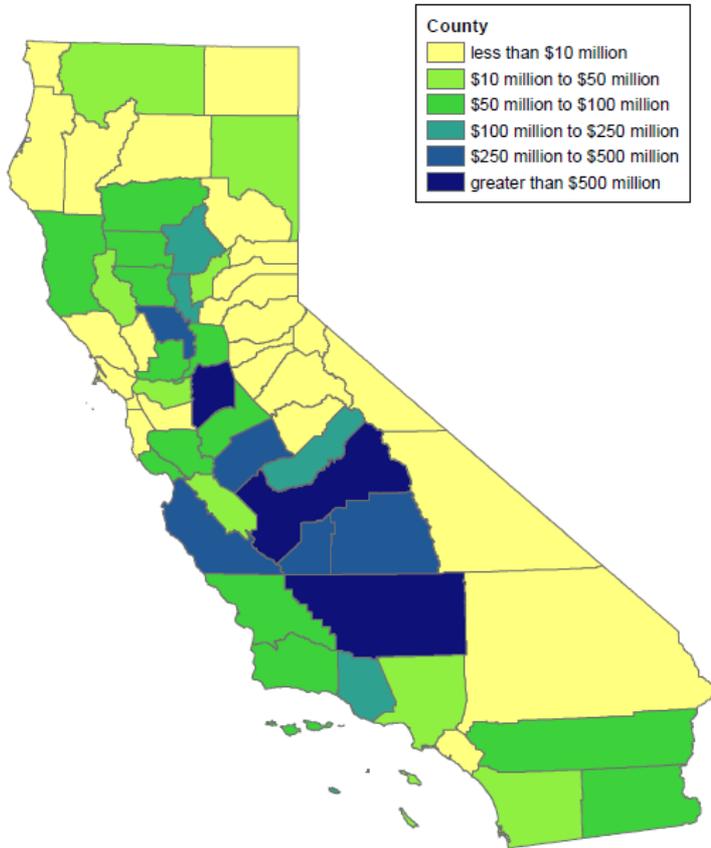
Category	Exposure to 100-Year Flood plain	Exposure to 100-Year Flood plain
Population	1.4 million	7.3 million
Value of Structures & Contents	\$137 billion	\$578 billion
Crops Value	\$5.4 billion	\$7.4 billion
Number of Critical Facilities:	6,300	13,000
DoD Facilities:	128,200 acres	138,100 acres
Native American Tribal lands	37,700 acres	66,300 acres



# Preliminary Hydraulic Region Exposure : Crops Value

## 100-year floodplain

## 500-year floodplain



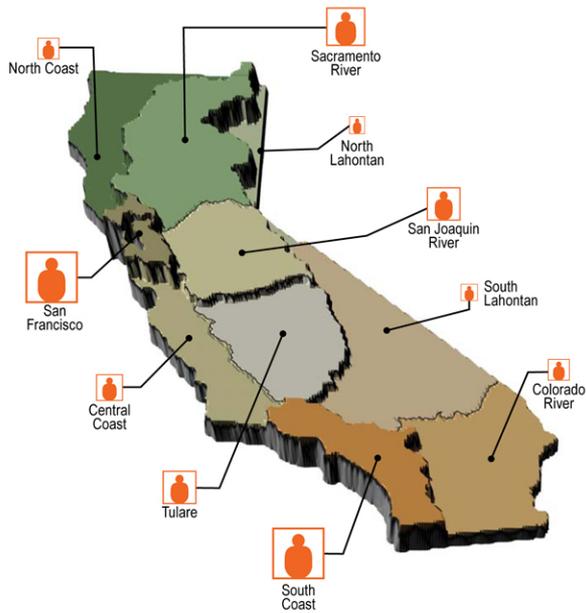
# Preliminary Flood Exposure Summary

Identify Flood Risks in California

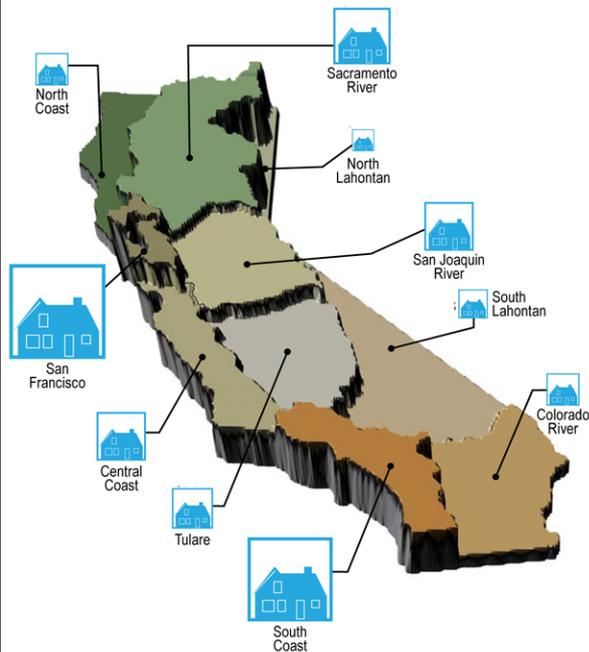
Explore Options to Address Risk

Develop Recommendations

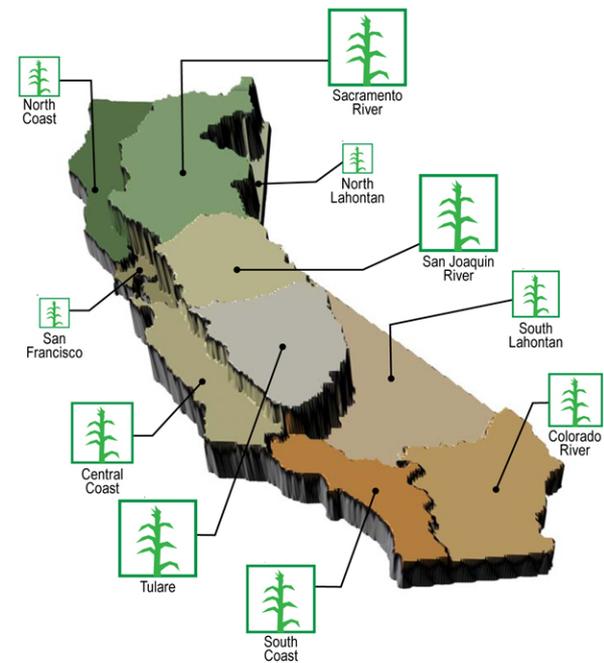
Population Exposed by CWP Hydrologic Region



Value of Exposed Structures and Contents by CWP Hydrologic Region



Value of Exposed Agricultural Crops by CWP Hydrologic Region



NOTE: Graphics are for illustrative purposes only

STATEWIDE FLOOD  
MANAGEMENT  
PLANNING PROGRAM



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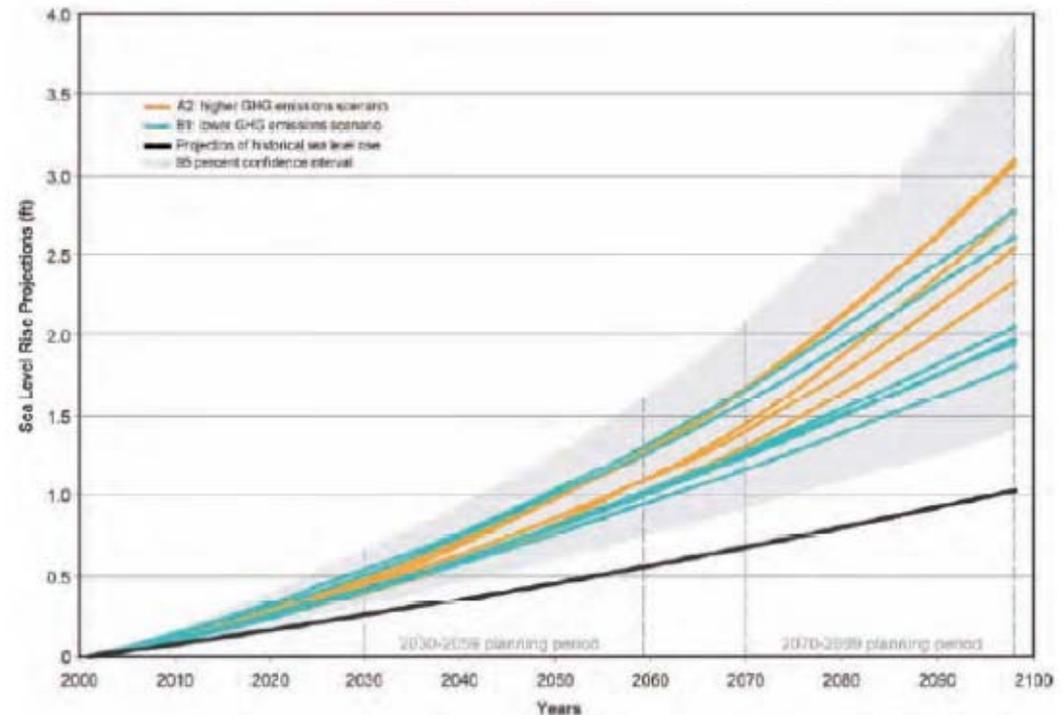
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# Flood Hazard Exposure

- **Climate change effects related to flood hazards include:**
  - Changes in timing and magnitudes of precipitation/runoff
  - Increased temperature
  - Extreme weather events
  - Rises in sea-level
- **Qualitative Discussion**





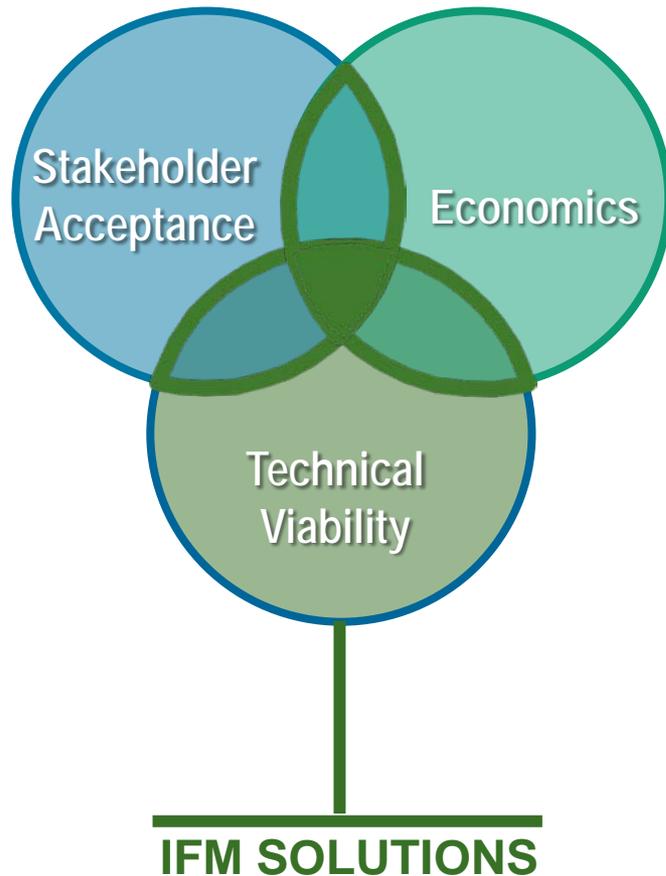
# Integrated Flood Management (IFM)

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# Integrated Flood Management



- Recognizes the connection of flood management actions to :
  - Water resources management
  - Land use planning
  - Environmental stewardship
  - Sustainability
- Uses a multi-faceted approach
  - Structural
  - Nonstructural
  - Natural watershed functions using other resource management strategies
- Recognizes the importance of:
  - Evaluating opportunities and potential impacts from a system perspective
  - Importance of coordinating across geographic and agency boundaries

# Preliminary IFM Findings

- Local agencies contacted had a good understanding of IFM
- Typically, agencies address issues on a project by project basis
- A few (larger) agencies are actively pursuing IFM projects
- Smaller or more rural agencies often struggle with developing IFM projects
- IRWMPs typically do not include comprehensive planning for projects
  - Results in potential lost IFM opportunities

# Preliminary IFM TM Findings

- Successful implementation of IFM projects includes:
  - Multiple funding sources
  - Have a plan in place
  - Stakeholder support
  - Leverage local, State, Tribal, and Federal partnerships
- Barriers include:
  - Increased permitting/regulatory requirements
  - O&M funding requirements
  - Mitigation requirements (up to 40% of project costs for permitting/mitigation)

# IFM Update

Technical Memoranda includes:

- IFM Definition and relation to USACE multipurpose projects
- 7 diverse Case Studies which reflect different regions, project components, management actions, and flood hazards
- Management Actions
  - Detailed descriptions including problem addressed, desired outcome, methodology, economic considerations, environmental considerations, flood hazard types, flood risk addressed, and integration opportunities
  - Matrix summarizing management actions



# Finance Strategy

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# Financing Strategies

- Develop Financing Strategies
  - Review Past Funding/Expenditures
  - Innovative Financing Approaches
  - Financing Strategies for IFM
- Coordinate planning in cooperation with local federal entities
- Interconnect IRWM and Flood Management
- Articulate the State's appropriate role



# Developing Recommendations

- Considerations from
  - Local Agencies
  - DWR and USACE
  - Previous Reports

# Flood Future Report Outline

- Introduction
- Background
  - FloodSAFE
  - FFR Purpose
  - SFMP Approach
- Flood Threats across California
  - California Flooding Impacts in a National Context
  - Types of Flooding
  - Flood Management Governance
  - Flood Infrastructure
  - Exposure to Flood Hazards

# Flood Future Report Outline

- Addressing Flood Management Issues in California
  - IFM
  - Project Needs in California
  - Financing Strategies for Flood Management
- Charting a Path Forward
  - Introduction
  - Development of Recommendations
  - High Level Issues and Challenges
  - Recommendations

# Flood Caucus Review Timeline - 2012

- Preliminary Content : March 2012
- Administrative Draft: April 2012
- Public Review Draft: May 2012
- Final Flood Future: October 2012



# Next Steps



STATEWIDE FLOOD  
MANAGEMENT  
PLANNING PROGRAM

FloodSAFE  
CALIFORNIA

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# Statewide Integrated Flood Management Program

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