California's Flood Future

Recommendations for Managing the State's Flood Risk

Briefing for
Northern San Francisco Bay Counties

1600 Los Gamos Drive
San Rafael, CA
8 April 2013

FloodSAFE CALIFORNIA

PUBLIC SAFETY ENVIRONMENTAL STEWARDSHIP ECONOMIC STABILITY

US Army Corps of Engineers

Agenda

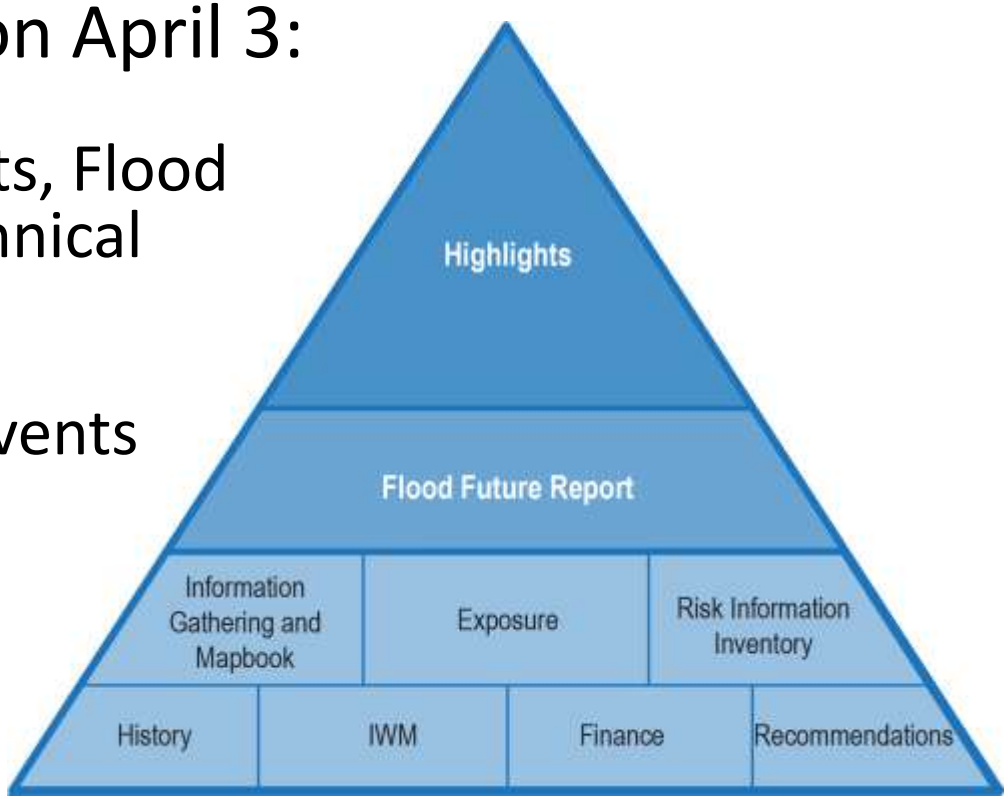
- Introductions
- *California's Flood Future* Presentation
- Break
- Recommendations Discussion
- Questions & Answers
- Closing Remarks

Report Purpose

- Increase understanding of statewide flood problem
- Make recommendations for managing flood risk
- Inform decisions about:
  - Policies
  - Financial investments

California's Flood Future: Release Schedule

- Public Drafts Released on April 3:
  - Released draft Highlights, Flood Future Report with technical memoranda
  - Participated in media events
- April-May:
  - 9 regional meetings statewide



DWR Flood Planning

- Central Valley
  - CVFPP
- Statewide
  - Flood Future Report

USACE

South Pacific Division

Flood Plain Management Services Authority Program

- Compile/share flood hazard informatic
- Provide technical and planning advice

USACE Participation does not include:

- Advocating for taxpayer funding
- Advocating for additional USACE authority

Consistent with USACE Civil Works Strategic Plan 2011-2015

Flood Future Report Process

US Army Corps of Engineers ®

California is at risk for catastrophic flooding!

- Devastating impacts to California and the nation
- 1 in 5 Californians are exposed to flooding
- $580B in assets are exposed to flooding
- Every county has experienced a Federally declared flood disaster in the last 20 years

The Problem

California experiences many types of flooding

Tsunami Flooding

Engineered Structure Failure Flooding

Coastal Flooding

Debris Flow Flooding

Stormwater Flooding

Slow Rise Flooding

Flash Flooding

Alluvial Fan Flooding

Flood risk is defined using these factors:

Hazard

What causes harm?

Performance

How will the system react?

Exposure

Who and what can be harmed?

Vulnerability

How susceptible to harm?

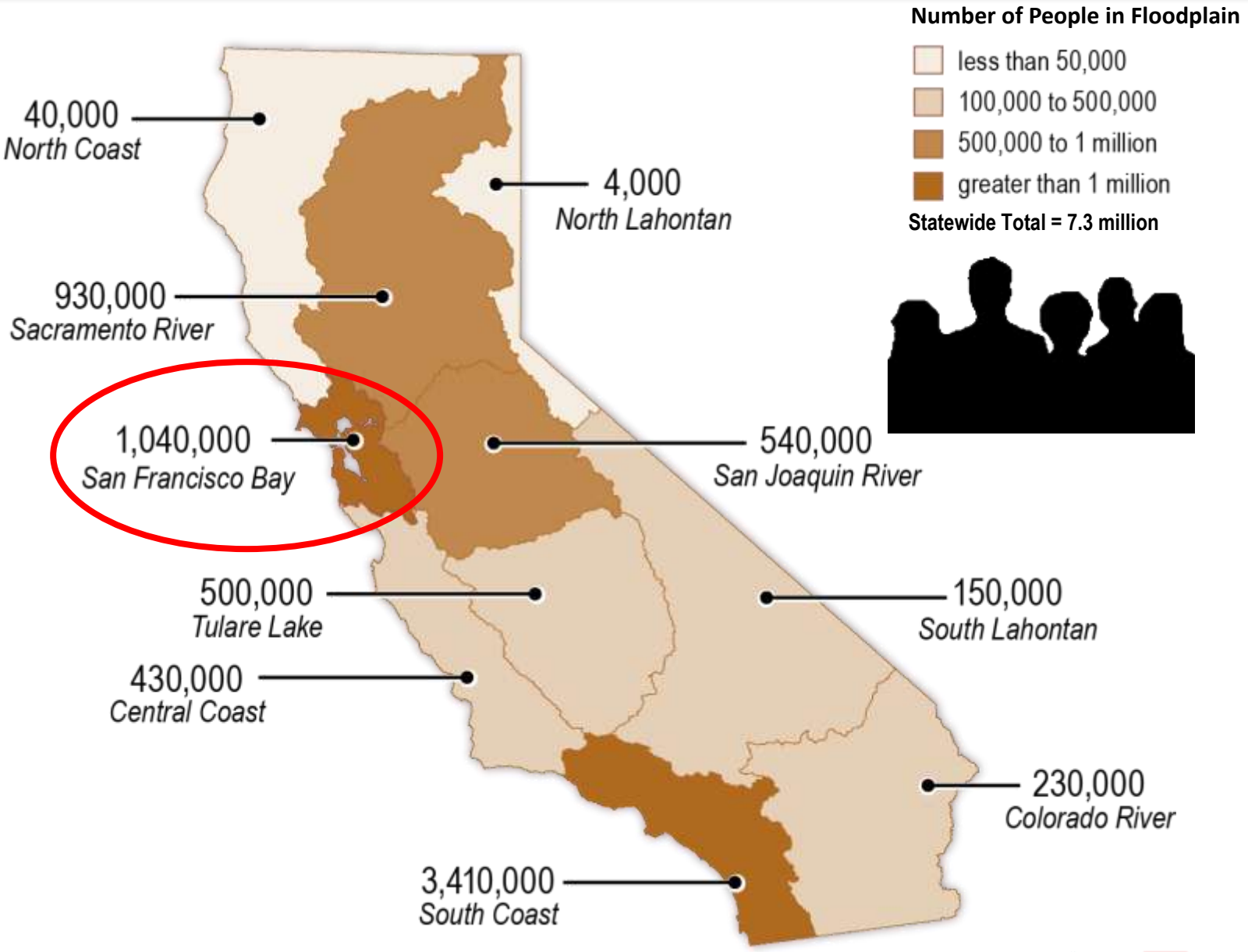
Consequence

How much harm?

Inundation Risk

Likelihood and severity of adverse consequences

7.3 million Californians live in floodplains



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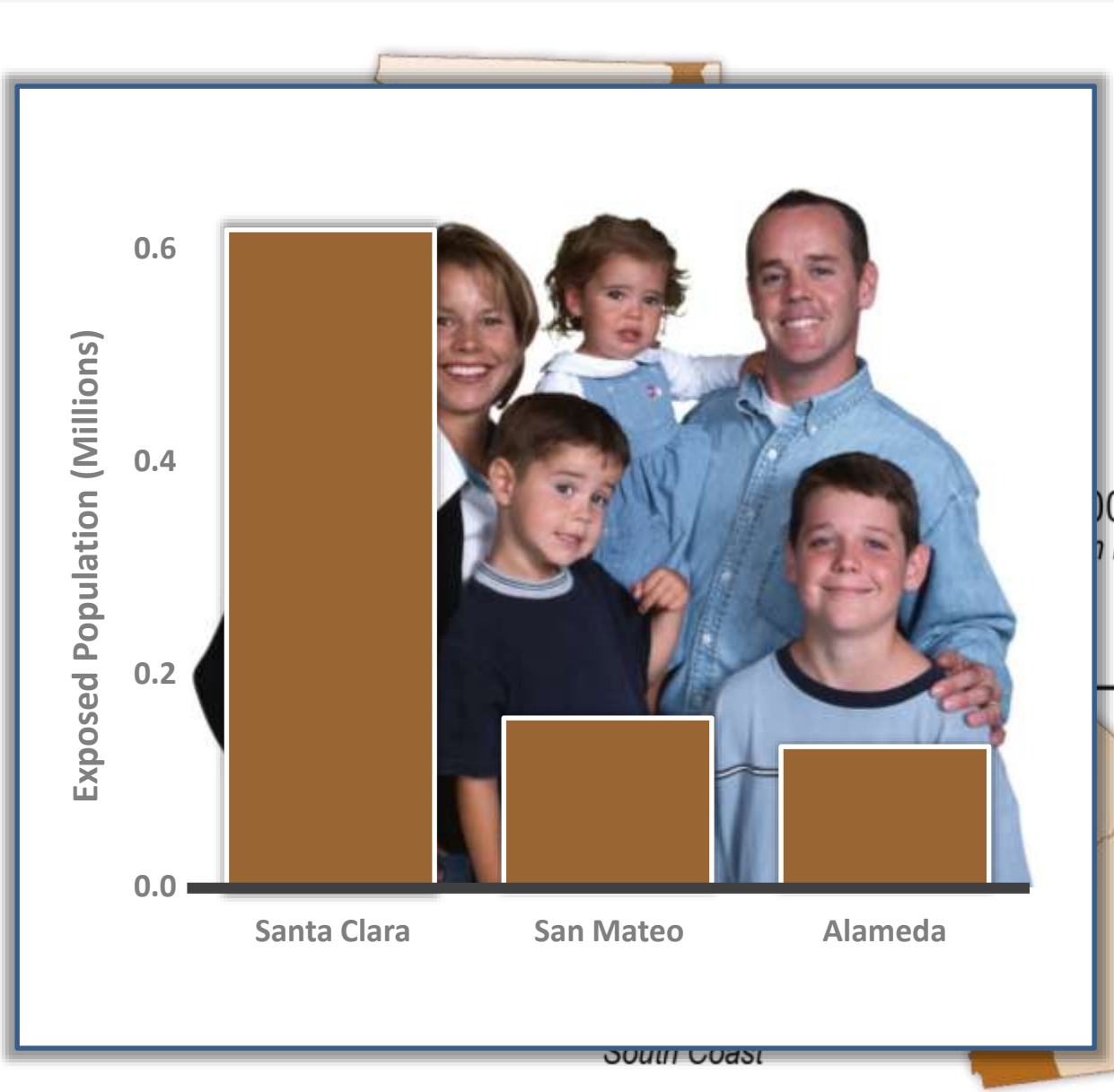

Number of People in Floodplain

- less than 50,000
- 100,000 to 500,000
- 500,000 to 1 million
- greater than 1 million

Statewide Total = 7.3 million

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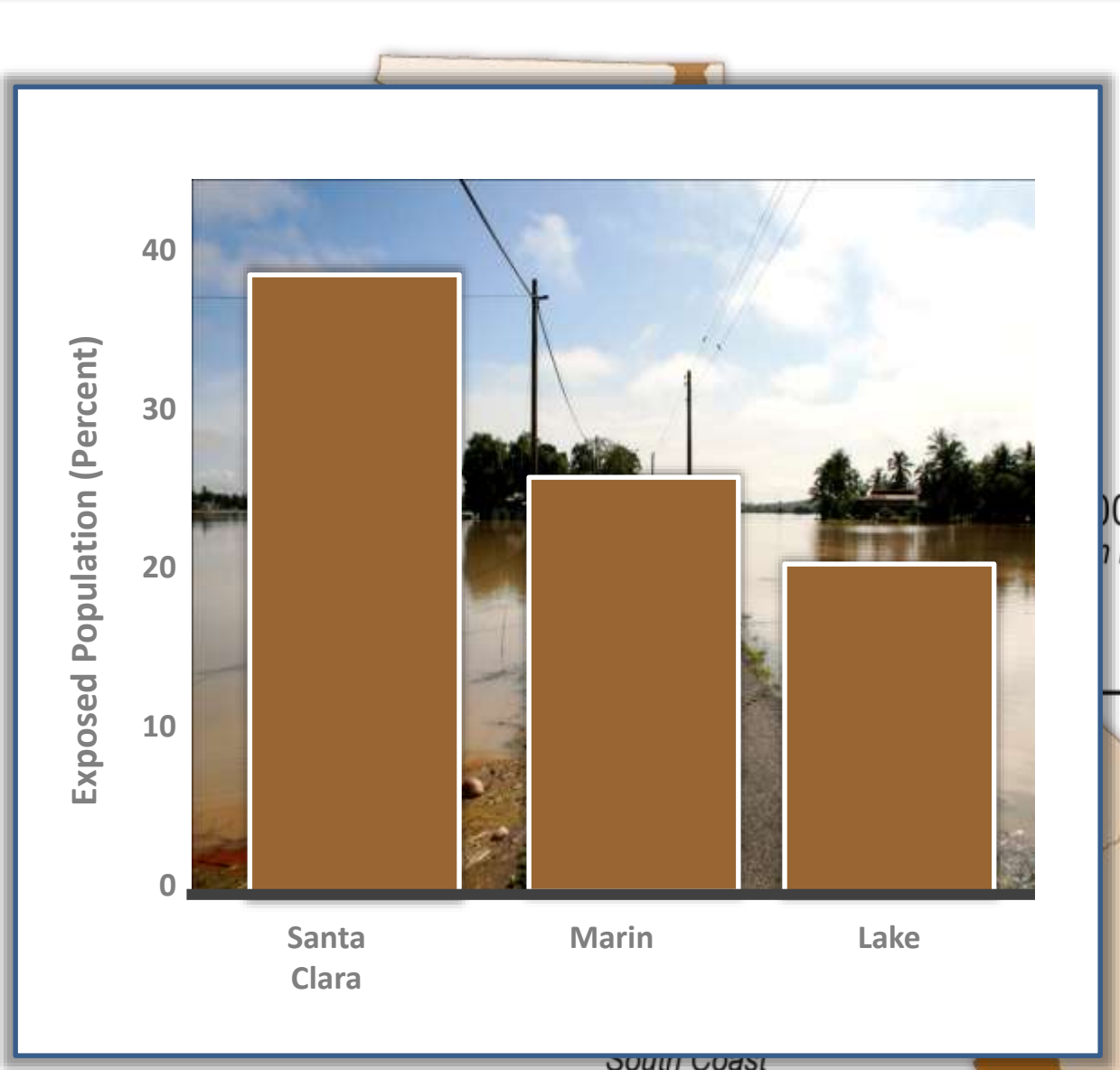
n River

150,000
South Lahontan

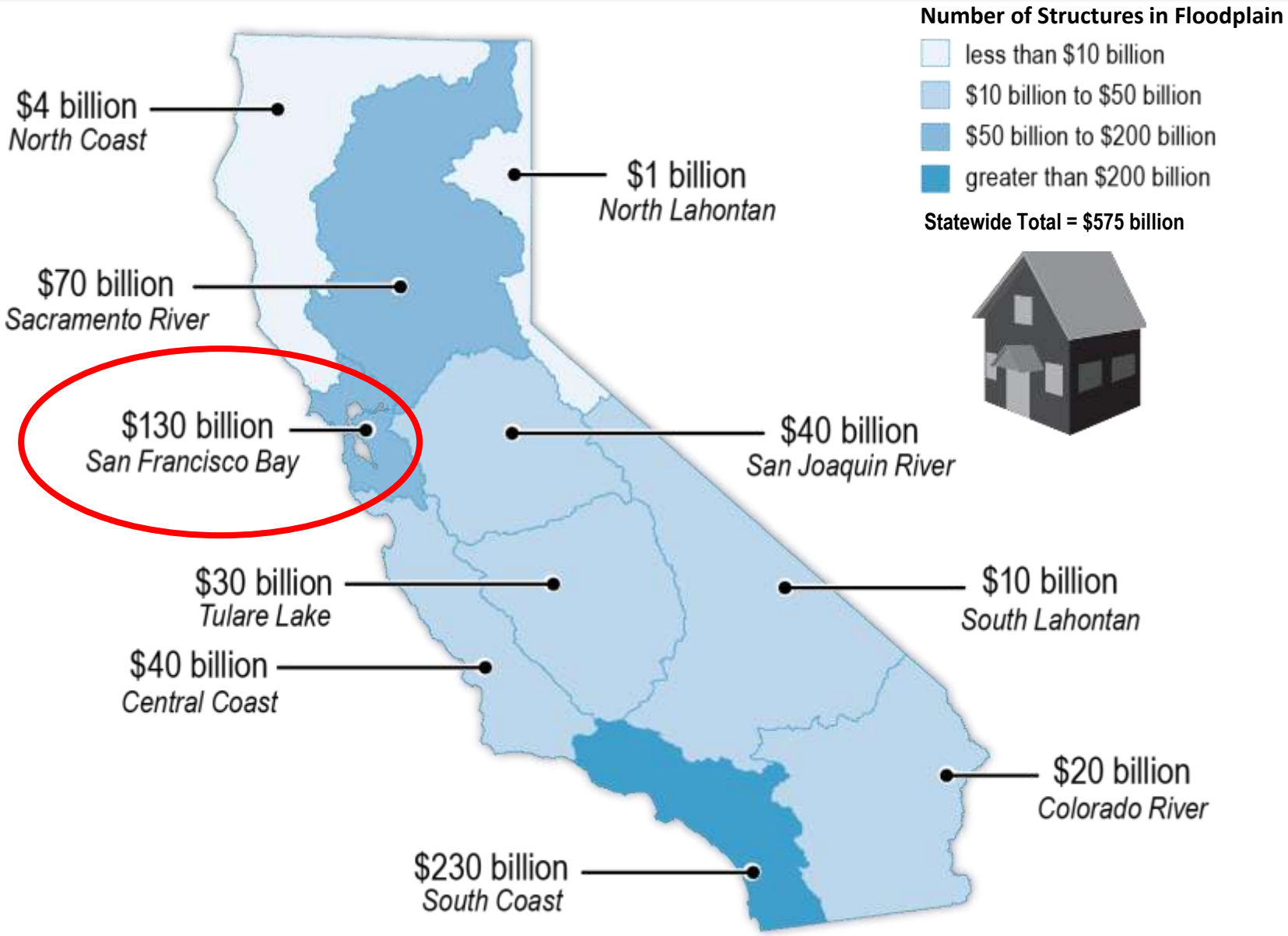
230,000
Colorado River

South Coast

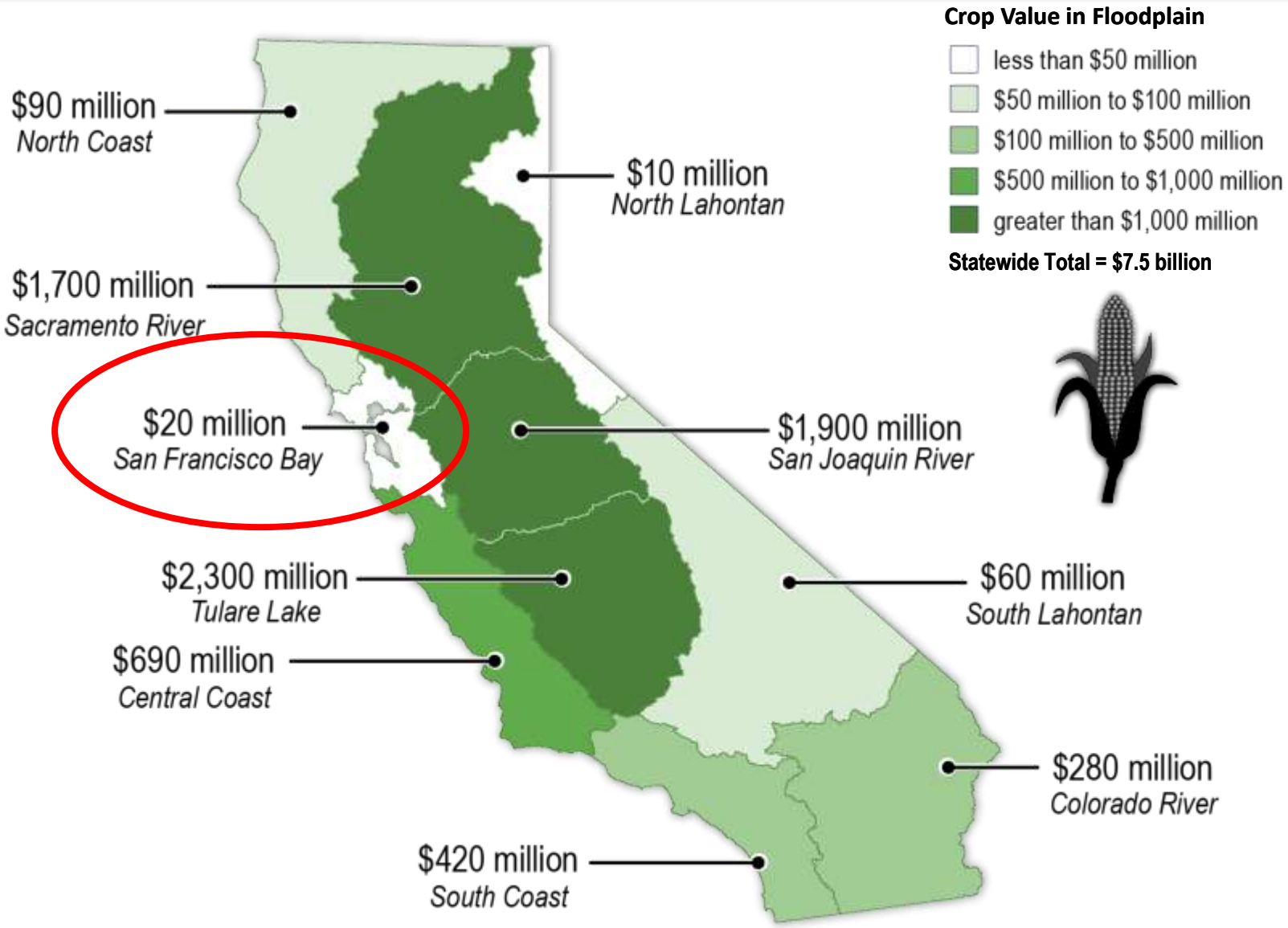
7.3 million Californians live in floodplains



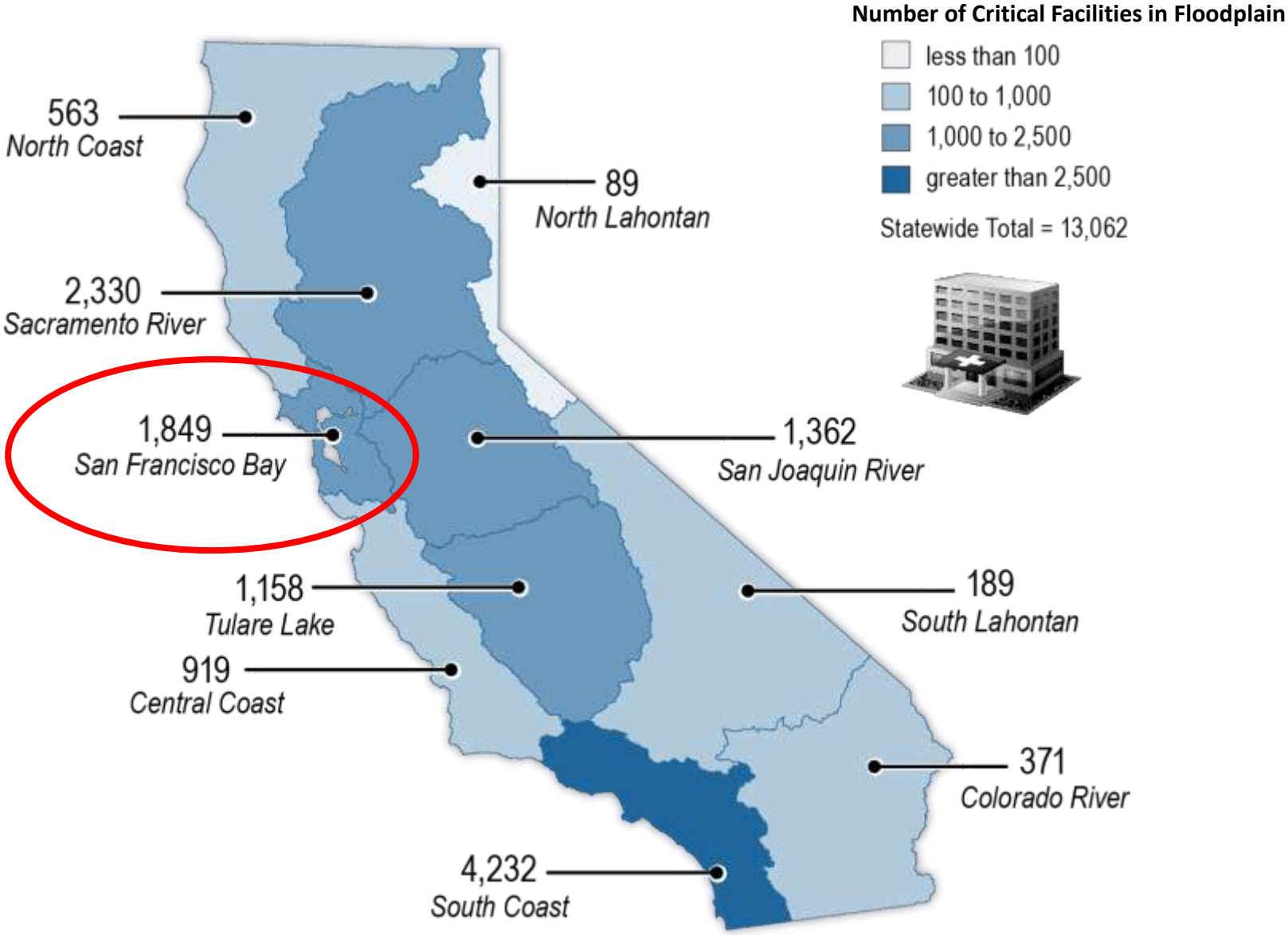
$575 billion in structures are at risk



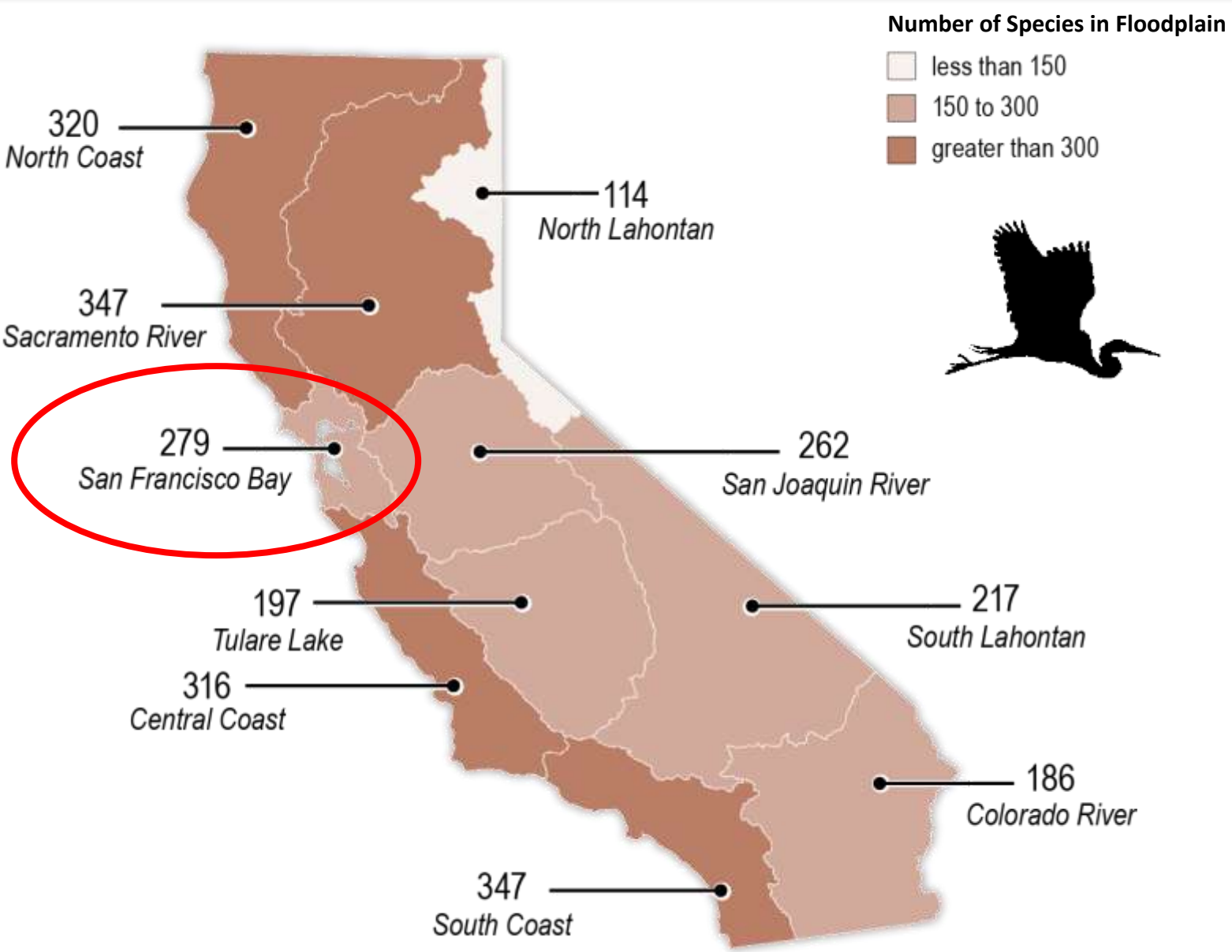
California's agricultural economy is at risk



Critical facilities are at risk



Floodplains are rich in environmental resources



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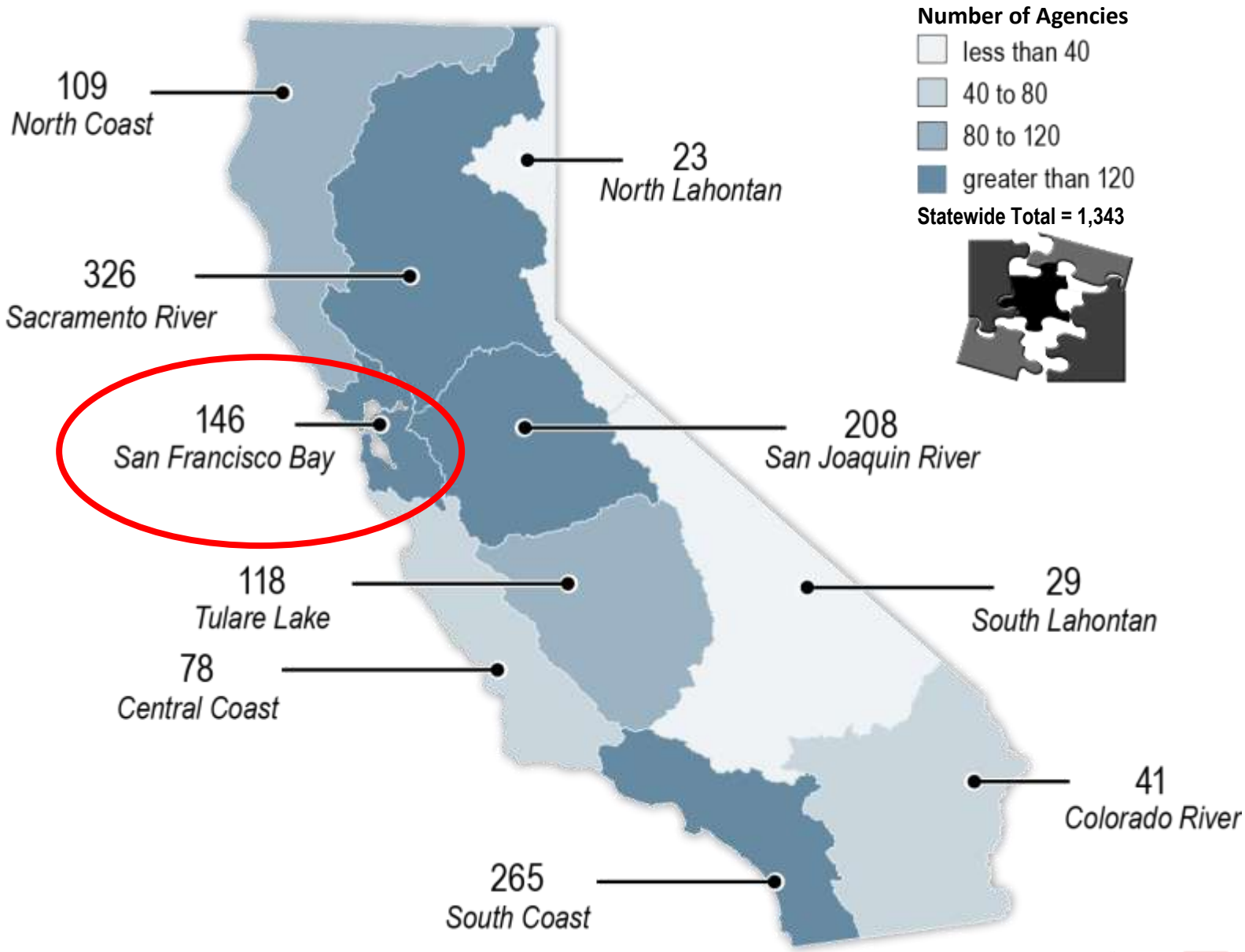
Flood management authority is complex and fragmented



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County mapbook example

100-year and 500-year Floodplains

N

0 1.75 3.5 7

Miles

City | Populated Place | Highway | Major River | 100-yr Floodplain | 500-yr Floodplain | Major Water Body | County

Selected Flood Events by Event Year

1861-1862 Winter, The Great Flood
1914 Corte Madera Creek
1925 San Anselmo
1951 Corte Madera Creek
1955-1956 December-January, 1955 Christmas Flood, Novato Creek, Corte Madera, Petaluma , San Rafael, Fairfax
1958 February-April, Corte Madera Creek
1962 October, Corte Madera Creek
1962-1963 December-February
1968-1969 December-April, Corte Madera Creek
1970 December, Northern California Flooding
1973 January-February
1986 February, St. Valentine's Day Storm, Corte Madera Creek, Fairfax, San Pablo Bay
1995 January-March
1998 El Nino Floods
2005-2006 December-January, New Year's Eve Flood of 2005, Corte Madera Creek,
2006 March 29 - April 1, May 10, Spring Storms

Types of Flooding

Likely:	Present:
Slow Rise	Tsunami
Flash	Engineered Structure Failure
Debris Flow	
Coastal	
Stormwater	

Hydrologic Regions

Flood Hazard Exposure

County Statistics

Total Acreage:	378,666
Total Population:	247,239
Total Structures:	93,200
Total Value of Structures and Contents:	$31.8 billion
Total Agricultural Acreage:	6,664
Total Value of Crops:	$1.6 million

Summary of Exposure to Flood Hazard Reported by County

	100-yr Event	500-yr Event
Exposed Area (acres):	34,604	38,374
Percent of Area Exposed:	9	10
Population Exposed:	39,739	63,380
Percent of Population Exposed:	16	26
Structures Exposed:	13,141	22,147
Value of Exposed Structures and Contents:	$5.6 billion	$9.3 billion
Exposed Agricultural Land (acres):	3,963	3,964
Value of Exposed Agricultural Land:	$677,437	$679,111
Department of Defense Facilities Exposed:	0	0
Essential Facilities Exposed:	23	45
High Potential Loss Facilities Exposed:	3	3
Lifeline Utilities Exposed:	4	6
Transportation Facilities Exposed:	76	94
Transportation Segments Exposed (miles):	28	39
Native American Tribal Land Exposed (acres):	0	0
Total Sensitive Plant Species Exposed:	70	70
Total Sensitive Animal Species Exposed:	49	51

Marin County

Figure D-41
Summary of Available Flood Types, Flood History, and Flood Hazard Exposure, Marin County

DRAFT

Mar 22, 2013

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STATEWIDE FLOOD MANAGEMENT PLANNING PROGRAM

Local agencies speak out

- Inadequate data
- Limited understanding
- Emergency management coordination
  - Inconsistent land use planning
    - Fragmented responsibility
      - Conflicting permit requirements
        - Unstable funding

Flood infrastructure does not meet current and future needs

- 800+ projects identified statewide
- $30-$50+ billion in improvements and projects
- Will not provide protection from a 100-year flood statewide

Flood funding is limited and unreliable

- Inconsistent and insufficient funding
- Declining local resources
- Reduced Federal cost shares
- Challenging revenue structure
- Cost of flood management misunderstood by public and policy makers

The Solution

Solutions must use an "Integrated Water Management" approach

- Combines flood management, water supply, and ecosystem actions
- Regional and systemwide approach
- Collaboration and cooperation
- Array of funding sources

Recommendation

TOOLS

1. Conduct regional flood risk assessments to better understand statewide flood risk.

Recommendations

TOOLS

2. Increase public and policymaker awareness about flood risks to facilitate informed decisions.

3. Increase support for flood emergency preparedness, response, and recovery programs to reduce flood impacts.

Recommendations

PLANS

4. Encourage land-use planning practices that reduce the consequences of flooding.

5. Conduct flood management from regional, systemwide, and statewide perspectives to provide multiple benefits.

Recommendations

PLANS

6. Increase collaboration among public agencies to improve flood management planning, policies, and investments.

7. Establish sufficient and stable funding mechanisms to reduce flood risk.

We Must Take Action. Now.

California's future depends on:

- Local, State, and Federal agencies working together
- Implement policies and projects using an IWM approach
- Increase awareness of the cost and consequences of flooding
- Establish investment priorities and sufficient and stable funding
- Short-term and long-term action and solutions

Statewide Flood Meetings

Regional meetings to discuss the report:

April 8 – Marin County

April 9 – Santa Clara County

April 15 – Sacramento County

April 17 –San Diego County

April 18 – Riverside and
Los Angeles Counties

April 19 – Ventura County

May 8 – Fresno County

May 14 – Humboldt County

Questions

Recommendations

1 Conduct regional flood risk assessments to understand statewide flood risk

TOOLS

- Identify methods for and conduct regional flood risk
- Set regional flood risk reduction goals
- Identify opportunities to maintain natural systems
- Assess climate change and sea level rise impacts

2 Increase public and policymaker awareness about flood risks to facilitate informed decisions

TOOLS

- Develop consistent messaging
- Provide outreach materials
- Share data and information

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3 Increase support for flood emergency preparedness, response, and recovery programs to reduce flood impacts

TOOLS

- Provide increased flood readiness funding
- Develop or improve Flood Emergency Management Plans
- Conduct regular flood emergency exercises
- Identify data/forecasting needs

4 Encourage land-use planning practices that reduce the consequences of flooding

PLANS

- Develop planning principles for development in floodplains
- Facilitate coordination and alignment between planners and emergency managers
- Incentivize best management practices

5 Implement flood management from regional, systemwide, and statewide perspectives to provide multiple benefits

PLANS

- Identify regional flood planning areas
- Prioritize flood management projects
- Improve State and Federal Processes
- Coordinate regional water and flood management
- Link funding to an IWM approach

6 Increase collaboration among public agencies to improve flood management planning, policies, and investments

ACTIONS

- Utilize regional working groups
  - *Permits*
  - *Plans*
  - *Implementation*
- Provide funding, grant, and in-kind credit programs
- Prioritize flood management investments

7 Establish sufficient and stable funding mechanisms to reduce flood risk

ACTIONS

- Assess potential funding sources and propose new options
- Facilitate access to funding sources
- Increase funding for priority flood management projects

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http://www.water.ca.gov/SFMP