

California's Flood Future

Recommendations for Managing
the State's Flood Risk

Attachment F: Flood Hazard Exposure Analysis

PUBLIC REVIEW DRAFT April 2013

California's Flood Future is provided to help inform local, State, and Federal decisions about policies and financial investments to improve public safety, foster environmental stewardship, and support economic stability



PUBLIC SAFETY

ENVIRONMENTAL STEWARDSHIP

ECONOMIC STABILITY



STATEWIDE FLOOD MANAGEMENT PLANNING PROGRAM



PUBLIC DRAFT

Attachment F: Flood Hazard Exposure Analysis

April 2013

Legal Disclaimer:

The following document is a draft. It has not been finalized and the statements contained within should not be considered the final positions of either the Department of Water Resources or the United States Army Corps of Engineers. Final release of this document is expected in summer 2013, and changes are anticipated based on stakeholder comments and continued agency reviews.

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Acronyms and Abbreviations

ACE	Annual Chance Exceedance
CEAC	County Engineers Association of California
cm	centimeter
CNDDDB	California Natural Diversity Database
CVFPP	Central Valley Flood Protection Plan
CWP	California Water Plan
Delta	Sacramento-San Joaquin Delta
DoD	U.S. Department of Defense
DWR	California Department of Water Resources
EAD	expected annual damage
EM	Engineer Manual
ER	Engineering Regulation
ESRI	Environmental Systems Research Institute
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
Flood Future Report	<i>California's Flood Future: Recommendations for Managing the State's Flood Risk</i>
GIS	Geographic Information System
HAZUS	Hazards United States
HEC-FDA	Hydrologic Engineering Center-Flood Damage Analysis
IFM	Integrated Flood Management
IRWM	Integrated Regional Water Management
IWM	Integrated Water Management
OMRR&R	operation, maintenance, repair, rehabilitation, and replacement
QA/QC	Quality Assurance/Quality Control
SFMP	Statewide Flood Management Planning
TM	Technical Memorandum
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture

Acronyms and Abbreviations

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1.0 Introduction

1.1 Background

California is at risk for catastrophic flooding. All 58 California counties have experienced at least one flood event with significant consequences in the last 20 years, resulting in loss of life and billions of dollars in damages. This report, *California's Flood Future: Recommendations for Managing the State's Flood Risk* (Flood Future Report), is the first product of the Statewide Flood Management Planning (SFMP) Program. The Program was developed under the FloodSAFE Initiative to expand California's flood management planning statewide. Specifically, the purpose of the SFMP Program is to make recommendations to inform flood management policies and investments in the coming decades by:

- Promoting a clear understanding of flood risks in California
- Garnering active support for partnerships at the local, tribal, State, and Federal levels¹
- Coordinating with other California Department of Water Resources (DWR) planning efforts
- Identifying strategies and feasible next steps to better incorporate flood management into Integrated Water Management (IWM)
- Promoting an IWM approach for flood management solutions

The initial work of the SFMP Program was to collect information in support of the Flood Future Report, as well as to build partnerships with local flood management agencies, the County Engineers Association of California (CEAC), Federal Emergency Management Agency (FEMA), and the United States Army Corps of Engineers (USACE). Throughout the Flood Future Report, determinations about specific flood terms were made that may not represent the specific terms used by partner agencies. These are described in Textbox 1-1. A description of the Flood Future Report components, organization, and layout is provided in Appendix A.

1.2 Purpose

An important objective of the SFMP Program is to characterize current and future flood risks throughout California based on the best available information. This technical memorandum (TM), presented as Attachment F to the Future Flood Report, describes a flood hazard exposure analysis that was performed to provide insight into potential flood risks throughout the state. The flood hazard exposure analysis supplements the information presented in the Flood Future Report with a detailed description of the method and results of the analysis. This analysis is sometimes referred to as the "flood exposure analysis" in the Flood Future Report.

¹ Hereafter in this document, the mention of governmental agencies is implicit to include tribal entities.

The purpose of the flood hazard exposure analysis is to use a consistent, accurate, and reproducible method to quantify the people and property that might be harmed from flooding in California. The analysis uses a limited set of flood exposure indices, such as population and critical facilities, to describe and compare flood hazard exposure among the diverse regions of the state. This TM qualitatively describes loss of function, which is the effect that a flood event could have on the function of inundated structures and infrastructure. In addition, this attachment includes a discussion of the potential effects of future changes in population and land use, as well as future climate changes, on flood hazard exposure in California.

Textbox 1-1: Agencies Differ in Flood Terminology

One of the challenges in a multi-agency effort is resolving language and culture differences between agencies. Staff from both USACE and DWR who are responsible for developing this report have made a conscious choice to adopt certain terminology throughout the documents.

As an example, USACE has adopted ***flood risk management*** as the term to describe a broad flood program that encompasses planning, construction, and operation, maintenance, repair, rehabilitation, and replacement (***OMRR&R***). DWR executes a similar broad program, largely through its Flood Management Division. As a result, DWR uses the term ***flood management*** in much the same way USACE uses ***flood risk management***.

Another term used throughout this document is ***100-year flood*** (or some other x-year flood). Although these terms are commonly used, both USACE and DWR prefer using ***1 percent chance flood*** (or a 1-in-100 chance event) to describe a flood that has a 1 percent chance of occurring in any given year. However, legislative language from 2007 directing DWR to undertake new planning using bond proceeds uses 100-year flood.

For Federally funded projects, the definition of operation and maintenance (***O&M***) includes the local entity's financial obligation to ***OMRR&R*** of the implemented project. ***OMRR&R*** is a non-Federal responsibility when local, regional and/or State entities partner on a Federal project. DWR typically uses ***O&M*** to refer simply to operation and maintenance, although repair and rehabilitation are sometimes included depending on project specifics. References to ***O&M*** provided in this report include ***OMRR&R*** responsibilities when the project is a Federal/non-Federal partnership.

For this report, both agencies agreed that, although language and cultural differences remain, it is more important to focus on the shared responsibility of performing our flood risk management or flood management missions rather than the use of specific phrases not in each agency's respective culture. A glossary is included to help the reader understand specific terms used by flood professionals and those terms that are used to define specific agency missions.

1.3 Overview of TM Organization

The following sections define and characterize flood hazard exposure, summarize the statewide results of the exposure analysis performed, and describe ways to improve understanding of flood risk management statewide. Attachment F is presented in the following sections:

- Section 1: Introduction
- Section 2: What is Flood Hazard Exposure Analysis?
- Section 3: Flood Hazard Exposure Analysis Method
- Section 4: Results of SFMP Flood Hazard Exposure Analysis
- Section 5: Future Impacts on Exposure to Flood Hazard
- Section 6: Findings
- Section 7: References

This attachment is supported by the following technical appendices:

- Appendix A: Flood Future Report Components
- Appendix B: Analysis of Exposure to Flood Hazard, by CWP Hydrologic Region
- Appendix C: Analysis of Exposure to Flood Hazard, by County
- Appendix D: Analysis of Exposure to Flood Hazard, by U. S. Congressional District
- Appendix E: Analysis of Exposure to Flood Hazard, by State Assembly District
- Appendix F: Analysis of Exposure to Flood Hazard, by State Senate District
- Appendix G: Analysis of Exposure to Flood Hazard, by Delta Primary/Secondary Zones and Mountain Counties
- Appendix H: Analysis of Exposure to Flood Hazard, by IRWM Region
- Appendix I: Glossary

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2.0 Why a Flood Hazard Exposure Analysis?

2.1 Definition of Flood Hazard Exposure

Flood hazard exposure describes who and what may be harmed by the flood hazard. Thus, it requires a description of where the flooding occurs and what exists in that area. This study uses FEMA 100-year (1 percent Annual Chance Exceedance [ACE]) and 500-year (0.2 percent ACE) floodplains and other flood maps. These delineations of flood areas are based on frequency and thus provide information about the hazard. More information about how the floodplains were defined in this study is provided in Section 3.1.2.

The SFMP Program describes exposure using population estimates; monetary values of structures, their contents, and crops; numbers and acreage of U.S. Department of Defense (DoD) facilities and Native American tribal lands, transportation facilities, and numbers of critical facilities, all within well understood floodplain boundaries. This analysis uses a limited set of flood exposure indices to describe and compare flood hazard exposure among the diverse regions of the state.

2.2 Flood Hazard Exposure Analysis Differs from Flood Risk Analysis

The flood hazard exposure analysis is a limited representation of detailed flood risk. This section gives the analysis context by describing flood risk and its components as reflected in the analysis of flood hazard exposure.

2.2.1 Definition of Flood Risk

Engineers, scientists, and floodplain managers define **flood risk** (or inundation risk) as the likelihood of consequences (damages) of flood inundation (resulting from an entire range of hydrologic events), including both economic and life-safety consequences. Flood risk is not simply the loss of life or damage incurred due to a single catastrophic event. Rather, flood risk characterizes the likelihood of adverse consequences for the entire range of flood events for a given impact area. *Impact area* is a term used to describe a geographic area for which risk is assessed.

Flood risk takes into account these five factors (shown in Figure F-1):

- Hazard: The cause of the harm, including its probability, extent, depth, and other characteristics (i.e., flooding and how often)
- Performance: How well the flood management system responds to the hazard (i.e., flood management system inadequacy or failure)
- Exposure: Who and what might be harmed by the hazard (i.e., who and what is flooded)

Flood risk is the likelihood of adverse economic and life-safety consequences of flood inundation.

WHY A FLOOD HAZARD EXPOSURE ANALYSIS?

- Vulnerability: The susceptibility of people and property to harm from the hazard (i.e., how flooding adversely affects people and property)
- Consequence: The loss or damage incurred as a result of the hazard (i.e., what is the cost of the flooding in terms of lives and dollars)

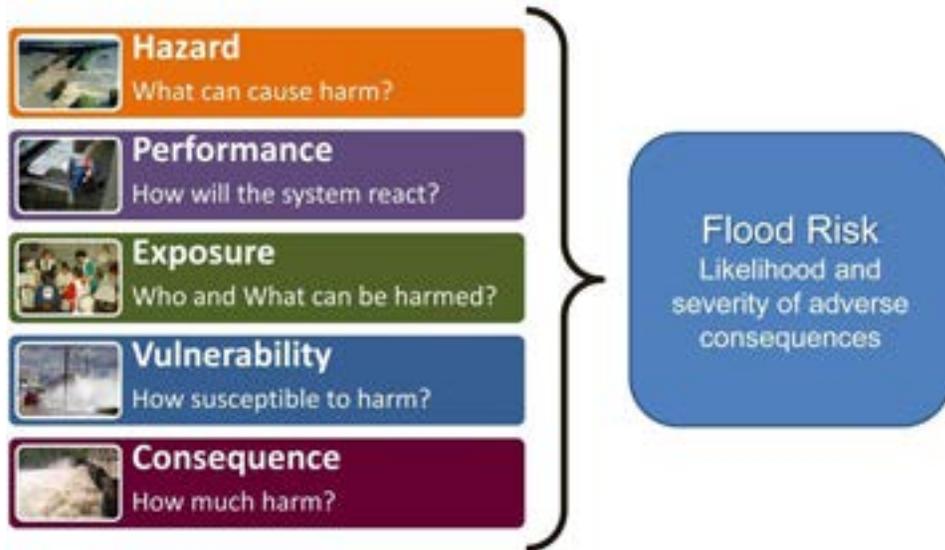


Figure F-1 Factors that Contribute to Flood Risk

Flood risk is expressed as a consequence-probability relationship. For example, when consequence is described as economic damage from flood inundation, flood risk is the probability of flood damage from various magnitudes of flooding.

The consequence-probability function can be integrated to compute an expected or most likely value of the consequence. If the probabilities are annual values, this most likely value is called the expected annual value. If the consequence considered is economic loss, the most likely value is called the expected annual damage (EAD). EAD reduction is often used as a standard for measuring the effectiveness of proposed flood management actions. This study did not compute EAD because it focuses solely on exposure, as described in the next section.

A detailed flood risk analysis, which would be necessary for a planning study by USACE and its project sponsors, is intended to identify and evaluate specific flood management measures, such as levees (including their types, locations, and dimensions). This analysis would assess flood management, economic impacts, life-safety risks, environmental impacts, and social benefits of the proposed measures. In addition, a detailed flood risk analysis would evaluate the consequences of a full range of possible flood hazards. Such a risk analysis would consider the likelihood of the flooding, the performance of existing or proposed actions and measures, current and future exposure of people and property to flooding, and the vulnerability of both.

Attachment G: Risk Information Inventory provides additional information about the analytical procedures used to compute flood risk.

2.2.2 Differences between Flood Hazard Exposure Analysis and Flood Risk Analysis

Key differences between the flood hazard exposure analysis described herein and a detailed flood risk analysis, which was not done, are provided in Table F-1.

Table F-1. Comparison of Flood Hazard Exposure Analysis and Flood Risk Analysis

Flood Hazard EXPOSURE Analysis	Detailed Flood RISK Analysis
Enables decision makers to identify and establish broad priorities for future statewide floodplain management.	Evaluates economic efficiency of alternative plans formulated to reduce flood risk at a particular location.
Uses a systematic, repeatable method to describe and compare exposure to flood hazard throughout the state’s diverse regions.	Uses detailed analytical methods and procedures found in USACE guidance, such as Engineering Regulation (ER) 1105-2-100, ER 1105-2-101, and Engineer Manual (EM) 1110-2-1619 to describe flood risk in a particular location with defined conditions. ^a
Illustrates at a high level the variation in exposure to flood hazard among the state’s geographic and political regions.	Describes the feasibility of a specific project, leading to identification of a recommended alternative.
Uses best currently available information and the assumptions built into that information.	Includes new model development; floodplain, topography, and bathymetric data collection; inclusion of fragility curves; population projections; and so on.
Is an assessment with a budget and study period appropriate for a high-level look at flood exposure statewide.	Would require a relatively large budget and long timeframe to identify likelihood and severity of flooding throughout the state.
Examines only two flood events—the 100-year flood and the 500-year flood. The results from this analysis could show significantly different results if flood events at different probabilities were used.	The inception of inundation could occur for flood events below the 100-year event. A detailed risk analysis takes into account exceedance probabilities of all likely flood events and should capture the inception of inundation flood events.
Quantifies a limited set of indices of exposure (who and what might get harmed)—population exposed, number and acreage of Tribal lands and DoD facilities, critical facilities exposed, depreciated replacement value of property (structures and contents), and value of crops exposed.	Accounts for factors in addition to exposure—hazard, performance, vulnerability, and consequence—to provide a detailed description of flood risk in a particular location with defined conditions, which will more accurately assess the likelihood of economic damage and loss of life.
Simplifies the description of inundation by placing people and property in one of two categories— “wet” or “dry.” That is, either they are touched by floodwater or they are not.	Accounts for the complex interactions among floodwater, floodplain, property, and human occupants through the use of depth-damage relationships, evacuation modeling, depth-mortality relationships, and other functions.
Uses depreciated replacement value of structures/content, without a consideration of gradations of potential damage at different flood depths, and market value of crops (i.e., a “snapshot” of their value just prior to harvest) to describe exposure.	Accounts for seasonality of flooding in relation to crop growing cycle in the determination of crop loss. May include a broader description of economic loss, including physical and nonphysical damages, both direct and indirect. May also examine life loss and environmental and social loss/damage.
Uses only Geographic Information System (GIS) tools.	Uses other tools, such as Hydrologic Engineering Center-Flood Damage Analysis (HEC-FDA), in addition to GIS tools.
Considers only whether levees meet FEMA criteria for accreditation in most regions of the state outside the Central Valley. In an area where levees meet the criteria, the area is considered to be “dry” (not inundated). In an area where levees do not meet the criteria, the area is considered to be “wet” (inundated). Note: Within the Central Valley Flood Protection Plan (CVFPP) boundary, levee fragility curves were used in the development of the floodplains (i.e., levee performance is included in the determination of an area as “wet” or “dry”).	Considers performance of structural features such as levees directly.

Notes:

^aReferenced regulations are available upon request or can be found online at HOPublications@usace.army.mil.

2.3 Flood Hazard Exposure Analysis is Appropriate for the SFMP Program Flood Future Report

The analytical method used by the study team for assessing exposure to flood hazard is consistent with—but narrower in scope than—the method used for detailed flood risk analysis. Despite certain simplifications, the analysis of exposure to flood hazard is appropriate for this study for the following reasons:

- It provides information on potential consequences of flooding throughout the state in a consistent, systematic, repeatable manner.
- It allows for comparison of flood exposure among various areas of the state.
- It provides information adequate to identify and prioritize a broad range of flood management recommendations.
- It makes use of flood hazard and exposure information from a variety of reliable, reviewed sources, including DWR, USACE, FEMA, and local flood management agencies.
- It is a cost-effective method for gathering the information needed for inclusion in the SFMP Flood Future Report.
- It is aligned with, although not identical to, the risk analysis completed for the Central Valley Flood Protection Plan (CVFPP) project.
- It lays a firm foundation for future, more detailed, risk analyses.

On the other hand, the data and information required for a statewide risk analysis were not readily available. Risk analysis considers more than exposure, as noted previously. Because of the effort required, detailed risk analysis has been completed for a limited number of locations in the state, specifically for projects that need to evaluate the economic efficiency of flood risk reduction plans to qualify for Federal funding. A statewide flood risk analysis would be an extensive, costly, and multi-year effort. This study provides the first steps to efficiently allocate resources that are aimed at identifying and prioritizing flood management efforts.

3.0 Flood Hazard Exposure Analysis Method

The SFMP flood hazard exposure analysis method uses existing Geographic Information System (GIS) data to identify the population, property, structures, facilities, and crops located within FEMA-designated 100-year (and 500-year, where available) floodplains, 2012 CVFPP floodplains, or other best available mapping. Quantities of structures and crops exposed within the floodplain are estimated using information in the Hazards United States (HAZUS) and ParcelQuest (property and parcel information) databases. Population data were obtained from the U.S. Census and HAZUS databases. The method is designed to be consistent with flood risk analyses that were performed for the CVFPP. The CVFPP is focused on identification and investment in systemwide solutions that reduce flood risk and promote projects with an IWM approach in the Sacramento and San Joaquin valleys. This analysis provides a high-level description of statewide exposure to flood hazard. Results from the flood hazard exposure analysis are presented for different analysis regions, including statewide California Water Plan (CWP) hydrologic regions, counties, legislative and congressional districts, Sacramento-San Joaquin Delta (Delta) zones, Mountain Counties, and Integrated Regional Water Management (IRWM) regions. This attachment also qualitatively describes loss of function, which is the effect that a flood event could have on the function of inundated structures (residential, commercial, industrial, public, or others) and infrastructure, such as transportation, health and human services, water supply, wastewater treatment, utilities, energy generation, and emergency services. In addition, this attachment includes a discussion of the potential effects of future changes in population and land use and future climate change on flood hazard exposure in California.

3.1 Data

3.1.1 Data Requirements

To identify inundation exposure for people and property, ArcGIS is used to overlay floodplain maps with other types of maps (geo-referenced shapefiles such as census blocks). The basic data required for the SFMP flood hazard exposure analysis include:

- Floodplains – The extent of the flood hazard for the 100-year and 500-year events.
- Population – The total population exposed to the flooding
- Structures – The total number and depreciated replacement value of structures and content exposed to the flooding, including residential, commercial, industrial, and public
- Critical Facilities – The number of certain types of facilities exposed to flooding, including schools, fire and police stations, hospitals, utilities, transportation facilities, and others
- DoD Facilities – Number and acreage of DoD facilities exposed to flooding

- Crops – The market value (yield multiplied by price) of crops exposed to flooding, including grain and hay; rice; field crops; pasture crops; truck, nursery, and berry crops; deciduous fruits and nuts; citrus and subtropical crops; and vineyard crops
- Native American Tribal Lands – Number and acreage of tribal lands exposed to flooding

3.1.2 Sources of Data

This SFMP analysis defines people and property as being exposed if they are located within the 500-year floodplain or 100-year floodplain. The floodplain is defined in one of three ways based on the source of the data—(1) FEMA floodplains, (2) floodplains defined (or refined) by USACE flood maps, or (3) the CVFPP floodplains, as defined by the CVFPP on October 4, 2011. This distinction among floodplains is relevant only in terms of the sources of data about the extent of the flood hazard. Use of the CVFPP floodplains within the CVFPP boundary ensures alignment of this SFMP study and the CVFPP. For this analysis, the CVFPP boundary is defined as the outer limits of the CVFPP impact areas used for the flood risk analysis.

The data sources used in this study are described below. Data that were also used for the CVFPP are noted.

- Floodplains
 - Where they were available, the SFMP used detailed 100-year and 500-year floodplains developed for the CVFPP flood risk analysis impact areas. The SFMP team obtained the draft CVFPP floodplains on October 4, 2011. The CVFPP floodplains were based on the *Sacramento and San Joaquin River Basins, California, Comprehensive Study* (USACE, 2002) floodplains and modified by CVFPP to reflect current hydrologic, hydraulic, and geotechnical information. For the SFMP analysis, the Yolo, East Side, Upper Sacramento, Mariposa, Sutter, and Tisdale bypasses were added to the CVFPP floodplains. Floodplains for the Stockton area were developed for the CVFPP after October 4, 2011, and were not available at the time of the SFMP analysis.
 - Outside the CVFPP boundary, the SFMP used FEMA Flood Insurance Rate Maps (FIRMs) (FEMA, 2013)², supplemented by five floodplain maps provided by the USACE following their standards given by Engineering Regulation (ER) 1105-2-101 and other guidance, to define 500-year and 100-year floodplains. It should be noted that 500-year floodplains were not available for some areas; however, this occurs only in small, sparsely populated areas of the state and will have a minimal effect on the results of the analysis.
 - Figure F-2 shows the floodplains used in the analysis.

² The 100-year floodplain used in the analysis includes regions of Special Flood Hazard Area with FEMA flood zone designations A, AE, AH, AO, A99, V, and VE and other regions with a 1 percent annual chance of flooding. The 500-year floodplain includes these same regions, plus those with FEMA flood zone designation X shaded and other regions with a 0.2 percent annual chance of flooding.

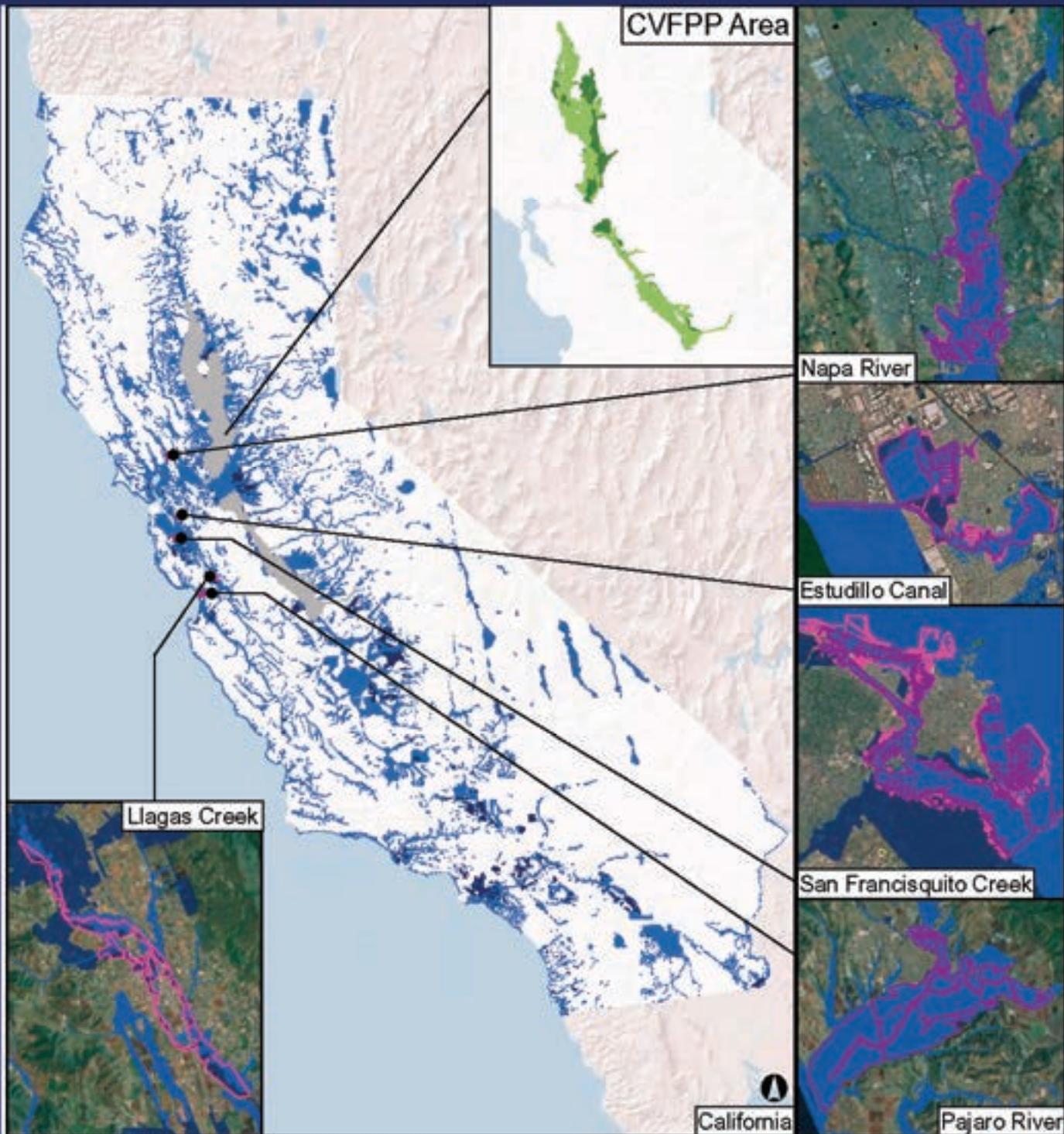
- Population – The SFMP used 2000 census data available in FEMA’s HAZUS model. Census data for 2010 were available for the SFMP; however, to align this study with the CVFPP, 2000 census data were used (FEMA, 2011). (The 2010 census data were not available when the CVFPP analysis was started.)
- Structures – The SFMP used structure information available in the HAZUS database, which is based on 2000 census information with economic values in 2006 dollars (FEMA, 2011). That information was then updated to 2010 dollars. Because HAZUS uses census information, structures are uniformly distributed within the census blocks, which does not necessarily represent the exact location of structures. The CVFPP developed a detailed structure inventory based upon 2010 parcel data, and the SFMP used that inventory within the CVFPP boundary.
- Critical facilities – The SFMP used facilities data available in HAZUS (FEMA, 2011). The CVFPP used these data as well. The following types of facilities are included:
 - Essential Facilities: Care facilities, emergency centers, fire stations, police stations, and schools
 - High Potential Loss Facilities: Dams and hazardous material sites
 - Lifeline Facilities: Wastewater facilities, potable water facilities, oil facilities, natural gas facilities, electric power facilities, and communications facilities
 - Transportation Facilities: Airport facilities, runways, rail facilities, railway bridges, railway segments, light-rail facilities, light-rail segments, port facilities, ferry facilities, bus facilities, highway bridges, and highway segments
- DoD facilities – The SFMP used an Environmental Systems Research Institute (ESRI) GIS (ESRI, 2008). Figure F-3 is a map showing locations of DoD facilities used in the analysis.
- Crops – The SFMP and the CVFPP used available county land use data that DWR compiled throughout the state. Where data were not available outside the CVFPP impact areas, the SFMP used crop acreage data from the HAZUS database (DWR, 2011). Both the SFMP and the CVFPP assigned yield and price data using county agricultural commissioner data, updated to 2010 dollars.
- California Natural Diversity Database (CNDDDB) – Created by the California Department of Fish and Wildlife, Biogeographic Data Branch, dated April 4, 2009 (CDFW, 2009).
- Native American tribal lands –ESRI GIS database (ESRI, 2010). The map in Figure F-3 also shows locations of Native American tribal lands used in the analysis. This database includes Tribal lands currently held in trust by the United States government, but does not include those known as Public Domain Allotments.

Table F-2 summarizes the types and sources of data.

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Table F-2. Types and Sources of Data Used for the SFMP Flood Hazard Exposure Analysis

Type of Data	Data Description	Data Sources	
		Outside CVFPP Boundary	Within CVFPP Boundary
Floodplains	Describes extent of flood hazard for the 100- and 500-year events.	FEMA FIRMs or most recent maps provided by the USACE	CVFPP floodplains as of October 4, 2011
Population	Describes the total population exposed to flooding.	HAZUS California database: <ul style="list-style-type: none"> • Demographics 	HAZUS California database: <ul style="list-style-type: none"> • Demographics
Structures	Describes the total number and depreciated replacement values of structures exposed to flooding (residential, commercial, industrial, and public).	HAZUS California database: <ul style="list-style-type: none"> • Demographics 	CVFPP structure inventory based upon ParcelQuest county assessor data
Critical Facilities and DoD Facilities	Describes the number of essential, high potential loss, transportation, utility, and DoD facilities exposed to flooding.	HAZUS California databases: <ul style="list-style-type: none"> • Essential facilities • High potential loss • Transportation • Utilities DoD facilities (GIS database [ESRI, 2008])	HAZUS California databases: <ul style="list-style-type: none"> • Essential facilities • High potential loss • Transportation • Utilities DoD facilities (GIS database [ESRI, 2008])
Crops	Describes the number and value of crop acres exposed to flooding (deciduous, citrus, field, truck, and vineyard).	California DWR county land use surveys (DWR, 2012) HAZUS California database: <ul style="list-style-type: none"> • Agriculture County agricultural commissioner yield and price data	California DWR county land use surveys (DWR, 2012) County agricultural commissioner yield and price data
California Natural Diversity Database	Describes the number of sensitive plant and sensitive animal species exposed to flooding	California Department of Fish and Wildlife, Biogeographic Data Branch (April 4, 2009)	California Department of Fish and Wildlife, Biogeographic Data Branch (April 4, 2009)
Native American Tribal Lands	Describes the number and acreage of Tribal land areas exposed to flooding	GIS database (ESRI, 2010)	GIS database (ESRI, 2010)



Floodplain Extents

- CVFPP Boundary
- USACE Floodplain - 100 year
- USACE Floodplain - 500 year
- FEMA Floodplain - 100 year
- FEMA Floodplain - 500 year
- CVFPP Floodplain - 100 year
- CVFPP Floodplain - 500 year



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Figure F-2
Floodplains Used for Flood Hazard Exposure Analysis

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Figure F-3: Department of Defense Facilities and Native American Tribal Lands Used in the Analysis

Source: National Atlas of the United States and the United States Geological Survey, ESR1 (published 4/1/2008 and 6/30/2010). Note that the Tribal lands used in the analysis include those currently held in Trust by the United States Government but not those known as Public Domain Allotments.

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3.2 Analysis Regions

This section describes the types of regions used in the flood hazard exposure analysis and provides an explanation of why each type was selected. The types of regions used for analysis include:

- **CWP Hydrologic Regions:** There are 10 CWP hydrologic regions and 2 overlay regions, which are shown in Figure F-4. Use of these analysis regions allows for consistency with other DWR programs and for integration into the CWP Update 2013. Each of the CWP hydrologic regions and overlay regions is described in Section 4.2 of this Attachment F.
- **Counties:** There are 58 counties in California, which are shown in Figure F-5, and all of them were contacted during the SFMP effort. Use of counties as analysis regions allows county officials and local agencies to easily view the results of this analysis. In addition, counties are identifiable geographic units, which facilitates dissemination of the analysis results to multiple audiences (for example, flood management agencies and the public).
- **State Senate and Assembly Districts:** As currently drawn (fall 2011), there are 80 assembly districts and 40 senate districts in California, which are shown in Figures F-6 and F-7, respectively. Use of these districts as analysis regions allows State assembly and senate representatives to relate the analysis results directly to their constituents by presenting results at the district level.
- **U.S. Congressional Districts:** As currently drawn (fall 2011), California has 53 congressional districts, which are shown in Figure F-8. Use of these districts as analysis regions allows members of the U.S. House of Representatives to relate the analysis results directly to their constituents by presenting results at the district level.
- **Delta Zones (primary and secondary):** The Delta Protection Act of 1992 included mandates for the designation of primary and secondary zones within the legal Delta. The Delta region has statewide significance, and areas within the primary and secondary Delta zones are subject to specific regulations. Use of these zones as analysis regions allows interested parties to focus on the analysis results in the Delta. The primary and secondary Delta zones are shown in Figure F-9.
- **Integrated Regional Water Management regions:** As of September 1, 2011, there are 48 IRWM regions in California, which are shown in Figure F-10. Because an IRWM region is a collaboration of local agencies, some IRWM regions overlap, and some parts of the state are not covered by an IRWM region. In addition, the number of regions changes as applicants are accepted into the IRWM program. IRWM regions cross jurisdictional, watershed, and political boundaries and can involve multiple agencies and stakeholders. Use of these regions in the analysis allows IRWM groups to focus on the analysis results within their region, which allows consistency with the IRWM grant programs administered by DWR. In addition, DWR is moving toward an IWM approach, which includes IRWM planning.



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Figure F-4: CWP Hydrologic Regions and Overlay Regions Used in the Analysis

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Figure F-5: Counties Used in the Analysis

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Figure F-6: State Assembly Districts Used in the Analysis

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Figure F-7: State Senate Districts Used in the Analysis

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Figure F-8: U.S. Congressional Districts Used in the Analysis

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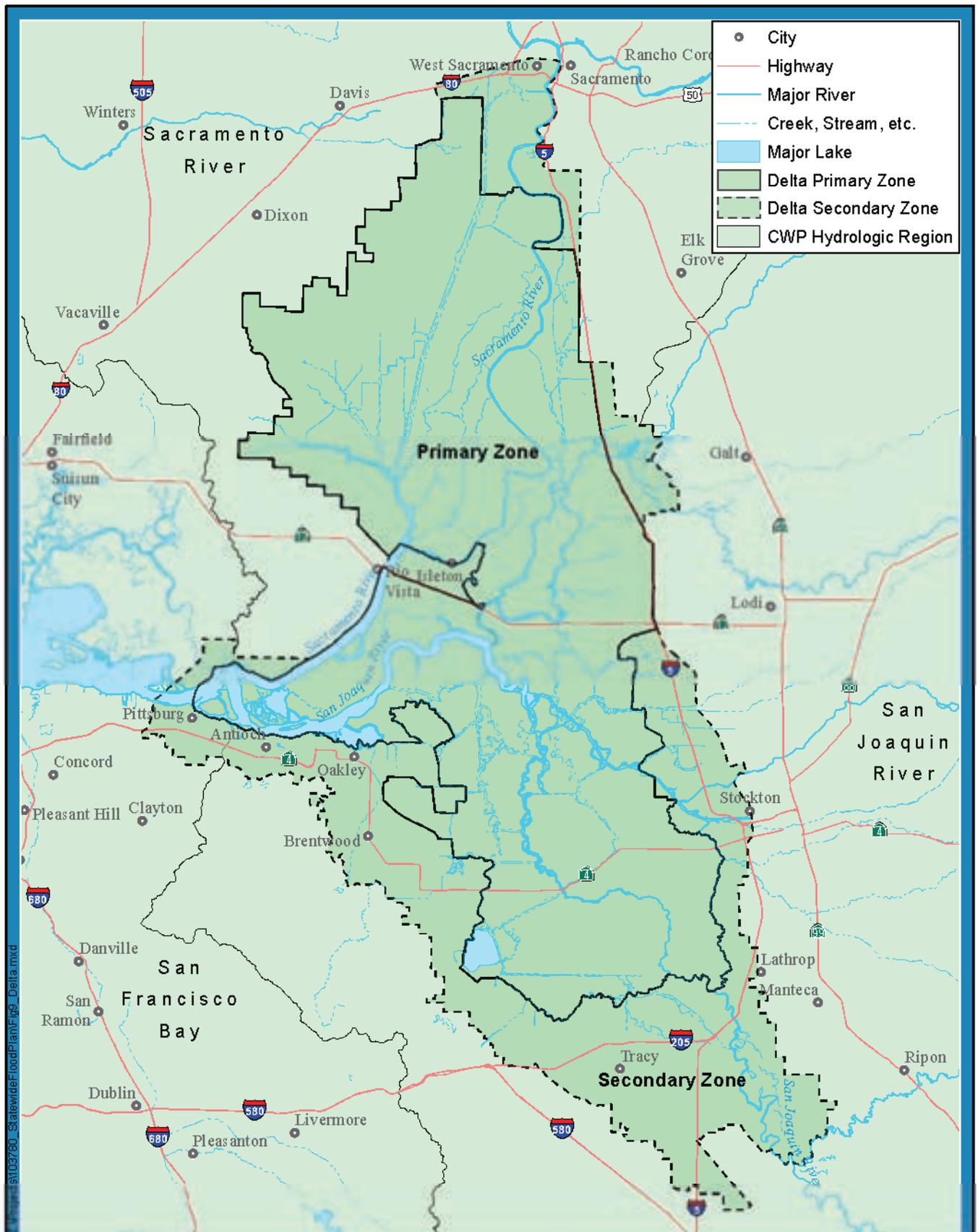


Figure F-9: Primary and Secondary Delta Zones Used in the Analysis

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Figure F-10: Integrated Regional Water Management Regions Used in the Analysis

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3.3 Procedures Used for Analysis

The flood hazard exposure analysis was performed by using ArcGIS to intersect floodplains in the various analysis regions described above with spatial data from HAZUS and other databases. These intersections are used to determine population, number of structures, crop acreage and type, numbers and types of critical facilities, number and acreage of DoD facilities, and number and acreage of Native American tribal lands exposed to flooding. The procedures used to analyze each region are summarized below.

3.3.1 Population

To estimate the exposed population within each analysis region, the following steps were completed:

1. Calculated each census block area (in acres) and the total population within each census block.
2. Clipped the census block shapefile with the analysis region boundary shapefile (e.g., counties, hydrologic regions) to remove those census blocks that were outside the analysis region.
3. Overlaid the floodplain shapefile onto the clipped census block shapefile for the analysis region.
4. Calculated the area of each census block within the analysis region that was exposed to the floodplain.
5. Calculated the exposed percentage of each census block (divided the area that is exposed by the total area of the census block).
6. Used the percentage from Step 5 to calculate the population exposed in each census block in the analysis region.
7. Summed the exposed populations for all census blocks within the analysis region to compute the total exposed population for the analysis region.

3.3.2 Structures

To estimate the numbers and values of exposed structures within each analysis region outside the CVFPP boundary, the following steps were completed:

1. Calculated each census block area (in acres).
2. Calculated the total number of structures, their total full replacement value, and the total full replacement value of the contents of those structures within each census block.
3. Clipped the census block shapefile with the analysis region boundary shapefile to remove those census blocks that were outside the analysis region.
4. Overlaid the floodplain shapefile onto the clipped census block shapefile for the analysis region.
5. Calculated the area of each census block within the analysis region that was exposed to the floodplain.
6. Calculated the exposed percentage of each census block (divided the area that is exposed by the total area of the census block).

7. Used the percentage from Step 6 to calculate the number of structures, replacement value of the structures, and replacement value of the contents of the structures in each census block that was exposed to the floodplain.

The full replacement values of structures and contents were adjusted for depreciation, location costs, and updated price levels. Depreciated replacement values were used to be consistent with USACE risk analyses and the CVFPP risk analysis. To convert the full replacement values to depreciated replacement values, the following steps were completed:

1. Determined the median year of all structures within each census block.
2. Subtracted the median year from 2010 to determine the age of all structures in each census block.
3. Determined the appropriate average depreciation percentage factors from Table F-3. If the HAZUS database had "0" as a Median Year Built for any of the structures, the weighted average of the structures within the adjacent census blocks for Median Year Built was used.
4. Multiplied the full replacement value times (1 minus depreciation percentage factor).

The depreciated replacement values were then adjusted to reflect localized construction costs for the analysis region. To localize these values, the following steps were completed:

1. Identified the appropriate county location cost factors in Table F-4.
2. Multiplied the county location cost factor by the total depreciated values of structures and contents.

The localized construction costs were also updated to 2010 dollars from 2006 dollars. To do this, localized values of all exposed structures and contents were multiplied by the *Engineering News Record* Building Cost Index update factor of +1.12.

Finally, the number of structures and the depreciated values of structures and contents were summed for all the census blocks within the analysis region to compute the total values for the analysis region.

Within the CVFPP boundary, structure inventory shapefiles (based upon county assessor's ParcelQuest data) were used to characterize flood hazard exposure. The structure inventory point shapefiles included depreciated values in 2010 dollars for the replacement structures and contents, which simplified the procedure. To estimate the exposed structures within the CVFPP boundary, the following steps were completed:

1. Overlaid the CVFPP floodplain shapefile onto the CVFPP structure inventory point shapefile.
2. Counted the number of structures that were exposed to the CVFPP floodplain.
3. Summed the depreciated replacement values of structures exposed to the CVFPP floodplain.
4. Summed the depreciated replacement values of contents exposed to the CVFPP floodplain.

Table F-3. HAZUS Depreciation Factors Averaged for all Types of Structures

Building Age (1)	Average Depreciation Factor (%) (2)	Building Age (3)	Average Depreciation Factor (%) (4)	Building Age (5)	Average Depreciation Factor (%) (6)
1	0.47	34	38.47	67	74.59
2	1.58	35	39.59	68	75.65
3	2.70	36	40.71	69	76.71
4	3.82	37	41.83	70	77.77
5	4.94	38	42.95	71	78.83
6	6.06	39	44.06	72	79.89
7	7.17	40	45.18	73	80.95
8	8.29	41	46.30	74	82.01
9	9.41	42	47.42	75	83.08
10	10.53	43	48.53	76	84.14
11	11.65	44	49.65	77	85.20
12	12.76	45	50.77	78	86.26
13	13.88	46	51.89	79	87.32
14	15.00	47	53.01	80	88.38
15	16.12	48	54.12	81	89.44
16	17.23	49	55.24	82	90.50
17	18.35	50	56.36	83	91.56
18	19.47	51	57.48	84	92.62
19	20.59	52	58.60	85	93.69
20	21.71	53	59.69	86	94.75
21	22.82	54	60.79	87	95.81
22	23.94	55	61.85	88	96.87
23	25.06	56	62.92	89	97.93
24	26.18	57	63.98	90	98.99
25	27.30	58	65.04	91	99.10
26	28.41	59	66.10	92	99.21
27	29.53	60	67.16	93	99.30
28	30.65	61	68.22	94	99.39
29	31.77	62	69.28	95	99.48
30	32.88	63	70.34	96	99.57
31	34.00	64	71.40	97	99.66
32	35.12	65	72.47	98	99.75
33	36.24	66	73.53	99	99.84
				100+	99.93

Source: FEMA, 2011

Table F-4. HAZUS County Location Cost Adjustment Factors

County	Location Cost Factor	County	Location Cost Factor
Alameda	1.15	Placer	1.08
Alpine	1.08	Plumas	1.09
Amador	1.09	Riverside	1.03
Butte	1.09	Sacramento	1.10
Calaveras	1.09	San Benito	1.09
Colusa	1.11	San Bernardino	0.99
Contra Costa	1.14	San Diego	1.04
Del Norte	1.06	San Francisco	1.22
El Dorado	1.10	San Joaquin	1.10
Fresno	1.08	San Luis Obispo	1.07
Glenn	1.11	San Mateo	1.19
Humboldt	1.07	Santa Barbara	1.06
Imperial	0.94	Santa Clara	1.14
Inyo	1.03	Santa Cruz	1.18
Kern	1.05	Shasta	1.09
Kings	1.07	Sierra	1.07
Lake	1.12	Siskiyou	1.06
Lassen	1.05	Solano	1.12
Los Angeles	1.05	Sonoma	1.15
Madera	1.07	Stanislaus	1.12
Mariposa	1.08	Sutter	1.10
Mendocino	1.10	Tehama	1.10
Merced	1.08	Trinity	1.08
Modoc	1.05	Tulare	1.05
Mono	1.04	Tuolumne	1.07
Monterey	1.09	Ventura	1.06
Napa	1.12	Yolo	1.11
Nevada	1.06	Yuba	1.10
Orange	1.05	Marin	1.19

Source: FEMA, 2011

3.3.3 Agriculture

To determine the exposed agricultural acreage and gross crop market values, the following steps were completed:

1. Clipped the DWR combined county land use survey shapefile (if available) or the HAZUS agricultural database with the analysis region boundary shapefile to remove areas outside the analysis region.
2. Overlaid the floodplain shapefile onto the clipped land use shapefile for the analysis region.
3. Determined the exposed agricultural acreage located within the floodplain.
4. Determined the value of exposed agricultural acreage using county agricultural commissioner's crop yield and price per unit data:
 - a. To estimate total exposed crop yields, the yield information obtained from the county agricultural commissioner's data (units per acre) was multiplied by the number of exposed acres, for each exposed crop.
 - b. To estimate total exposed crop values, the price information obtained from the county agricultural commissioner's data (\$/unit) was multiplied by the estimated exposed yield.
5. Where there were "missing" crop data, the following guidelines were used:
 - a. For crops that are identified under DWR land use data and are not listed in the agricultural commissioner's data, yield and price data from similar crops within the agricultural commissioner's data were used. If similar crops could not be determined, then certain crops were classified as "excluded crop"; the area was reported in the results table, but values were not reported. Certain crops were also classified as "non-crop" (for example, native vegetation); these areas and values are not reported. Where HAZUS land use information was used, the HAZUS crop types were matched to similar crops within the agricultural commissioner's data. As described below, county data were preferred, but if the data were not available, then state total data were used.
 - b. When a county's agricultural commissioner's yield and price data were missing for a given crop, state totals were used for that crop. For example, almonds are identified in Napa County using DWR's land use data, but the county agricultural commissioner's data did not provide price or yield data for almonds. Therefore, the state total almond yield (0.96 tons per acre) and price (\$3,189.21 per ton) were used for Napa County.
6. Reported total exposed agricultural acreage. DWR crop data are organized by major crop categories. These categories are defined in the standard DWR Land Use Legend (DWR, 2005):
 - Grain and hay
 - Rice
 - Field
 - Pasture
 - Truck, nursery, and berry crops

- Deciduous fruits and nuts
 - Citrus and subtropical
 - Vineyards
7. Reported exposed acreage for the subset of crops for which economic value was computed.
 8. Reported value of exposed crops.
 9. To update crop values to 2010 price levels, the crop price index factors provided in Table F-5 were used. These factors were applied to the total crop category values rather than the specific crops within the crop categories.

Table F-5. USDA 2010 Crop Price Index Factors for Major Crop Categories

Major Crop Category	Price Index Factor
Grain and hay	1.31
Rice	1.02
Field	1.28
Pasture	1.02
Truck, nursery and berry crops	0.87
Deciduous fruits and nuts	1.07
Citrus and subtropical	1.02
Vineyards	1.07

Source: USDA, 2010

3.3.4 CNDDDB Species

To determine the number of sensitive plant species and sensitive animal species exposed, the following steps were completed:

1. Clipped the CNDDDB shapefile with the analysis region boundary shapefile to remove those CNDDDB areas located completely outside the analysis region.
2. Overlaid the floodplain shapefile onto the clipped CNDDDB shapefile.
3. Counted the number of sensitive plant species and sensitive animal species located partly or entirely within the floodplain and determined their acreage.

3.3.5 Critical Facilities and Department of Defense Facilities

To determine the number of exposed critical facilities for all categories other than DoD facilities, the following steps were completed:

1. Clipped the appropriate HAZUS facility point shapefiles with the analysis region boundary shapefile to remove those facilities that were located completely outside the analysis region.
2. Overlaid the floodplain shapefile onto the clipped facility shapefile for the analysis region.
3. Counted the number of critical facilities located partly or entirely within the floodplain.

To determine the number (not acreage) of exposed DoD facilities, the following steps were completed:

1. Clipped the DoD facility polygon shapefile with the analysis region boundary shapefile to remove those DoD facilities that were located completely outside the analysis region.
2. Overlaid the floodplain shapefile onto the clipped DoD facilities shapefile.
3. Counted the number of DoD facilities located partly or entirely within the floodplain and determined their acreage.

3.3.6 Native American Tribal Lands

To determine the number and acreage of exposed Native American tribal lands, the following steps were completed:

1. Clipped the Tribal land areas polygon shapefile with the analysis region boundary shapefile to remove those Tribal land areas located completely outside the analysis region.
2. Overlaid the floodplain shapefile onto the clipped Tribal land areas shapefile.
3. Counted the number of Tribal lands located partly or entirely within the floodplain and determined their acreage.

3.4 Analysis Steps

3.4.1 Method Testing

Two test cases were analyzed by four consulting teams as part of the development and refinement of the flood hazard exposure analysis method. The first test case was for Napa County. The proposed procedures were used to estimate the exposed areas, population, and numbers and values of structures and crops. The lessons learned from this test case helped in the initial formulation of the analysis method.

Next, a second test case, this time for Marin County, was analyzed to help refine the details of the method. Each consulting team computed independently the following values for Marin County:

- Exposed population
- Exposed area
- Number of exposed structures
- Depreciated replacement value of exposed structures
- Exposed agricultural acreage
- Market value of exposed crops

The consultant teams compared their results to ensure that the method was clear and that each team was properly following the method. Discrepancies in the results computed by the different teams revealed some areas where refinements were needed to ensure consistency in the analysis. Once these refinements were made, the values computed by each team were equal, demonstrating that the analysis method could be applied independently to achieve the same results.

3.4.2 Estimates of Exposure to Flood Hazard

The flood hazard exposure analysis involved analysis teams from four different consulting firms. Because of differences in data for the CVFPP and the rest of the state, computations for within the CVFPP boundary and those for the rest of the state were assigned to different analysis teams. Each team completed the analysis steps described above for its assigned analysis regions. In cases where the boundary of the CVFPP cut across an analysis region boundary, computations were performed separately for the CVFPP and non-CVFPP portions of the analysis region. The resulting values were then added together to obtain estimates of total exposure for the entire analysis region.

3.4.3 Quality Assurance/Quality Control

After each team completed the analysis steps, a quality assurance/quality control (QA/QC) process was completed. Study teams exchanged their draft work products and followed a consistent QA/QC process. All QA/QC steps were completed for all analysis regions for both the 100-year and 500-year floodplains. The QA/QC process answered the following questions:

- Were the area, total population, number of structures, total full replacement value of structures, and total full replacement value of contents recorded, and do values seem reasonable?
- Were the exposed area, exposed population, full replacement value of exposed structures, and full replacement value of exposed contents recorded, and do values seem reasonable?
- Were replacement values of structures and contents depreciated based on median structure age and the average depreciation factor?
- Were replacement values of structures and contents localized using the appropriate county location cost factors?
- Were the depreciated structure and content values updated to 2010 dollars using the *Engineering News Record* Building Cost Index update factor of +1.12?
- Were exposed essential facilities, including high potential loss facilities, lifeline utilities, transportation facilities, and military facilities, estimated correctly?
- Were the DWR county land use survey data used as the primary source for estimating exposed crops?
- Was the HAZUS crop database used as a secondary source for estimating exposed crops?
- Were the DWR and HAZUS crop data merged correctly?
- Were the correct crop categories included in exposed crop calculations?
- Were exposed crops used for valuation computed correctly?

- Were crop values determined using county agricultural commissioners' yield and price data?
- Were crop values updated to 2010 levels using the U.S. Department of Agriculture (USDA) price indices for the crop categories?

Inconsistencies in draft work products were noted and discussed with each study team until the results were verified and multiple teams working independently produced the same results.

3.5 Limitations of Analysis

3.5.1 Direct Limitations of Analysis Method

Analysis of exposure to flood hazard is appropriate for identifying areas of California at risk of flooding and for formulating conceptual plans or identifying broad categories of solutions to flood problems. However, the flood hazard exposure analysis method and results have certain limitations and should be interpreted with care. Limitations and cautions include the following:

- This study did not compute risk, such as expected annual consequence (damage or loss of life, for example), as would be done with a detailed risk analysis. Nor did this study compute actual damage for the 100-year and 500-year events. Rather, this study tabulated the number of people and the number and value of various assets within the footprints of the 100-year and 500-year events. Thus, these estimates should not be interpreted as information for use in a benefit-cost analysis or as the test for making investment decisions. The estimates can, however, support identification, comparison, and prioritization of broad categories of flood management solutions.
- Hazard information, particularly floodplain delineations, used herein is based on the best information available to analysts when calculations were completed in September and October 2011. This information included FEMA floodplain maps, floodplain maps provided by USACE, and floodplain maps provided by DWR that were developed as a component of the CVFPP. This hazard information provides a reasonable estimate of the extent of flooding, but it is not (and this study is not) intended to provide a firm line that divides flooded areas from dry areas.
- In areas outside the CVFPP boundary, this study did not include detailed geotechnical engineering analyses to confirm or refine forecasts of levee performance. If levees were accredited by FEMA, they were included here. Note that within the CVFPP boundary, levee fragility functions informed delineation of the inundation area.
- This study covers areas that are in FEMA-, CVFPP-, or USACE-delineated floodplains. About 0.5 percent of the state (including all of Alpine County and most of San Francisco County) did not have floodplain delineation available and therefore was not covered by the study.

- Population estimates used for this study are from the 2000 U.S. Census. This is consistent with population estimates used in the CVFPP life-safety analysis. The effect on the results of using 2000 census data instead of 2010 census data is unknown; however, the 2010 census reported an increase in statewide population from 34 million to 37 million.
- Structure values within the CVFPP boundary are derived from the exposure data used for the CVFPP. Outside the CVFPP boundary, values from FEMA's HAZUS database were used; this study did not refine those structure estimates.
- Because HAZUS uses census information, structures are uniformly distributed within the census blocks, which would not represent the exact location of structures. Thus, outside the CVFPP boundary (which used geospatial parcel data), the study may not be accurately tabulating exact counts of structures within the flood event footprints. However, these tabulations are acceptable for a statewide exposure analysis. The estimates of crop acreage and values exposed to flooding were derived from several sources, including local, State, and Federal agencies. DWR and HAZUS crop types were matched with the appropriate county agricultural commissioner's yield and price data for the entire state. Although the team made its best attempt to ensure accuracy in matching these data, some discrepancies could be present, which would affect the crop value estimates. When the match between DWR/HAZUS crop types with the county agricultural commissioner's data could not be made, only exposed acreage was reported.
- The results in this study present only the number of sensitive plant species and sensitive animal species exposed, which is the intent of the report.

3.5.2 Loss of Function

This attachment quantifies the exposure to flood hazard of population, structures, important facilities, and crops using a consistent methodology statewide. While this approach represents an important first step in statewide flood management planning, other factors that are not easily quantifiable should be considered in a more detailed study. For example, a more detailed study would evaluate not only the direct physical damages to inundated structures and crop losses typically included in a flood risk assessment but also the loss of function to those inundated structures (residential, commercial, industrial, public, and others) and infrastructure (such as transportation, health and human services, water supply, wastewater treatment, utilities, energy generation, and emergency services). In addition, floods will affect ecosystems and regional economic activity. Loss-of-function impacts are briefly described below.

Impacts from flooding to transportation systems can be substantial. The interruption to the movement of people, goods, and services could last from days to months following a large flood event. Urban communities could experience delays in commuting, having to find alternative routes, and rural communities could have their sole transportation corridor cut off because of the flooding, isolating the

community. Critical facilities, such as hospitals, nursing homes, police and fire stations, and other government buildings, may also be isolated by the flood, requiring additional resources to maintain their operations. Evacuations to other facilities and buildings outside the flooded area could be required. Although the delays and the additional expenses incurred caused by using longer alternative routes are not significant to the overall flood mitigation and recovery costs, they still can be substantial in terms of absolute dollar amounts—on the order of hundreds of thousands to a few million dollars. For example, it is estimated that a 1-day closure of Highway 101 in South San Francisco Bay (which averages approximately 400,000 trips per day) would cost several million dollars.

Health and human services may be affected during floods, with the limited availability of potable water to the community frequently being a primary concern. Temporary closures of medical clinics, schools, welfare services, and other governmental services could affect a much larger portion of the community than those areas directly flooded. A flood could overload wastewater treatment facilities, causing a release of untreated sewage into rivers, bays, or the ocean, or possibly backing up the sewer system to the street level. Untreated sewage would increase the number of disease-carrying insects and other pathogens in the area. Water supplies could be limited by the flooding, due to temporary closures of pumping facilities or contamination of water sources. A statewide worst-case scenario would be the flooding of the State's water system (including the State Water Project and Central Valley Project), which potentially would affect 25 million urban water users and 3 million acres of irrigated farmland. Approximately one-quarter of the State's population depends fully on the State's water system for drinking water, and two-thirds of the State partially depends on the system for drinking water.

Besides water supply, the flow of gas and electrical transmission could be affected by flooding. Disruption of utilities during and following a flood could hamper emergency responses and post-flood economic activities, delaying the return to normalcy for residents of the flooded area. Additionally, if energy generation facilities are within the flooded area, they might have to shut down, decreasing the energy available on the grid.

During the response to a flood, emergency services are critical, such as closing off affected areas, routing people away from the flood, protecting against looting and vandalism, providing emergency medical care, evacuating trapped residents, flood fighting, and other services. Emergency services should be minimally affected for communities that have sufficient space and have properly planned for flood events. During major floods, the emergency response capabilities and/or infrastructure of a community can be overwhelmed; outside assistance requires the allocation of resources from areas not affected by the flood.

Ecosystem functions could also be adversely affected, depending upon the magnitude and duration of the flood event. Habitats other than riparian (upland, for example) may be impacted by flooding, resulting in temporary displacement, or permanent destruction of affected flora and fauna habitats, including habitat for endangered species. The flooding effects on flora will depend on the vulnerability of the species to inundation and the duration of the flood, and the flooding effects

on fauna will depend on the ability of the species to move out of the area or find refuge before inundation occurs. Flooding is a natural process for riparian ecosystems, and the effects of flooding can be beneficial to native species with the creation of new habitat, to soil fertility with the importation of nutrients, and to groundwater quality and rate of recharge. However, in the case of catastrophic flooding, or flooding resulting from structural failures (such as dams and levees), even riparian ecosystem functioning can be adversely affected over both short and long terms, and perhaps permanently.

Recreation is also affected by floods, with temporary closures of trails and parks, or destruction of some recreational features during the flood. Examples of recreational projects statewide that would be affected by floods include the Santa Ana River Trail, which (when completed) will run 110 miles along the river from Big Bear Lake to the Pacific Ocean; Discovery Park, a 160-acre park located at the confluence of the American and Sacramento rivers in downtown Sacramento; and the San Francisco Bay Trail, a 500-mile shoreline trail along the San Francisco Bay. Although these examples represent smart land-use planning decisions regarding flood hazards, they still would require time and resources to reopen following a major flood event, thereby limiting recreational opportunities.

Finally, in addition to the physical damage and loss of functions within a flooded region, economic activity can be affected beyond that region. For example, flooded businesses may experience disruptions in the flow of goods and services in and out of the region. This could result in direct and indirect income and employment losses in those other regions. The disruption of infrastructure within a flooded region could also have effects outside the region. For example, flooded water or power supply infrastructure that supplies other regions might cause direct and indirect losses within those regions due to supply interruptions. Alternatively, businesses that support recovery efforts and are located outside the flooded area might experience a boom. Federal and State governments can provide financial assistance that offsets losses within the flooded region, but these expenditures have implications for their budgets (and ultimately the taxpayers) outside the region.

4.0 Results of SFMP Flood Hazard Exposure Analysis

4.1 Statewide Results

This section provides an overview of the statewide results of the flood hazard exposure analysis. The analysis estimated population, depreciated replacement value of structures and content, market value of crops, numbers of critical facilities, and numbers and acreage of Native American tribal lands and DoD facilities that are within the 100-year and 500-year floodplains as determined by the CVFPP (in the Central Valley) or by FEMA or the USACE (outside the Central Valley) for each analysis region. Because this study did not compute risk (e.g., the likelihood of loss of life or actual damage for the 100-year and 500-year events), these estimates should not be interpreted as information for use in a benefit-cost analysis or as the test for making investment decisions. The estimates can, however, support identification, comparison, and prioritization of broad categories of flood management solutions.

The statewide exposure to flood hazard from the 100-year floodplain totals about 1.4 million people, \$137 billion in value of structures and their contents, and \$5.4 billion in crop values. The statewide exposure to flood hazard from the 500-year floodplain totals about 7.3 million people, \$577 billion in value of structures and their contents, and \$7.5 billion in crop values. Thus, the exposure to the 500-year floodplain is about 420 percent more than the exposure to the 100-year floodplain in terms of people exposed, with increases of about 320 percent in structures and contents value and about 40 percent in crop value compared to the 100-year floodplain.

To help understand how the exposure to flood hazard is distributed across the state, results are presented for the following categories:

- Counties
- State Assembly, State Senate, and U.S. Congressional Districts
- IRWM Regions
- Delta Zones
- Mountain Counties
- CWP Hydrologic Regions

Detailed results for each analysis region are provided in Appendices B through H. For each category, two figures are presented, representing 100-year and 500-year floodplains. Each figure delineates the relative exposure of population, structure and contents value, and crop values.

Statewide Results

100-Year Floodplain (1% annual chance of flooding)

- 1.4 million people
- \$137 billion in structures and contents values
- \$5.4 billion in crop values

500-Year Floodplain (0.2% annual chance of flooding)

- 7.3 million people
- \$577 billion in structures and contents values
- \$7.5 billion in crop values

County Results

Population and Value of Structures and Contents

Orange, Santa Clara, and San Mateo counties have the most exposure to the 100-year floodplain.

Orange, Santa Clara, and Los Angeles counties have the most exposure to the 500-year floodplain, with more than 45% of the statewide total.

Agricultural Crops Value

Exposure is concentrated in 12 counties that comprise more than 70% of the statewide total.

4.1.1 Counties

Tables F-6, F-7, and F-8 and Figures F-11 and F-12 show the relative exposure results for the counties in terms of population, value of structures and contents, and value of agricultural crops in the 100-year and 500-year floodplains. In addition, Figures F-13 and F-14 show the percentage exposed in each county for each category.

Urban exposure to flood hazard for the 100-year floodplain is widely distributed among California counties, with 29 counties having more than 10,000 people exposed and 28 counties having more than \$1 billion in structures and contents exposed. Orange, Santa Clara, and San Mateo counties have the most exposure in terms of population and value of structures and their contents. These three counties each have more than 100,000 people and more than \$10 billion in structures and contents exposed to the 100-year floodplain.

Urban exposure to the 500-year floodplain is more concentrated, with about 45 percent of the statewide exposure of population and value of structures and contents occurring in just three counties—Orange, Santa Clara, and Los Angeles. In total, 15 counties have a population of more than 100,000 and 14 counties have more than \$10 billion in structures and their contents exposed to the 500-year floodplain. Four counties—Yuba, Yolo, Merced, and Colusa—have more than 25 percent of their populations exposed to the 100-year floodplain. Five counties—Sutter, Yuba, San Joaquin, Monterey, and Tulare—have more than 50 percent of their populations exposed to the 500-year floodplain.

Most of the agricultural exposure to the 100-year floodplain occurs in 12 counties (San Joaquin, Fresno, Kern, Kings, Merced, Yolo, Tulare, Monterey, Madera, Sutter, Ventura, and Butte), each of which has more than \$100 million in exposed agricultural crops. These 12 counties contain more than 70 percent of the total value of exposed agricultural crops in the state. Five additional counties—Humboldt, Marin, Plumas, Yolo, and Del Norte—have more than 50 percent of their agricultural acreage exposed to the 100-year floodplain.

Agricultural exposure to the 500-year floodplain is concentrated in the same 12 counties plus 5 additional counties (Sacramento, Imperial, Solano, Yuba, and Riverside), where each county has more than \$100 million in exposed agricultural crops. These 17 counties also contain more than 70 percent of the total value of exposed agricultural crops in the state. In addition, Humboldt, Marin, Plumas, Yolo, Del Norte, Contra Costa, San Joaquin, and Colusa counties have more than 50 percent of their agricultural acreage exposed to the 500-year floodplain.

RESULTS OF SFMP FLOOD HAZARD EXPOSURE ANALYSIS

Table F-6. Summary of Population Exposure Results by Analysis Region Category

Analysis Region Category	No. of Regions	100-year Floodplain Results					500-year Floodplain Results				
		No. Greater Than 10,000	No. Greater Than 50,000	No. Greater Than 100,000	No. Greater Than 250,000	No. Greater Than 1,000,000	No. Greater Than 10,000	No. Greater Than 50,000	No. Greater Than 100,000	No. Greater Than 250,000	No. Greater Than 1,000,000
Counties	58	29	8	3	0	0	35	23	15	7	2
State Assembly Districts	80	45	5	0	0	0	71	46	24	5	0
State Senate Districts	40	31	13	1	0	0	38	34	24	3	0
U.S. Congressional Districts	53	37	11	0	0	0	48	37	26	11	0
IRWM Regions	48	29	7	2	1	0	34	19	15	6	3

Table F-7. Summary of Structures and Contents Exposure Results by Analysis Region Category

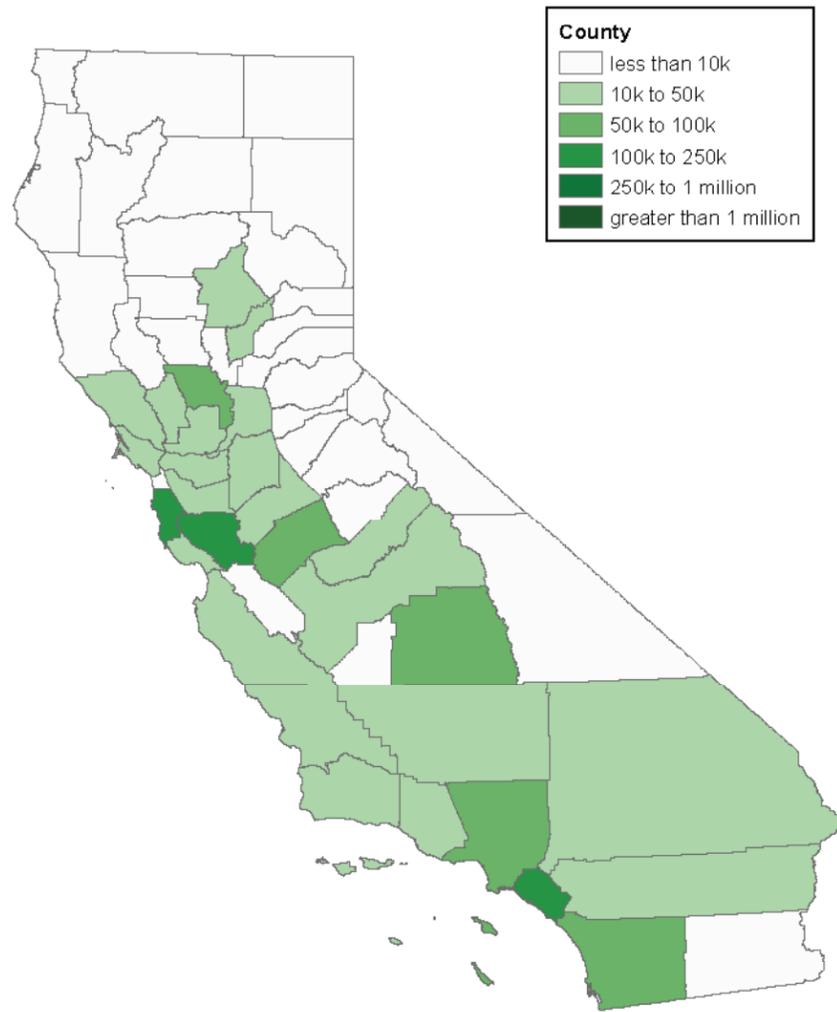
Analysis Region Category	No. of Regions	100-year Floodplain Results					500-year Floodplain Results				
		No. Greater Than \$1 Billion	No. Greater Than \$5 Billion	No. Greater Than \$10 Billion	No. Greater Than \$20 Billion	No. Greater Than \$50 Billion	No. Greater Than \$1 Billion	No. Greater Than \$5 Billion	No. Greater Than \$10 Billion	No. Greater Than \$20 Billion	No. Greater Than \$50 Billion
Counties	58	28	9	3	0	0	33	21	14	6	3
State Assembly Districts	80	45	6	0	0	0	70	44	21	5	0
State Senate Districts	40	30	13	1	0	0	38	32	22	10	0
U.S. Congressional Districts	53	35	11	1	0	0	48	36	22	9	0
IRWM Regions	48	25	6	2	1	0	33	17	15	6	3

RESULTS OF SFMP FLOOD HAZARD EXPOSURE ANALYSIS

Table F-8. Summary of Agricultural Crops Exposure Results by Analysis Region Category

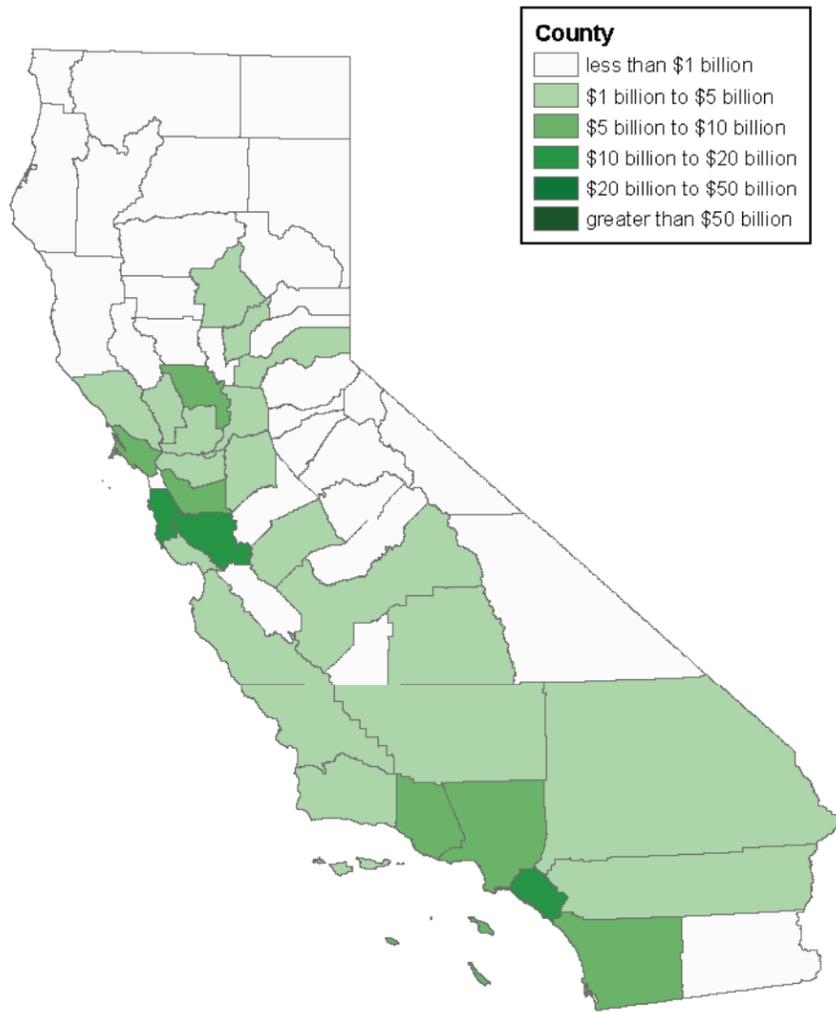
Analysis Region Category	No. of Regions	100-year Floodplain Results					500-year Floodplain Results				
		No. Greater Than \$10 million	No. Greater Than \$50 million	No. Greater Than \$100 million	No. Greater Than \$250 million	No. Greater Than \$500 million	No. Greater Than \$10 million	No. Greater Than \$50 million	No. Greater Than \$100 million	No. Greater Than \$250 million	No. Greater Than \$500 million
Counties	58	33	25	12	8	3	34	28	17	10	4
State Assembly Districts	80	23	20	14	6	3	26	21	17	10	3
State Senate Districts	40	15	12	9	7	4	18	14	10	9	6
U.S. Congressional Districts	53	20	15	11	7	4	21	15	14	10	5
IRWM Regions	48	28	19	14	6	2	28	24	16	10	5

Population Exposed by County



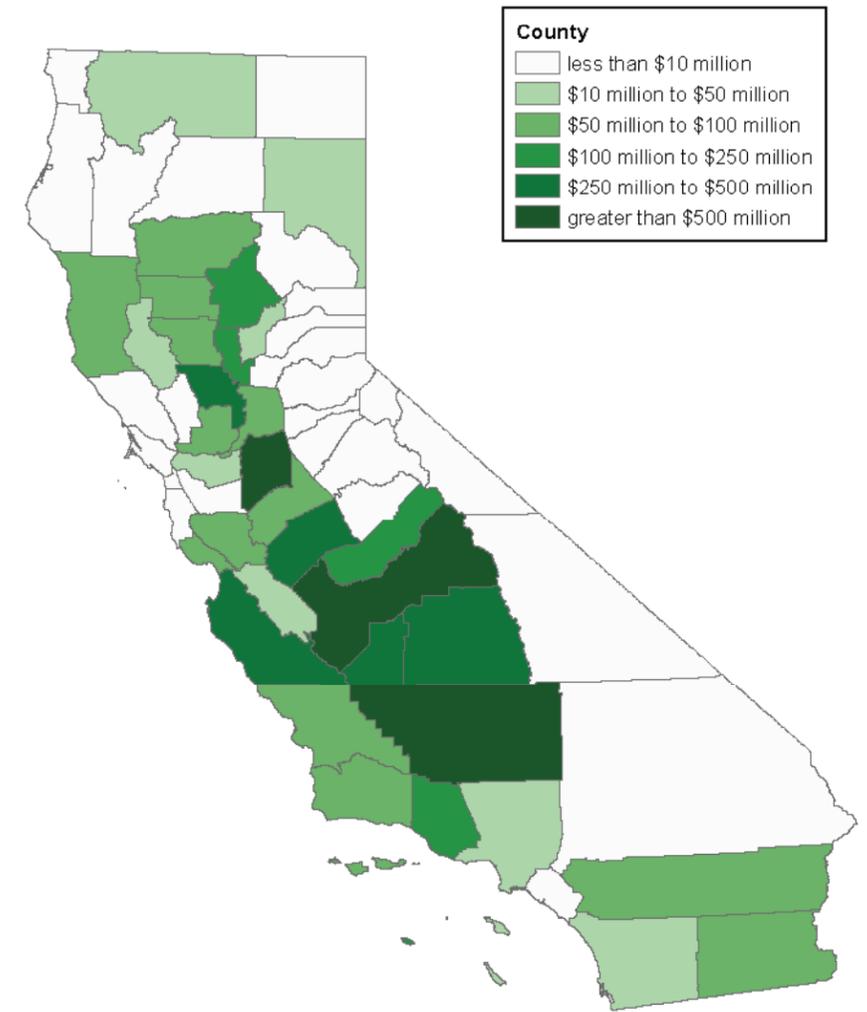
NOTE: Each island is part of an analysis region that also includes an area on the mainland. For those analysis regions, the results shown reflect the total of the mainland area and its associated islands.

Value of Exposed Structures and Contents by County



NOTE: Each island is part of an analysis region that also includes an area on the mainland. For those analysis regions, the results shown reflect the total of the mainland area and its associated islands.

Value of Exposed Agricultural Crops by County



NOTE: Each island is part of an analysis region that also includes an area on the mainland. For those analysis regions, the results shown reflect the total of the mainland area and its associated islands.

Total Population Exposed Statewide = 1.4 million (4%)

Total Value of Exposed Structures and Contents Statewide = \$136.7 billion (5%)

Total Value of Exposed Agricultural Crops = \$5.4 billion (27%)

Figure F-11
Statewide Exposure to Flood Hazard, Reported by County for a 100-year Flood Event

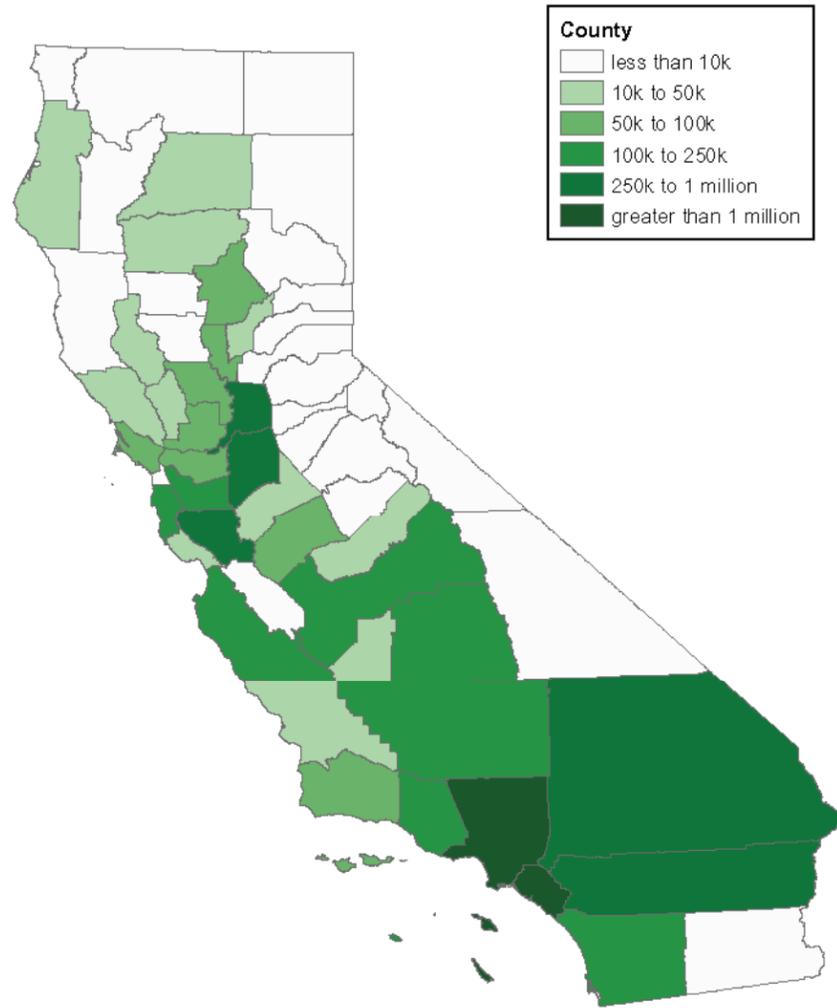
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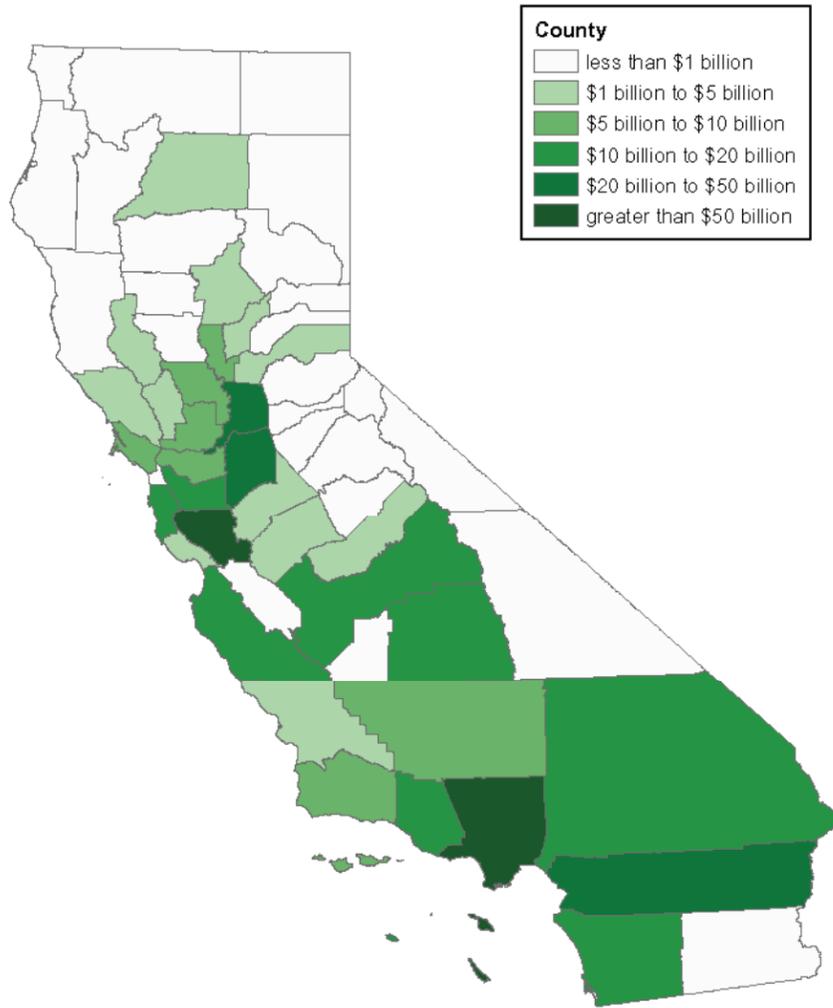
November 9, 2012

Population Exposed by County



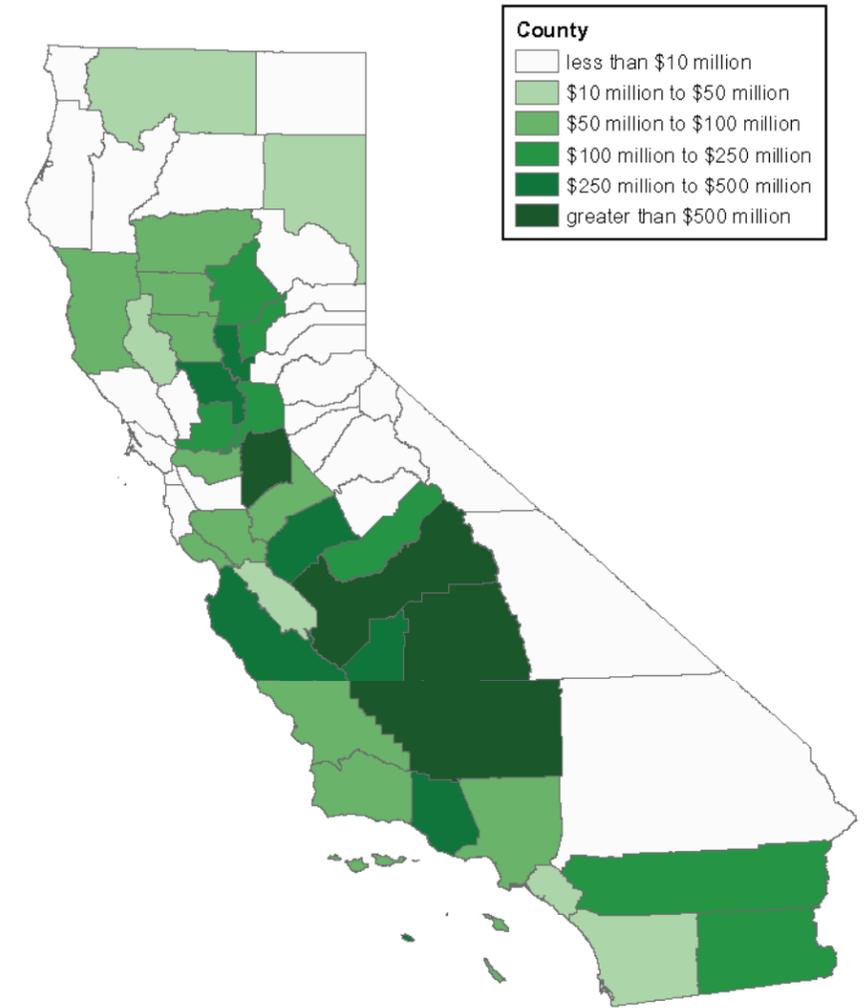
NOTE: Each island is part of an analysis region that also includes an area on the mainland. For those analysis regions, the results shown reflect the total of the mainland area and its associated islands.

Value of Exposed Structures and Contents by County



NOTE: Each island is part of an analysis region that also includes an area on the mainland. For those analysis regions, the results shown reflect the total of the mainland area and its associated islands.

Value of Exposed Agricultural Crops by County



NOTE: Each island is part of an analysis region that also includes an area on the mainland. For those analysis regions, the results shown reflect the total of the mainland area and its associated islands.

Total Population Exposed Statewide = 7.3 million (21%)

Total Value of Exposed Structures and Contents Statewide = \$576.8 billion (20%)

Total Value of Exposed Agricultural Crops = \$7.5 billion (35%)

Figure F-12
Statewide Exposure to Flood Hazard, Reported by County for a 500-year Flood Event

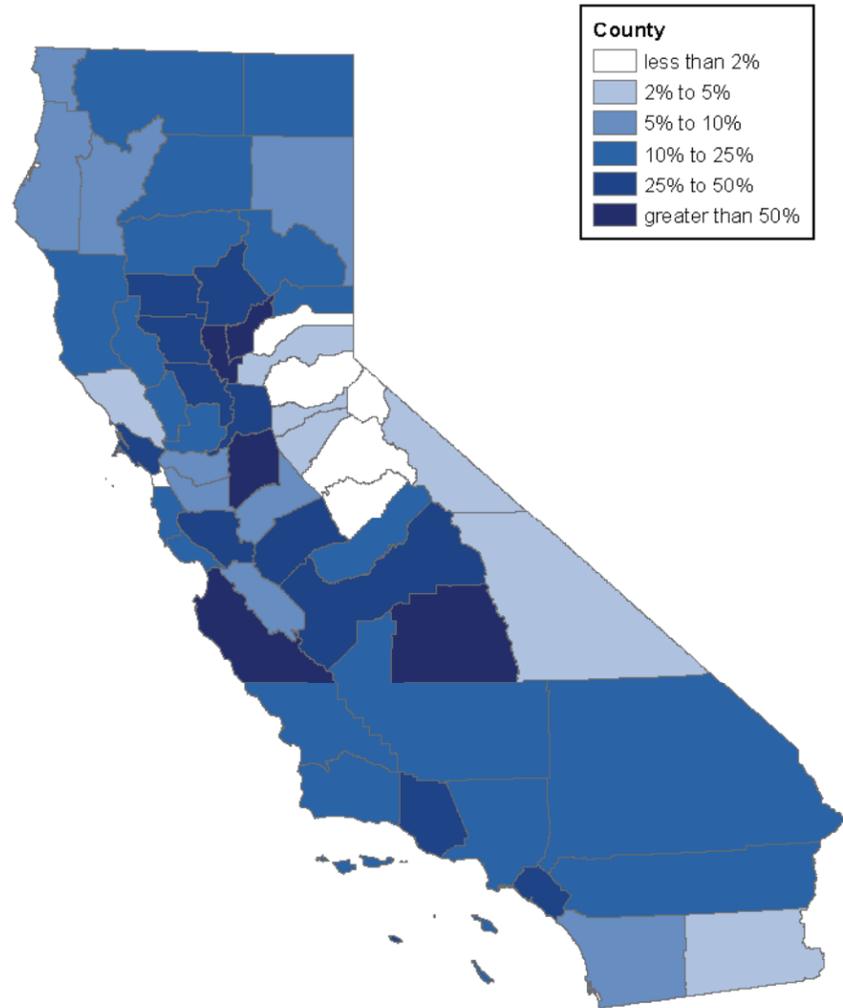
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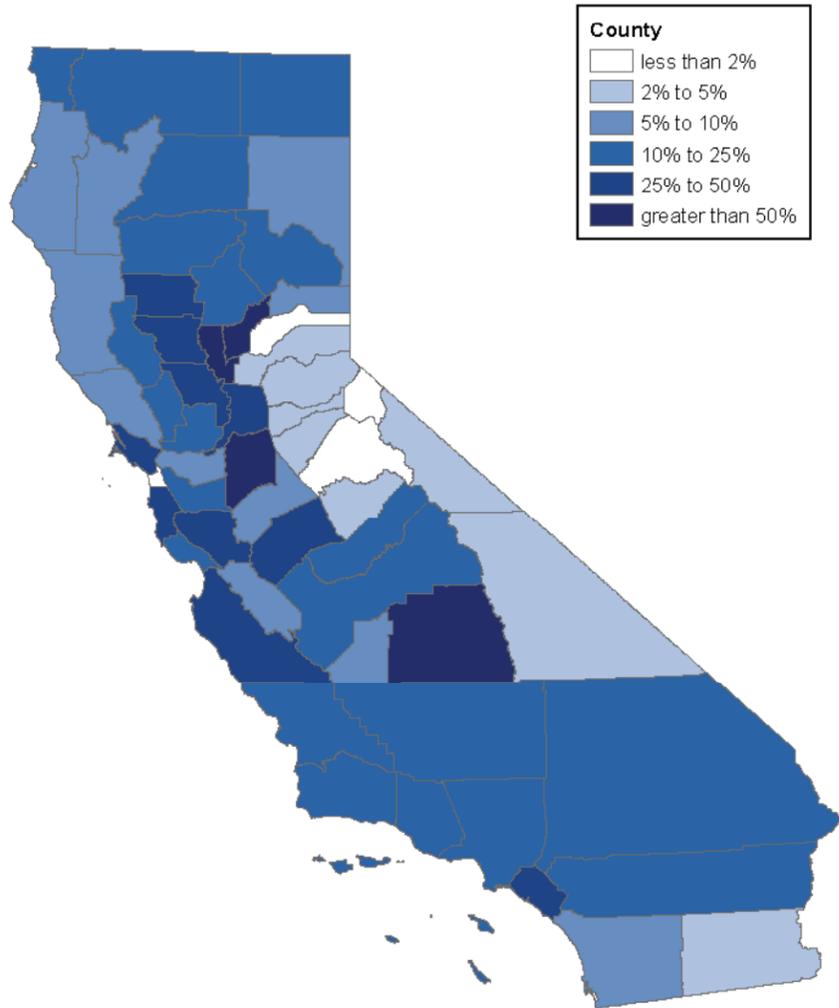
November 9, 2012

Percentage of Population Exposed by County



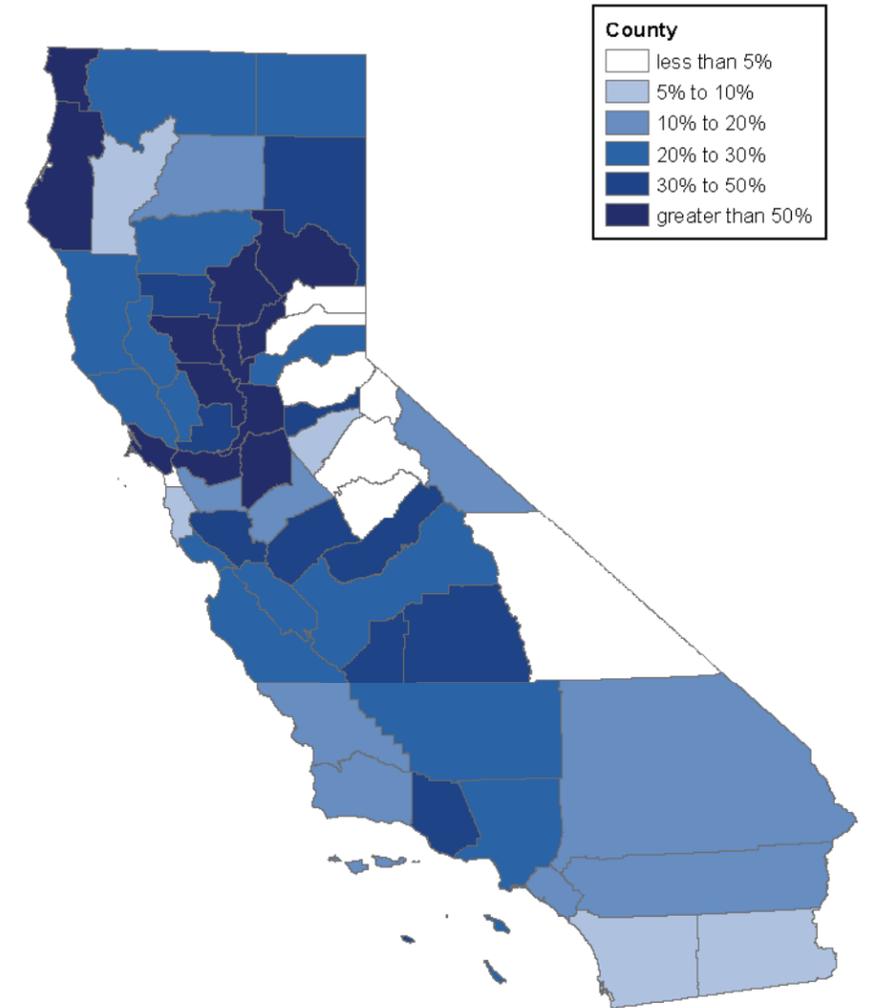
Percentage of Total Population Exposed Statewide = 21%

Percentage of Exposed Structures and Contents by County



Percentage of Total Exposed Structures and Contents Statewide = 20%

Percentage of Exposed Agricultural Crops by County



Percentage of Total Exposed Agricultural Crops Statewide = 35%

Figure F-14
Percentage of Statewide Exposure to Flood Hazard, Reported by County for a 500-year Flood Event

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Exposure of sensitive plant species to flood hazard in the 100-year floodplain is distributed among most California counties, with 14 counties having more than 50 plant species exposed. San Diego and San Luis Obispo counties have the most exposure with more than 100 sensitive plant species in the 100-year floodplain.

Exposure of sensitive plant species to the 500-year floodplain is similar to that of the 100-year floodplain. Fourteen counties have more than 50 sensitive plant species in the 500-year floodplain, and San Diego and San Luis Obispo counties have more than 100 sensitive plant species in the 500-year floodplain.

For both the 100-year and 500-year floodplains, about 9 percent of the exposed sensitive plant species were listed by the State of California as endangered, and about 10 percent of the exposed plant species were Federally listed as endangered. For both the 100-year and 500-year floodplains, about 2 percent of the exposed sensitive plant species were listed by the State of California as threatened, and about 4 percent of exposed plant species were Federally listed as threatened.

Exposure of sensitive animal species to flood hazard in the 100-year floodplain is distributed among most California counties, with 16 counties having more than 50 animal species exposed. Riverside and San Bernardino counties have the most exposure with more than 100 animal species in the 100-year floodplain. Exposure of sensitive animal species to the 500-year floodplain is similar to that of the 100-year floodplain. Seventeen counties have more than 50 sensitive animal species in the 500-year floodplain, and Riverside and San Bernardino counties have more than 100 sensitive animal species in the 500-year floodplain.

For both the 100-year and 500-year floodplains, about 8 percent of the exposed animal species were listed by the State of California as endangered, and about 12 percent of the exposed animal species were Federally listed as endangered. For both the 100-year and 500-year floodplains, about 6 percent of the exposed animal species were listed by the State of California as threatened, and about 5 percent of exposed animal species were Federally listed as threatened.

4.1.2 State Assembly, State Senate, and U.S. Congressional Districts

Tables F-6, F-7, and F-8, and Figures F-15 and F-16 show the exposure results for the State assembly districts in terms of population, value of structures and their contents, and value of agricultural crops in the 100-year and 500-year floodplains. Figures F-17 and F-18 present that information for State senate districts, while Figures F-19 and F-20 present the information for U.S. congressional districts.

Urban exposure to flood hazard for the 100-year floodplain is highly distributed across the state among the political districts. Forty-five assembly districts, 31 senate districts, and 37 congressional districts have more than 10,000 people exposed; similarly, 45 assembly districts, 30 senate districts, and 35 congressional districts each have more than \$1 billion in structures and their contents exposed. Urban exposure to the 500-year floodplain is more concentrated than for the 100-year floodplain. Twenty-four assembly districts, 24 senate districts, and 26 congressional districts each have populations of more than 100,000 exposed. Twenty-one

assembly districts, 22 senate districts, and 22 congressional districts have more than \$10 billion in structures and their contents exposed to the 500-year floodplain.

Most of the exposure of agricultural crops to the 100-year floodplain occurs in 14 assembly districts, 9 senate districts, and 11 congressional districts, each of which has more than \$100 million in exposed agricultural crops. These districts make up more than 80 percent of the total value of exposed agricultural crops for their respective categories in the state. Exposure of agricultural crops to the 500-year floodplain is concentrated in 10 senate districts, 17 assembly districts, and 14 congressional districts, each of which has more than \$100 million in exposed agricultural crops. These districts also make up more than 80 percent of the total value of exposed agricultural crops for their respective categories in the state.

Exposure of sensitive species to flood hazard in the 100-year floodplain is distributed across the state among the political districts. Five assembly districts, seven senate districts, and five congressional districts have more than 100 sensitive plant species in the 100-year floodplain. Three assembly districts, six senate districts, and five congressional districts have more than 100 sensitive animal species in the 100-year floodplain. In the 500-year floodplain, five assembly districts, seven senate districts, and six congressional districts have more than 100 sensitive plant species exposed. Three assembly districts, six senate districts, and five congressional districts have more than 100 sensitive animal species in the 500-year floodplain.

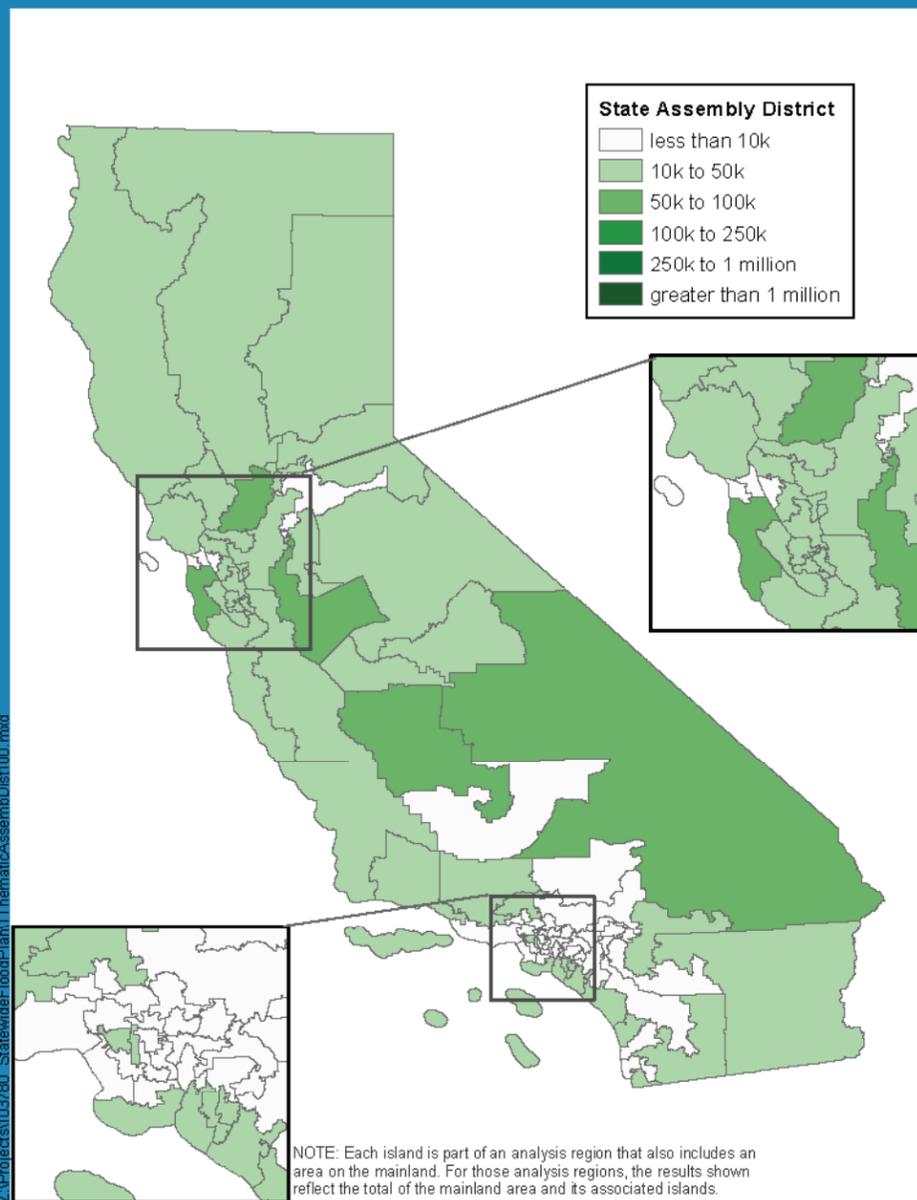
For both the 100-year and 500-year floodplains, about 9 percent of the exposed plant species were listed by the State of California as endangered, and about 10 percent of the exposed plant species were Federally listed as endangered. For both the 100-year and 500-year floodplains, about 2 percent of the exposed plant species were listed by the State of California as threatened, and about 4 percent of exposed plant species were Federally-listed as threatened.

For both the 100-year and 500-year floodplains, about 8 percent of the exposed animal species were listed by the State of California as endangered, and about 12 percent of the exposed animal species were Federally listed as endangered. For both the 100-year and 500-year floodplains, about 6 percent of the exposed animal species were listed by the State of California as threatened, and about 5 percent of exposed animal species were Federally listed as threatened.

4.1.3 IRWM Regions

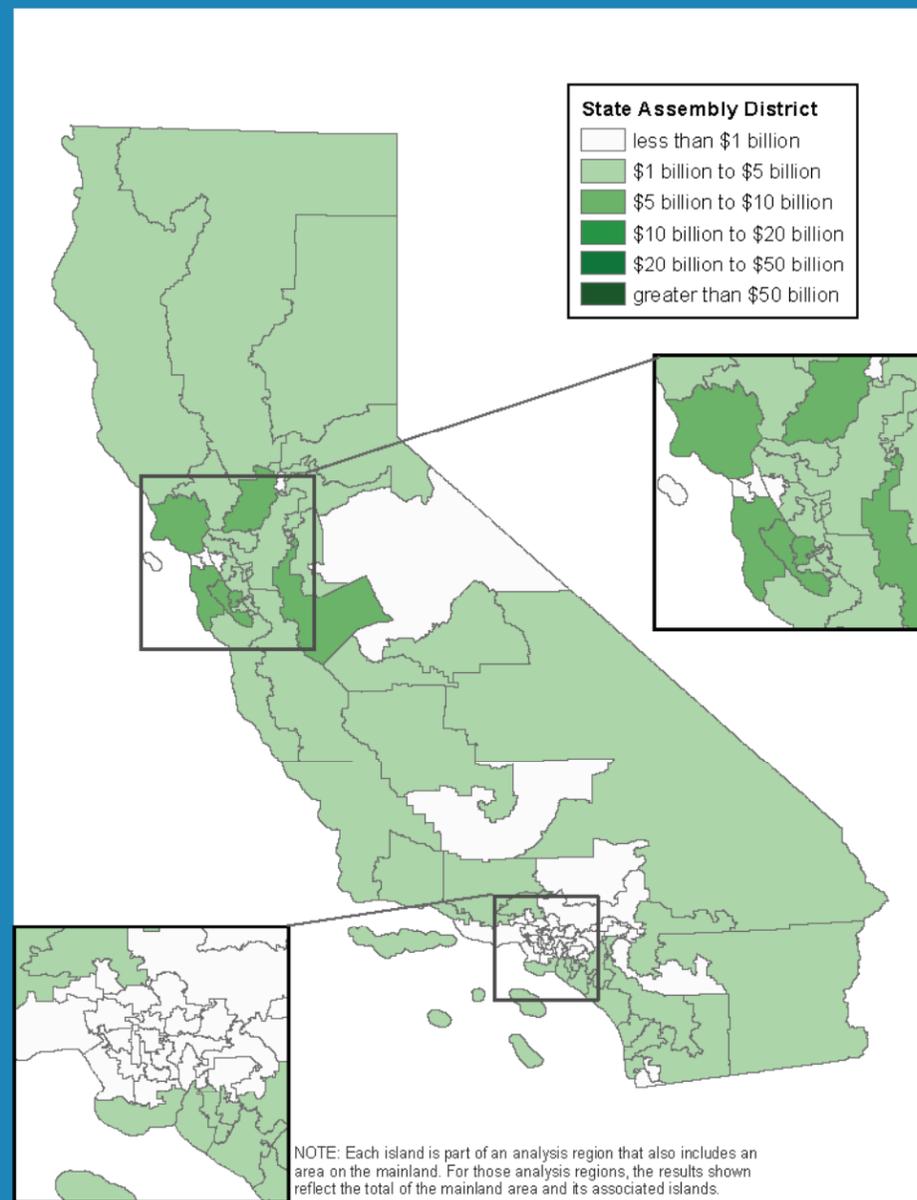
Tables F-6, F-7, and F-8 and Figures F-21 and F-22 show the relative differences between the 48 IRWM regions in population, value of structures and their contents, and value of agricultural crops in the 100-year and 500-year floodplains.

Population Exposed by State Assembly District



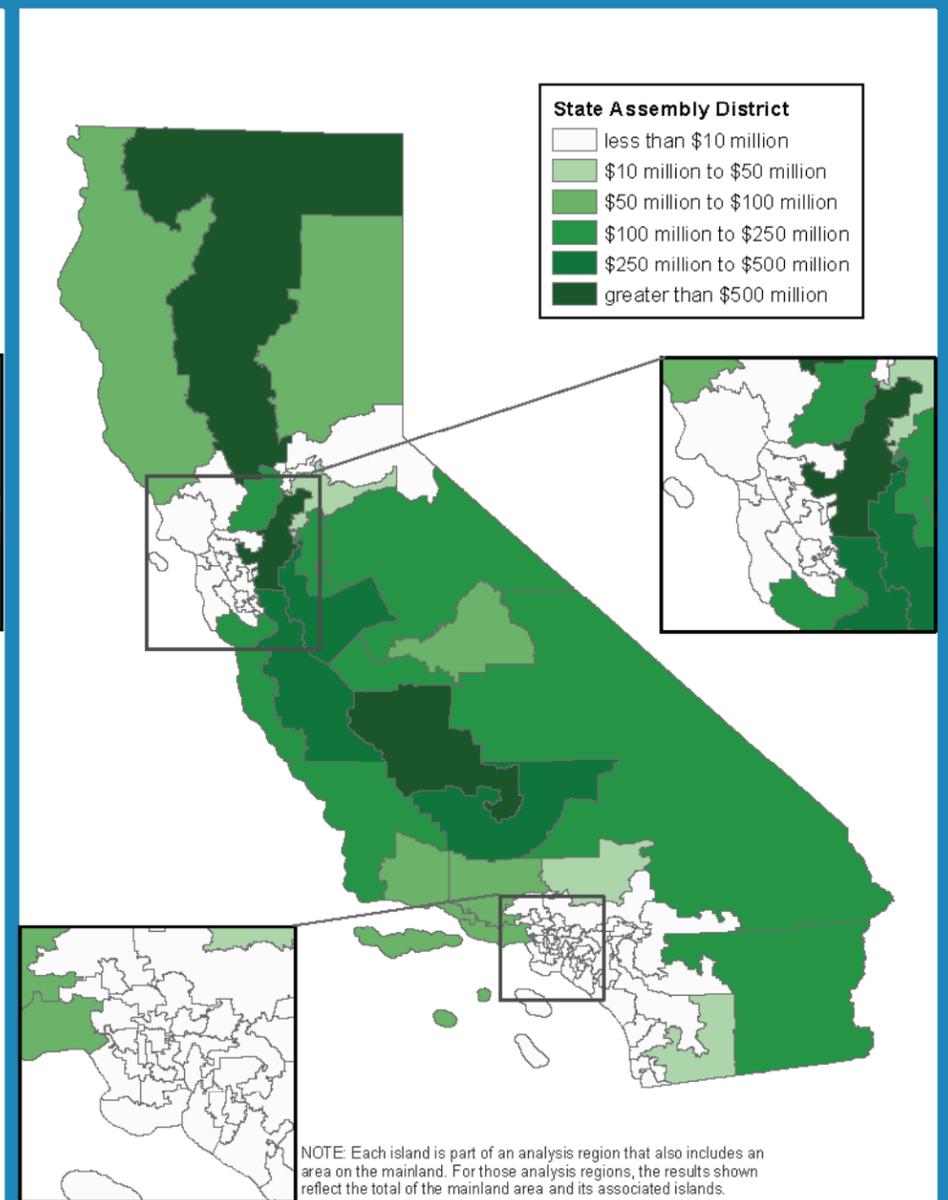
Total Population Exposed Statewide = 1.4 million

Value of Exposed Structures and Contents by State Assembly District



Total Value of Exposed Structures and Contents Statewide = \$136.7 billion

Value of Exposed Agricultural Crops by State Assembly District



Total Value of Exposed Agricultural Crops = \$5.4 billion

Figure F-15
Statewide Exposure to Flood Hazard, Reported by State Assembly District for a 100-year Flood Event

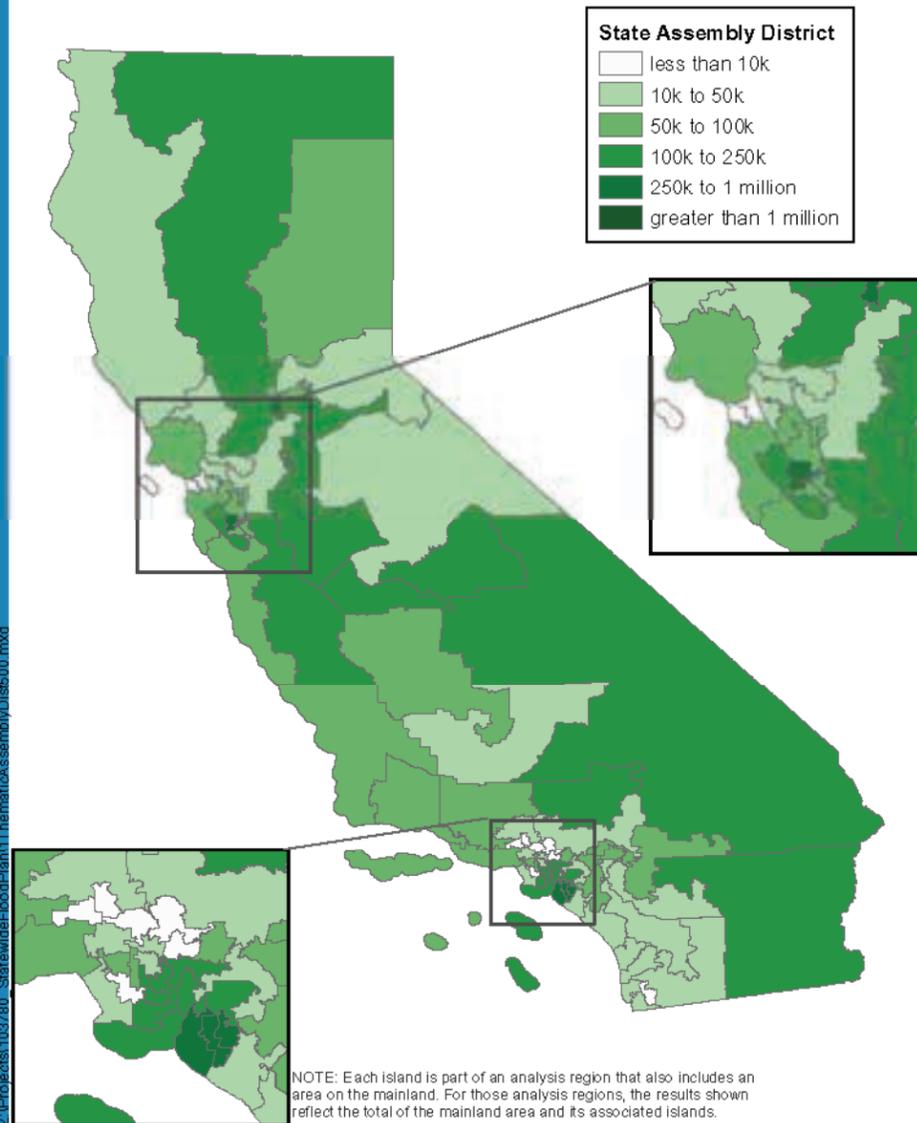
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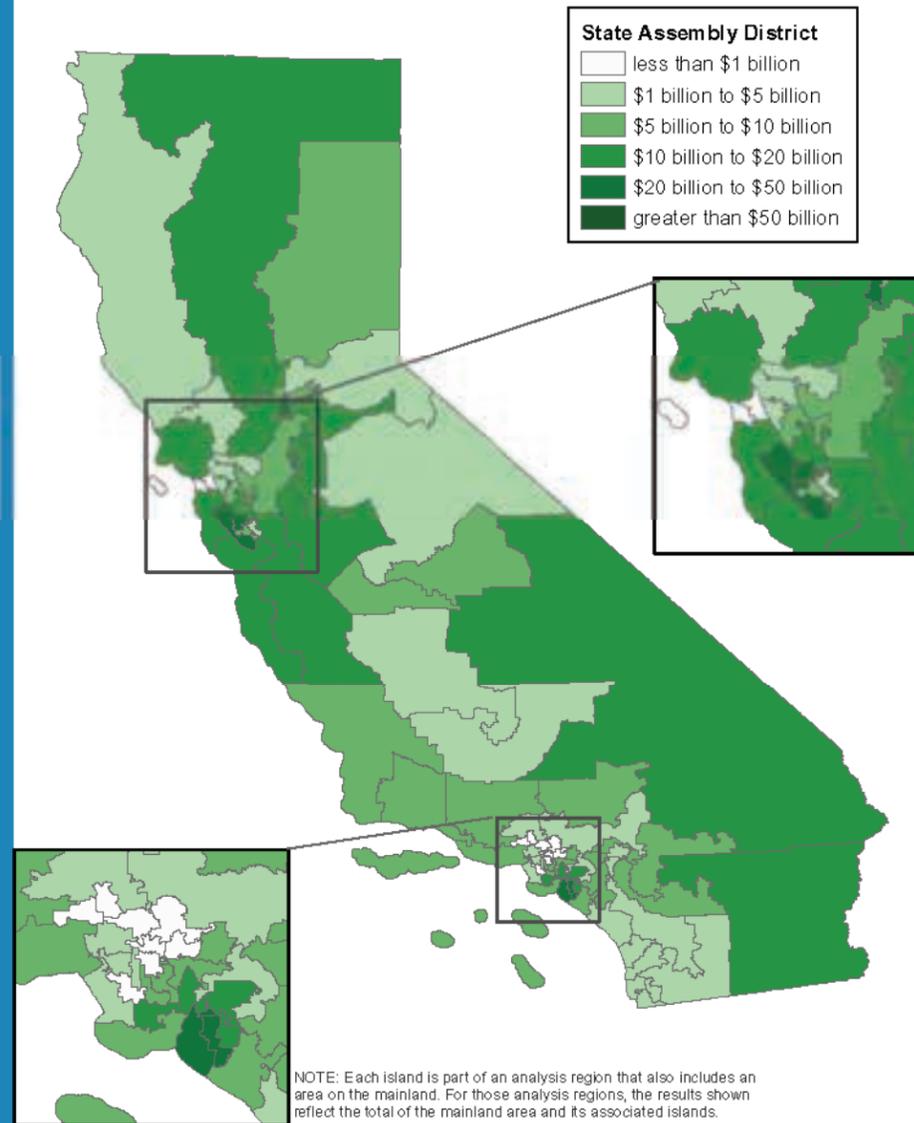
November 9, 2012

Population Exposed by State Assembly District



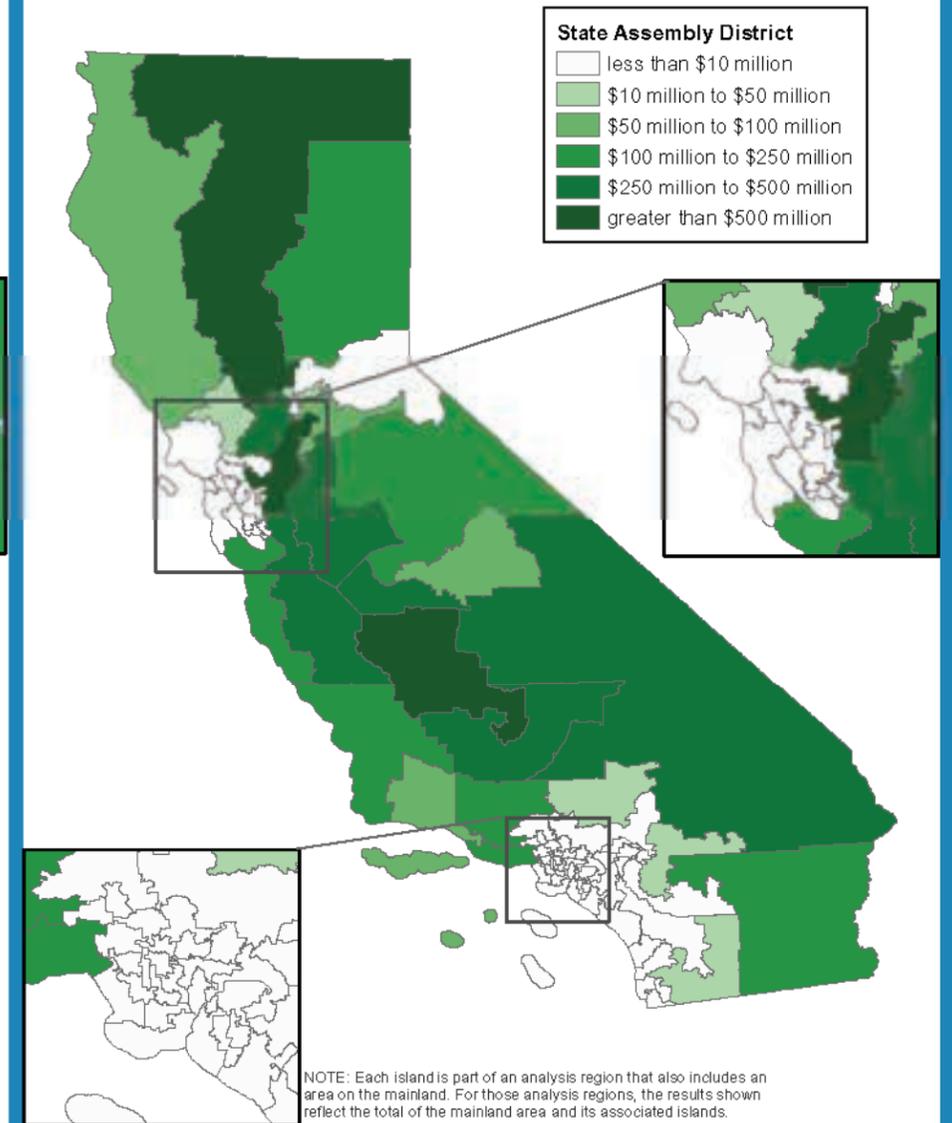
Total Population Exposed Statewide = 7.3 million

Value of Exposed Structures and Contents by State Assembly District



Total Value of Exposed Structures and Contents Statewide = \$576.8 billion

Value of Exposed Agricultural Crops by State Assembly District



Total Value of Exposed Agricultural Crops = \$7.5 billion

Figure F-16
Statewide Exposure to Flood Hazard, Reported by State Assembly District for a 500-year Flood Event

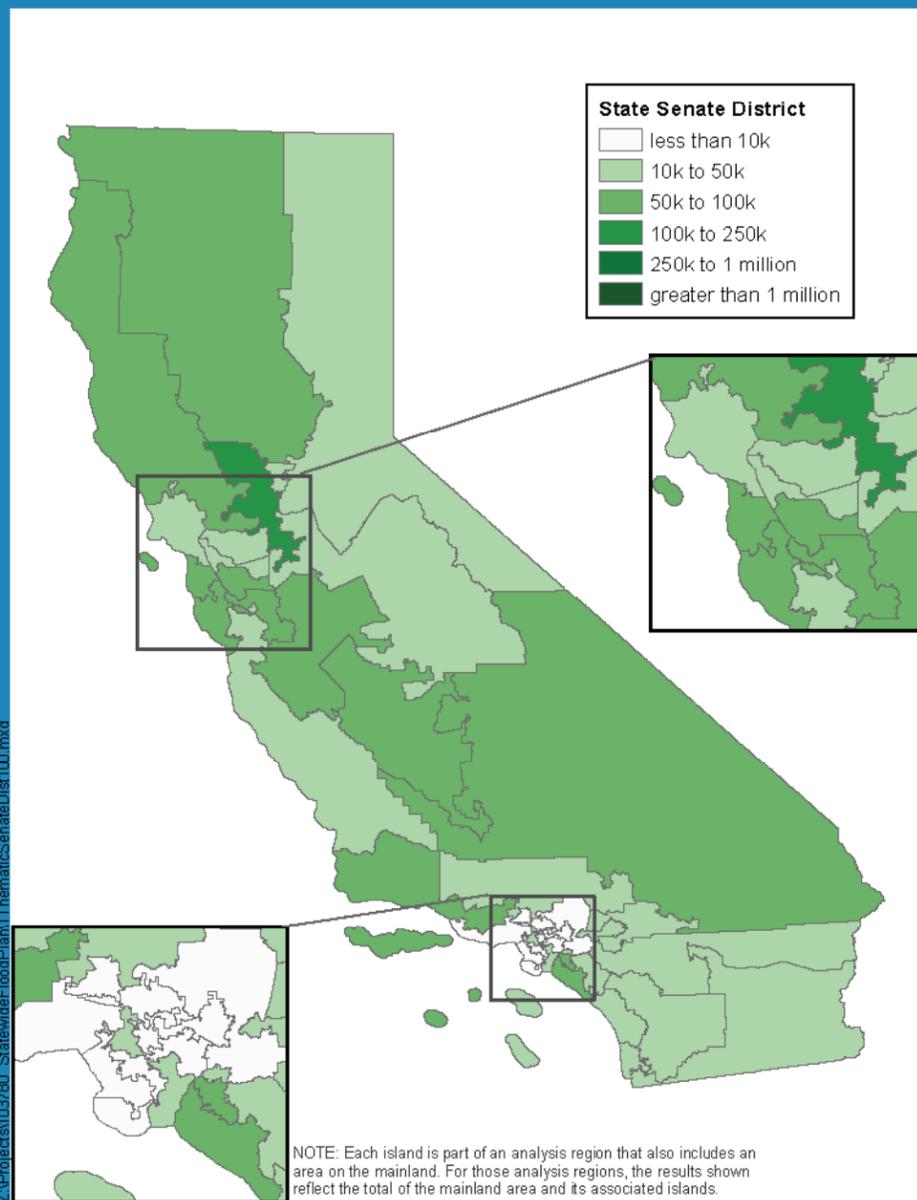
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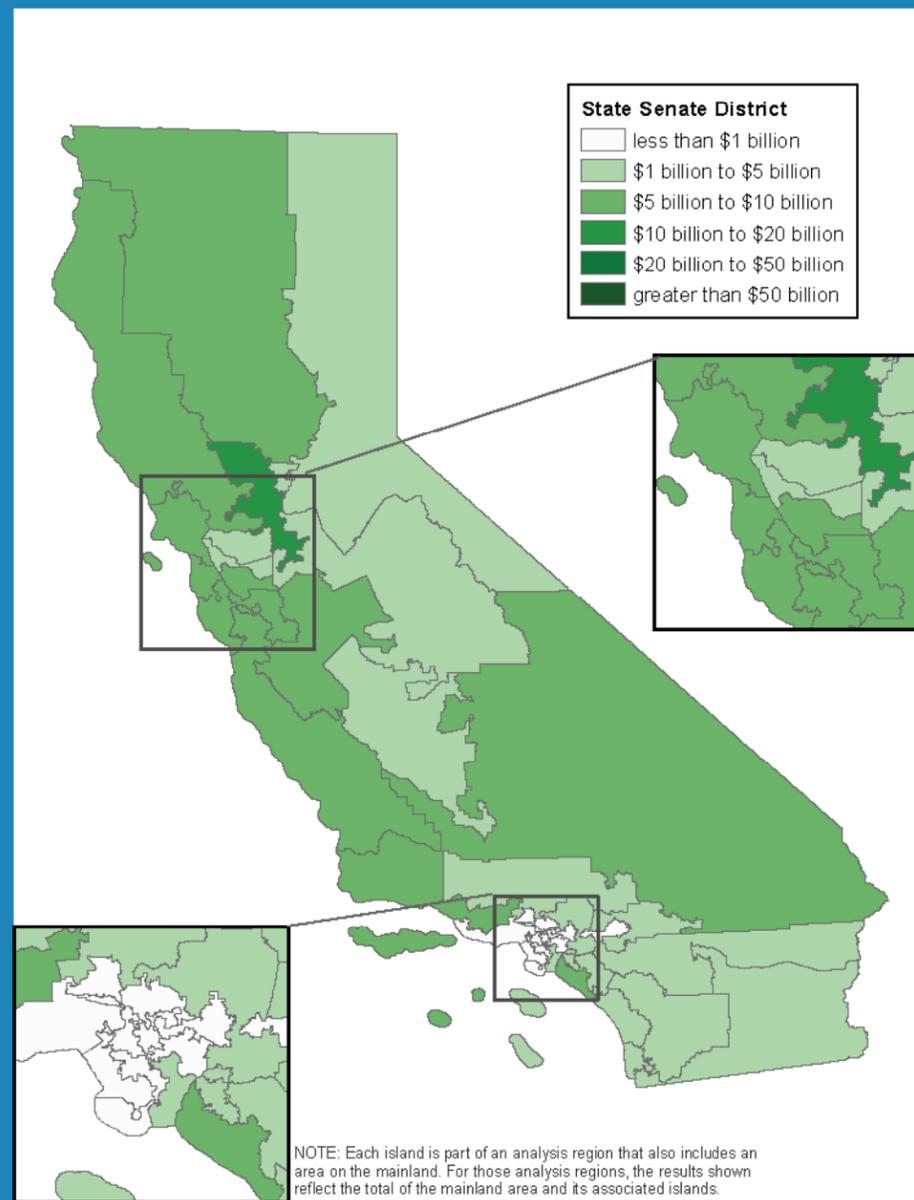
November 9, 2012

Population Exposed by State Senate District



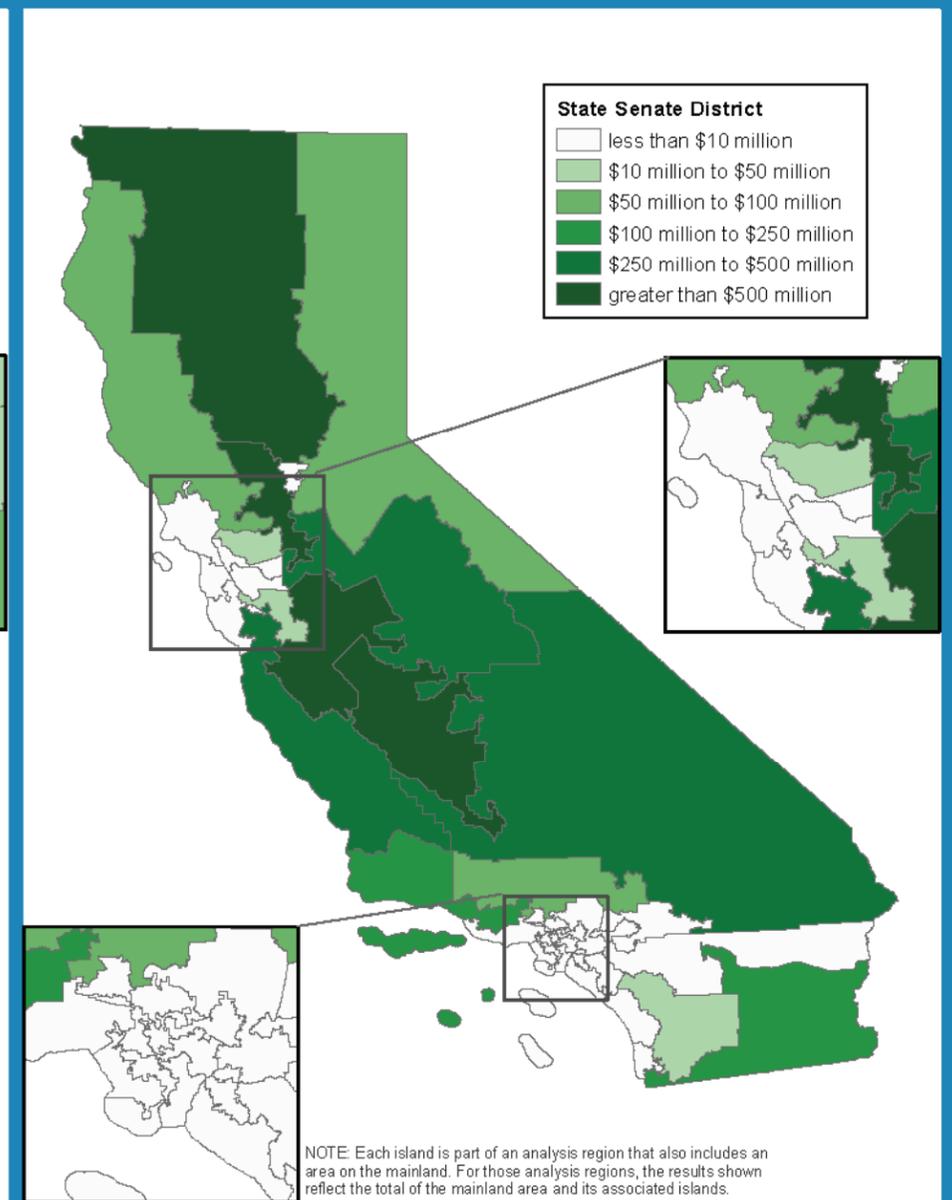
Total Population Exposed Statewide = 1.4 million

Value of Exposed Structures and Contents by State Senate District



Total Value of Exposed Structures and Contents Statewide = \$136.7 billion

Value of Exposed Agricultural Crops by State Senate District



Total Value of Exposed Agricultural Crops = \$5.4 billion

Figure F-17
Statewide Exposure to Flood Hazard, Reported by State Senate District for a 100-year Flood Event

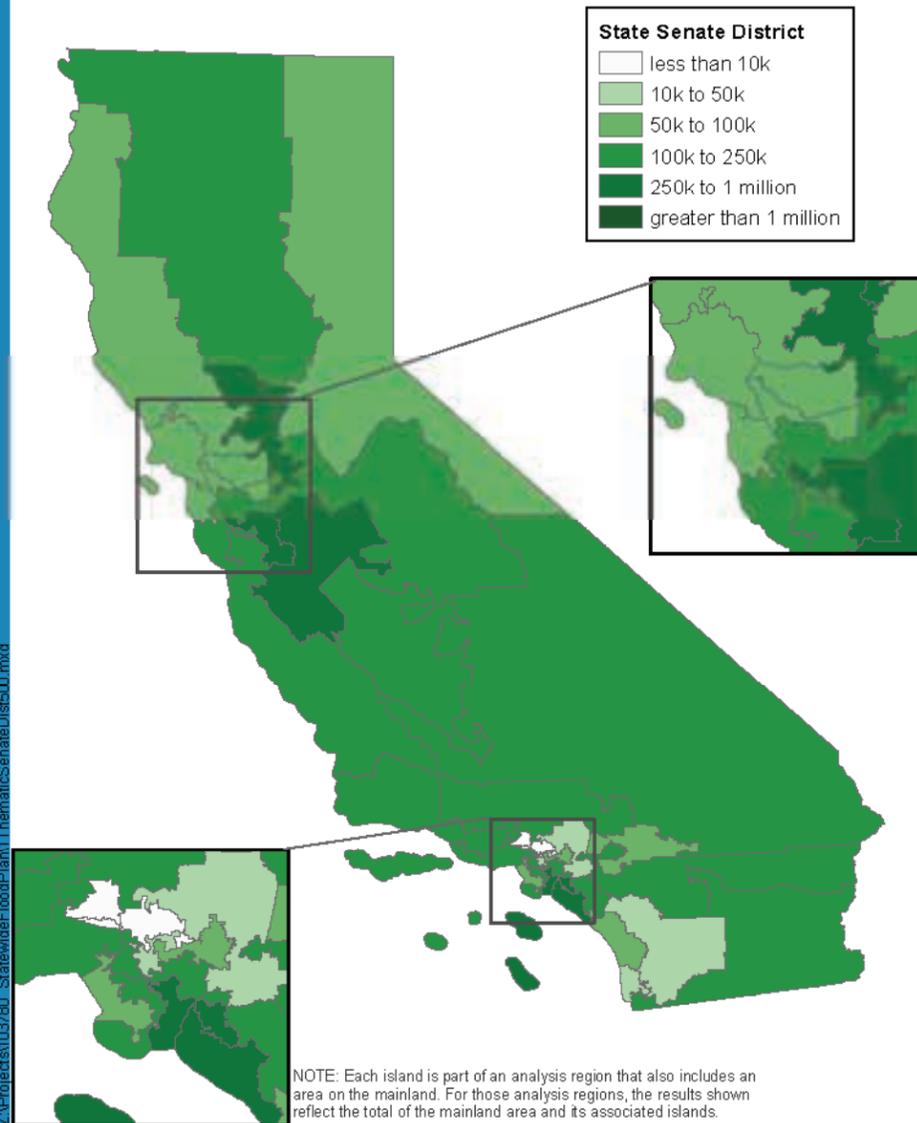
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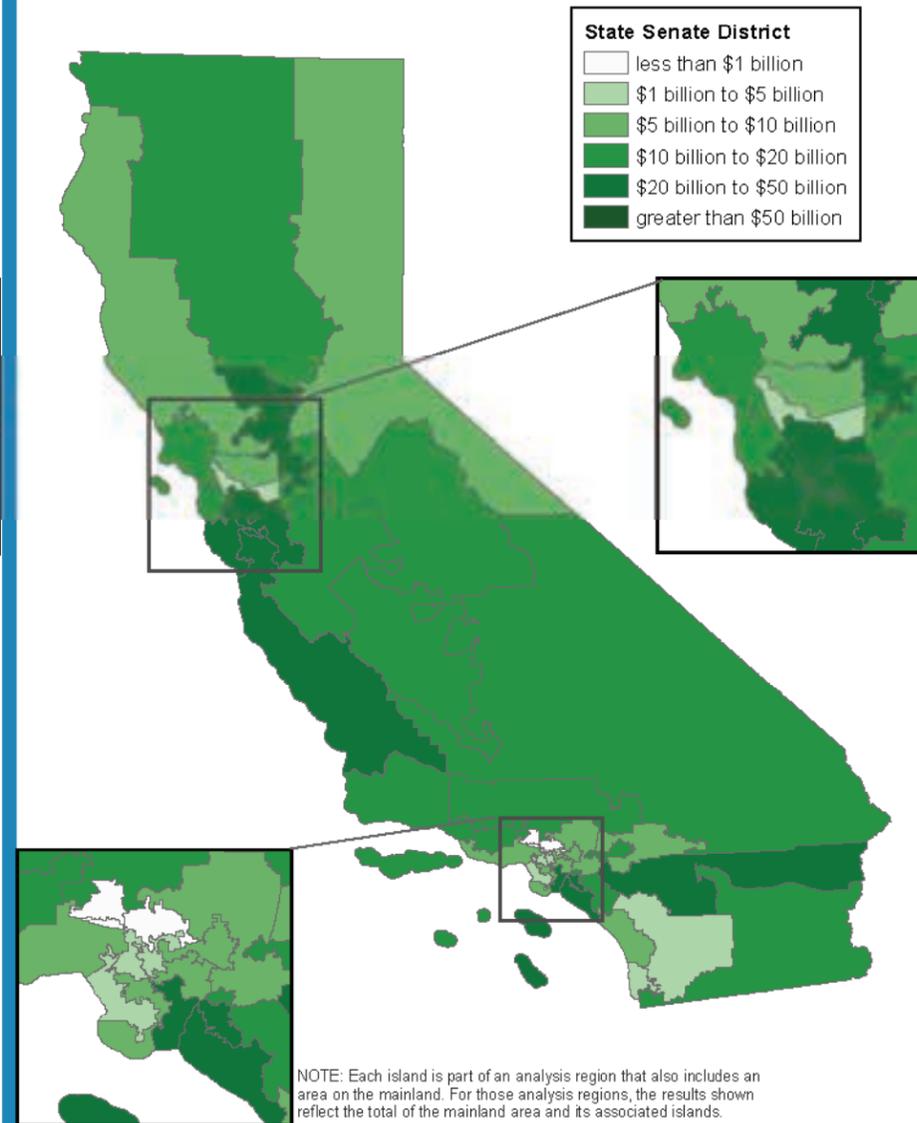
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Population Exposed by State Senate District



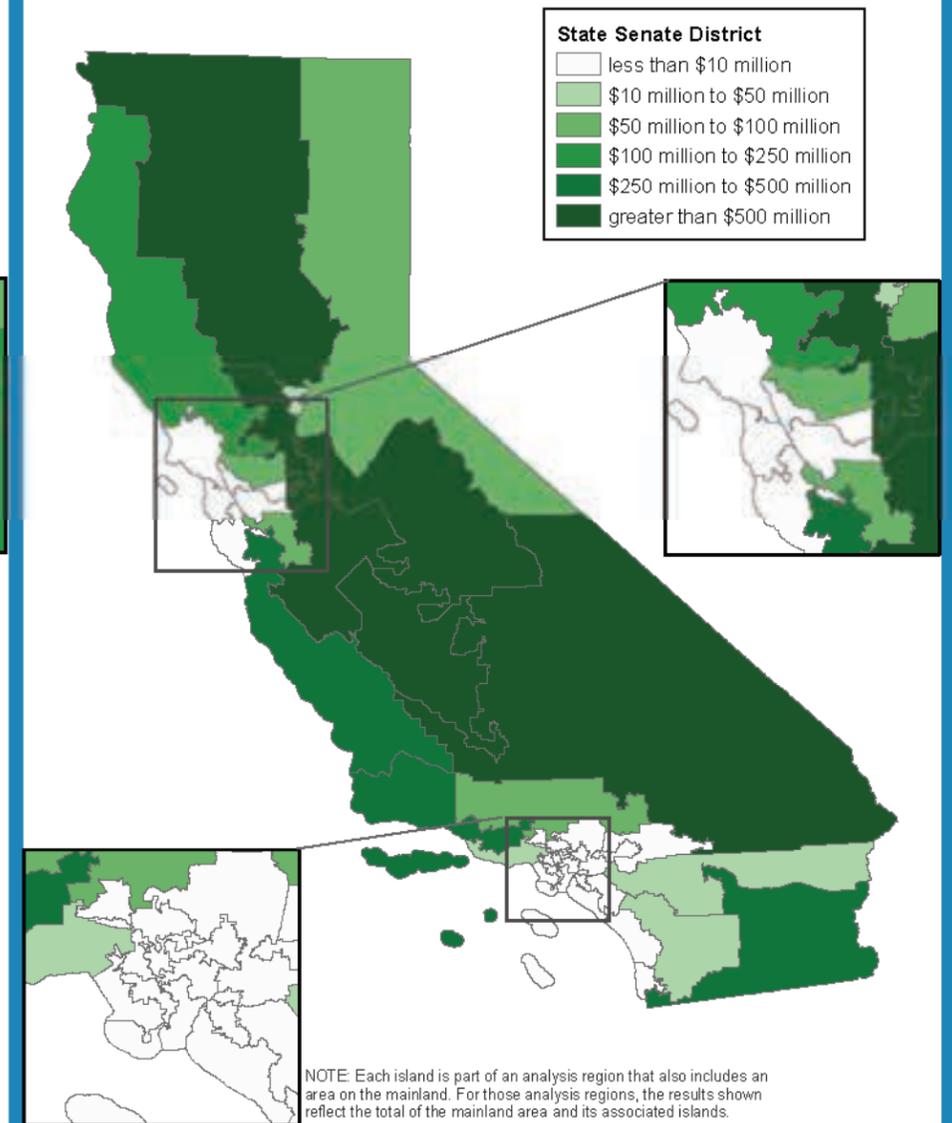
Total Population Exposed Statewide = 7.3 million

Value of Exposed Structures and Contents by State Senate District



Total Value of Exposed Structures and Contents Statewide = \$577.8 billion

Value of Exposed Agricultural Crops by State Senate District



Total Value of Exposed Agricultural Crops = \$7.4 billion

Figure F-18
Statewide Exposure to Flood Hazard, Reported by State Senate District for a 500-year Flood Event

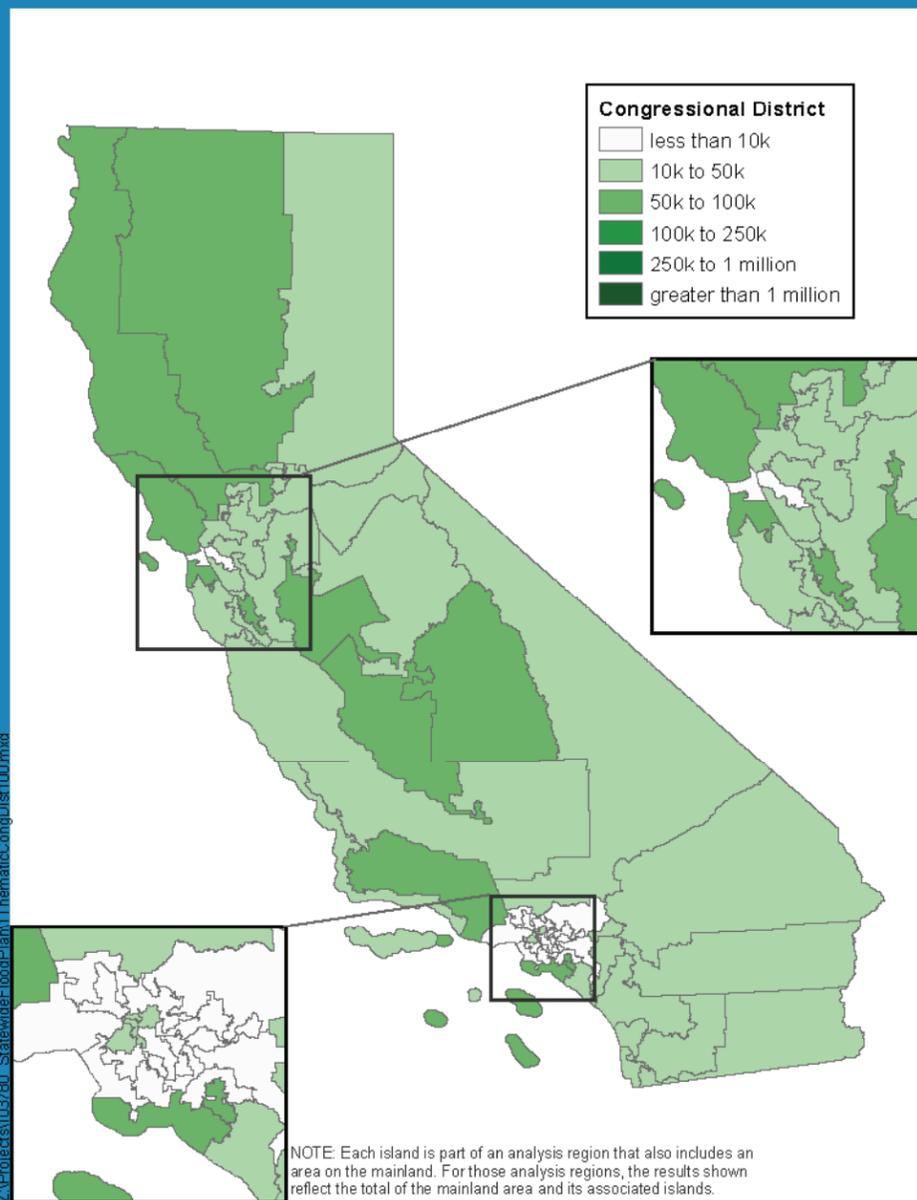
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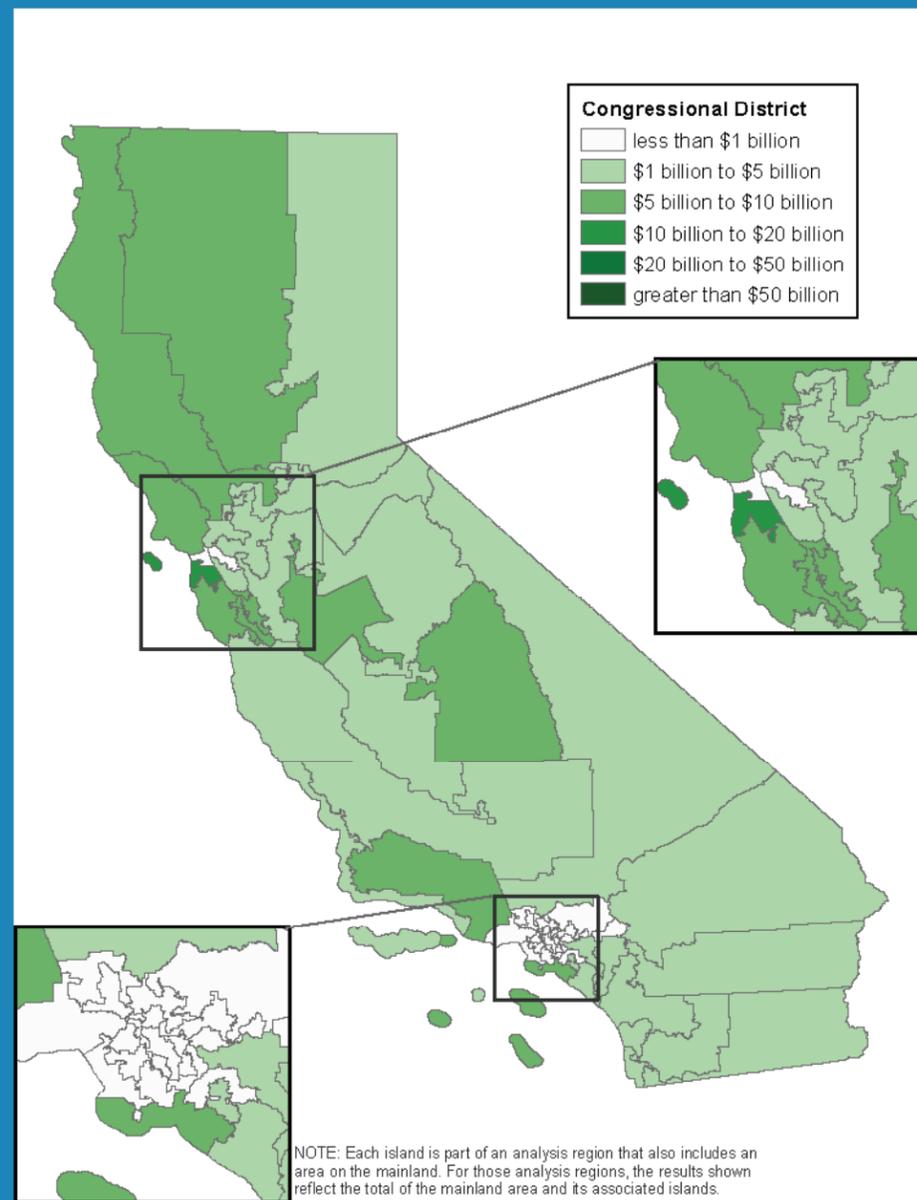
November 9, 2012

Population Exposed by Congressional District



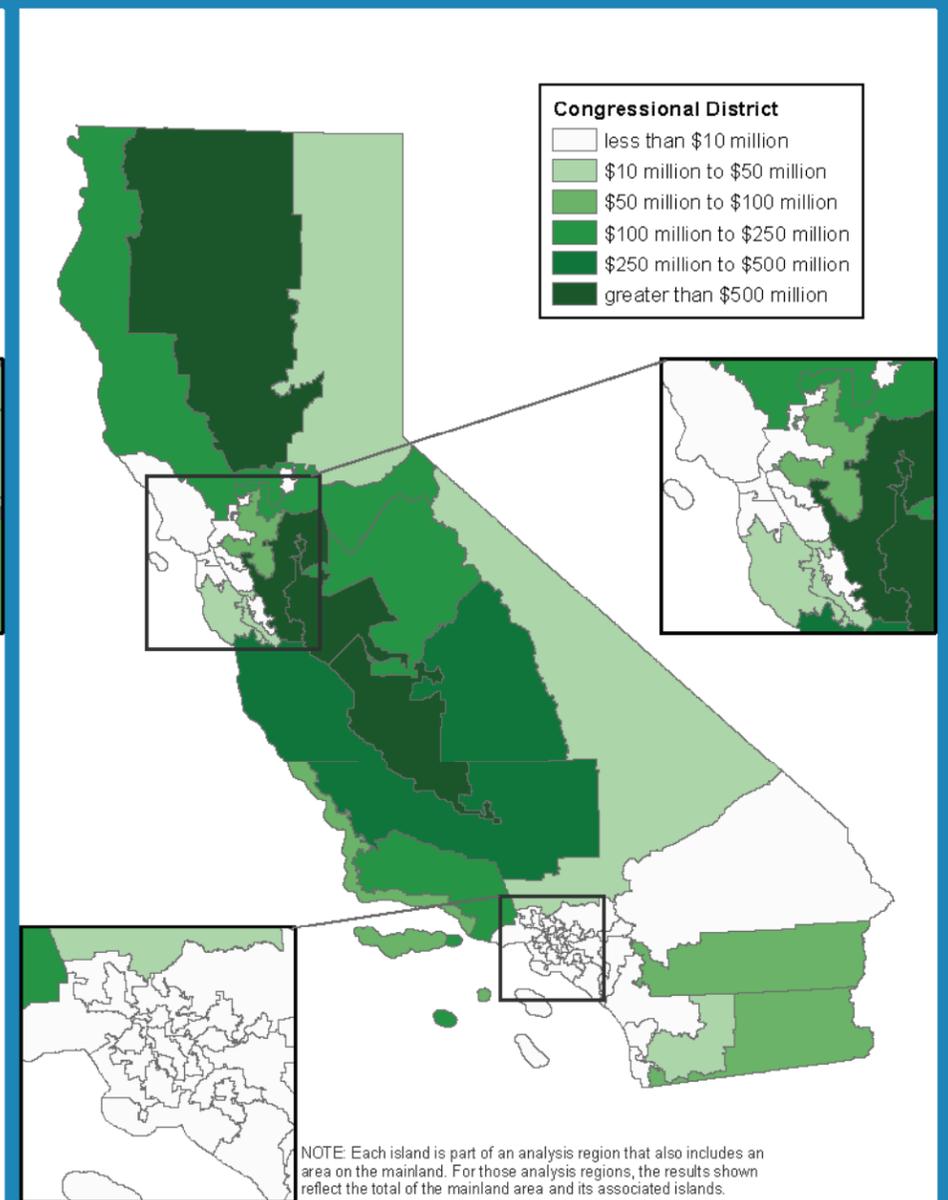
Total Population Exposed Statewide = 1.4 million

Value of Exposed Structures and Contents by Congressional District



Total Value of Exposed Structures and Contents Statewide = \$136.7 billion

Value of Exposed Agricultural Crops by Congressional District



Total Value of Exposed Agricultural Crops = \$5.4 billion

Figure F-19
Statewide Exposure to Flood Hazard, Reported by U.S. Congressional District for a 100-year Flood Event

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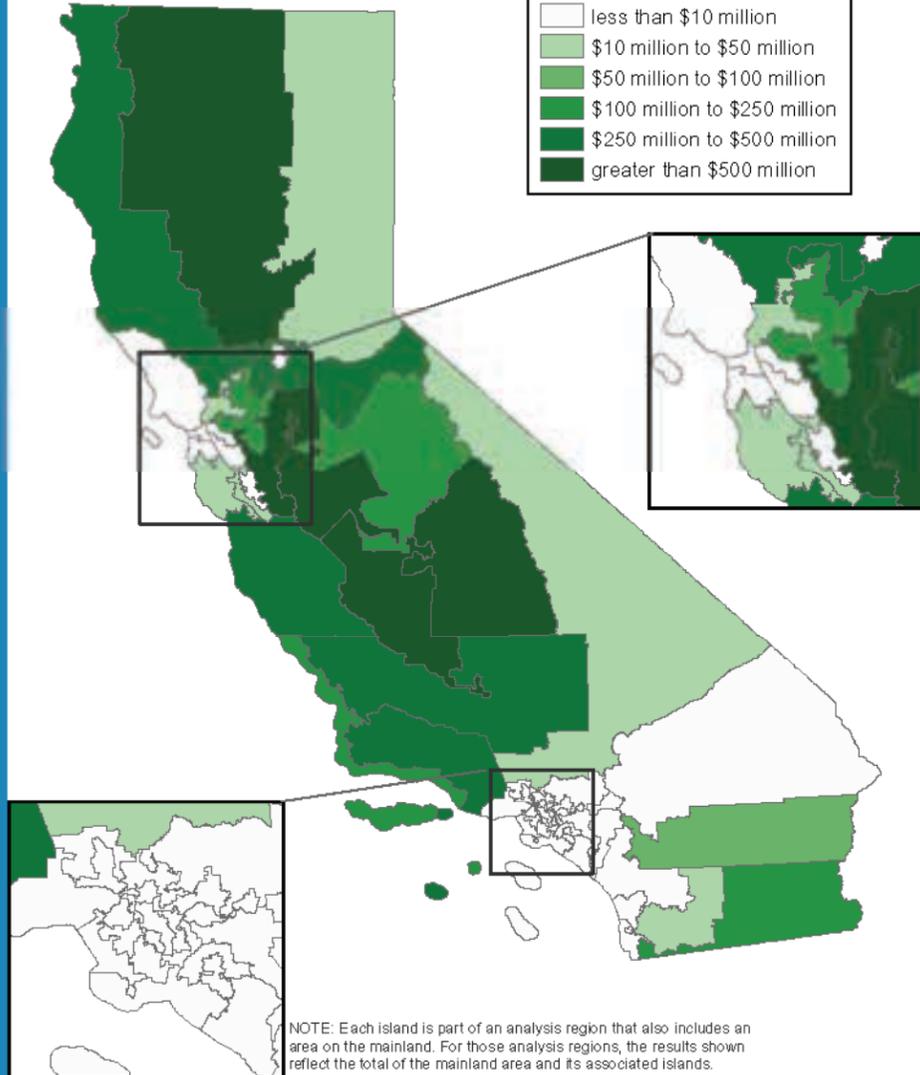
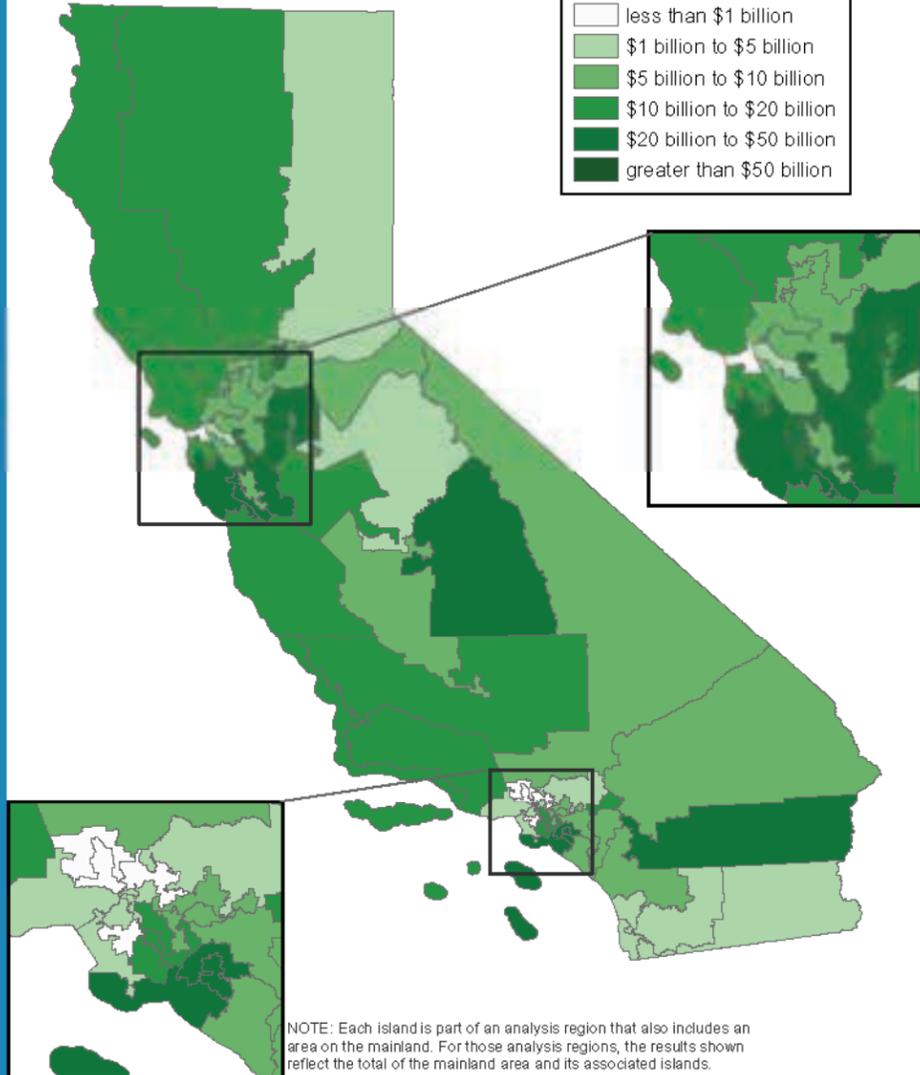
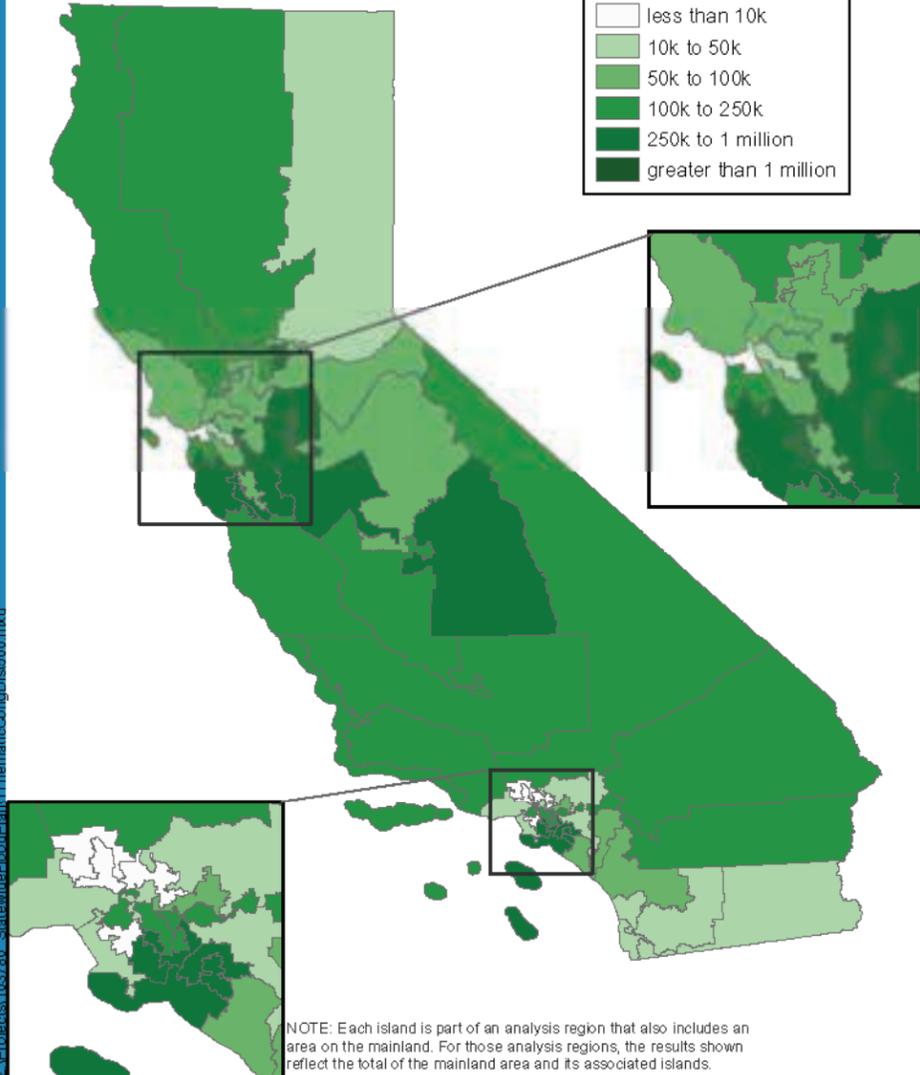
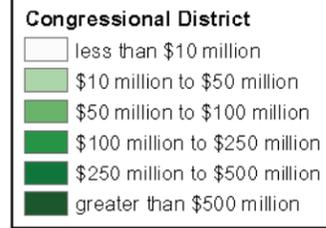
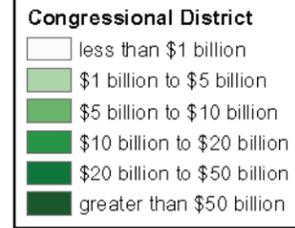
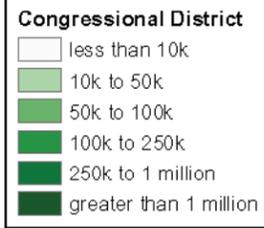


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Population Exposed by Congressional District

Value of Exposed Structures and Contents by Congressional District

Value of Exposed Agricultural Crops by Congressional District



NOTE: Each island is part of an analysis region that also includes an area on the mainland. For those analysis regions, the results shown reflect the total of the mainland area and its associated islands.

NOTE: Each island is part of an analysis region that also includes an area on the mainland. For those analysis regions, the results shown reflect the total of the mainland area and its associated islands.

NOTE: Each island is part of an analysis region that also includes an area on the mainland. For those analysis regions, the results shown reflect the total of the mainland area and its associated islands.

Total Population Exposed Statewide = 7.3 million

Total Value of Exposed Structures and Contents Statewide = \$576.8 billion

Total Value of Exposed Agricultural Crops = \$7.5 billion

Figure F-20
Statewide Exposure to Flood Hazard, Reported by U.S. Congressional District for a 500-year Flood Event

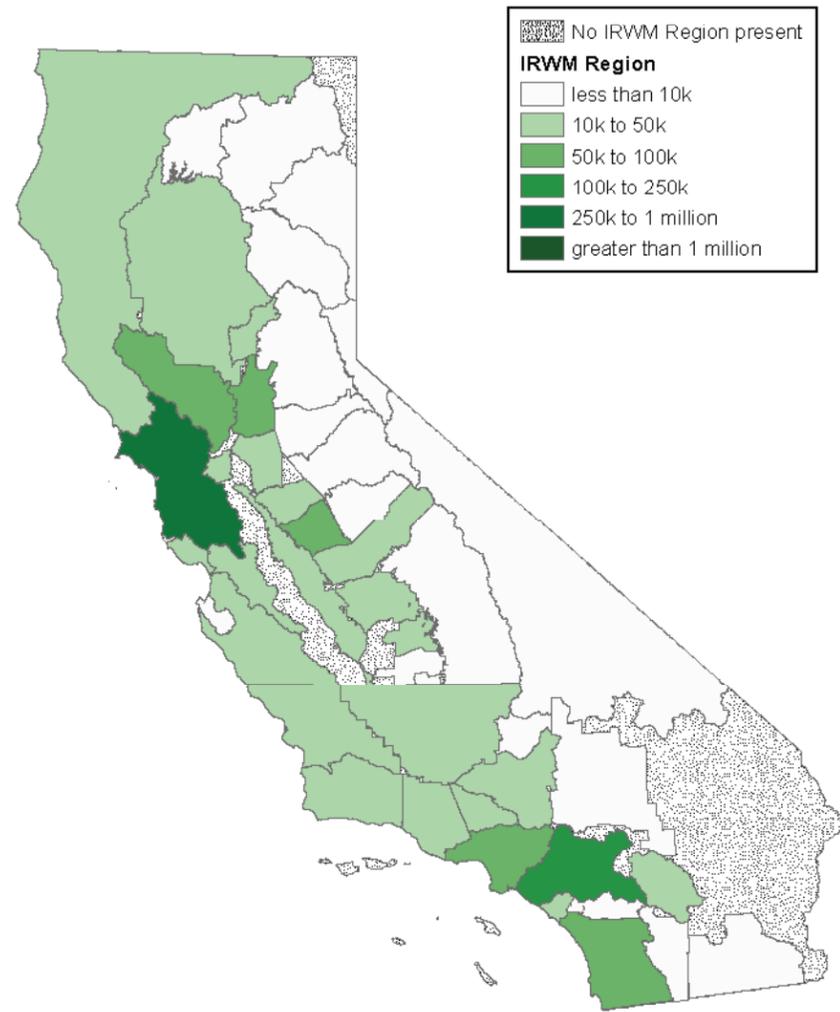
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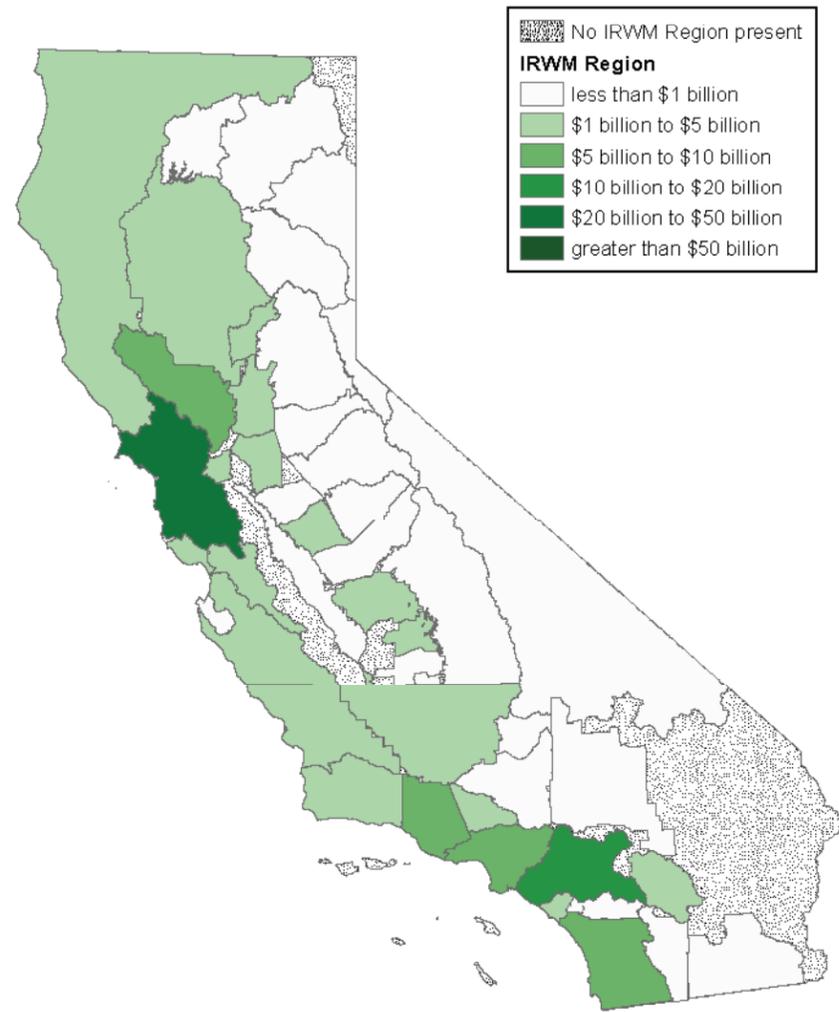
November 9, 2012

Population Exposed by IRWM Region



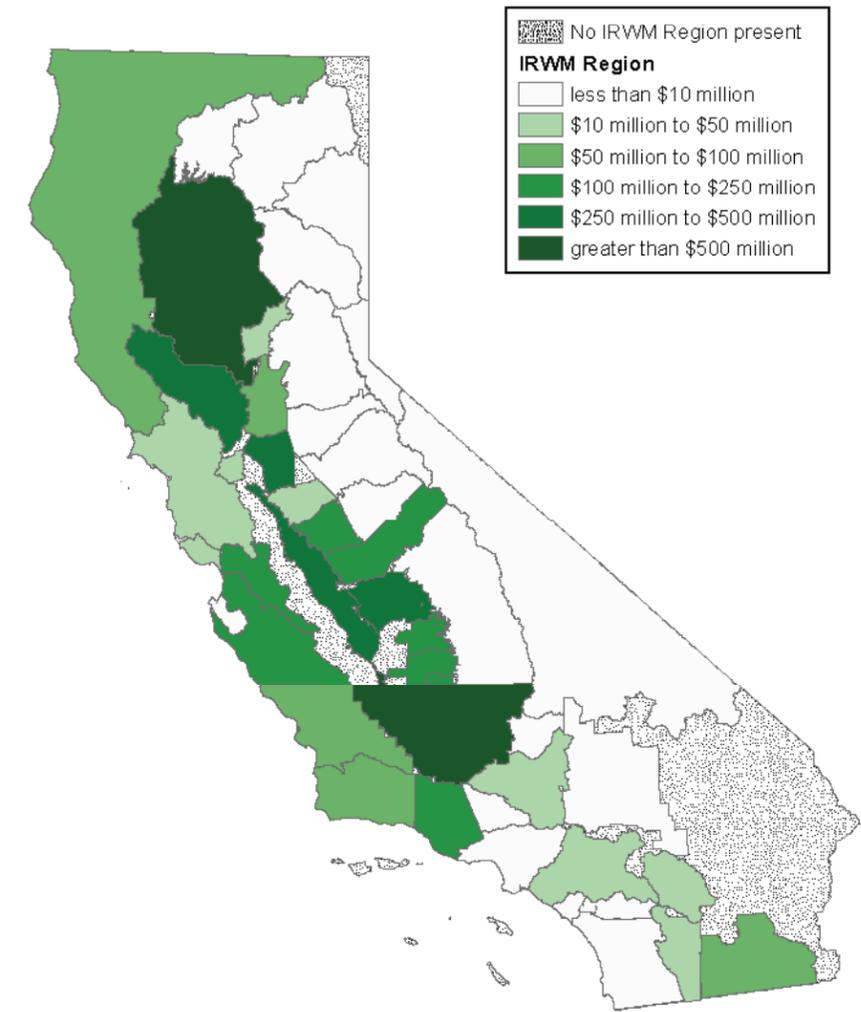
Total Population Exposed Statewide = 1.4 million

Value of Exposed Structures and Contents by IRWM Region



Total Value of Exposed Structures and Contents Statewide = \$136.7 billion

Value of Exposed Agricultural Crops by IRWM Region



Total Value of Exposed Agricultural Crops = \$5.4 billion

Figure F-21
Statewide Exposure to Flood Hazard, Reported by IRWM Region for a 100-year Flood Event

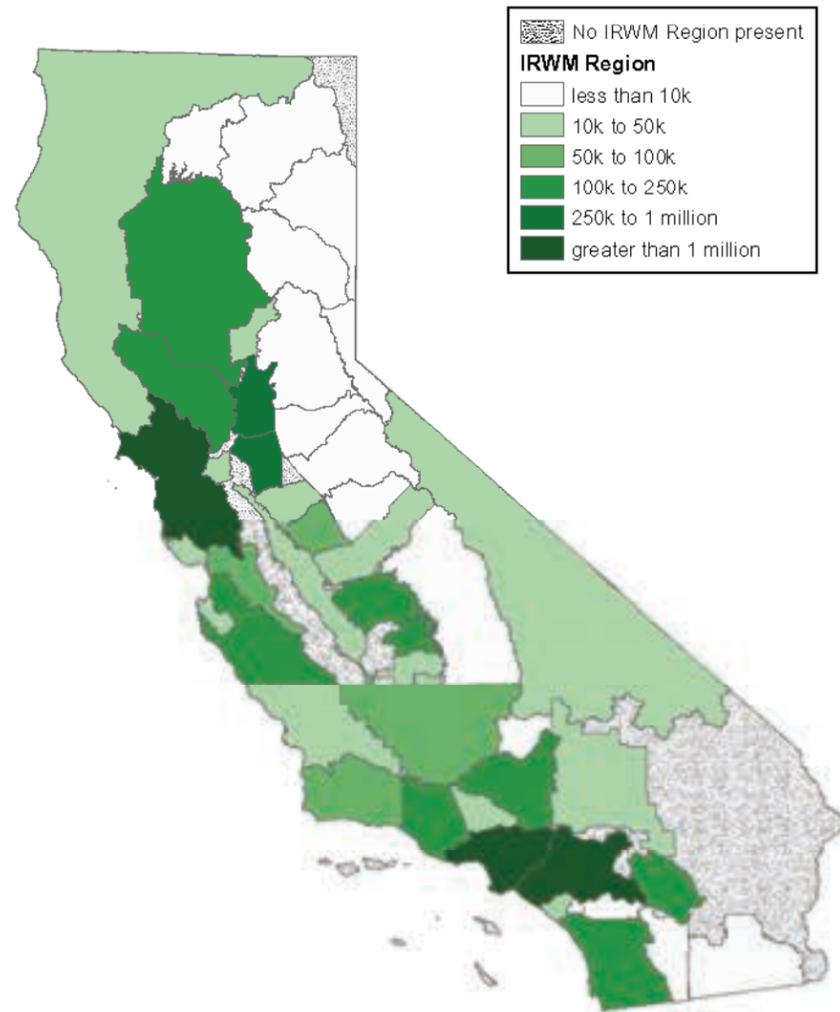
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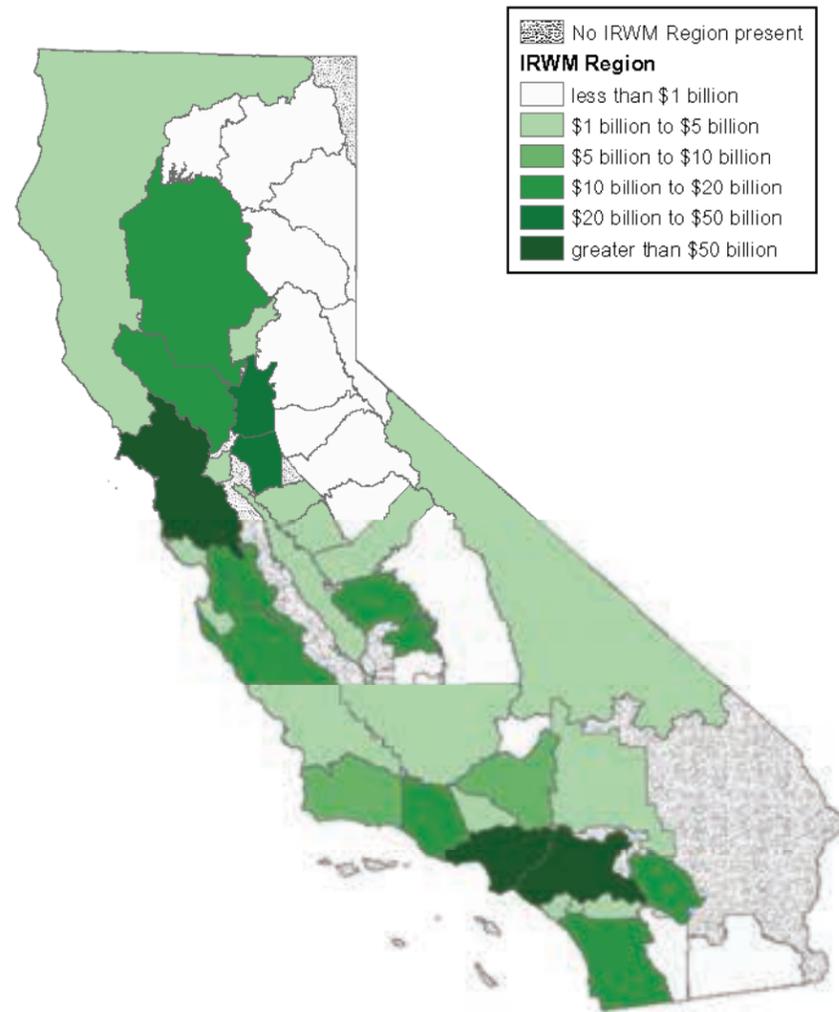
November 9, 2012

Population Exposed by IRWM Region



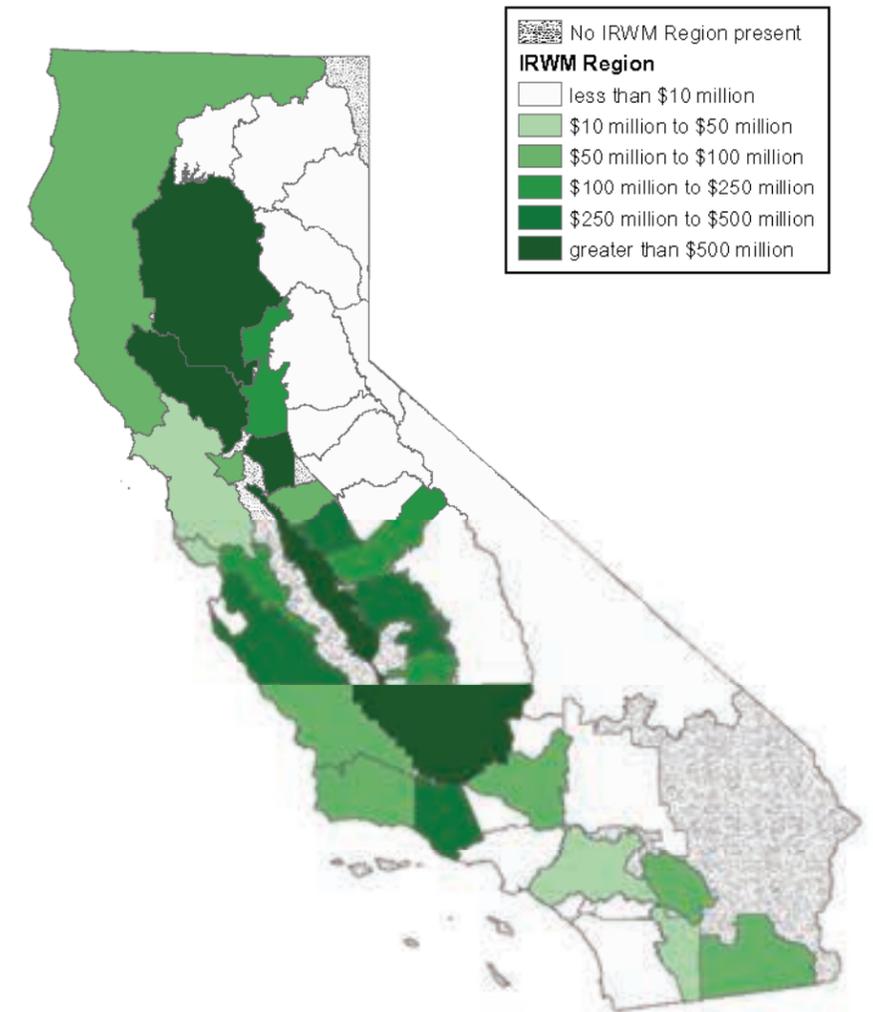
Total Population Exposed Statewide = 7.3 million

Value of Exposed Structures and Contents by IRWM Region



Total Value of Exposed Structures and Contents Statewide = \$576.8 billion

Value of Exposed Agricultural Crops by IRWM Region



Total Value of Exposed Agricultural Crops = \$7.5 billion

Figure F-22
Statewide Exposure to Flood Hazard, Reported by IRWM Region for a 500-year Flood Event

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Urban exposure to flood hazard for the 100-year floodplain is highly distributed across the IRWM regions. Twenty-nine IRWM regions each have more than 10,000 people exposed, and 25 IRWM regions each have more than \$1 billion in structures and their contents exposed. Urban exposure to the 500-year floodplain is more concentrated than for the 100-year floodplain. Fifteen IRWM regions have exposed populations of more than 100,000 each, and 15 IRWM regions each have more than \$10 billion in structures and their contents exposed in the 500-year floodplain. The Santa Ana Watershed Project Authority, Greater Los Angeles County, and San Francisco Bay area IRWM regions have the most exposure in population and in value of structures and contents in both the 100-year and 500-year floodplains.

Most of the exposure of agricultural crops to the 100-year floodplain occurs in the following 14 IRWM regions, each having more than \$100 million in exposed agricultural crops:

- North Sacramento Valley Group
- Kern County
- Westside – San Joaquin
- Westside (Yolo, Solano, Napa, Lake, Colusa)
- Eastern San Joaquin
- Upper Kings Basin Water Forum
- Merced
- Greater Monterey County
- Madera
- Pajaro River Watershed
- Kaweah River Basin
- Watershed Coalition of Ventura County
- Poso Creek
- Tule

These IRWM regions make up more than 80 percent of the total value of exposed agricultural crops in the state. Exposure of agricultural crops to the 500-year floodplain is concentrated in 16 IRWM regions. The two additional IRWM regions are the American River Basin and Yuba County—each having more than \$100 million in exposed agricultural crops. These IRWM regions also make up more than 80 percent of the total value of exposed agricultural crops in the state.

Exposure of sensitive plant species to flood hazard in the 100-year floodplain is distributed across the IRWM regions. Forty-five IRWM regions have more than 10 sensitive plant species in the 100-year floodplain, and five of those regions have more than 100 sensitive plant species. Forty-six IRWM regions have more than 10 sensitive plant species in the 500-year floodplain, and five of those regions have more than 100 sensitive plant species exposed in the 500-year floodplain.

Exposure of sensitive animal species to flood hazard is distributed across the IRWM regions. Forty-eight IRWM regions have more than 10 sensitive animal species, and two of those regions have more than 100 sensitive animal species exposed in both the 100-year and 500-year floodplains.

In both the 100-year and 500-year floodplains, about 9 percent of the exposed plant species were listed by the State of California as endangered, and about 10 percent of the exposed plant species were Federally listed as endangered. In both the 100-year and 500-year floodplains, about 2 percent of the exposed plant species were listed by the State of California as threatened, and about 4 percent of exposed plant species were Federally listed as threatened.

In both the 100-year and 500-year floodplains, about 8 percent of the exposed animal species were listed by the State of California as endangered, and about 12 percent of the exposed animal species were Federally listed as endangered. In both the 100-year and 500-year floodplains, about 6 percent of the exposed animal species were listed by the State of California as threatened, and about 5 percent of exposed animal species were Federally listed as threatened.

CWP Hydrologic Region Results

Population and Value of Structures and Contents

South Coast and San Francisco Bay regions have the most exposure to 100-year and 500-year floodplains.

South Coast exposure to 500-year floodplain totals more than 3.4 million people and \$230 billion in value of structures and contents.

Agricultural Crop Values

Sacramento River, San Joaquin River, and Tulare Lake regions have the most exposure to 100-year and 500-year floodplains.

4.1.4 CWP Hydrologic Regions and Delta Zones

Population, Structures and Agricultural Crops

Tables F-9, F-10, and F-11 and Figures F-23 and F-24 show the exposure results for the 10 CWP hydrologic regions, 2 overlay regions, and 2 Delta zones in population, value of structures and their contents, and value of agricultural crops in the 100-year and 500-year floodplains. The figures are in the same format as those for the other regions. In addition, Figures F-25 and F-26 depict the percent exposed in each region for each category. Finally, Figures F-27 and F-28 depict the approximate results for each of the 10 CWP hydrologic regions for the 100-year and 500-year floodplains.

Exposure to flood hazard is distributed throughout the state with all of the CWP hydrologic and overlay regions and Delta zones having some level of exposure to flooding. The San Francisco Bay and South Coast regions have the highest levels of exposure, with more than 250,000 people within the 100-year floodplain and more than 1 million people within the 500-year floodplain in each region. The highest percent exposure levels are in the Sacramento River, San Joaquin River, and Tulare Lake regions for the 100-year floodplain and in the Sacramento River, San Joaquin River, and Colorado River regions for the 500-year floodplain.

The San Francisco Bay and South Coast regions have the greatest exposure to flood hazard in terms of population and in terms of value of structures and their contents for both the 100-year and 500-year floodplains. The exposed values are comparable between the two regions for the 100-year floodplain, but the South Coast has the greater exposure in population and value of structures and contents within the 500-year floodplain. The South Coast exposure to the 500-year floodplain totals more than 3.4 million people and more than \$230 billion in structures and contents. The San Francisco Bay region exposure to the 500-year floodplain is smaller but still significant, with more than 1 million people and more than \$130 billion in structures and contents.

Table F-9. Summary of Population Exposure Results by Analysis Region Category

Analysis Region Category	No. of Regions	100-year Floodplain Results					500-year Floodplain Results				
		No. Greater Than 30,000	No. Greater Than 100,000	No. Greater Than 250,000	No. Greater Than 500,000	No. Greater Than 1,000,000	No. Greater Than 30,000	No. Greater Than 100,000	No. Greater Than 250,000	No. Greater Than 500,000	No. Greater Than 1,000,000
CWP Hydrologic Regions	10	8	5	2	0	0	9	8	6	4	2
CWP Overlay Regions	2	1	0	0	0	0	1	1	0	0	0
Delta Zones	2	1	0	0	0	0	1	1	0	0	0

Table F-10. Summary of Structures and Contents Exposure Results by Analysis Region Category

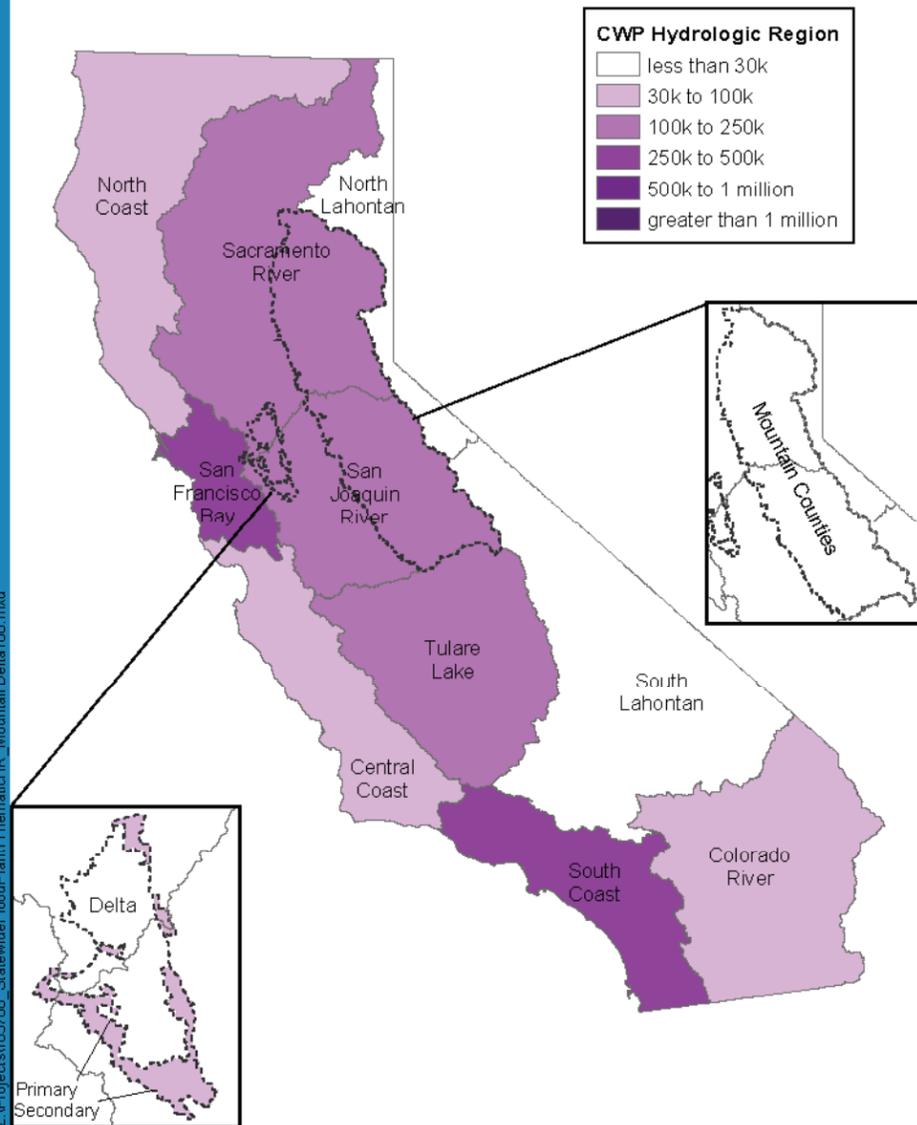
Analysis Region Category	No. of Regions	100-year Floodplain Results					500-year Floodplain Results				
		No. Greater Than \$5 Billion	No. Greater Than \$15 Billion	No. Greater Than \$30 Billion	No. Greater Than \$50 Billion	No. Greater Than \$80 Billion	No. Greater Than \$5 Billion	No. Greater Than \$15 Billion	No. Greater Than \$30 Billion	No. Greater Than \$50 Billion	No. Greater Than \$80 Billion
CWP Hydrologic Regions	10	6	3	2	0	0	8	7	6	3	2
CWP Overlay Regions	2	1	0	0	0	0	1	1	0	0	0
Delta Zones	2	1	0	0	0	0	1	1	0	0	0

RESULTS OF SFMP FLOOD HAZARD EXPOSURE ANALYSIS

Table F-11. Summary of Agricultural Crops Exposure Results by Analysis Region Category

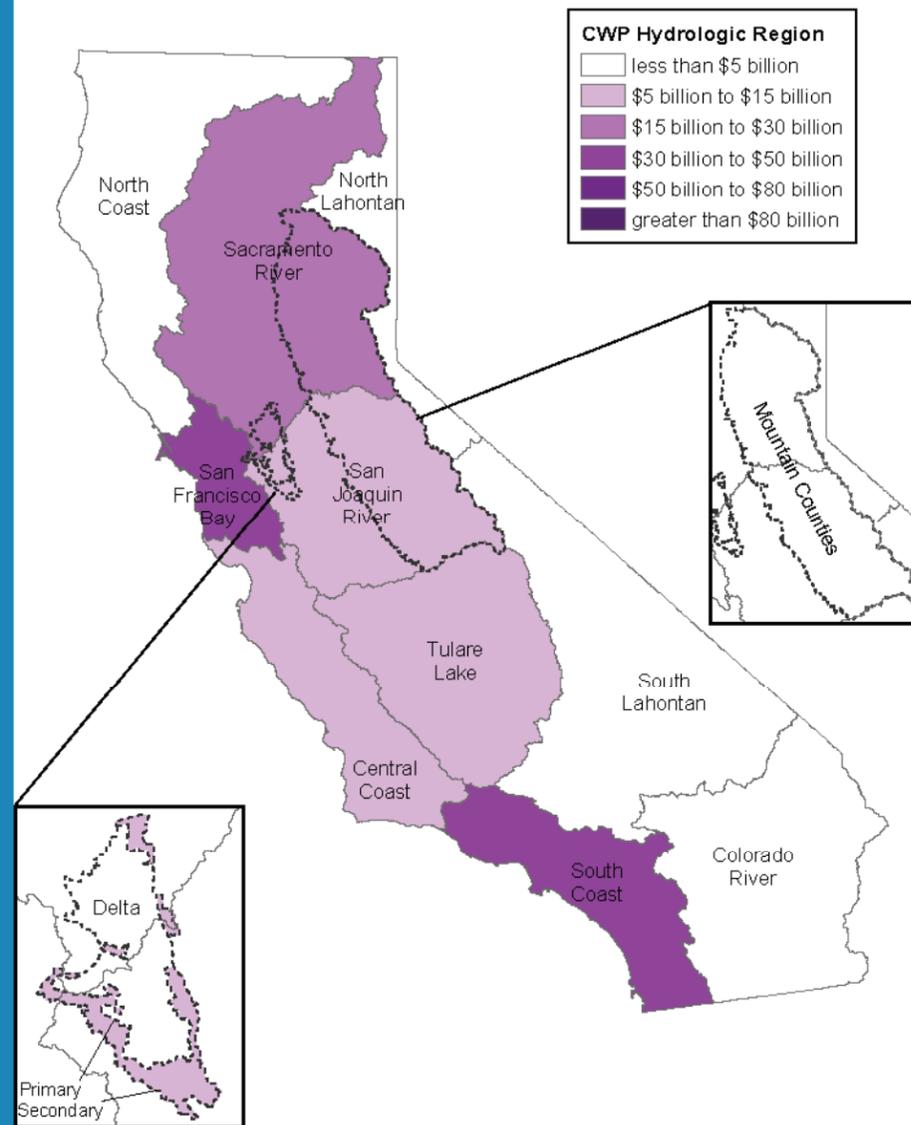
Analysis Region Category	No. of Regions	100-year Floodplain Results					500-year Floodplain Results				
		No. Greater Than \$100 million	No. Greater Than \$250 million	No. Greater Than \$500 million	No. Greater Than \$1 Billion	No. Greater Than \$2 Billion	No. Greater Than \$100 million	No. Greater Than \$250 million	No. Greater Than \$500 million	No. Greater Than \$1 Billion	No. Greater Than \$2 Billion
CWP Hydrologic Regions	10	6	4	4	3	0	6	6	4	3	1
CWP Overlay Regions	2	1	1	1	0	0	1	1	1	1	0
Delta Zones	2	1	1	1	0	0	2	1	1	0	0

Population Exposed by CWP Hydrologic Region and Delta Zone



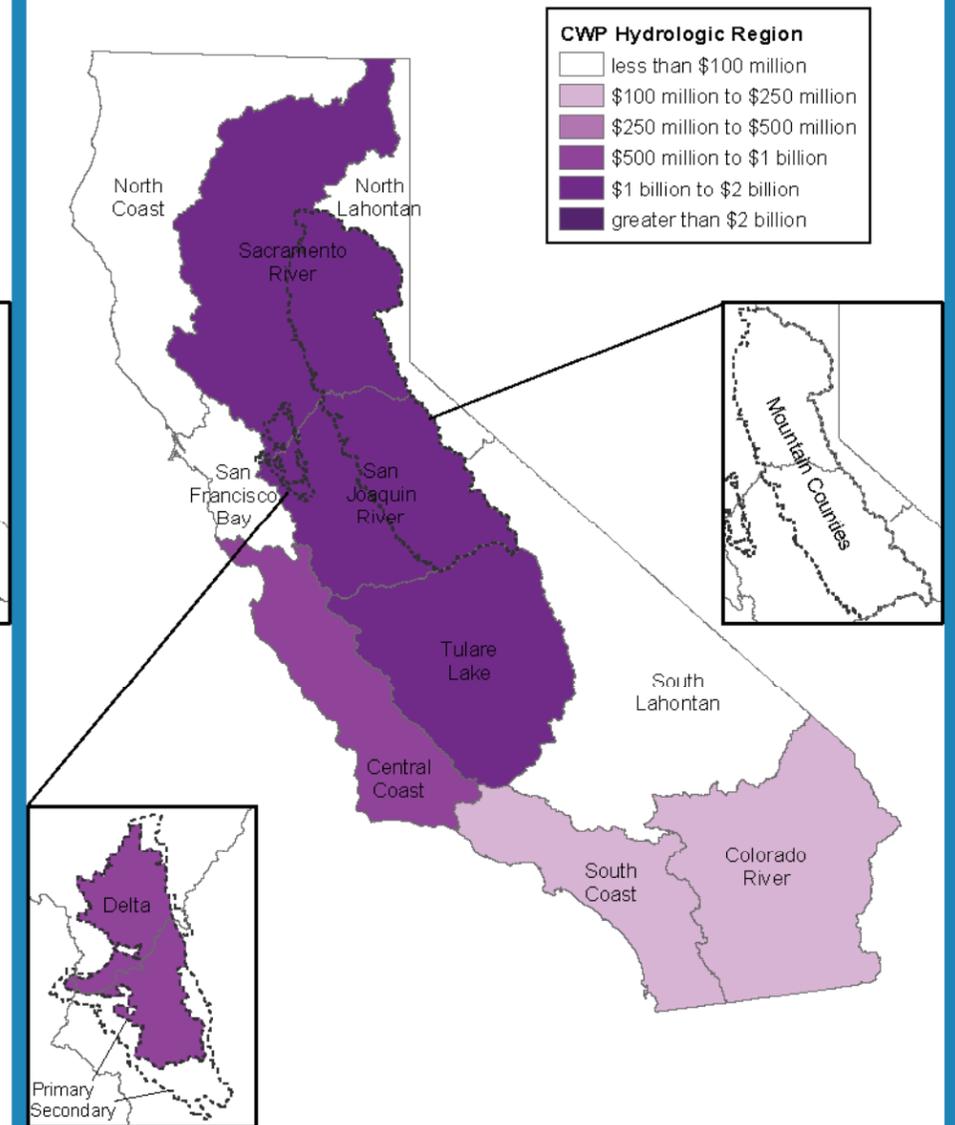
Total Population Exposed Statewide = 1.4 million (4%)

Value of Exposed Structures and Contents by CWP Hydrologic Region and Delta Zone



Total Value of Exposed Structures and Contents Statewide = \$136.7 billion (5%)

Value of Exposed Agricultural Crops by CWP Hydrologic Region and Delta Zone



Total Value of Exposed Agricultural Crops = \$5.4 billion (27%)

Figure F-23

Statewide Exposure to Flood Hazard, Reported by CWP Hydrologic Region and Delta Zone for a 100-year Flood Event

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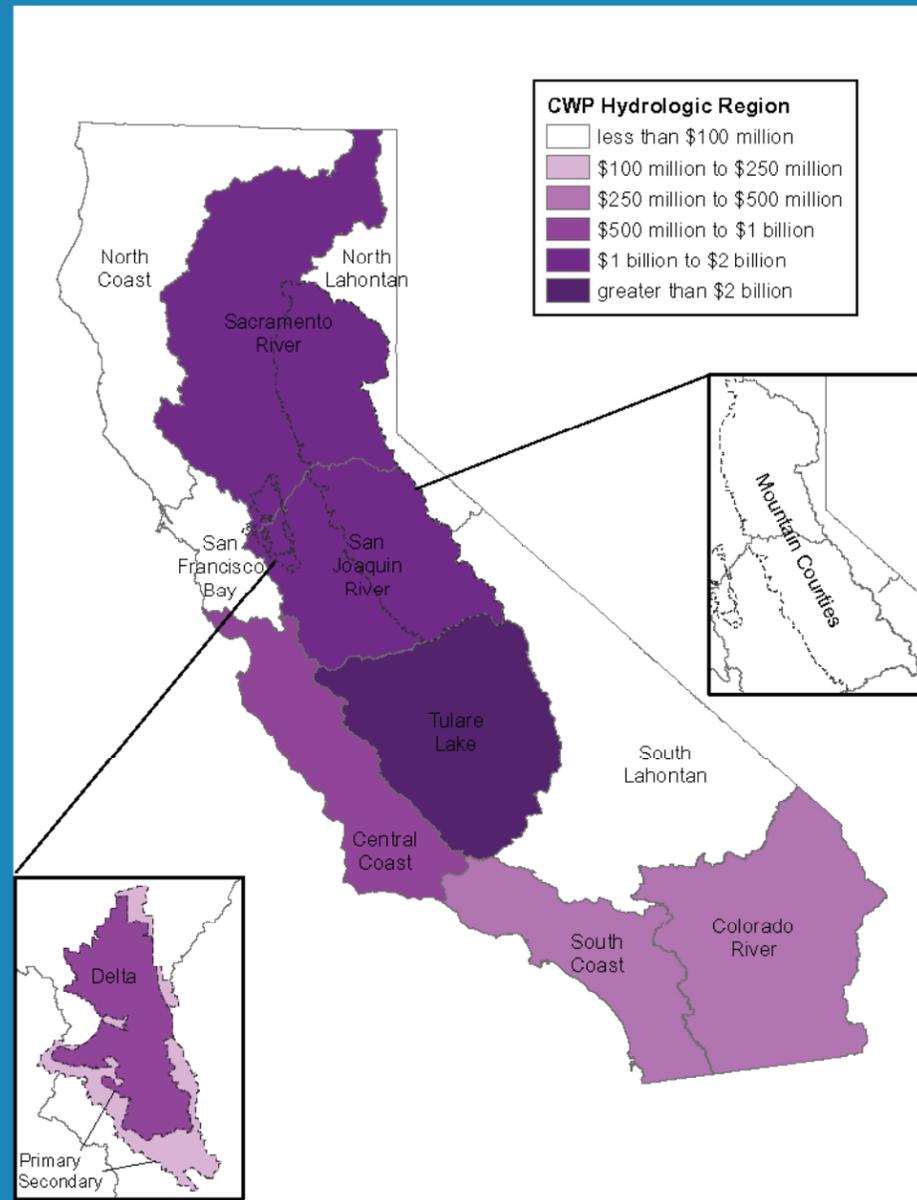
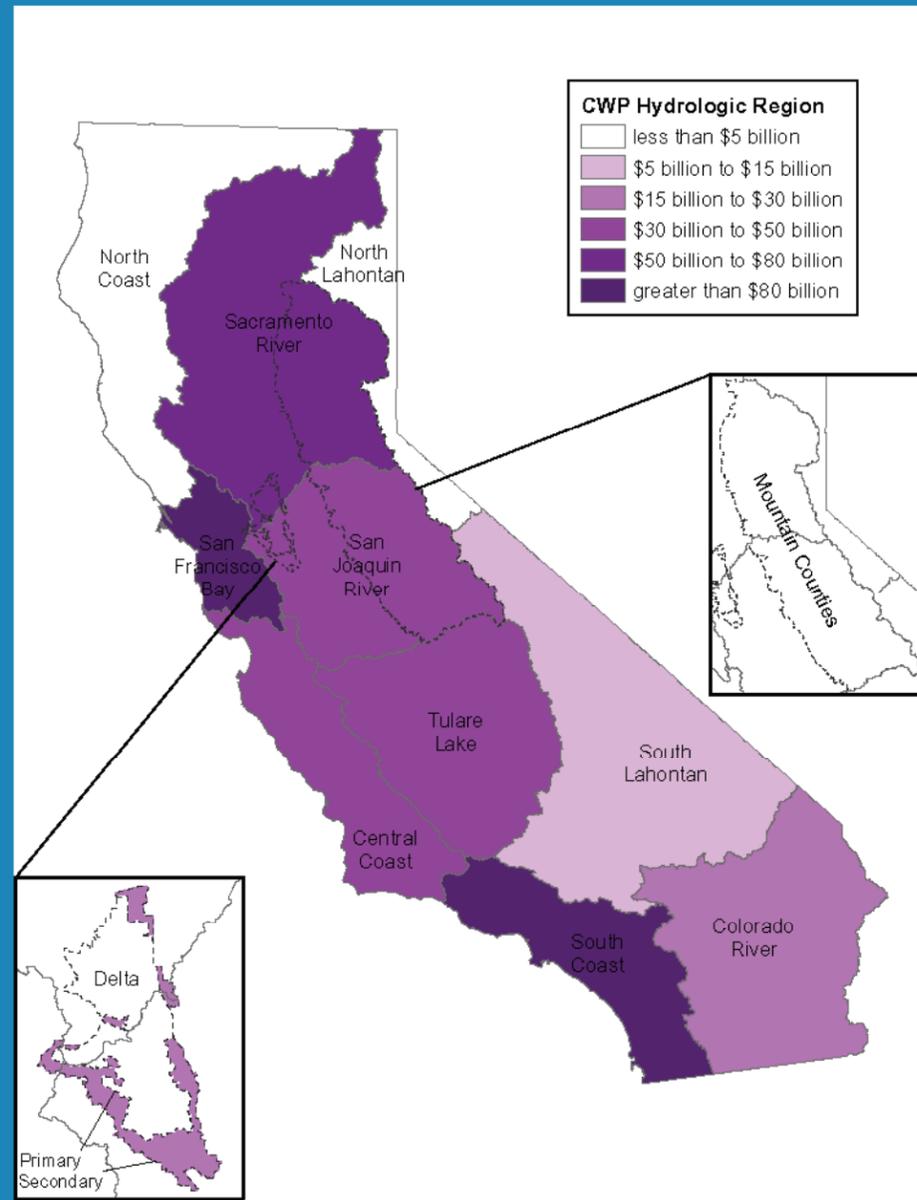
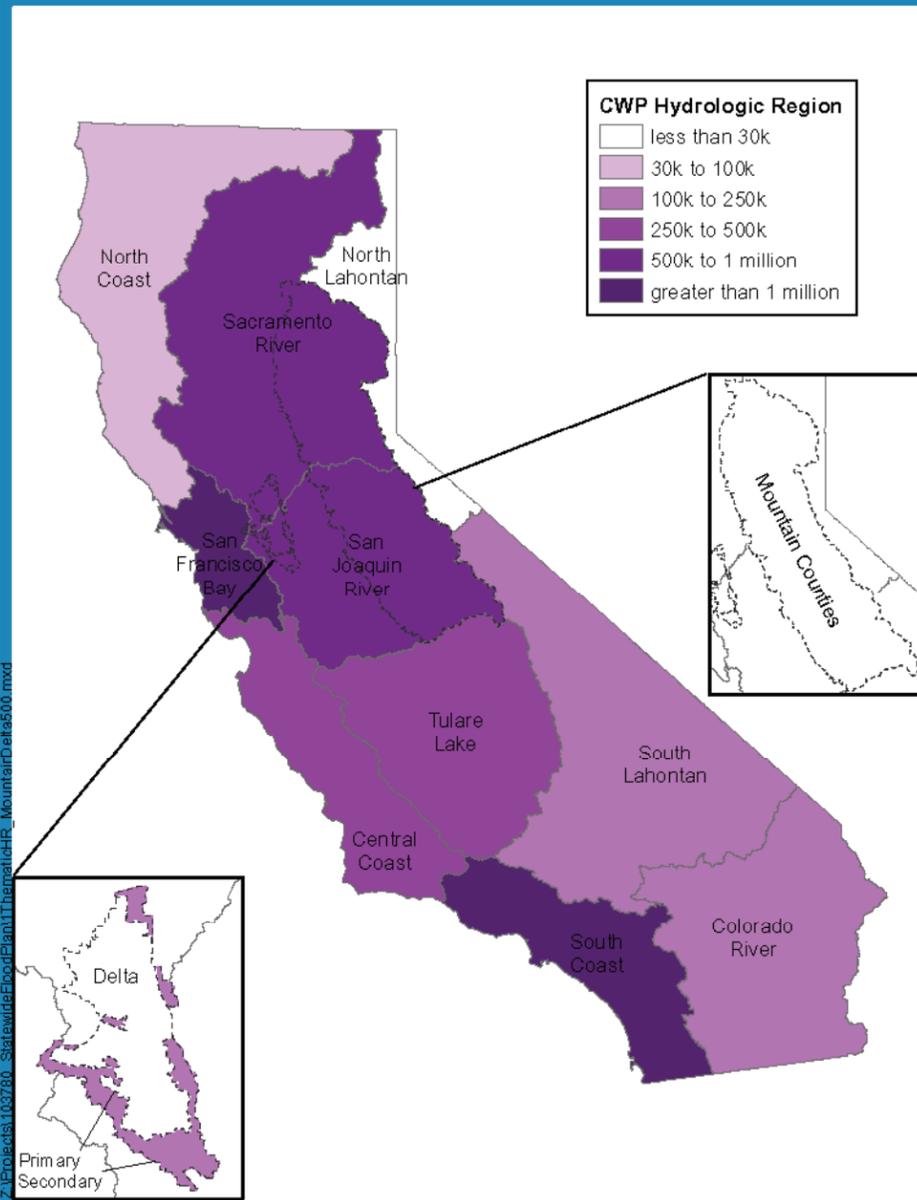


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Population Exposed by CWP Hydrologic Region and Delta Zone

Value of Exposed Structures and Contents by CWP Hydrologic Region and Delta Zone

Value of Exposed Agricultural Crops by CWP Hydrologic Region and Delta Zone



Total Population Exposed Statewide = 7.3 million (21%)

Total Value of Exposed Structures and Contents Statewide = \$576.8 billion (20%)

Total Value of Exposed Agricultural Crops = \$7.5 billion (35%)

Figure F-24
Statewide Exposure to Flood Hazard, Reported by CWP Hydrologic Region and Delta Zone for a 500-year Flood Event

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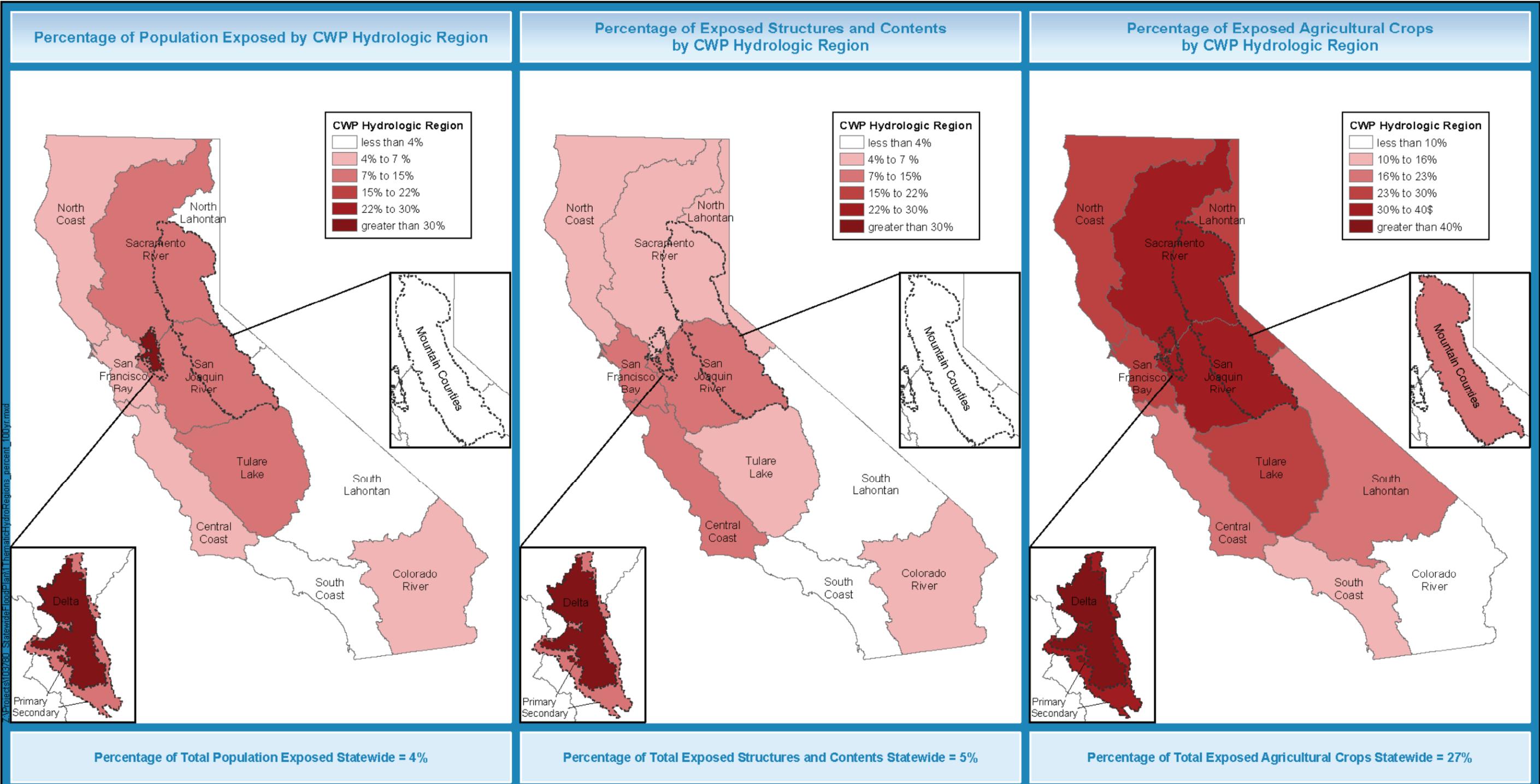


Figure F-25
Percentage of Statewide Exposure to Flood Hazard, Reported by CWP Hydrologic Region and Delta Zone for a 100-year Flood Event

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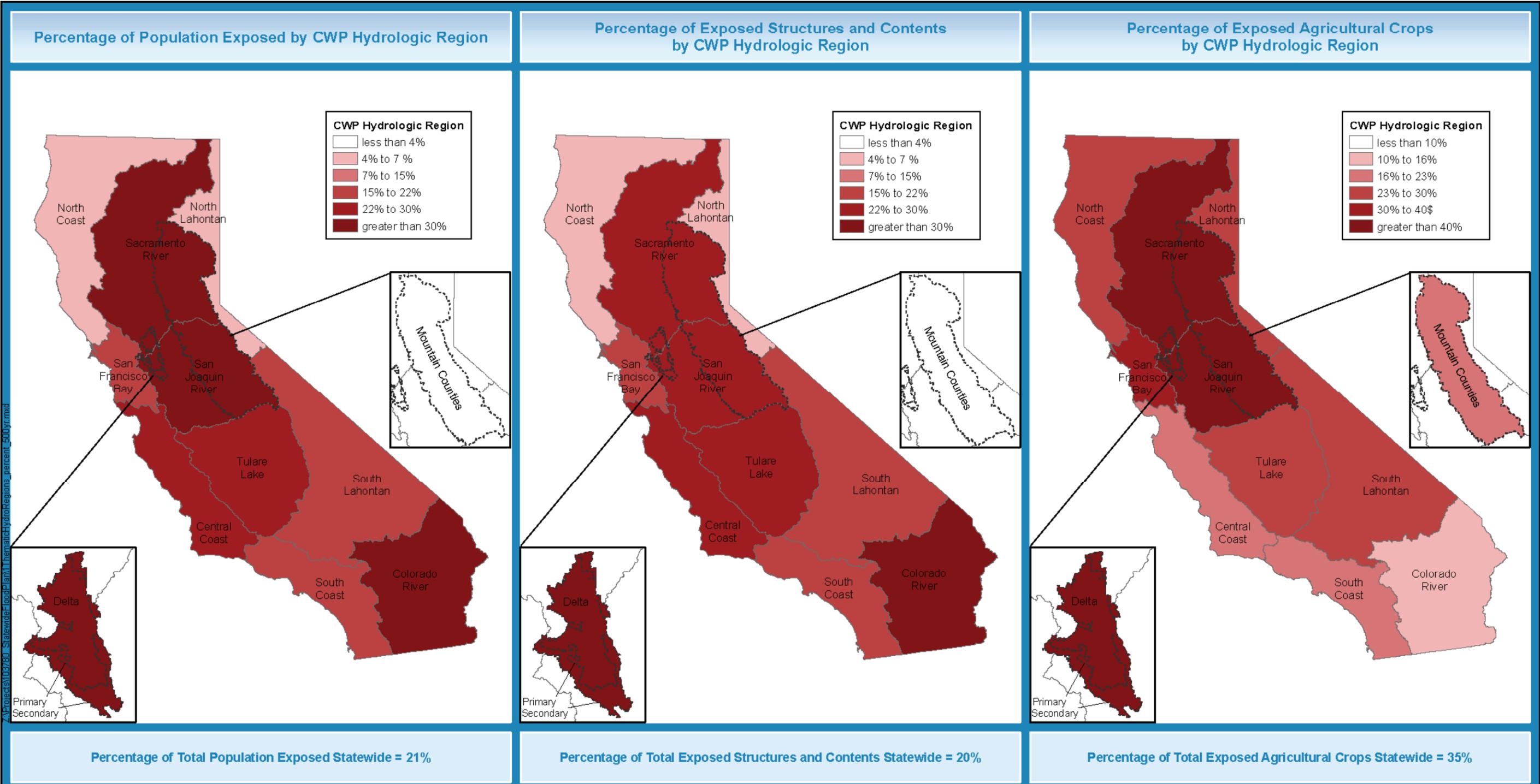


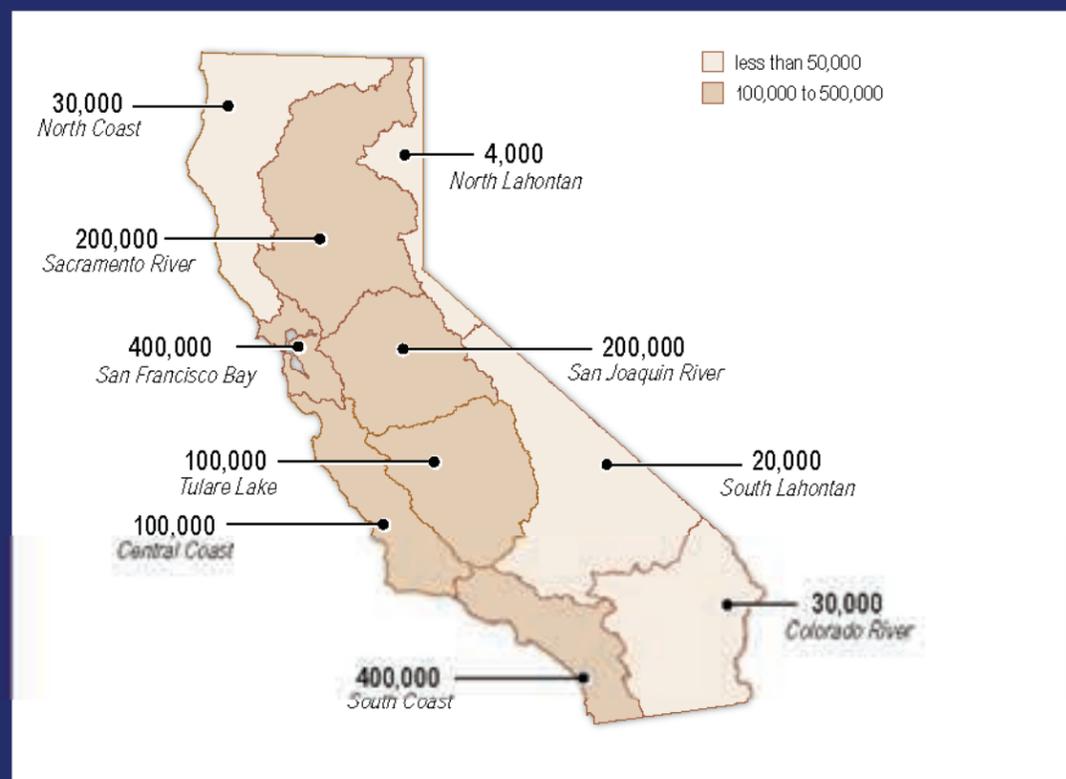
Figure F-26
Percentage of Statewide Exposure to Flood Hazard, Reported by CWP Hydrologic Region and Delta Zone for a 500-year Flood Event

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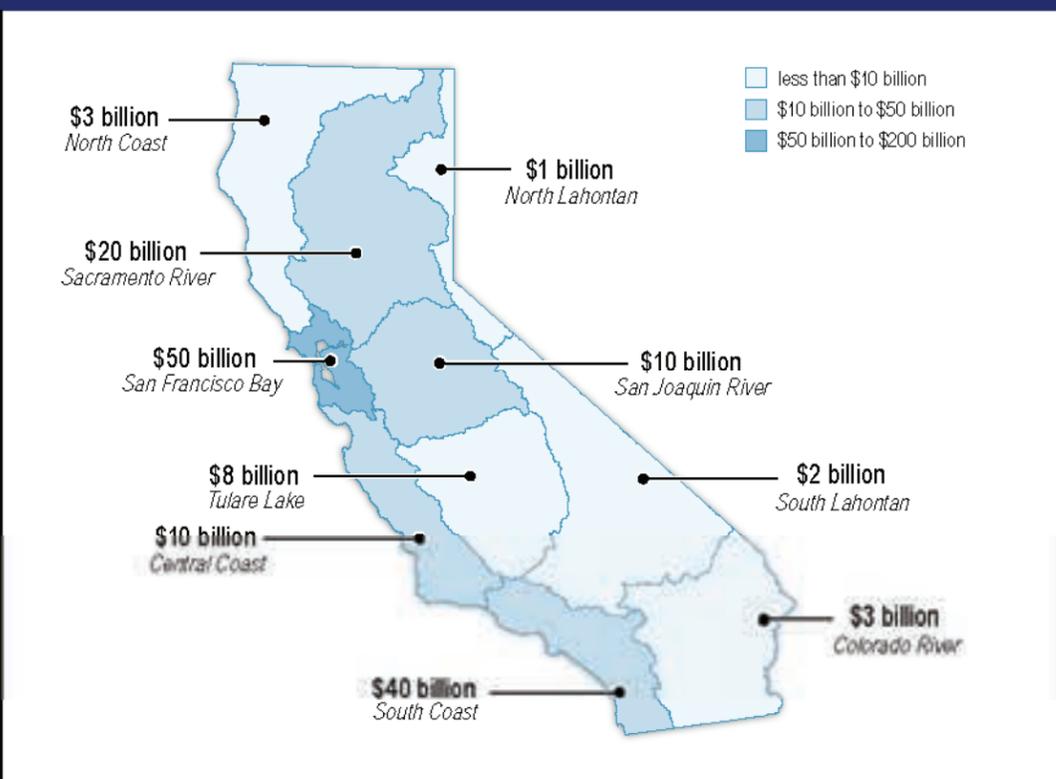
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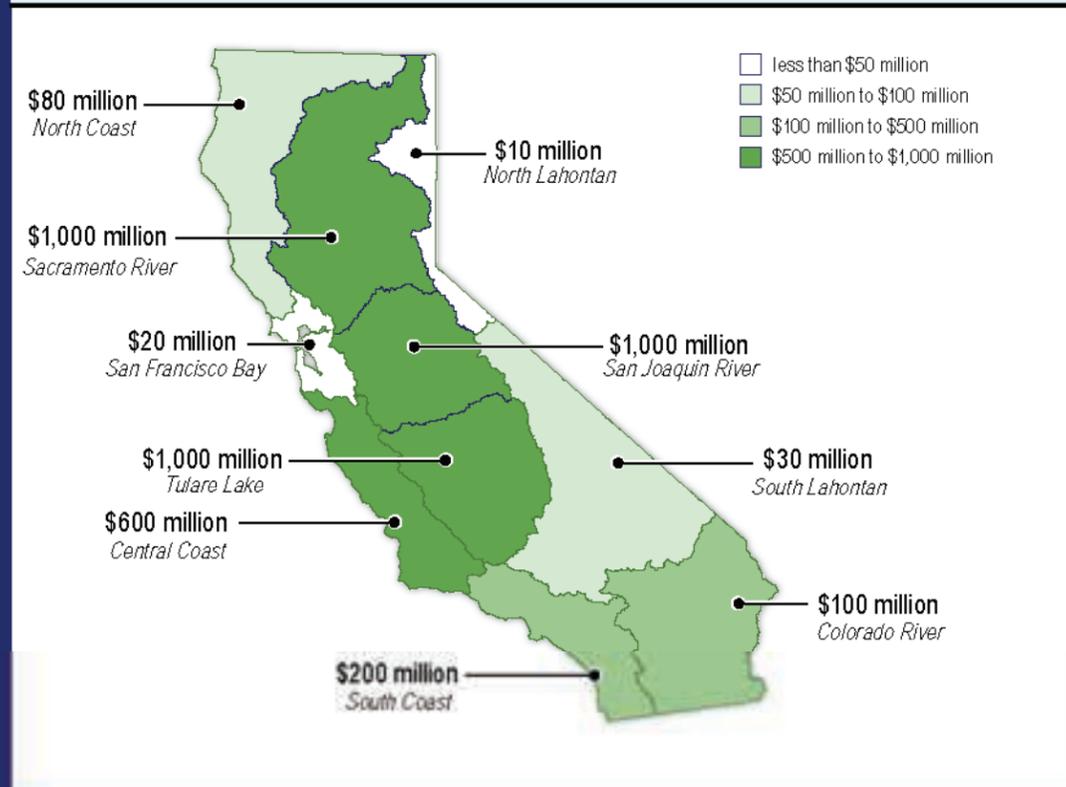
November 9, 2012



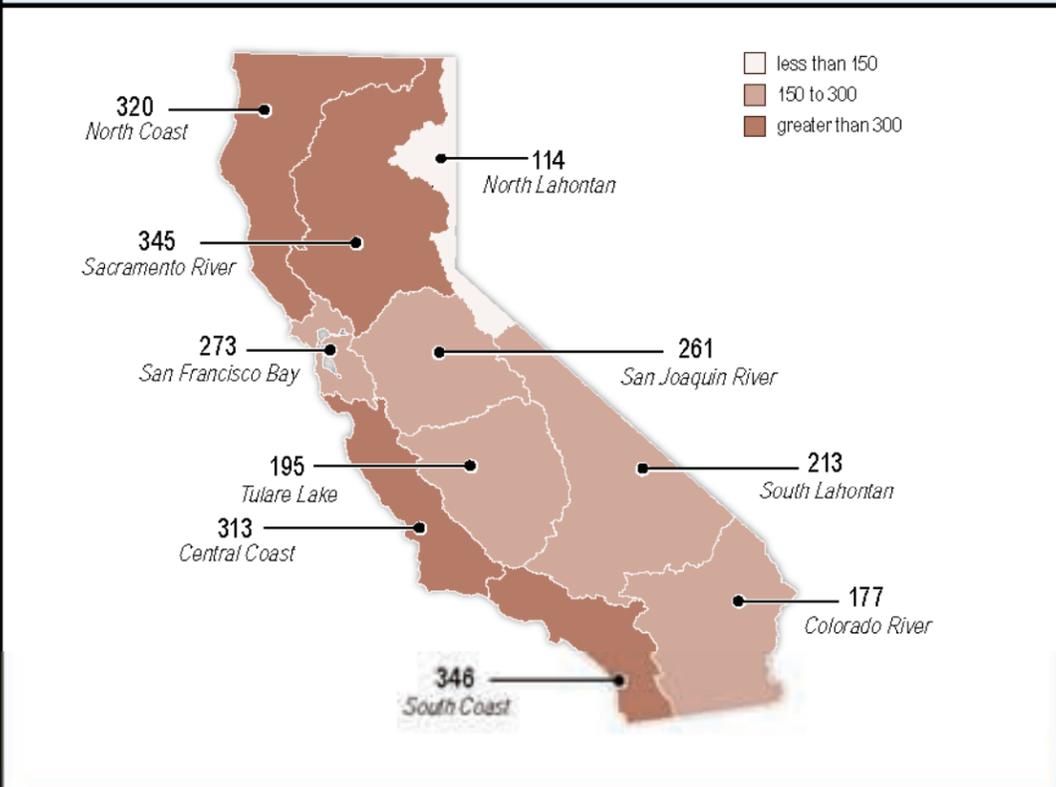
Population Exposed by CWP Hydrologic Region



Value of Exposed Structures and Contents by CWP Hydrologic Region



Value of Exposed Agricultural Crops by CWP Hydrologic Region

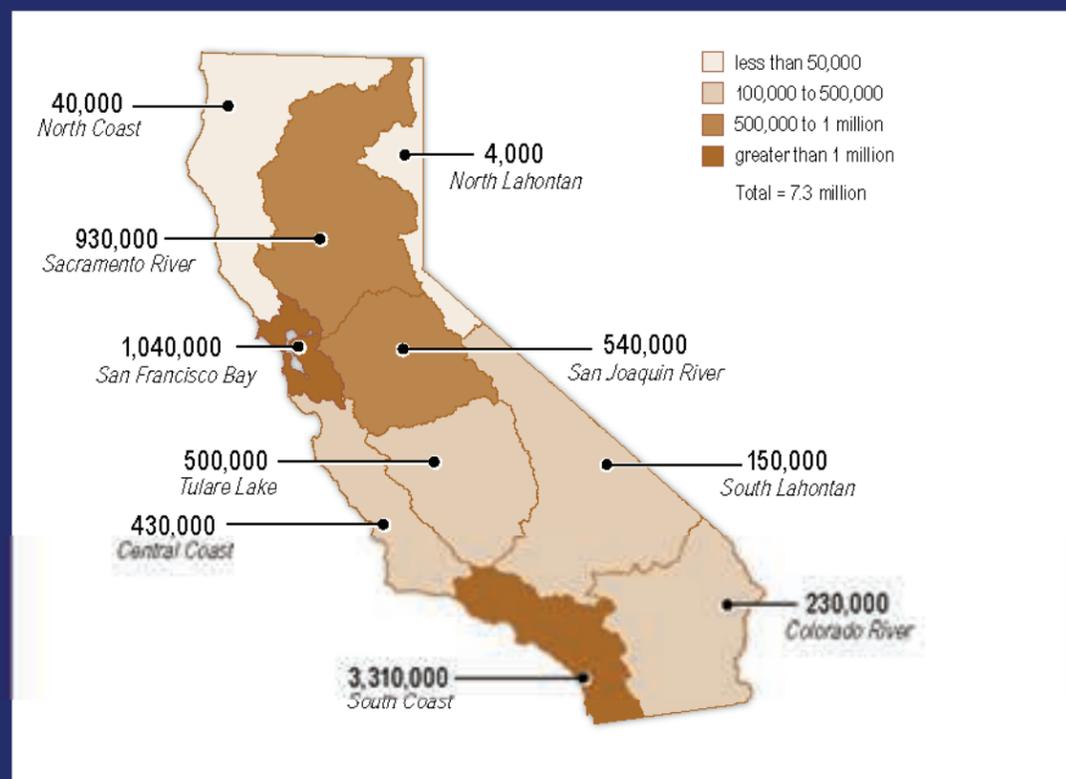


Total Species (Plant and Animal) Exposed by CWP Hydrologic Region

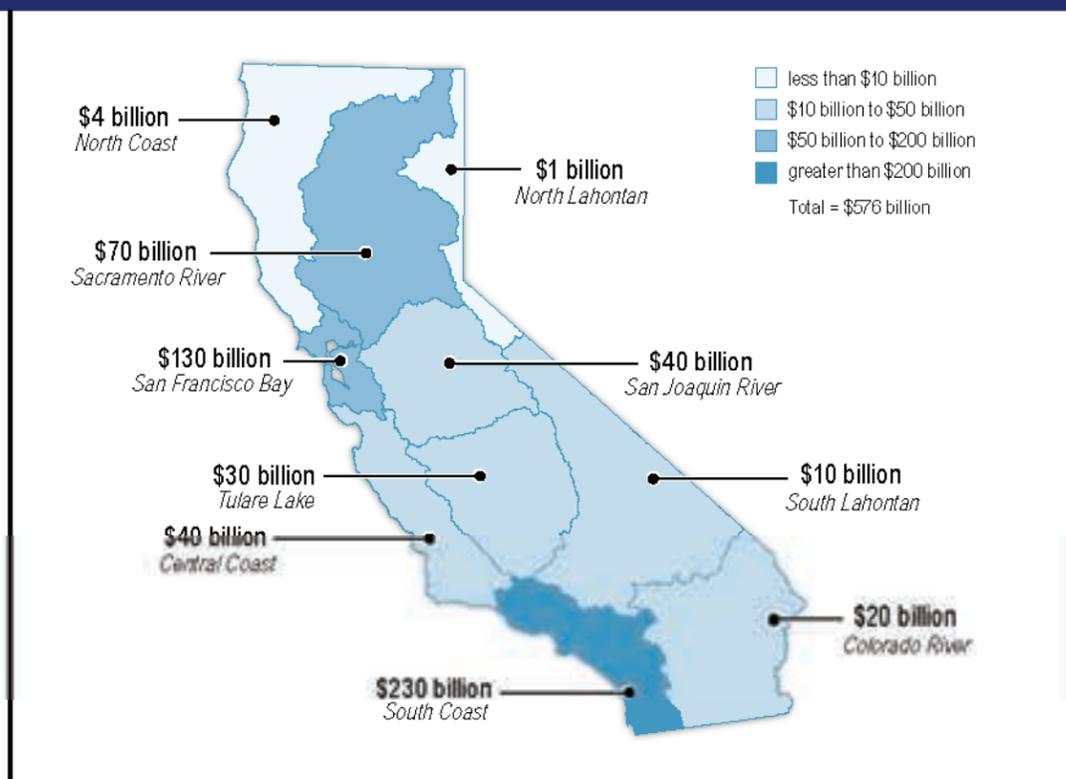
Figure F-27
Exposure of Population, Structures, and Contents Value, Agricultural Crops Value, and Sensitive Species to 100-Year Floodplain

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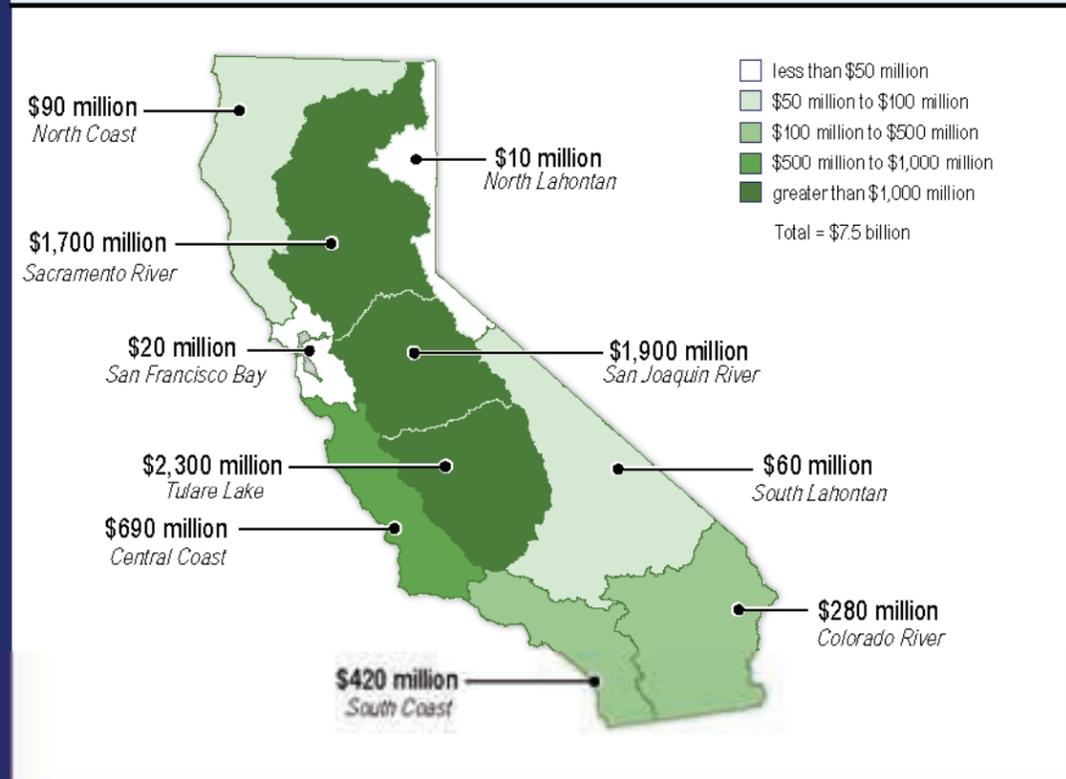




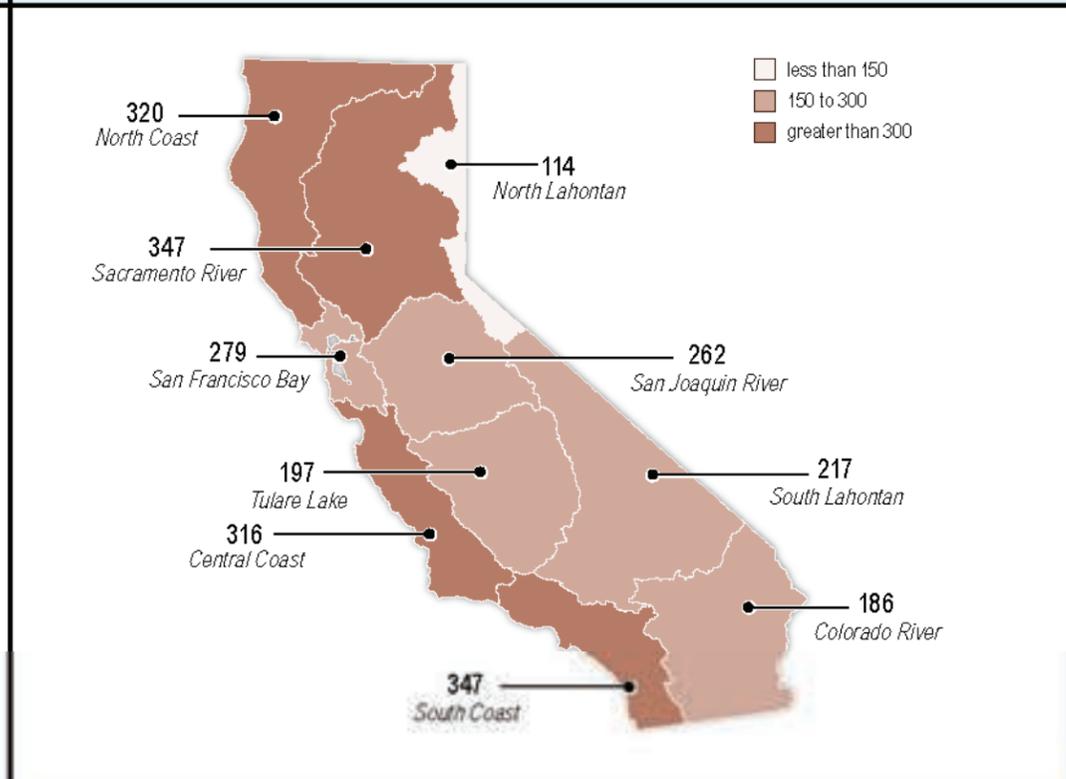
Population Exposed by CWP Hydrologic Region



Value of Exposed Structures and Contents by CWP Hydrologic Region



Value of Exposed Agricultural Crops by CWP Hydrologic Region



Total Species (Plant and Animal) Exposed by CWP Hydrologic Region

Figure F-28
Exposure of Population, Structures, and Contents Value, Agricultural Crops Value, and Sensitive Species to 500-Year Floodplain

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The Sacramento River, San Joaquin River, and Tulare Lake regions have the greatest exposure in terms of agricultural crop values, with more than \$1 billion in agricultural crops exposed in each region for both the 100-year and the 500-year floodplains. The Tulare Lake region has the greatest exposure of agricultural crop value, with more than \$2 billion exposed for the 500-year floodplain. The Sacramento River and San Joaquin River regions have the largest percentage of agricultural acreage exposed in both the 100-year and 500-year floodplains.

CNDDDB Sensitive Plant and Animal Species

Exposure of sensitive plant and animal species to flood hazard is distributed throughout the state, with all CWP hydrologic regions, overlay regions, and Delta zones having some level of exposure to flooding. Figures F-27 and F-28 present the total number of sensitive species exposed to the 100-year and 500-year floodplains. The South Coast, North Coast, Sacramento River, and Central Coast hydrologic regions have the highest levels of exposure for sensitive plant species, with more than 200 sensitive plant species in both the 100-year and 500-year floodplains of each region. The Sacramento River, South Coast, and San Joaquin River hydrologic regions have the highest levels of exposure for sensitive animal species, with more than 125 sensitive animal species in both the 100-year and 500-year floodplains of each region.

Table F-12 shows the number of sensitive plant and animal species exposed in each CWP hydrologic region. The South Coast Hydrologic Region has the largest number of sensitive plant species exposed in both the 100-year and 500-year floodplains, and the Sacramento River Hydrologic Region has the largest number of sensitive animal species exposed in both the 100-year and 500-year floodplains.

Table F-12. Exposed Sensitive Plant and Animal Species in Each Hydrologic Region

CWP Hydrologic Region	Exposed Sensitive Plant and Animal Species from CNDDDB			
	100-Year Floodplain		500-Year Floodplain	
	Sensitive Plant Species	Sensitive Animal Species	Sensitive Plant Species	Sensitive Animal Species
Central Coast	202	111	204	112
Colorado River	78	99	85	101
North Coast	203	117	203	117
North Lahontan	68	46	68	46
Sacramento River	203	142	205	142
San Francisco Bay	167	106	169	110
San Joaquin River	130	131	131	131
South Coast	210	136	210	137
South Lahontan	100	113	104	113
Tulare Lake	94	101	94	103
Overlay Regions				
Sacramento-San Joaquin Delta	46	61	46	64
Mountain Counties	123	87	123	87

Critical Facilities

Figures F-29 and F-30 present the numbers of critical facilities exposed to the 100-year and 500-year floodplains. The South Coast, San Francisco Bay, and Sacramento River regions have the most essential, high potential loss, and lifeline facilities exposed to both the 100-year and 500-year floodplains. Although the total numbers are relatively similar for the 100-year floodplain, the South Coast region has far more exposure of these types of facilities in the 500-year floodplain, with more than 40 percent of the state’s exposed essential, high potential loss, and lifeline facilities being in the South Coast region.

Exposure of transportation facilities occurs in many parts of the state, with the South Coast, San Francisco Bay, Sacramento River, San Joaquin River, Tulare Lake, and Central Coast regions having large numbers of exposed transportation facilities in both the 100-year and 500-year floodplains.

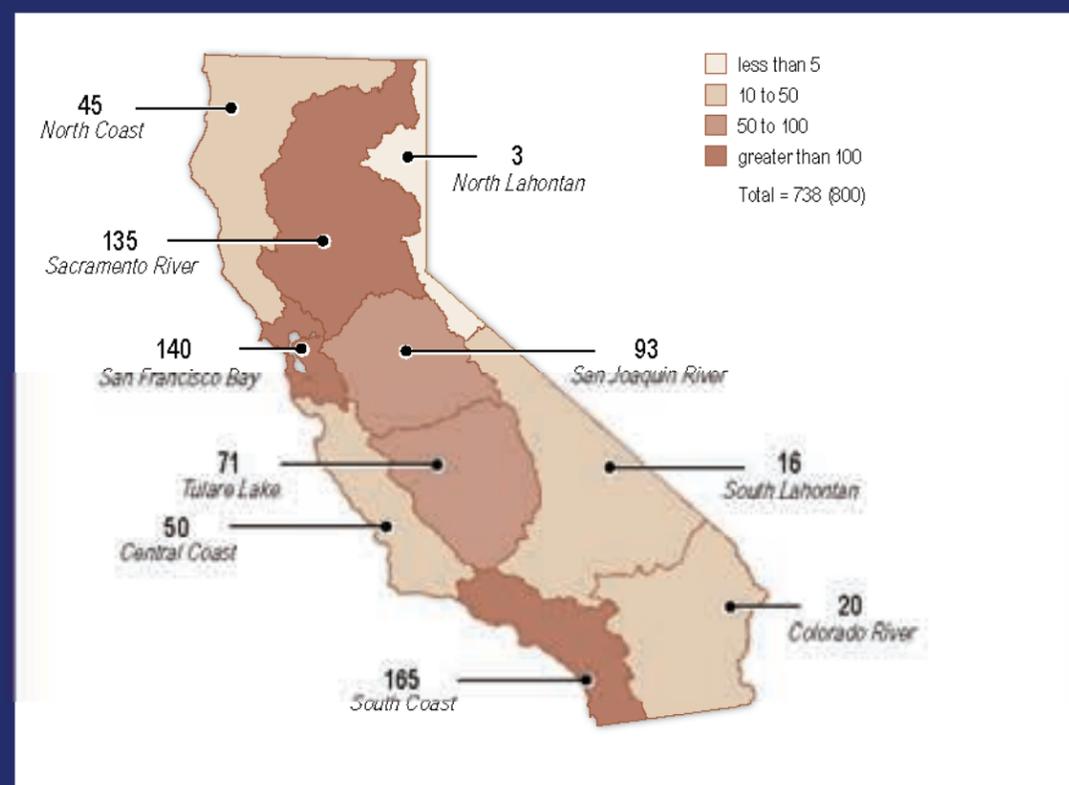
Department of Defense Facilities

Table F-13 shows the number and acreage of exposed DoD facilities in each CWP hydrologic region. The South Coast Hydrologic Region has the largest number of exposed DoD facilities in both the 100-year and 500-year floodplains.

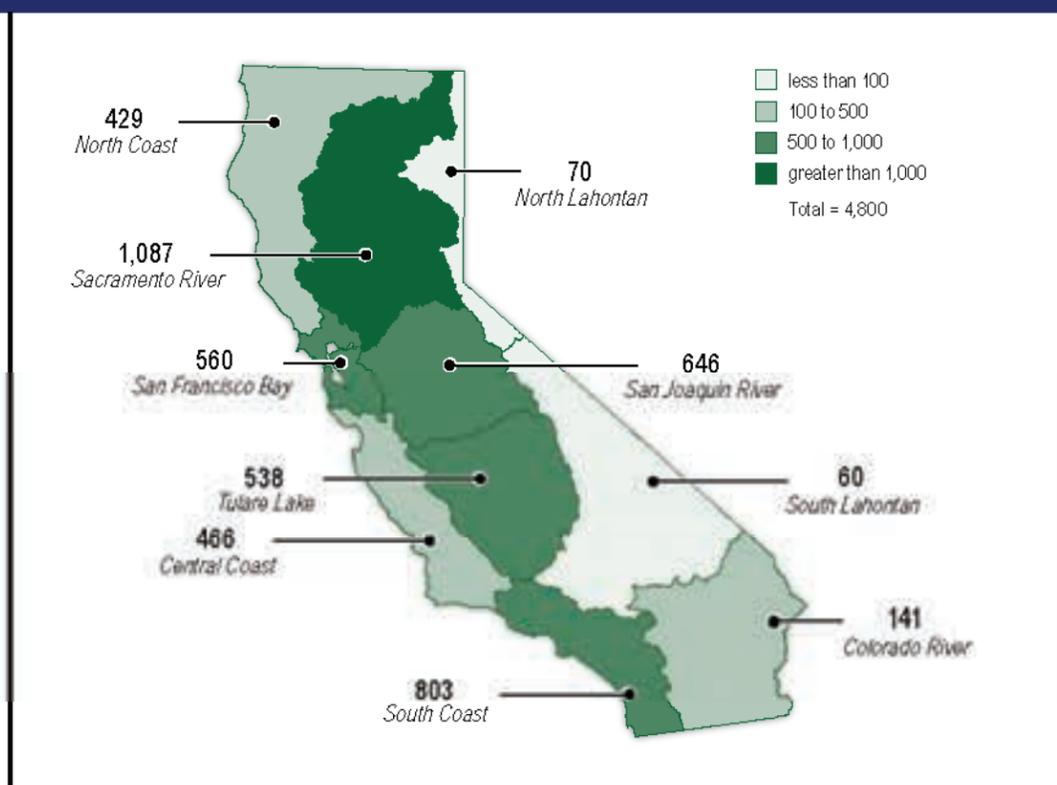
Table F-13. Exposed Department of Defense Facilities in Each Hydrologic Region

CWP Hydrologic Region	Exposed Department of Defense Facilities			
	100-Year Floodplain		500-Year Floodplain	
	Number	Acres	Number	Acres
Central Coast	5	13,480	5	15,332
Colorado River	4	16,962	4	16,963
North Coast	0	0	0	-
North Lahontan	1	56,674	1	56,674
Sacramento River	5	4,970	6	5,841
San Francisco Bay	8	2,813	8	2,914
San Joaquin River	2	597	2	831
South Coast	16	1,252	16	4,337
South Lahontan	4	6,498	4	9,377
Tulare Lake	7	25,143	7	25,396
Overlay Regions				
Sacramento-San Joaquin Delta	2	34	2	52
Mountain Counties	0	0	0	0

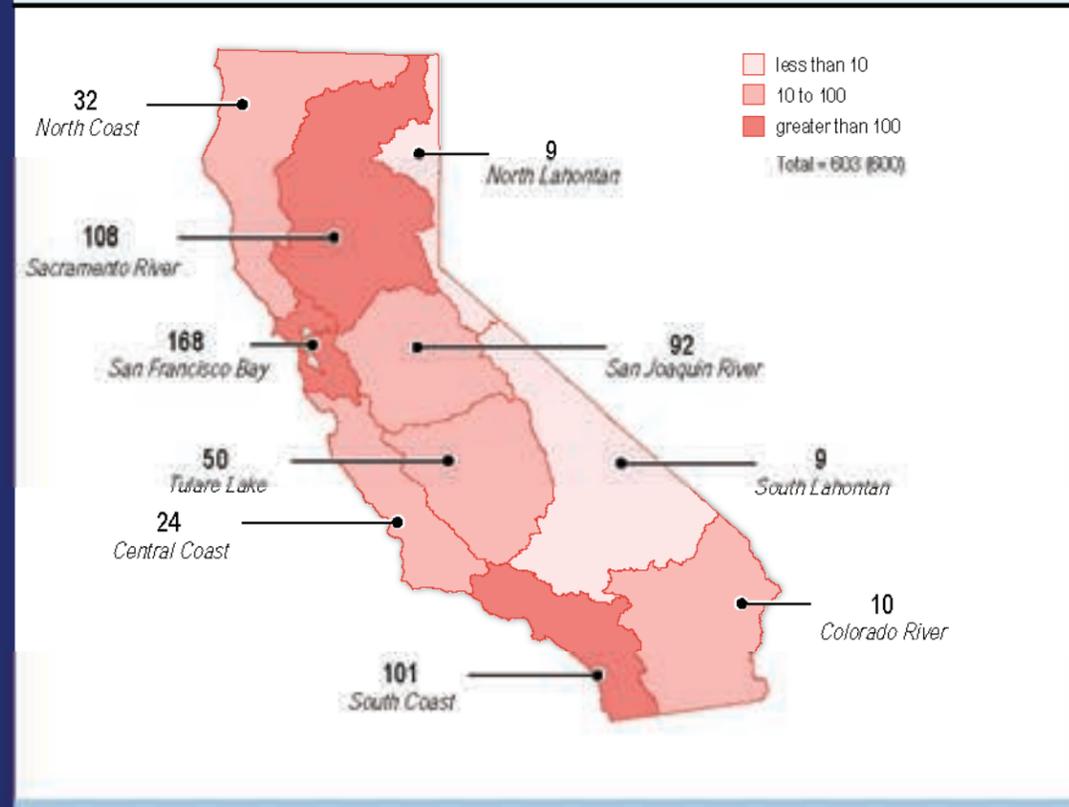
Note: Acres numbers are rounded to the nearest hundred.



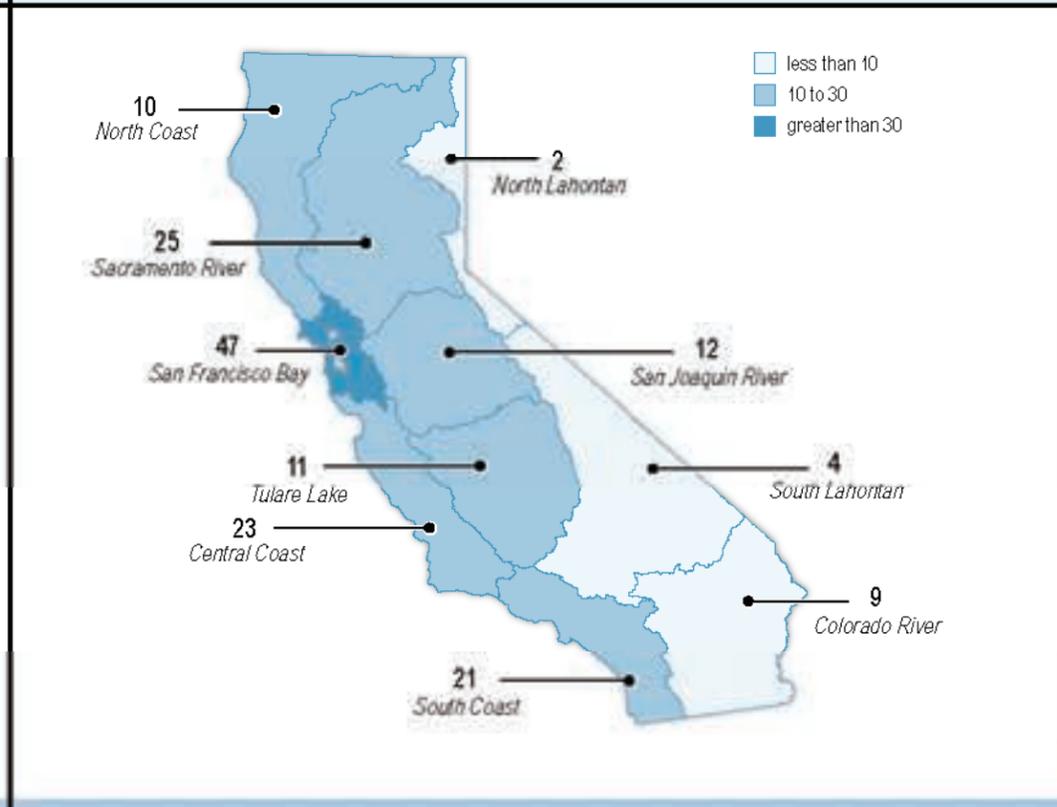
Essential Facilities Exposed by CWP Hydrologic Region



Transportation Facilities Exposed by CWP Hydrologic Region



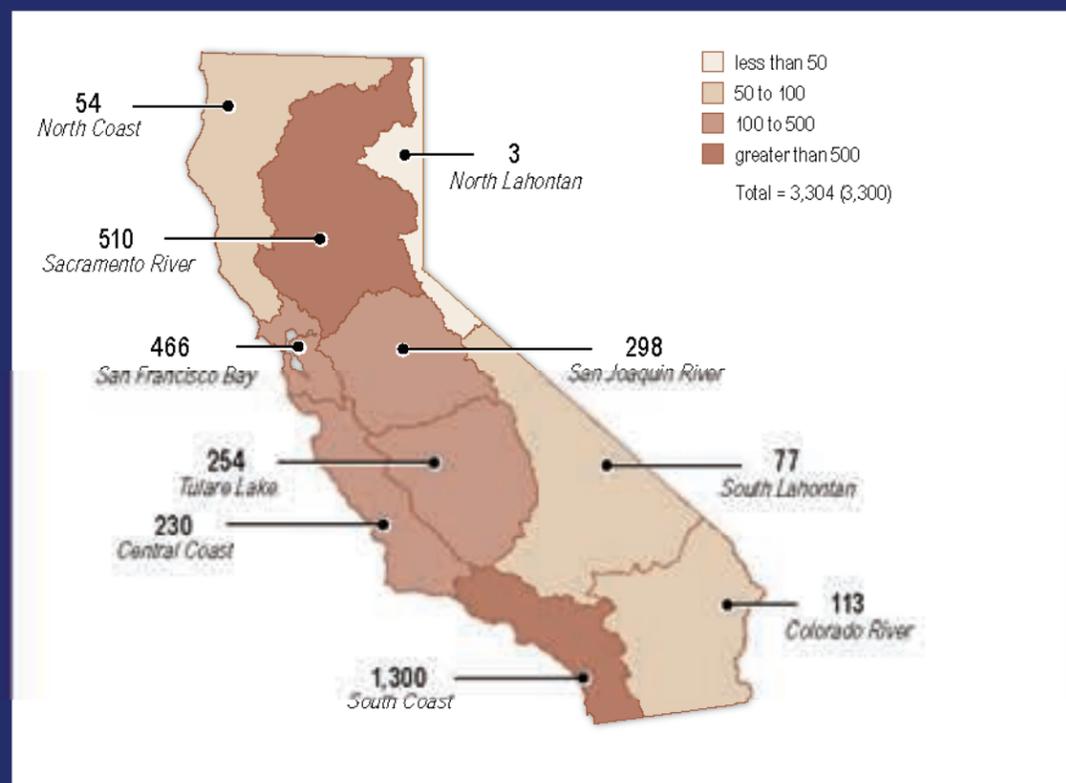
High Potential Facilities Exposed by CWP Hydrologic Region



Lifeline Utilities Exposed by CWP Hydrologic Region

Figure F-29
Facilities Exposure to
100-Year Floodplain

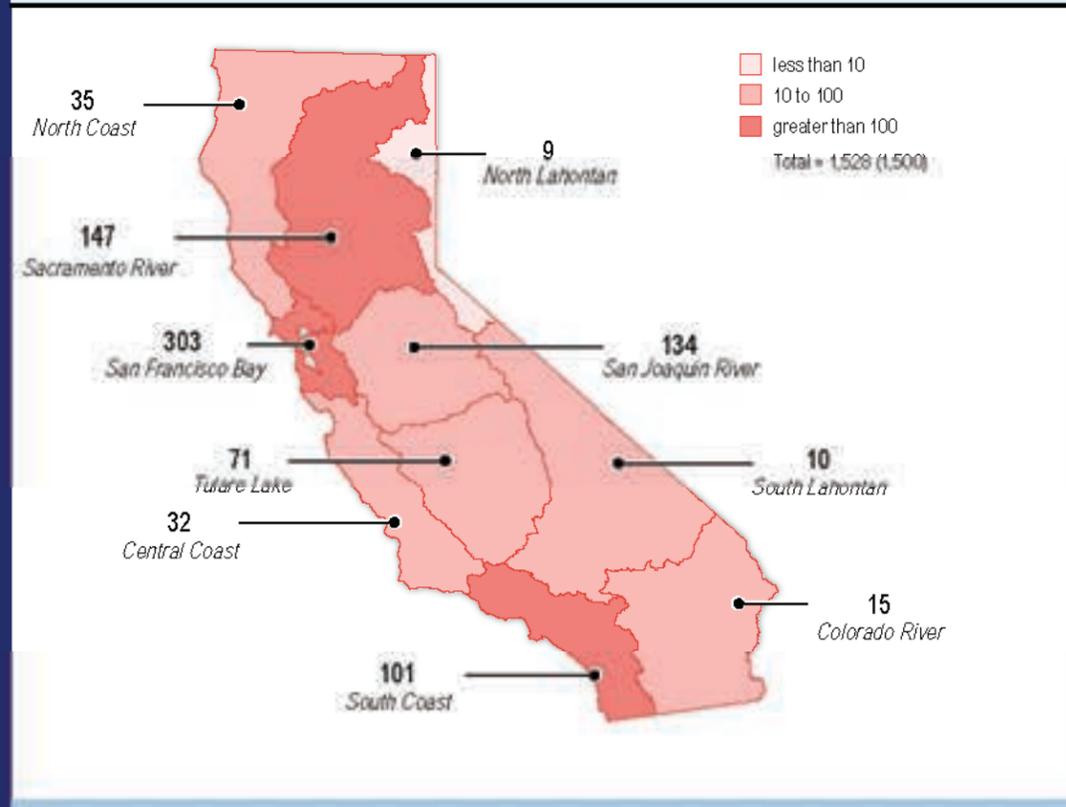
Figure_F-29_100yr_facilities_exposure.rtf 05-12 dsh



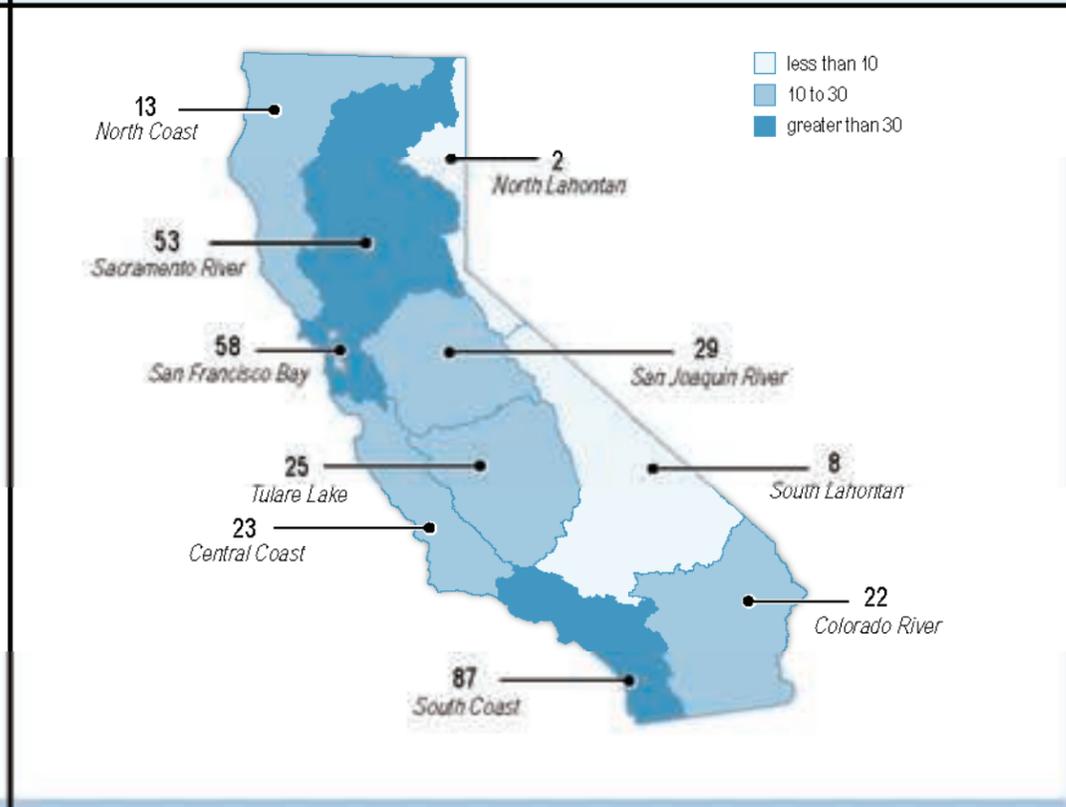
Essential Facilities Exposed by CWP Hydrologic Region



Transportation Facilities Exposed by CWP Hydrologic Region



High Potential Facilities Exposed by CWP Hydrologic Region



Lifeline Utilities Exposed by CWP Hydrologic Region

Figure F-30
Facilities Exposure to
500-Year Floodplain

Figure_F30_500y_facilities_exposure 11-05-12.dwh

Native American Tribal Lands

Table F-14 shows the number of tribes and acreage of exposed Native American tribal lands in each CWP hydrologic region. The majority of exposed Native American tribal lands are in the Sacramento River and Colorado River hydrologic regions.

Table F-14. Exposed Native American Tribal Lands in Each CWP Hydrologic Region

CWP Hydrologic Region	Exposed Native American Tribal Lands			
	100-Year Floodplain		500-Year Floodplain	
	Number of Tribes	Acres	Number of Tribes	Acres
Central Coast	0	-	0	-
Colorado River	9	29,154	10	57,499
North Coast	4	5,568	4	5,748
North Lahontan	1	9	2	14
Sacramento River	8	2,747	8	2,833
San Francisco Bay	0	0	0	0
San Joaquin River	1	3	1	3
South Coast	5	583	5	586
South Lahontan	1	3	1	10
Tulare Lake	2	109	2	109
Overlay Regions				
Sacramento-San Joaquin Delta	0	0	0	0
Mountain Counties	2	412	2	412

4.2 Overview of Each CWP Hydrologic Region

4.2.1 Summary

This section provides an overview of the types of flooding that occur in California and then provides an overview of each CWP hydrologic region and overlay region, including its physical setting, summary of flood hazards, and an overview of the flood hazard exposure results for each region. Much of the information contained in the physical setting and flood hazards section for each region is taken from *California Local Flood Response and Recovery Plans: Identification of Flood Hazards* (DWR, 2009a). In addition, a list of historical flood events in each CWP hydrologic region and overlay region can be found in *Attachment C: History of California Flooding*.

4.2.2 Types of Flooding in California

Several types of flooding occur throughout the State of California. This is due to variations in:

- Weather and climate patterns (e.g., El Niño, La Niña, Pineapple Express)
- Hydrologic features

- Composition of soil and bedrock
- Type and density of vegetation
- Past and present human manipulations of the landscape
- Patterns of land use

These factors combine to bring about floods that can differ in characteristics, such as warning time, duration, depth, and resulting losses, depending on where, when, why, and how the flooding occurs.

Figure F-31 depicts the types of flooding that occur in California. The types of flooding in California can be divided into eight categories:

- Slow rise flooding – Gradual inundation as waterways or lakes overflow their banks. Most often caused by heavy precipitation, especially with heavy snowmelt. This type of flood includes riverine flooding in deep floodplains and ponding of water in low-lying urban areas, as well as gradual flooding in areas adjacent to local streams and creeks.
- Flash flooding – Quickly forming floods with high-velocity flows. Often caused by stationary or slow-moving storms. Typically occurs on steep slopes and impermeable surfaces, and in areas adjacent to local streams and creeks.
- Debris flow flooding – Flows made up of water, liquefied mud, and debris. Can form and accelerate quickly, reach high velocities, and travel great distances. Commonly caused by heavy localized rainfall on burned hillsides devoid of vegetation.
- Alluvial fan flooding – Flows of shallow depth and high velocity, with sediment transport, along uncertain flow paths on the surface and at the toe of alluvial fans. Typically caused by localized rainstorms, often with snowmelt.
- Coastal flooding – Inundation at locations normally above the level of high tide. Often caused by storm surge occurring with high tide.
- Tsunami flooding – High-speed seismic sea waves, triggered by mass movement that displaces a large volume of water. Causes include earthquakes and underwater landslides. Impact on land depends on wave height and inundation area.
- Stormwater flooding – Local stormwater flooding refers to localized flooding that occurs in urbanized areas during or after a storm event. Generally, the extent of flooding is confined to a smaller area compared to other types of flooding. Local stormwater flooding usually results from clogged or overwhelmed storm drain systems that became incapable of conveying stormwater runoff efficiently to outfalls into creeks and rivers.
- Engineered structure failure flooding – Flooding as a result of dam failure or levee failure presents the potential of catastrophic impact, depending on amount of water impounded and location of populated areas downstream.

All California communities are at risk of stormwater flooding, and most California communities are vulnerable to additional types of flooding.



Slow Rise Flooding

Gradual inundation as waterways or lakes overflow their banks. Most often caused by heavy precipitation, especially with heavy snowmelt. This type of flood includes riverine flooding in deep floodplains and ponding of water in low-lying urban areas, as well as gradual flooding in areas adjacent to local streams and creeks.



Flash Flooding

Quickly forming floods with high-velocity flows. Often caused by stationary or slow-moving storms. Typically occurs on steep slopes and impermeable surfaces, and in areas adjacent to local streams and creeks.



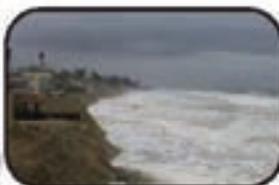
Debris Flow Flooding

Flows made up of water, liquefied mud, and debris. Can form and accelerate quickly, reach high velocities, and travel great distances. Commonly caused by heavy localized rainfall on burned hillsides devoid of vegetation.



Alluvial Fan Flooding

Flows of shallow depth and high velocity, with sediment transport, along uncertain flow paths on the surface and at the toe of alluvial fans. Typically caused by localized rainstorms, often with snowmelt.



Coastal Flooding

Inundation at locations normally above the level of high tide. Often caused by storm surge occurring with high tide.



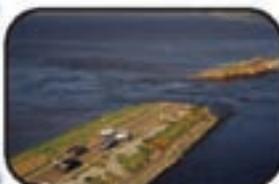
Tsunami Flooding

High-speed seismic sea waves triggered by mass movement that displaces a large volume of water. Causes include earthquakes and underwater landslides. Impact on land depends on wave height and inundation area.



Stormwater Flooding

Local storm water flooding refers to localized flooding that occurs in urbanized areas during or after a storm event. Generally the extent of flooding is confined to a smaller area compared to other types of flooding. Local storm water flooding usually results from clogged or overwhelmed storm drain systems that became incapable of conveying storm water runoff efficiently to outfalls into creeks and rivers.



Engineered Structure Failure Flooding

Flooding as a result of dam failure or levee failure presents the potential of catastrophic impact, depending on amount of water impounded and location of populated areas downstream.

LEGEND
Potential Occurrence by County
 Absent Present Likely



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Figure F-31
 Types of Flooding in California

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4.2.3 North Coast Hydrologic Region

Physical Setting

The North Coast Hydrologic Region includes approximately 19,500 square miles along the far northern areas of California. The region is primarily mountainous, rugged, and heavily forested, with some inland mountain valleys, and the high desert region of the Modoc Plateau. Significant geographic features include the Klamath River Basin, Hoopa Valley, Anderson Valley, Santa Rosa Plain, Klamath Mountains, the Coast Range, the high plateau area of Modoc County, and Mount Shasta. Major lakes and reservoirs include Clear, Tule, Lower Klamath, and Trinity lakes. Major streams or rivers include the Klamath, Eel, Smith, Mad, Russian, and Mattole rivers. Major cities include Crescent City, Eureka, Santa Rosa, Ukiah, and Yreka.

Flood Hazards

Common flood types include stormwater, slow rise, flash, and coastal flooding. Other possible flood types include tsunami, debris flow, and engineered structure failure. Because of heavy rainfall, land use practices, extremely high loads of sediment, and steep mountains, the region's rivers exhibit short lag times and cause very destructive floods. Flooding due to snowmelt is rare, primarily because of the region's proximity to the Pacific Ocean and relatively low-elevation mountains. High spring tides coupled with intense rainfall can cause flooding to shoreline communities, particularly in the Humboldt Bay area. Tsunamis caused by oceanic earthquakes also pose a real threat, particularly to the community of Crescent City in Del Norte County.

Description of Exposure to Flood Hazard Results

Figures F-32 and F-33 depict the 100-year and 500-year floodplains in the North Coast Hydrologic Region, as well as key results for the exposure to flood hazard analysis within the hydrologic region for each floodplain. About 33,000 people and 108,000 acres of agricultural crops are exposed in the 100-year floodplain, with about 43,000 people and 112,000 acres of agricultural crops exposed in the 500-year floodplain. More than 200 sensitive plant species and 100 sensitive animal species are exposed in both the 100-year and 500-year floodplains. More than 510 facilities are exposed in the 100-year floodplain, and more than 560 facilities are exposed in the 500-year floodplain. Four Native American tribes are exposed to both the 100-year and 500-year floodplains in this region.

Common flood types:

- ✓ Stormwater
- ✓ Slow rise
- ✓ Flash
- ✓ Coastal

Other possible flood types:

- ✓ Debris flow
- ✓ Tsunami
- ✓ Engineered structure failure



North Coast Key Results

Total Population:	636,800	Transportation Facilities:	429
Population Exposed:	33,300	Transportation Segments (miles):	330
Percent of Population Exposed:	5	Essential Facilities:	45
Exposed Structures:	17,400	Lifeline Utilities:	10
Value of Exposed Structure and Contents:	\$3.0 Billion	Dept. of Defense Facilities:	-
Total Area (acres)	12.4 Million	Dept. of Defense Facilities (acres):	-
Exposed Area (acres)	400,800	High Potential Loss Facilities:	32
Percent of Area Exposed:	3	Native American Tribes:	4
Exposed Ag. Crops (acres):	108,300	Native American Tribal Lands (acres):	5,568
Percent of Ag. Crops Exposed:	25	Sensitive Animal Species Exposed:	117
Value of Exposed Ag. Crops:	\$84.0 Million	Sensitive Plant Species Exposed:	203

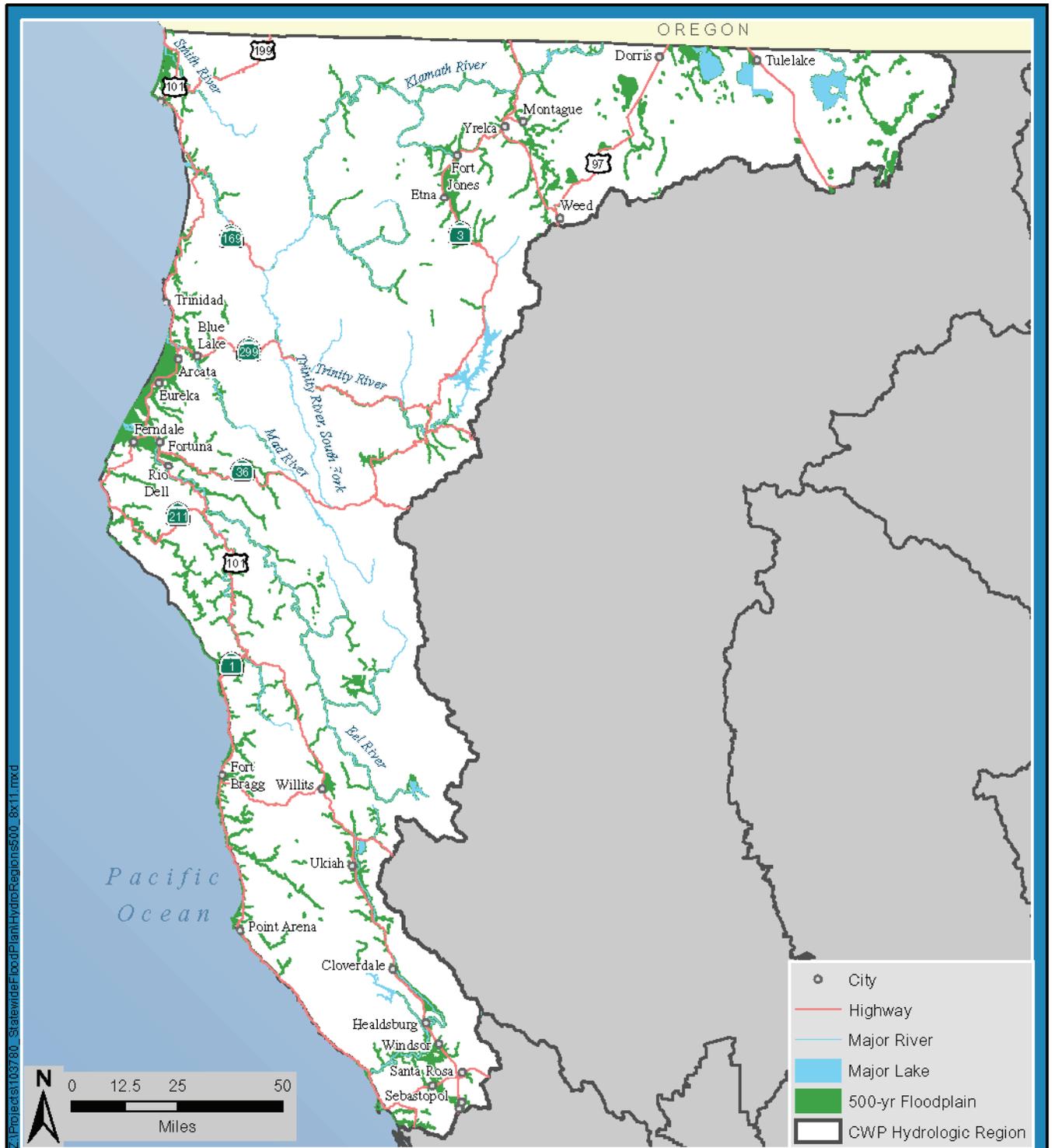
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Figure F-32
Statewide Flood Hazard Exposure Summary for the North Coast Hydrologic Region 100-year Floodplain

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North Coast Key Results

Total Population:	636,800	Transportation Facilities:	461
Population Exposed:	43,400	Transportation Segments (miles):	355
Percent of Population Exposed:	7	Essential Facilities:	54
Exposed Structures:	22,600	Lifeline Utilities:	13
Value of Exposed Structure and Contents:	\$4.2 Billion	Dept. of Defense Facilities:	-
Total Area (acres)	12.4 Million	Dept. of Defense Facilities (acres):	-
Exposed Area (acres)	412,400	High Potential Loss Facilities:	35
Percent of Area Exposed:	3	Native American Tribes:	4
Exposed Ag. Crops (acres):	112,200	Native American Tribal lands (acres):	5,748
Percent of Ag. Crops Exposed:	26	Sensitive Animal Species Exposed:	117
Value of Exposed Ag. Crops:	\$87.7 Million	Sensitive Plant Species Exposed:	203

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Figure F-33
Statewide Flood Hazard Exposure Summary for the North Coast Hydrologic Region 500-year Floodplain

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4.2.4 San Francisco Bay Hydrologic Region

Physical Setting

The San Francisco Bay Hydrologic Region covers approximately 4,500 square miles. Significant physical features include the San Francisco, Suisun, and San Pablo bays; and the Coast Range, Diablo Range, and Santa Cruz mountains. Major lakes and reservoirs include San Andreas Lake and Crystal Springs Reservoir. Major streams and rivers in the region include Guadalupe River, Coyote Creek, Alameda Creek, Napa River, and Sonoma Creek. Major cities include San Francisco, Oakland, and San Jose.

Flood Hazards

Common flood types include stormwater, slow rise, flash, and coastal flooding. Other possible flood types include debris flow, tsunami, and engineered structure failure. Flooding originates primarily from intense rainstorms. The northern portion of the region receives more precipitation and experiences floods more often than the southern portion. Flooding occurs most frequently in winter and spring; the steep terrain results in floods that are intense and of short duration. Valley flooding tends to occur when large, widespread storms fall on previously saturated watersheds. The greatest flood damages occur in low-gradient lower reaches when channels overflow and floodwaters spread through urban neighborhoods. Hillsides denuded by wildfires can exacerbate flood-induced damages with increased runoff and sediment. Flooding at river mouths is frequent, and storm surges coincident with high tides can create severe flooding in low-lying areas.

Description of Exposure to Flood Hazard Results

Figures F-34 and F-35 depict the 100-year and 500-year floodplains in the San Francisco Bay Hydrologic Region, as well as key results for the exposure to flood hazard analysis within the hydrologic region for each floodplain. About 355,000 people and 33,000 acres of agricultural crops are exposed in the 100-year floodplain, with approximately 546,000 people and 43,000 acres of agricultural crops exposed in the 500-year floodplain. More than 150 sensitive plant species and 100 sensitive animal species are exposed in the 100-year and 500-year floodplains. More than 920 facilities are exposed in the 100-year floodplain, and more than 1,800 facilities are exposed in the 500-year floodplain. No Native American tribal lands are exposed to 100-year and 500-year floodplains in this region.

Common flood types:

- ✓ Stormwater
- ✓ Slow rise
- ✓ Flash
- ✓ Coastal

Other possible flood types:

- ✓ Tsunami
- ✓ Engineered structure failure
- ✓ Debris flow



San Francisco Bay Key Results

Total Population:	6,066,100	Transportation Facilities:	560
Population Exposed:	355,000	Transportation Segments (miles):	361
Percent of Population Exposed:	6	Essential Facilities:	140
Exposed Structures:	109,800	Lifeline Utilities:	47
Value of Exposed Structure and Contents:	\$46.2 Billion	Dept. of Defense Facilities:	8
Total Area (acres)	2.9 Million	Dept. of Defense Facilities (acres):	2,813
Exposed Area (acres)	446,000	High Potential Loss Facilities:	168
Percent of Area Exposed:	15	Native American Tribes:	-
Exposed Ag. Crops (acres):	33,300	Native American Tribal Lands (acres):	-
Percent of Ag. Crops Exposed:	23	Sensitive Animal Species Exposed:	106
Value of Exposed Ag. Crops:	\$17.3 Million	Sensitive Plant Species Exposed:	167

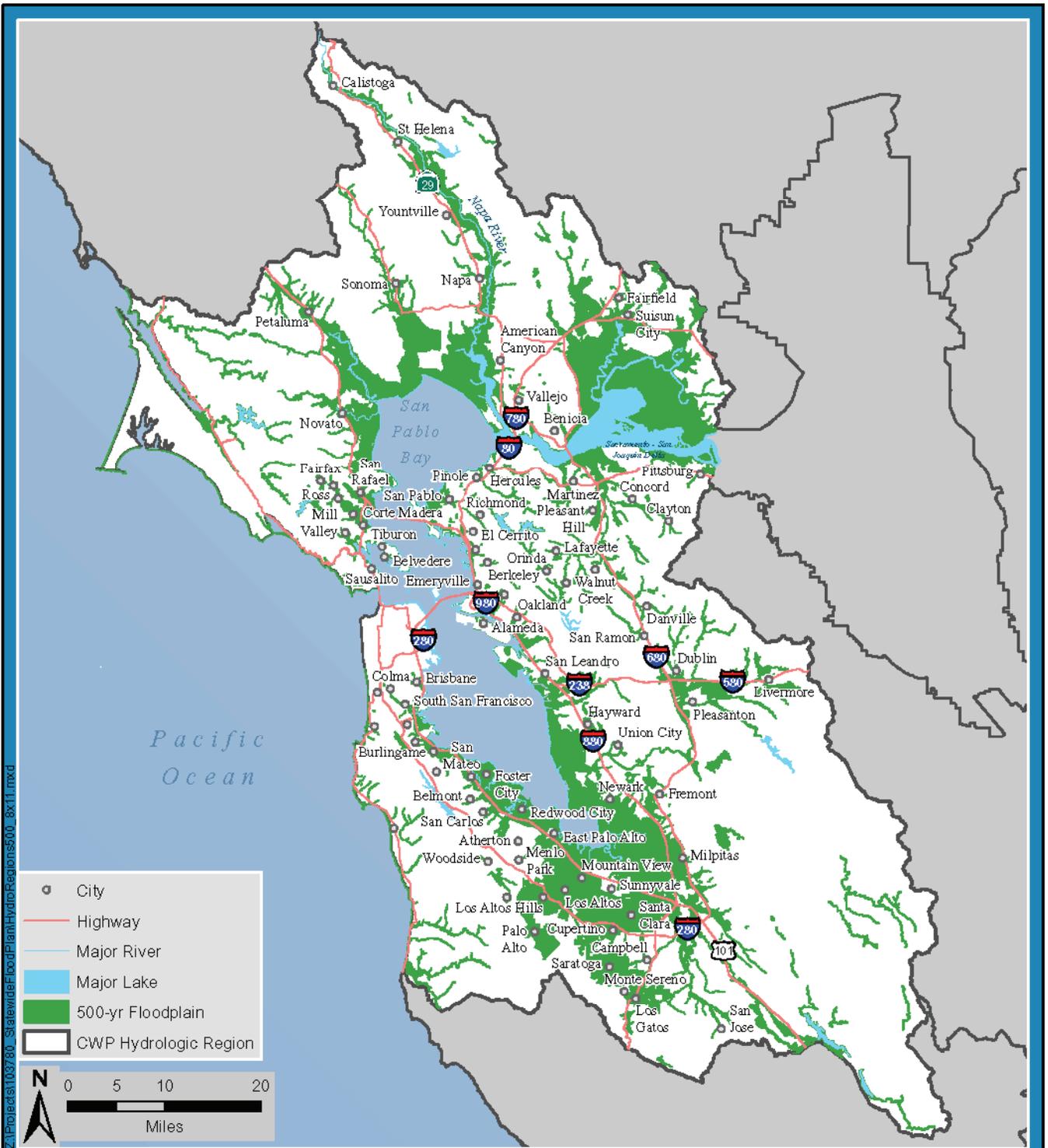
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Figure F-34
 Statewide Flood Hazard
 Exposure Summary for the
 San Francisco Bay
 Hydrologic Region 100-year
 Floodplain

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San Francisco Bay Key Results

Total Population:	6,066,100	Transportation Facilities:	1,022
Population Exposed:	1,041,400	Transportation Segments (miles):	709
Percent of Population Exposed:	17	Essential Facilities:	466
Exposed Structures:	322,700	Lifeline Utilities:	58
Value of Exposed Structure and Contents:	\$133.8 Billion	Dept. of Defense Facilities:	8
Total Area (acres)	2.9 Million	Dept. of Defense Facilities (acres):	2,914
Exposed Area (acres)	553,600	High Potential Loss Facilities:	303
Percent of Area Exposed:	19	Native American Tribes:	-
Exposed Ag. Crops (acres):	44,000	Native American Tribal Lands (acres):	-
Percent of Ag. Crops Exposed:	31	Sensitive Animal Species Exposed:	110
Value of Exposed Ag. Crops:	\$23.9 Million	Sensitive Plant Species Exposed:	169

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Figure F-35
Statewide Flood Hazard Exposure Summary for the San Francisco Bay Hydrologic Region 500-year Floodplain

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4.2.5 Central Coast Hydrologic Region

Physical Setting

The Central Coast Hydrologic Region encompasses approximately 11,300 square miles along the coast of California. Significant physical features include Monterey and Morro bays, coastal mountains, coastal plains, inland valleys, and irrigated agriculture in the valleys. Major lakes and reservoirs include San Antonio, Nacimiento, and Twitchell reservoirs. Major streams and rivers include Salinas, Santa Ynez, Santa Maria, San Lorenzo, Pajaro, Carmel, and Big Sur rivers. Major cities include Santa Cruz, Salinas, Monterey, Paso Robles, San Luis Obispo, Santa Maria, and Santa Barbara.

Flood Hazards

Common flood types include stormwater, slow rise, flash, alluvial fan, and coastal flooding. Other possible flood types include debris flow, tsunami, and engineered structure failure. Streams draining the mountains of the Central Coast are subject to short, intense floods, causing frequent flood damage in agricultural and urban areas. Steep slopes in the upper watersheds undergo severe erosion during storm runoff, depositing large amounts of sediment on floodplains. Wildfires exacerbate sediment loading to rivers in upper watersheds with increased rainsplash erosion rates and high-velocity sheet flows.

Description of Exposure to Flood Hazard Results

Figures F-36 and F-37 depict the 100-year and 500-year floodplains in the Central Coast Hydrologic Region, as well as key results for the exposure to flood hazard analysis within the hydrologic region for each floodplain. About 93,000 people and 124,000 acres of agricultural crops are exposed in the 100-year floodplain, with approximately 425,000 people and 146,000 acres of agricultural crops exposed in the 500-year floodplain. More than 200 sensitive plant species and 100 sensitive animal species are exposed in the 100-year and 500-year floodplains. More than 560 facilities are exposed in the 100-year floodplain, and more than 900 facilities are exposed in the 500-year floodplain. No Native American tribal lands are exposed to 100-year and 500-year floodplains in this region.

Common flood types:

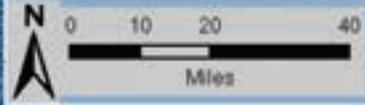
- ✓ Stormwater
- ✓ Slow rise
- ✓ Flash
- ✓ Alluvial fan
- ✓ Coastal

Other possible flood types:

- ✓ Debris flow
- ✓ Tsunami
- ✓ Engineered structure failure



- City
- Highway
- Major River
- Major Lake
- 100-yr Floodplain
- CWP Hydrologic Region



Central Coast Key Results

Total Population:	1,447,400	Transportation Facilities:	466
Population Exposed:	92,700	Transportation Segments (miles):	275
Percent of Population Exposed:	6	Essential Facilities:	50
Exposed Structures:	31,600	Lifeline Utilities:	23
Value of Exposed Structure and Contents:	\$10.3 Billion	Dept. of Defense Facilities:	5
Total Area (acres)	7.2 Million	Dept. of Defense Facilities (acres):	13,480
Exposed Area (acres)	336,000	High Potential Loss Facilities:	24
Percent of Area Exposed:	5	Native American Tribes:	-
Exposed Ag.Crops (acres):	123,600	Native American Tribal Lands (acres):	-
Percent of Ag. Crops Exposed:	18	Sensitive Animal Species Exposed:	111
Value of Exposed Ag. Crops:	\$564.6 Million	Sensitive Plant Species Exposed:	202

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Figure F-36
 Statewide Flood Hazard Exposure Summary for the Central Coast Hydrologic Region 100-year Floodplain

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Central Coast Key Results

Total Population:	1,447,400	Transportation Facilities:	624
Population Exposed:	426,900	Transportation Segments (miles):	412
Percent of Population Exposed:	29	Essential Facilities:	230
Exposed Structures:	125,400	Lifeline Utilities:	33
Value of Exposed Structure and Contents:	\$36.3 Billion	Dept. of Defense Facilities:	5
Total Area (acres)	7.2 Million	Dept. of Defense Facilities (acres):	15,322
Exposed Area (acres)	393,500	High Potential Loss Facilities:	32
Percent of Area Exposed:	5	Native American Tribes:	-
Exposed Ag.Crops (acres):	146,300	Native American Tribal Lands (acres):	-
Percent of Ag. Crops Exposed:	21	Sensitive Animal Species Exposed:	112
Value of Exposed Ag. Crops:	\$689.3 Million	Sensitive Plant Species Exposed:	204

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Figure F-37
Statewide Flood Hazard Exposure Summary for the Central Coast Hydrologic Region 500-year Floodplain

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4.2.6 South Coast Hydrologic Region

Physical Setting

The South Coast Hydrologic Region includes approximately 10,600 square miles along the Pacific Coast from northern Ventura County south to the border of Mexico, and east to the San Gabriel, San Bernardino, and San Jacinto mountains. Significant geographic features include the Coastal Plain, the central Transverse Ranges, the Peninsular Ranges, and the San Fernando, San Gabriel, Santa Ana, and Santa Clara river valleys. Major lakes and reservoirs include Lake Casitas, Castaic Lake, Big Bear Lake, Lake Mathews, and Morena Lake. Many of the rivers in this region have been channelized and lined with concrete, and are seasonal low-flow rivers. Major cities include Ventura, Los Angeles, Long Beach, Santa Ana, San Bernardino, and San Diego.

Flood Hazards

Common flood types include stormwater, slow rise, flash, debris flow, alluvial fan, and coastal flooding. Other possible flood types include tsunami and engineered structure failure. Flooding in this region is predominately from winter storms. Precipitation over short periods can produce large amounts of water in the steep upper watersheds, often leading to very sudden and severe flooding of developed lowland areas. Debris flows are a common occurrence during the winter months. Seasonal fires denude the watersheds of vegetation and can leave steep terrain vulnerable to winter storms. Thunderstorms are infrequent in the region, and typically occur only at low elevations during the winter months.

Description of Exposure to Flood Hazard Results

Figures F-38 and F-39 depict the 100-year and 500-year floodplains in the South Coast Hydrologic Region, as well as key results for the exposure to flood hazard analysis within the hydrologic region for each floodplain. About 393,000 people and 46,000 acres of agricultural crops are exposed in the 100-year floodplain, with approximately 3,410,000 people and 80,000 acres of agricultural crops exposed in the 500-year floodplain. More than 200 sensitive plant species and 125 sensitive animal species are exposed in the 100-year and 500-year floodplains. More than 1,100 facilities are exposed in the 100-year floodplain, and more than 4,200 facilities are exposed in the 500-year floodplain. Five Native American tribes are exposed to 100-year and 500-year floodplains in this region.

Common flood types:

- ✓ Stormwater
- ✓ Slow rise
- ✓ Flash
- ✓ Debris flow
- ✓ Alluvial fan
- ✓ Coastal

Other possible flood types:

- ✓ Tsunami
- ✓ Engineered structure failure



South Coast Key Results

Total Population:	18,066,400	Transportation Facilities:	803
Population Exposed:	393,100	Transportation Segments (miles):	423
Percent of Population Exposed:	2	Essential Facilities:	165
Exposed Structures:	116,100	Lifeline Utilities:	21
Value of Exposed Structure and Contents:	\$35.7 Billion	Dept. of Defense Facilities:	16
Total Area (acres)	7.0 Million	Dept. of Defense Facilities (acres):	1,252
Exposed Area (acres)	262,200	High Potential Loss Facilities:	101
Percent of Area Exposed:	4	Native American Tribes:	5
Exposed Ag.Crops (acres):	46,200	Native American Tribal Lands (acres):	583
Percent of Ag. Crops Exposed:	12	Sensitive Animal Species Exposed:	136
Value of Exposed Ag. Crops:	\$216.0 Million	Sensitive Plant Species Exposed:	210

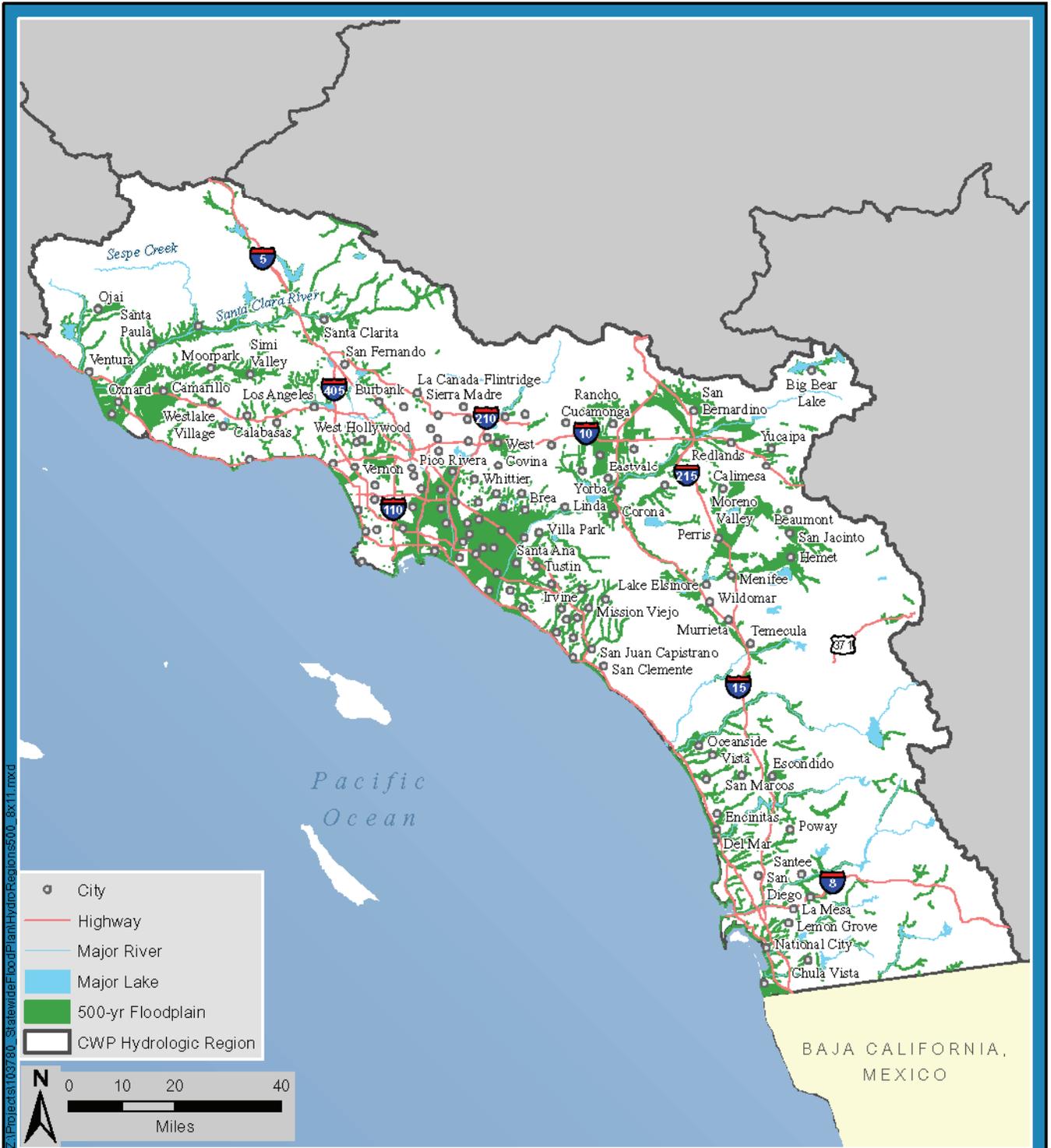
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Figure F-38
 Statewide Flood Hazard
 Exposure Summary for the
 South Coast Hydrologic
 Region 100-year Floodplain

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South Coast Key Results

Total Population:	18,066,400	Transportation Facilities:	2,074
Population Exposed:	3,411,900	Transportation Segments (miles):	1,626
Percent of Population Exposed:	19	Essential Facilities:	1,299
Exposed Structures:	883,100	Lifeline Utilities:	87
Value of Exposed Structure and Contents:	\$231.3 Billion	Dept. of Defense Facilities:	16
Total Area (acres)	7.0 Million	Dept. of Defense Facilities (acres):	4,337
Exposed Area (acres)	578,400	High Potential Loss Facilities:	772
Percent of Area Exposed:	8	Native American Tribes:	5
Exposed Ag.Crops (acres):	79,900	Native American Tribal Lands (acres):	586
Percent of Ag. Crops Exposed:	20	Sensitive Animal Species Exposed:	137
Value of Exposed Ag. Crops:	\$424.8 Million	Sensitive Plant Species Exposed:	210

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Figure F-39
Statewide Flood Hazard Exposure Summary for the South Coast Hydrologic Region 500-year Floodplain

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4.2.7 Sacramento River Hydrologic Region

Physical Setting

The Sacramento River Hydrologic Region encompasses approximately 27,200 square miles in the northern central area of California. The region is the drainage area of the Sacramento River, the largest river in the state. Most of the mountainous portions of the region are heavily forested. The region includes the Coast Range, southern Klamath Mountains, southern Cascade Mountains, western Sierra Nevada Mountains, and the Sacramento Valley. In the foothill areas, suburban and rural housing developments are built along major highway corridors. Major lakes and reservoirs include Goose Lake, Shasta Lake, Clear Lake, Lake Almador, Lake Oroville, Lake Berryessa, and Folsom Lake. Major streams and rivers include Sacramento, American, Bear, Yuba, Feather, and Pit rivers. Major cities include Sacramento, Yuba City, Oroville, Chico, and Redding.

Flood Hazards

Common flood types include stormwater, slow rise, and flash flooding. Other possible flood types include debris flow, alluvial fan, and engineered structure failure. Floods within the Sacramento River region originate principally from heavy rainfall. Most flood events occur in December and January as a result of multiple storms and saturated soil conditions, but floods can occur in October and November or during the late winter or early spring months.

Description of Exposure to Flood Hazard Results

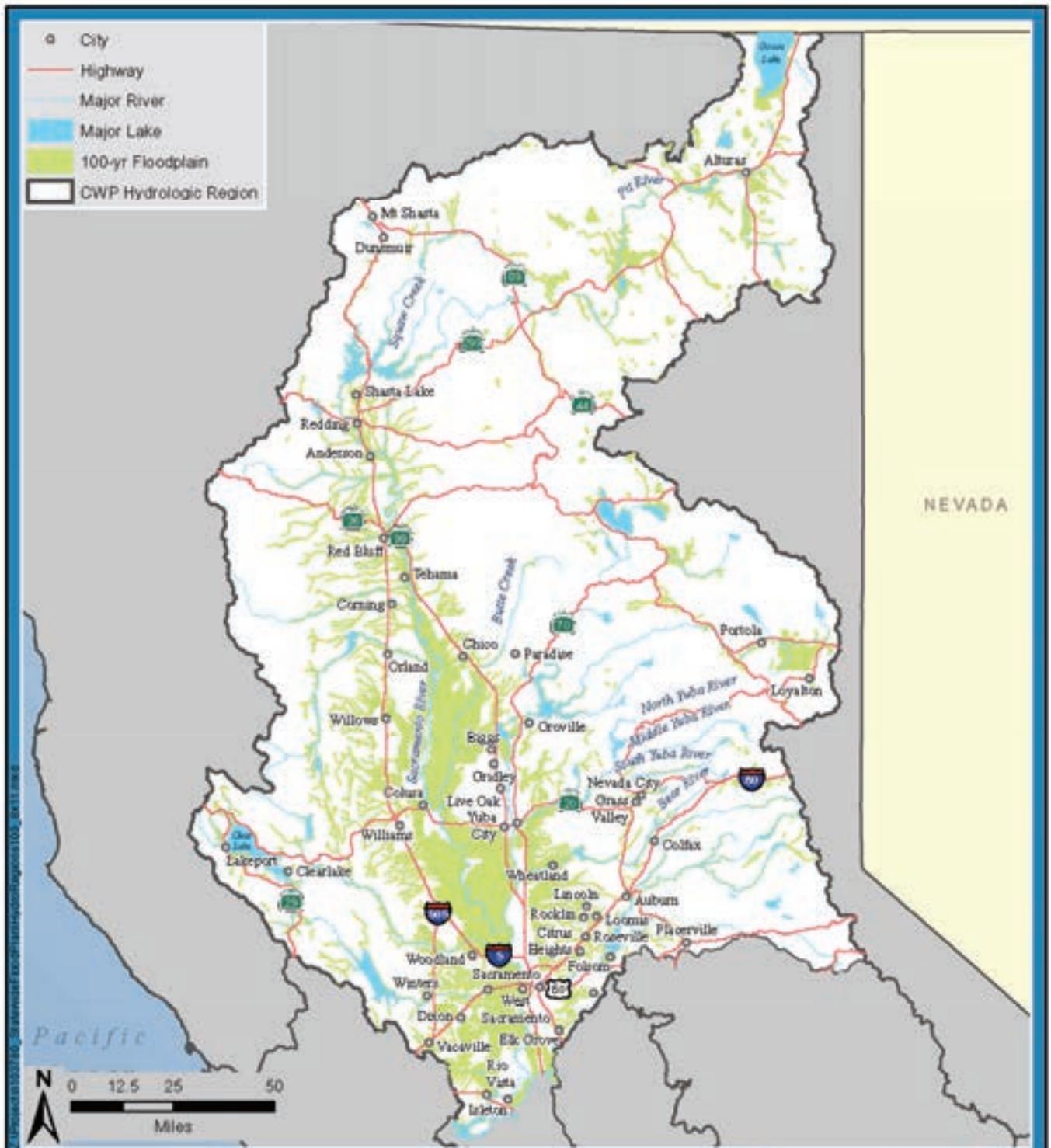
Figures F-40 and F-41 depict the 100-year and 500-year floodplains in the Sacramento River Hydrologic Region, as well as key results for the exposure to flood hazard analysis within the hydrologic region for each floodplain. About 200,000 people and 897,000 acres of agricultural crops are exposed in the 100-year floodplain, with about 926,000 people and 1,200,000 acres of agricultural crops exposed in the 500-year floodplain. More than 200 sensitive plant species and 140 sensitive animal species are exposed in the 100-year and 500-year floodplains. More than 1,300 facilities are exposed in the 100-year floodplain, and more than 2,300 facilities are exposed in the 500-year floodplain. Eight Native American tribal lands are exposed to 100-year and 500-year floodplains in this region.

Common flood types:

- ✓ Stormwater
- ✓ Slow rise
- ✓ Flash

Other possible flood types:

- ✓ Debris flow
- ✓ Alluvial fan
- ✓ Engineered structure failure



Sacramento River Key Results

Total Population:	2,570,300	Transportation Facilities:	1,087
Population Exposed:	200,200	Transportation Segments (miles):	626
Percent of Population Exposed:	8	Essential Facilities:	135
Exposed Structures:	75,000	Ufeline Utilities:	25
Value of Exposed Structure and Contents:	\$16.7 Billion	Dept. of Defense Facilities:	5
Total Area (acres)	17.4 Million	Dept. of Defense Facilities (acres):	4,970
Exposed Area (acres)	1,737,300	High Potential Loss Facilities:	108
Percent of Area Exposed:	10	Native American Tribes:	8
Exposed Ag.Crops (acres):	896,900	Native American Tribal Lands (acres):	2,747
Percent of Ag. Crops Exposed:	40	Sensitive Animal Species Exposed:	142
Value of Exposed Ag. Crops:	\$1.1 Billion	Sensitive Plant Species Exposed:	203

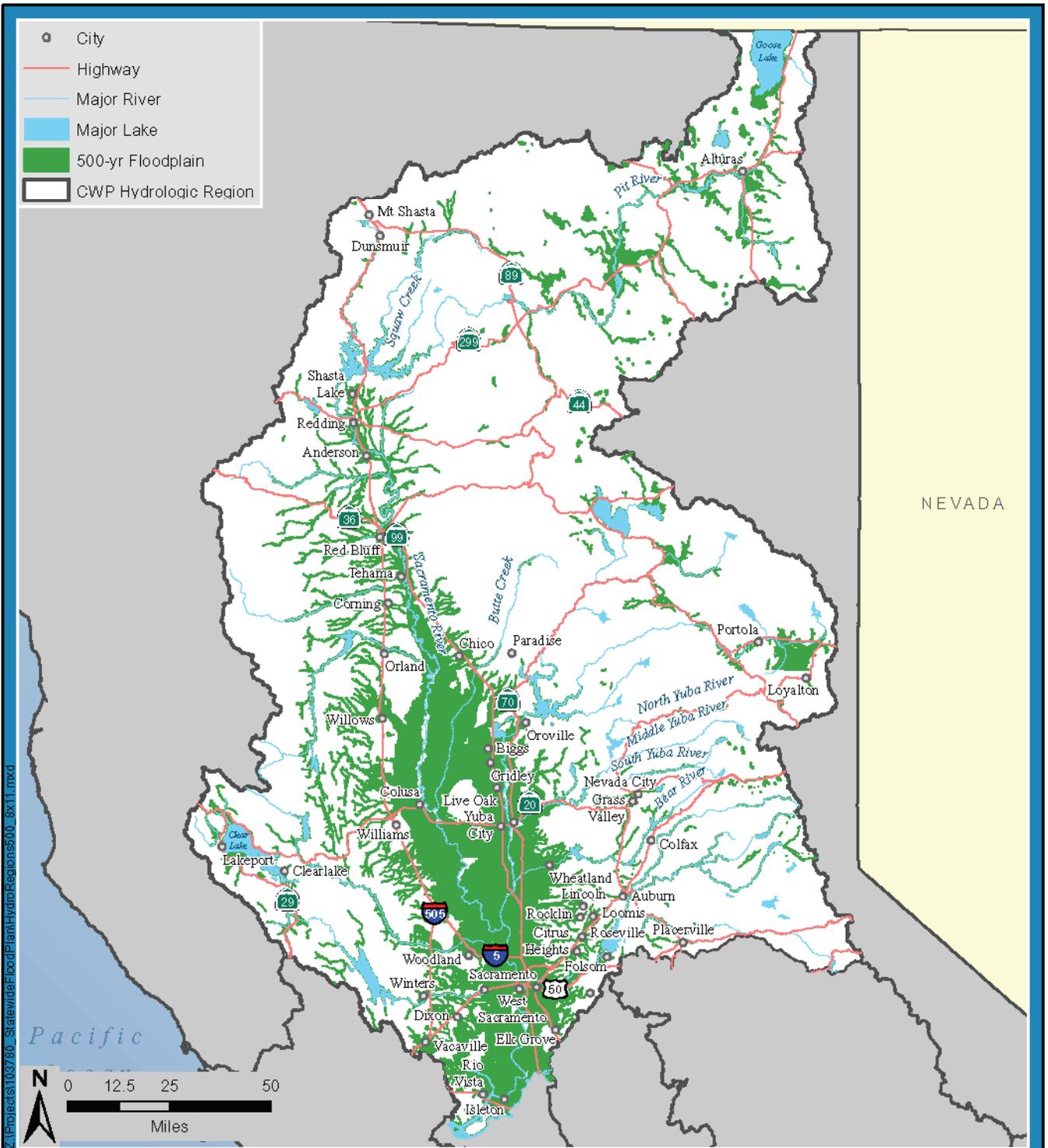
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Figure F-40
 Statewide Flood Hazard
 Exposure Summary for the
 Sacramento River
 Hydrologic Region 100-year
 Floodplain

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Sacramento River Key Results

Total Population:	2,570,300	Transportation Facilities:	1,620
Population Exposed:	925,800	Transportation Segments (miles):	1,191
Percent of Population Exposed:	36%	Essential Facilities:	510
Exposed Structures:	320,800	Lifeline Utilities:	53
Value of Exposed Structure and Contents:	\$66.3 Billion	Dept. of Defense Facilities:	6
Total Area (acres):	17.4 Million	Dept. of Defense Facilities (acres):	5,841
Exposed Area (acres)	2,242,400	High Potential Loss Facilities:	147
Percent of Area Exposed:	13%	Native American Tribes:	8
Exposed Ag.Crops (acres):	1,215,500	Native American Tribal Lands (acres):	2,833
Percent of Ag. Crops Exposed:	54%	Sensitive Animal Species Exposed:	142
Value of Exposed Ag. Crops:	\$1.7 Billion	Sensitive Plant Species Exposed:	205

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Figure F-41
Statewide Flood Hazard Exposure Summary for the Sacramento River Hydrologic Region 500-year Floodplain

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4.2.8 San Joaquin River Hydrologic Region

Physical Setting

The San Joaquin River Hydrologic Region encompasses approximately 15,200 square miles in California's Central Valley. Significant features include the northern half of the San Joaquin Valley, the southern part of the Sacramento-San Joaquin Delta, the Sierra Nevada, and Diablo Range. Major lakes and reservoirs include Hensley Lake, Eastman Lake, Lake McClure, New Don Pedro Lake, New Melones Lake, Camanche Reservoir, and Millerton Lake. Major streams and rivers include Fresno, Chowchilla, Merced, Tuolumne, Stanislaus, Mokelumne, San Joaquin, and Cosumnes rivers. Major cities include Merced, Modesto, and Stockton.

Flood Hazards

Common flood types include stormwater, slow rise, and flash flooding. Other possible flood types include debris flow, alluvial fan, and engineered structure failure. Floods in the San Joaquin Valley originate principally from melting of the Sierra snowpack and from rainfall. Flooding from snowmelt typically occurs in the spring and has a lengthy runoff period. Flooding from rainfall occurs in the winter and early spring, particularly when storms arriving from the Gulf of Alaska draw moisture-laden air from the tropics.

Description of Exposure to Flood Hazard Results

Figures F-42 and F-43 depict the 100-year and 500-year floodplains in the San Joaquin River Hydrologic Region, as well as key results for the exposure to flood hazard analysis within the hydrologic region for each floodplain. About 158,000 people and 682,000 acres of agricultural crops are exposed in the 100-year floodplain, with about 536,000 people and 879,000 acres of agricultural crops exposed in the 500-year floodplain. More than 125 sensitive plant species and 125 sensitive animal species are exposed in the 100-year and 500-year floodplains. More than 840 facilities are exposed in the 100-year floodplain, and more than 1,300 facilities are exposed in the 500-year floodplain. One Native American tribal land area is exposed to 100-year and 500-year floodplains in this region.

Common flood types:

- ✓ Stormwater
- ✓ Slow rise
- ✓ Flash

Other possible flood types:

- ✓ Debris flow
- ✓ Alluvial fan
- ✓ Engineered structure failure



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San Joaquin River Key Results

Total Population:	1,752,400	Transportation Facilities:	646
Population Exposed:	157,100	Transportation Segments (miles):	428
Percent of Population Exposed:	9	Essential Facilities:	93
Exposed Structures:	54,200	Lifeline Utilities:	12
Value of Exposed Structure and Contents:	\$11.3 Billion	Dept. of Defense Facilities:	2
Total Area (acres)	9.8 Million	Dept. of Defense Facilities (acres):	597
Exposed Area (acres)	1,149,200	High Potential Loss Facilities:	92
Percent of Area Exposed:	12	Native American Tribes:	1
Exposed Ag. Crops (acres):	682,100	Native American Tribal Lands (acres):	3
Percent of Ag. Crops Exposed:	32	Sensitive Animal Species Exposed:	131
Value of Exposed Ag. Crops:	\$1.4 Billion	Sensitive Plant Species Exposed:	130

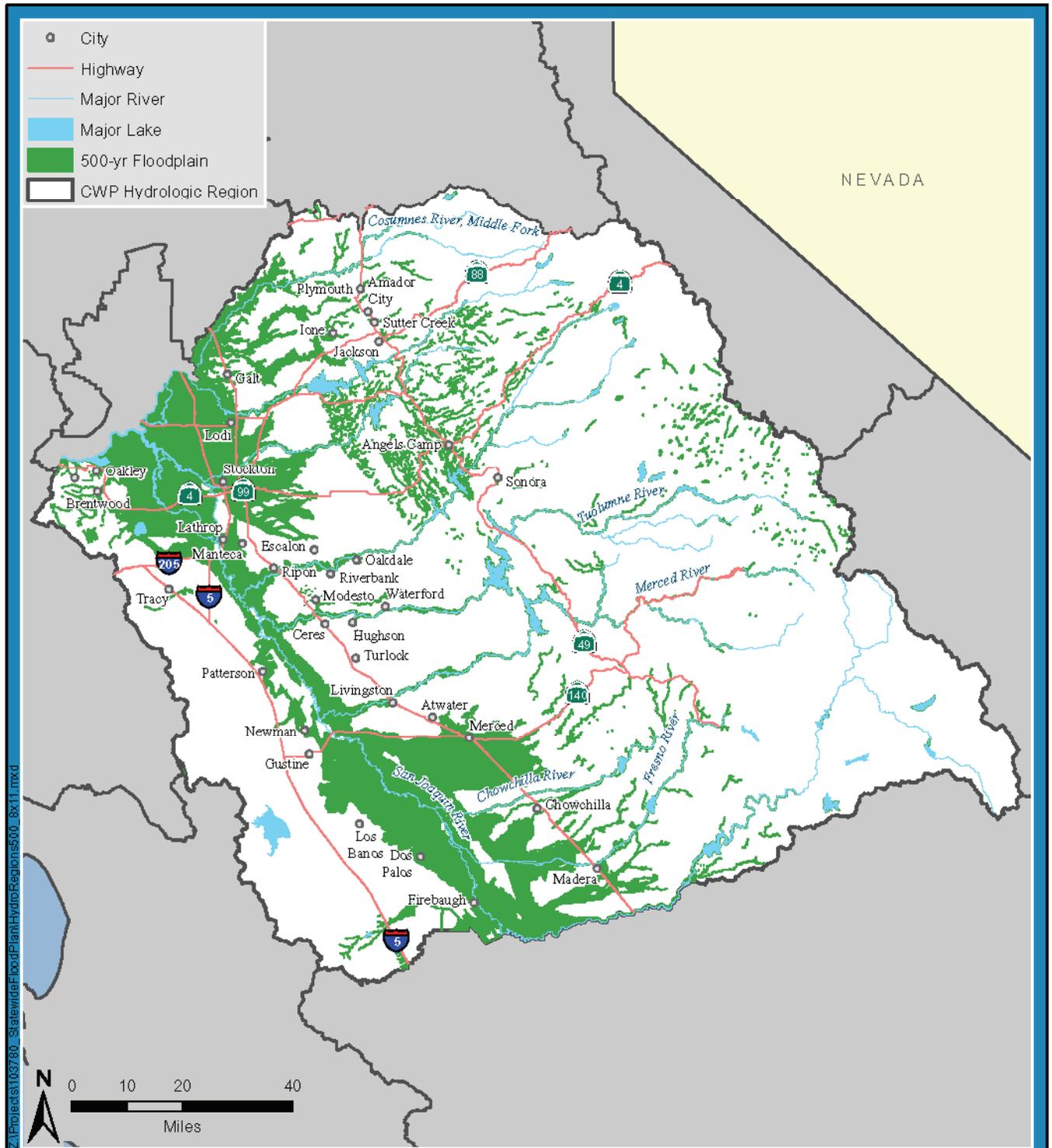
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Figure F-42
Statewide Flood Hazard
Exposure Summary for the
San Joaquin River
Hydrologic Region 100-year
Floodplain

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San Joaquin River Key Results

Total Population:	1,752,400	Transportation Facilities:	901
Population Exposed:	535,300	Transportation Segments (miles):	718
Percent of Population Exposed:	31	Essential Facilities:	298
Exposed Structures:	172,300	Lifeline Utilities:	29
Value of Exposed Structure and Contents:	\$39.6 Billion	Dept. of Defense Facilities:	2
Total Area (acres)	9.8 Million	Dept. of Defense Facilities (acres):	831
Exposed Area (acres)	1,418,400	High Potential Loss Facilities:	134
Percent of Area Exposed:	14	Native American Tribes:	1
Exposed Ag. Crops (acres):	878,700	Native American Tribal Lands (acres):	3
Percent of Ag. Crops Exposed:	41	Sensitive Animal Species Exposed:	131
Value of Exposed Ag. Crops:	\$1.9 Billion	Sensitive Plant Species Exposed:	131

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Figure F-43
Statewide Flood Hazard Exposure Summary for the San Joaquin River Hydrologic Region 500-year Floodplain

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4.2.9 Tulare Lake Hydrologic Region

Physical Setting

The Tulare Lake Hydrologic Region includes approximately 17,000 square miles in the center of California. Significant geographic features include the southern half of the San Joaquin Valley, the Temblor Range to the west, the Tehachapi Mountains to the south, and the southern Sierra Nevada to the east. With no outlet to the sea, the area naturally drains to the Tulare, Buena Vista, and Kern lakebeds (natural drainage sinks converted to agricultural areas). Major lakes and reservoirs include Pine Flat Lake, Lake Kaweah, Lake Success, and Lake Isabella. Major streams and rivers include Kings, Kaweah, Tule, and Kern rivers. Major cities include Bakersfield, Visalia, Fresno, Clovis, Tulare, and Delano.

Flood Hazards

Common flood types include stormwater, slow rise, flash, and debris flow flooding. Other possible flood types include alluvial fan and engineered structure failure. Floods in the Tulare Lake region are caused by rainfall, snowmelt, and the resultant rise of normally dry lakes.

Description of Exposure to Flood Hazard Results

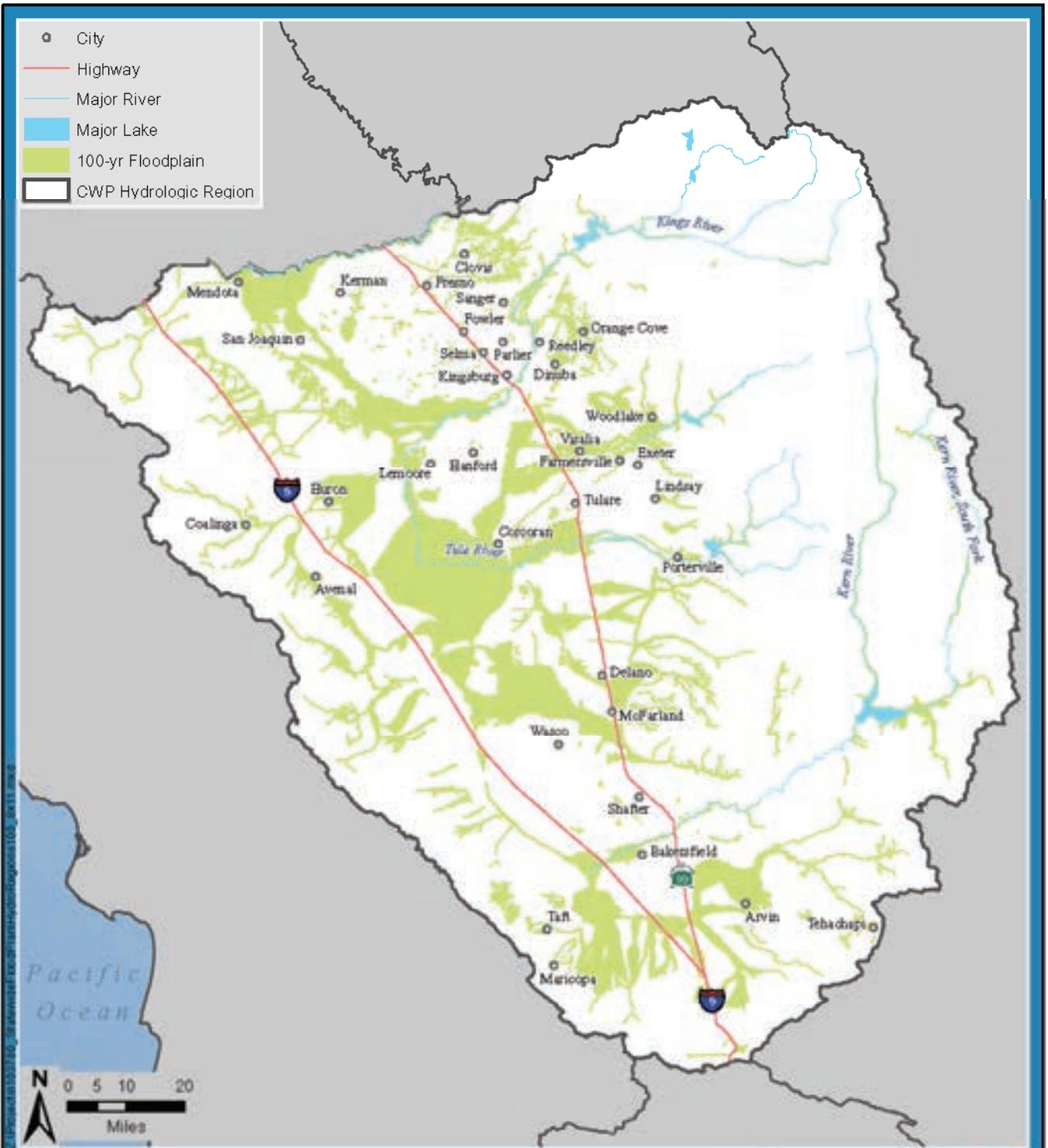
Figures F-44 and F-45 depict the 100-year and 500-year floodplains in the Tulare Lake Hydrologic Region, as well as key results for the exposure to flood hazard analysis within the hydrologic region for each floodplain. About 134,000 people and 801,000 acres of agricultural crops are exposed in the 100-year floodplain, with about 498,000 people and 990,000 acres of agricultural crops exposed in the 500-year floodplain. More than 90 sensitive plant species and 100 sensitive animal species are exposed in the 100-year and 500-year floodplains. More than 660 facilities are exposed in the 100-year floodplain, and more than 1,100 facilities are exposed in the 500-year floodplain. Two Native American tribal lands are exposed to 100-year and 500-year floodplains in this region.

Common flood types:

- ✓ Stormwater
- ✓ Slow rise
- ✓ Flash
- ✓ Debris flow

Other possible flood types:

- ✓ Alluvial fan
- ✓ Engineered structure failure



Tulare Lake Key Results

Total Population:	1,870,500	Transportation Facilities:	538
Population Exposed:	134,100	Transportation Segments (miles):	487
Percent of Population Exposed:	7	Essential Facilities:	71
Exposed Structures:	41,200	Lifeline Utilities:	11
Value of Exposed Structure and Contents:	\$8.3 Billion	Dept. of Defense Facilities:	7
Total Area (acres)	10.8 Million	Dept. of Defense Facilities (acres):	25,143
Exposed Area (acres)	1,211,100	High Potential Loss Facilities:	50
Percent of Area Exposed:	11	Native American Tribes:	2
Exposed Ag.Crops (acres):	802,200	Native American Tribal Lands (acres):	109
Percent of Ag. Crops Exposed:	23	Sensitive Animal Species Exposed:	101
Value of Exposed Ag. Crops:	\$1.8 Billion	Sensitive Plant Species Exposed:	94

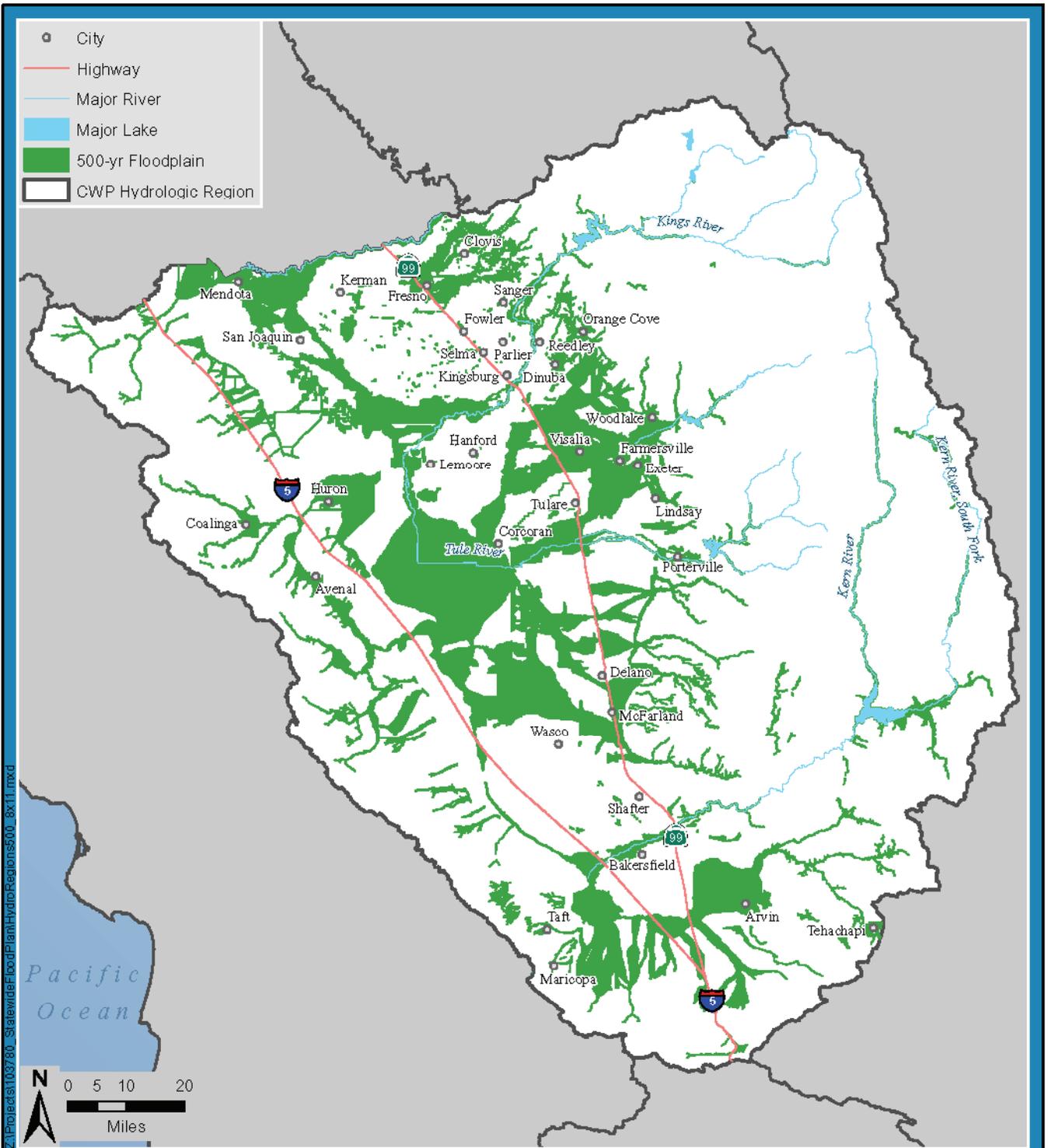
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Figure F-44
 Statewide Flood Hazard Exposure Summary for the Tulare Lake Hydrologic Region 100-year Floodplain

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Tulare Lake Key Results

Total Population:	1,870,500	Transportation Facilities:	808
Population Exposed:	498,200	Transportation Segments (miles):	744
Percent of Population Exposed:	27	Essential Facilities:	254
Exposed Structures:	152,200	Lifeline Utilities:	25
Value of Exposed Structure and Contents:	\$32.0 Billion	Dept. of Defense Facilities:	7
Total Area (acres)	10.8 Million	Dept. of Defense Facilities (acres):	25,396
Exposed Area (acres)	1,491,800	High Potential Loss Facilities:	71
Percent of Area Exposed:	14	Native American Tribes:	2
Exposed Ag. Crops (acres):	990,800	Native American Tribal Lands (acres):	109
Percent of Ag. Crops Exposed:	29	Sensitive Animal Species Exposed:	103
Value of Exposed Ag. Crops:	\$2.3 Billion	Sensitive Plant Species Exposed:	94

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Figure F-45
Statewide Flood Hazard Exposure Summary for the Tulare Lake Hydrologic Region 500-year Floodplain

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4.2.10 North Lahontan Hydrologic Region

Physical Setting

The North Lahontan Hydrologic Region encompasses approximately 6,110 square miles along a narrow strip of land on the eastern side of California, stretching from the Oregon border southward to the Lassen area. The region includes the Sierra Nevada mountain range and the Modoc Plateau. Much of the southern portion of the region is Federally owned and managed as national forest lands. Major lakes and reservoirs include Lake Tahoe, Honey Lake, Eagle Lake, and Upper Lake. Major streams and rivers include Truckee, Carson, and Walker rivers. Major cities include Susanville, Lake Tahoe City, and Truckee.

Flood Hazards

Common flood types include stormwater, slow rise, and flash flooding. Other possible flood types include debris flow, alluvial fan, and engineered structure failure.

Description of Exposure to Flood Hazard Results

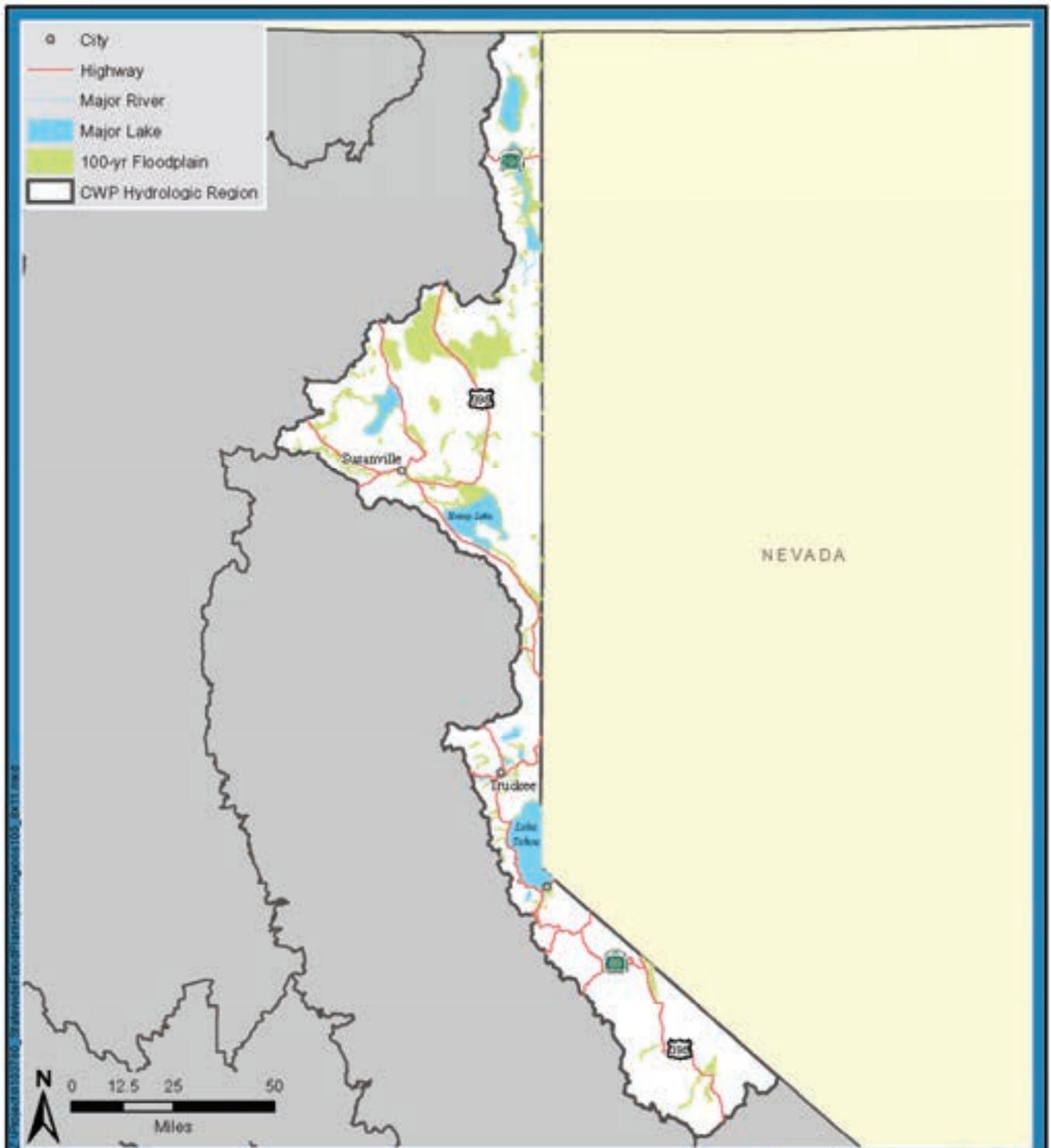
Figures F-46 and F-47 depict the 100-year and 500-year floodplains in the North Lahontan Hydrologic Region, as well as key results for the exposure to flood hazard analysis within the hydrologic region for each floodplain. About 3,600 people and 43,000 acres of agricultural crops are exposed in the 100-year floodplain, with about 4,000 people and 43,000 acres of agricultural crops exposed in the 500-year floodplain. More than 60 sensitive plant species and 40 sensitive animal species are exposed in the 100-year and 500-year floodplains. More than 80 facilities are exposed in the 100-year floodplain, and approximately 90 facilities are exposed in the 500-year floodplain. One Native American tribal land is exposed to the 100-year floodplain, and two Tribal lands are exposed to the 500-year floodplain.

Common flood types:

- ✓ Stormwater
- ✓ Slow rise
- ✓ Flash

Other possible flood types:

- ✓ Debris flow
- ✓ Alluvial fan
- ✓ Engineered structure failure



North Lahontan Key Results

Total Population:	97,800	Transportation Facilities:	70
Population Exposed:	3,600	Transportation Segments (miles):	94
Percent of Population Exposed:	4	Essential Facilities:	3
Exposed Structures:	3,200	Lifeline Utilities:	2
Value of Exposed Structure and Contents:	\$714.2 Million	Dept. of Defense Facilities:	1
Total Area (acres)	3.9 Million	Dept. of Defense Facilities (acres):	56,674
Exposed Area (acres)	487,400	High Potential Loss Facilities:	9
Percent of Area Exposed:	12	Native American Tribes:	1
Exposed Ag. Crops (acres):	42,900	Native American Tribal Lands (acres):	9
Percent of Ag. Crops Exposed:	27	Sensitive Animal Species Exposed:	46
Value of Exposed Ag. Crops:	\$9.9 Million	Sensitive Plant Species Exposed:	68

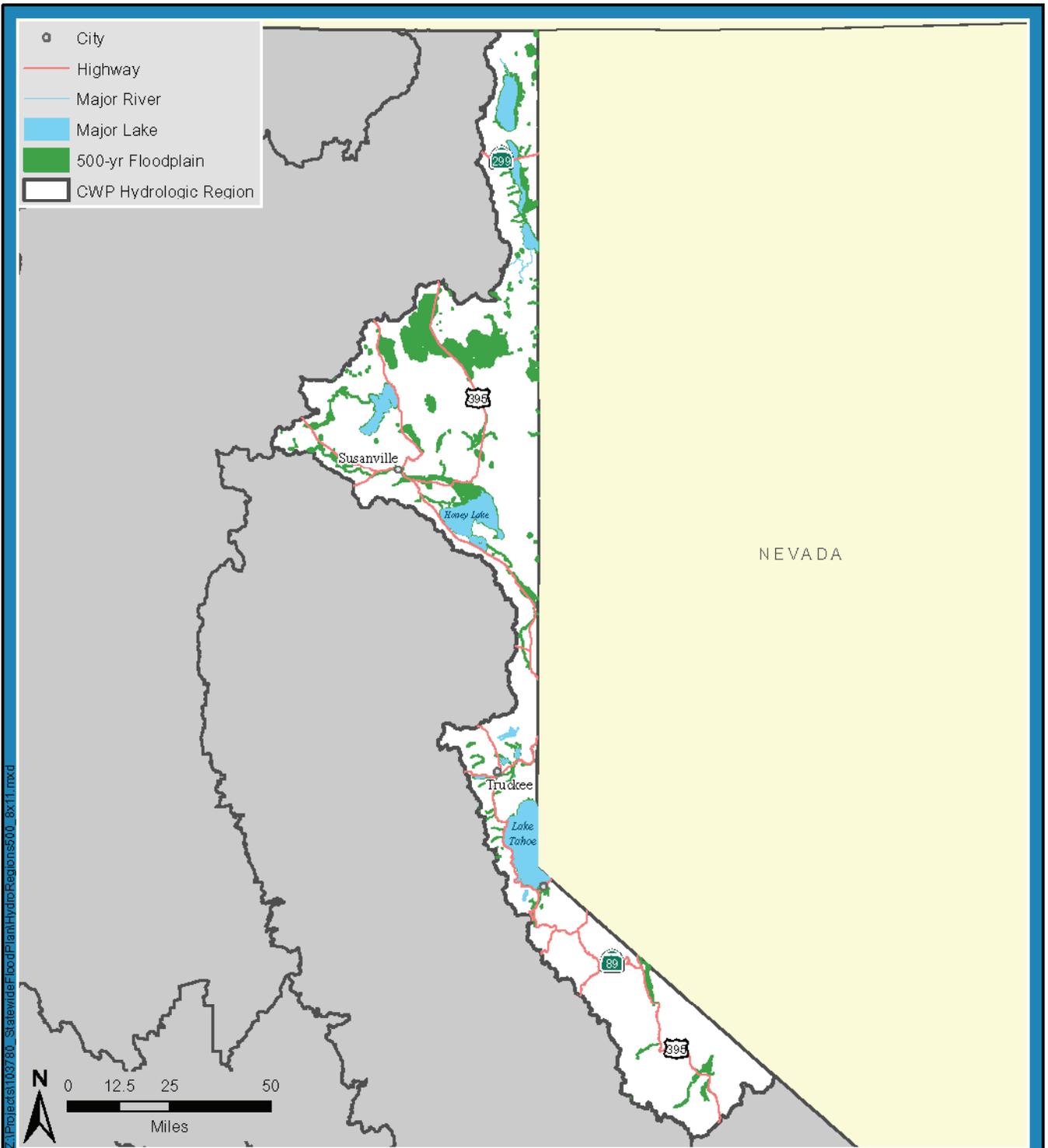
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Figure F-46
Statewide Flood Hazard
Exposure Summary for the
North Lahontan Hydrologic
Region 100-year Floodplain

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North Lahontan Key Results

Total Population:	97,800	Transportation Facilities:	75
Population Exposed:	4,000	Transportation Segments (miles):	96
Percent of Population Exposed:	4	Essential Facilities:	3
Exposed Structures:	3,500	Lifeline Utilities:	2
Value of Exposed Structure and Contents:	\$823.0 Million	Dept. of Defense Facilities:	1
Total Area (acres)	3.9 Million	Dept. of Defense Facilities (acres):	56,674
Exposed Area (acres)	488,400	High Potential Loss Facilities:	9
Percent of Area Exposed:	12	Native American Tribes:	2
Exposed Ag. Crops (acres):	43,200	Native American Tribal Lands (acres):	14
Percent of Ag. Crops Exposed:	27	Sensitive Animal Species Exposed:	46
Value of Exposed Ag. Crops:	\$10.0 Million	Sensitive Plant Species Exposed:	68

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Figure F-47
Statewide Flood Hazard Exposure Summary for the North Lahontan Hydrologic Region 500-year Floodplain

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4.2.11 South Lahontan Hydrologic Region

Physical Setting

The South Lahontan Hydrologic Region covers approximately 33,100 square miles in eastern California from Mono Lake to the San Gabriel Mountains, reaching westward to the crest of the southern Sierra Nevada Mountains. The South Lahontan region includes both the highest (Mount Whitney) and lowest (Death Valley) surface elevations in the contiguous United States. Topographic features include Owens Valley, Death Valley, and Mount Whitney. The region includes many dry lakebeds and drainage sinks. Major lakes and reservoirs include Mono, June, Convict, Crawley, and Tinemaha lakes in the north, and Lake Arrowhead, Silverwood Lake, and Lake Palmdale in the south. Major streams and rivers include Owens, Mojave, and Amargosa rivers (the Amargosa River contains water only during flash floods). Major cities include Lancaster, Palmdale, Hesperia, Victorville, Apple Valley, Lake Arrowhead, and Independence.

Flood Hazards

Common flood types include stormwater, flash, debris flow, and alluvial fan flooding. Other possible flood types include slow rise and engineered structure failure flooding. In the South Lahontan region, winter storms generally create the greatest flood damage. Storms tend to be intense. Most streams in the region are intermittent in their lower reaches, which have steeply sloped channel beds and little vegetation. Sediment loads are often dominated by coarse-grained materials. These conditions often result in flash floods and dangerous debris flows. Severe local damage could also be sustained in summer when thunderstorms generate floods upstream of an urban development.

Description of Exposure to Flood Hazard Results

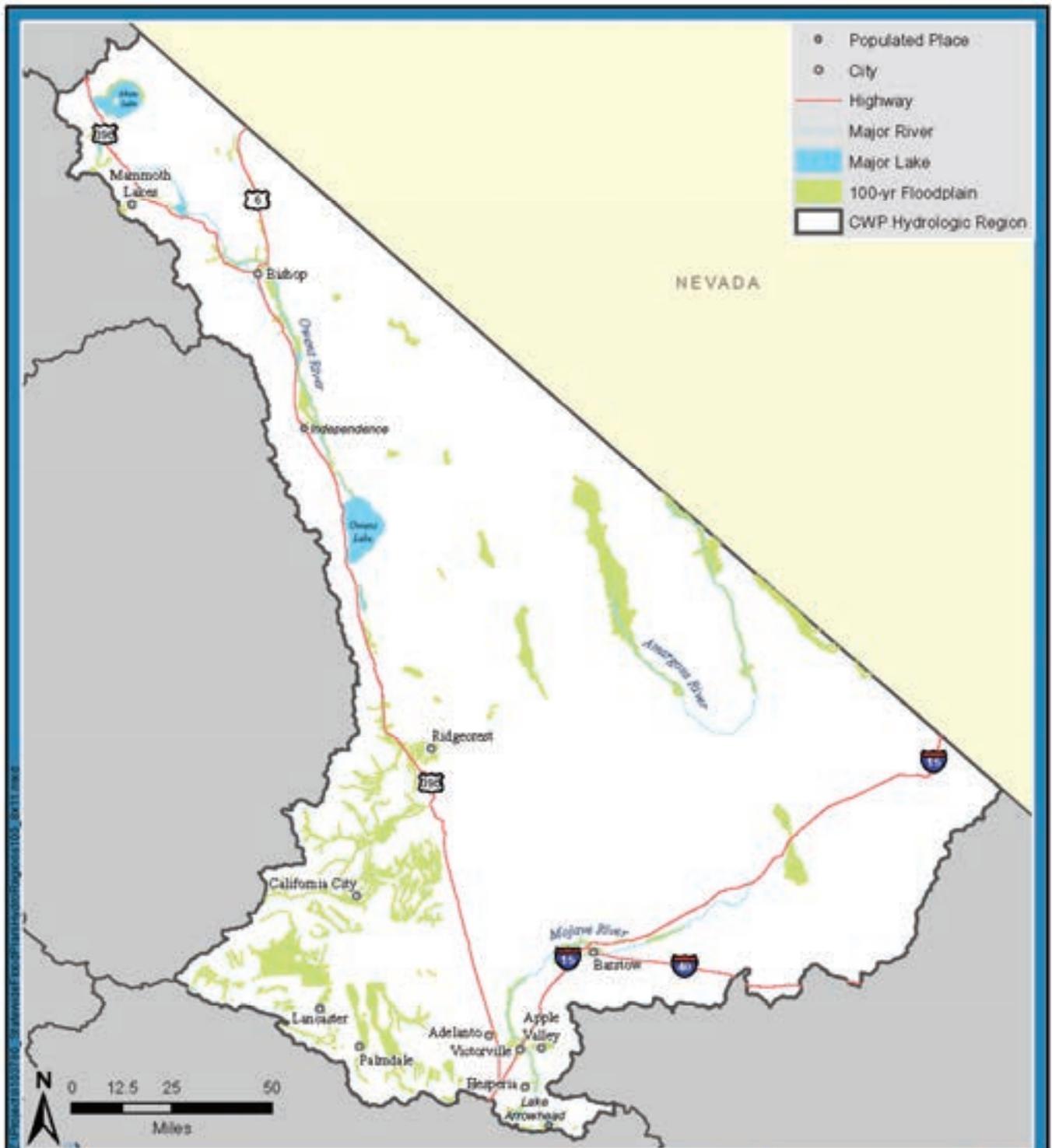
Figures F-48 and F-49 depict the 100-year and 500-year floodplains in the South Lahontan Hydrologic Region, as well as key results for the exposure to flood hazard analysis within the hydrologic region for each floodplain. About 20,000 people and 41,000 acres of agricultural crops are exposed in the 100-year floodplain, with approximately 153,000 people and 72,000 acres of agricultural crops exposed in the 500-year floodplain. More than 100 sensitive plant species and 100 sensitive animal species are exposed in the 100-year and 500-year floodplains. More than 90 facilities are exposed in the 100-year floodplain, and more than 190 facilities are exposed in the 500-year floodplain. One Native American tribal land is exposed to 100-year and 500-year floodplains in this region.

Common flood types:

- ✓ Stormwater
- ✓ Flash
- ✓ Debris flow
- ✓ Alluvial fan

Other possible flood types:

- ✓ Slow rise
- ✓ Engineered structure failure



South Lahontan Key Results

Total Population:	715,000	Transportation Facilities:	60
Population Exposed:	19,900	Transportation Segments (miles):	169
Percent of Population Exposed:	3	Essential Facilities:	16
Exposed Structures:	9,700	Utility Utilities:	4
Value of Exposed Structure and Contents:	\$1.7 Billion	Dept. of Defense Facilities:	4
Total Area (acres)	17.1 Million	Dept. of Defense Facilities (acres):	6,498
Exposed Area (acres)	652,400	High Potential Loss Facilities:	9
Percent of Area Exposed:	4	Native American Tribes:	1
Exposed Ag. Crops (acres):	41,400	Native American Tribal Lands (acres):	3
Percent of Ag. Crops Exposed:	16	Sensitive Animal Species Exposed:	113
Value of Exposed Ag. Crops:	\$25.6 Million	Sensitive Plant Species Exposed:	100

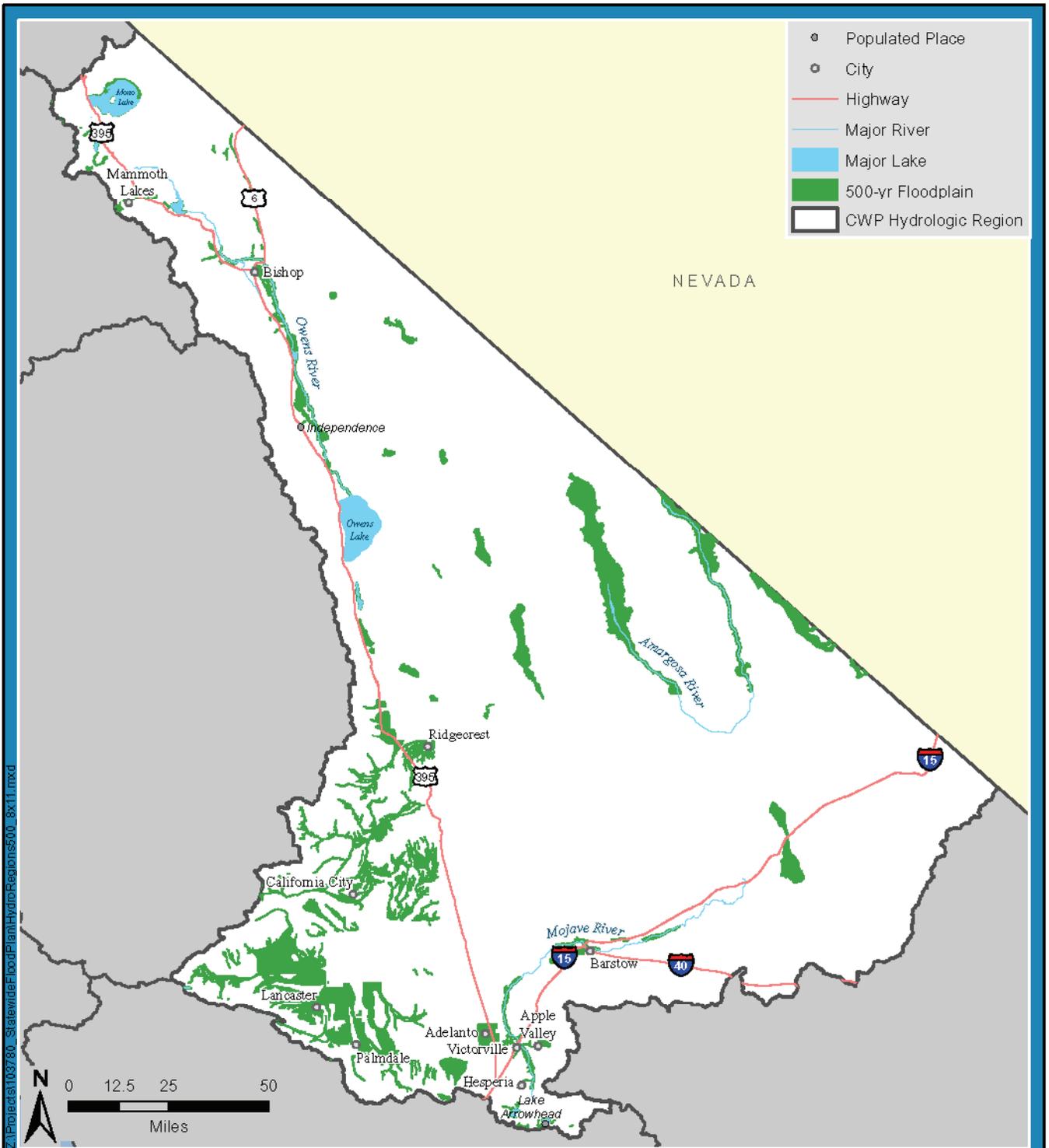
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Figure F-48
 Statewide Flood Hazard Exposure Summary for the South Lahontan Hydrologic Region 100-year Floodplain

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South Lahontan Key Results

Total Population:	715,100	Transportation Facilities:	94
Population Exposed:	153,200	Transportation Segments (miles):	295
Percent of Population Exposed:	21	Essential Facilities:	77
Exposed Structures:	57,200	Lifeline Utilities:	8
Value of Exposed Structure and Contents:	\$11.9 Billion	Dept. of Defense Facilities:	4
Total Area (acres)	17.1 Million	Dept. of Defense Facilities (acres):	9,377
Exposed Area (acres)	820,300	High Potential Loss Facilities:	10
Percent of Area Exposed:	5	Native American Tribes:	1
Exposed Ag. Crops (acres):	72,200	Native American Tribal Lands (acres):	10
Percent of Ag. Crops Exposed:	28	Sensitive Animal Species Exposed:	113
Value of Exposed Ag. Crops:	\$59.5 Million	Sensitive Plant Species Exposed:	104

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Figure F-49
Statewide Flood Hazard Exposure Summary for the South Lahontan Hydrologic Region 500-year Floodplain

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4.2.12 Colorado River Hydrologic Region

Physical Setting

The Colorado River Hydrologic Region encompasses approximately 20,000 square miles in the southeastern corner of California. Significant physical features include volcanic craters, sand dunes, the San Andreas Fault, and the Salton Trough. The major lake is the Salton Sea. Major streams and rivers include Colorado, New, and Alamo rivers. Major cities include Palm Springs, Indio, El Centro, Calexico, Beaumont, Needles, and Blythe.

Flood Hazards

Common flood types include stormwater, slow rise, flash, debris flow, and alluvial fan flooding. Other possible flood types include engineered structure failure. Of California's hydrologic regions, the Colorado River region has the lowest annual precipitation. Consequently, most of the natural streams are ephemeral; the exceptions are the Colorado, New, and Alamo Rivers. The low annual rainfall amounts to sparse vegetation in the region's watersheds and gives rise to braided streams with steep channel slopes. In these watercourses, short-duration, high-intensity rainfall from summer monsoonal thunderstorms or winter storms can result in flash floods and debris flows.

Description of Exposure to Flood Hazard Results

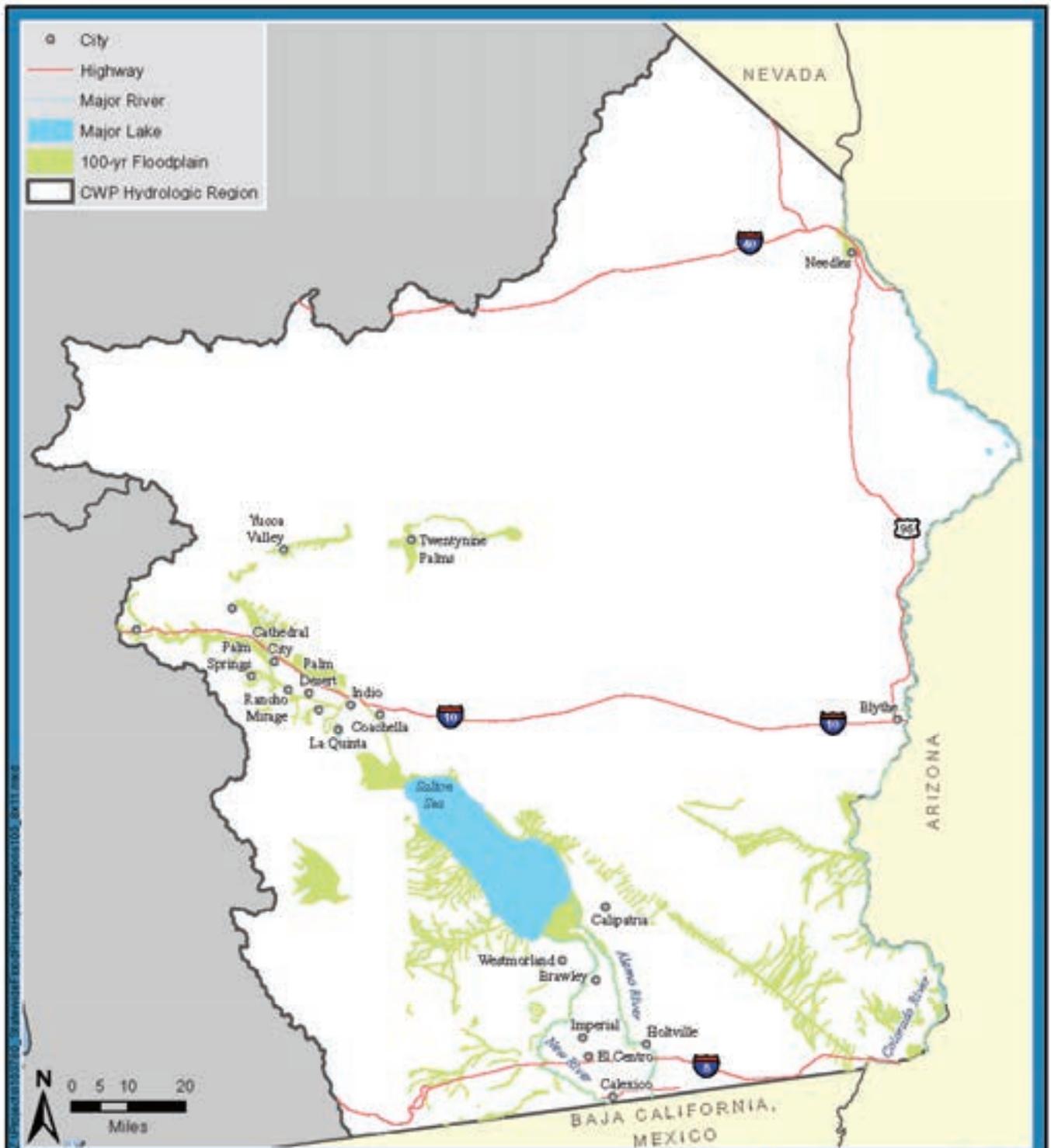
Figures F-50 and F-51 depict the 100-year and 500-year floodplains in the Colorado River Hydrologic Region, as well as key results for the exposure to flood hazard analysis within the hydrologic region for each floodplain. About 31,000 people and 49,000 acres of agricultural crops are exposed in the 100-year floodplain, with about 227,000 people and 79,000 acres of agricultural crops exposed in the 500-year floodplain. More than 75 sensitive plant species and approximately 100 sensitive animal species are exposed in the 100-year and 500-year floodplains. More than 180 facilities are exposed in the 100-year floodplain, and more than 370 facilities are exposed in the 500-year floodplain. Nine Native American tribal lands are exposed to the 100-year floodplain, and 10 Tribal lands are exposed to the 500-year floodplains.

Common flood types:

- ✓ Stormwater
- ✓ Slow rise
- ✓ Flash
- ✓ Debris flow
- ✓ Alluvial fan

Other possible flood types:

- ✓ Engineered structure failure



Colorado River Key Results

Total Population:	600,900	Transportation Facilities:	141
Population Exposed:	31,400	Transportation Segments (miles):	180
Percent of Population Exposed:	5	Essential Facilities:	20
Exposed Structures:	18,400	Lifeline Utilities:	9
Value of Exposed Structure and Contents:	\$2.5 Billion	Dept. of Defense Facilities:	4
Total Area (acres)	12.7 Million	Dept. of Defense Facilities (acres):	16,962
Exposed Area (acres)	504,300	High Potential Loss Facilities:	10
Percent of Area Exposed:	4	Native American Tribes:	9
Exposed Ag. Crops (acres):	49,000	Native American Tribal Lands (acres):	29,154
Percent of Ag. Crops Exposed:	7	Sensitive Animal Species Exposed:	99
Value of Exposed Ag. Crops:	\$146.1 Million	Sensitive Plant Species Exposed:	78

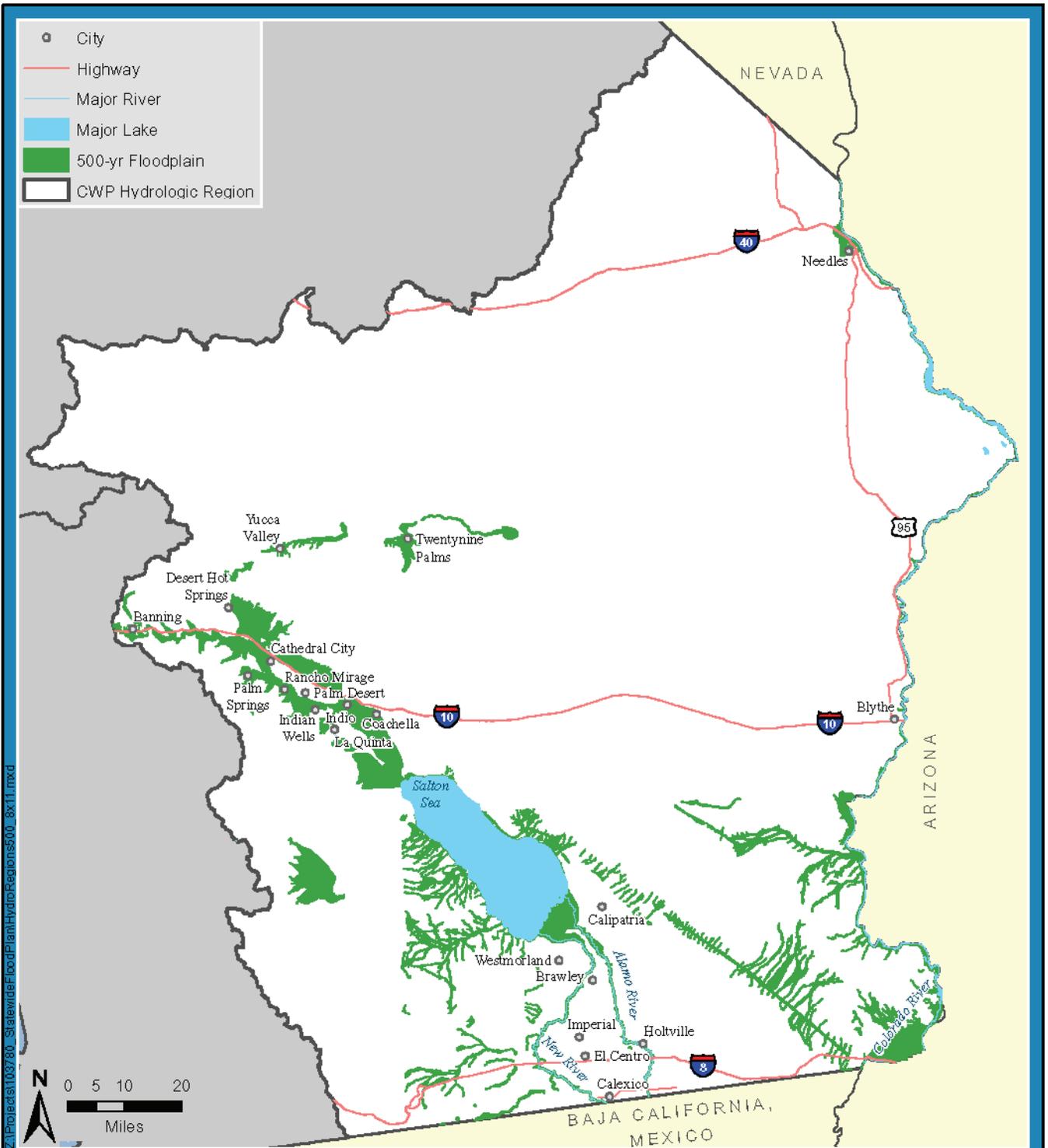
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Figure F-50
Statewide Flood Hazard
Exposure Summary for the
Colorado River Hydrologic
Region 100-year Floodplain

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Colorado River Key Results

Total Population:	600,900	Transportation Facilities:	221
Population Exposed:	227,100	Transportation Segments (miles):	319
Percent of Population Exposed:	38	Essential Facilities:	113
Exposed Structures:	100,600	Lifeline Utilities:	22
Value of Exposed Structure and Contents:	\$20.5 Billion	Dept. of Defense Facilities:	4
Total Area (acres)	12.7 Million	Dept. of Defense Facilities (acres):	16,963
Exposed Area (acres)	609,200	High Potential Loss Facilities:	15
Percent of Area Exposed:	5	Native American Tribes:	10
Exposed Ag.Crops (acres):	79,100	Native American Tribal Lands (acres):	57,499
Percent of Ag. Crops Exposed:	11	Sensitive Animal Species Exposed:	101
Value of Exposed Ag. Crops:	\$275.7 Million	Sensitive Plant Species Exposed:	85

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Figure F-51
Statewide Flood Hazard Exposure Summary for the Colorado River Hydrologic Region 500-year Floodplain

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4.2.13 Sacramento-San Joaquin Delta Overlay Region

Physical Setting

The Sacramento-San Joaquin Delta Overlay Region and the Suisan Marsh area are at the confluence of the Sacramento River and San Joaquin River basins, which drain about 40 percent of California. The Delta covers about 1,315 square miles in portions of six California counties and is part of the largest estuary on the West Coast of the United States. The Delta watershed covers 40 percent of the state. Many of California's major rivers converge on the Delta as tributaries of the Sacramento River, which is the state's largest river, or of the San Joaquin River. Entering the Delta separately are the Cosumnes, Mokelumne, and Calaveras rivers, the Yolo Bypass, and numerous smaller creeks and sloughs. The Delta includes portions of Contra Costa, Sacramento, San Joaquin, Solano, Yolo, and Alameda counties.

Flood Hazards

Common flood types include stormwater, slow rise, and coastal flooding. Other possible flood types include tsunami and engineered structure failure.

Throughout the Delta, levees were originally constructed from material dredged from adjacent channels, but since have been improved in various places to hold back river and tidal waters. These levees are subject to damage from rodents, piping, and possibly, foundation movement. These effects may lead to sudden failure at any time of the year.

Most of the region's precipitation falls from December through March. Monthly rainfall can come all at once in 1 day during winter storms. Winter storms bring both high inflows and windy conditions. In combination with annual and daily high tides, this could cause waves to wash over and damage Delta levees, potentially leading to failure. When an island floods, the fetch (the distance along open water or land over which the wind blows, or the distance waves can traverse unobstructed) is increased to the full width of the island. The waves could cause extensive damage to unprotected interior levee slopes.

Description of Exposure to Flood Hazard Results

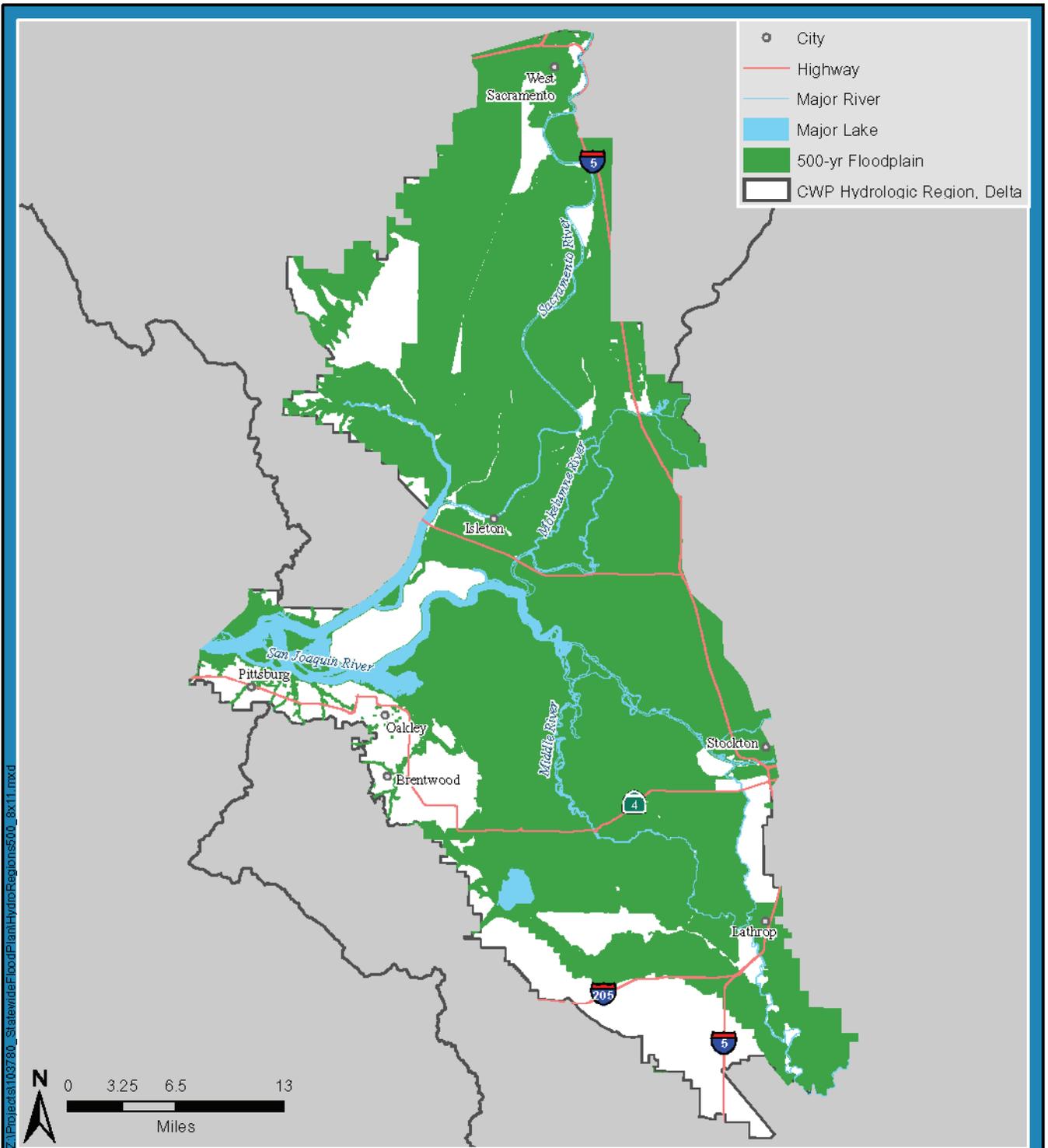
Figures F-52 and F-53 depict the 100-year and 500-year floodplains in the Sacramento-San Joaquin Delta Hydrologic Region, as well as key results for the exposure to flood hazard analysis within the hydrologic region for each floodplain. About 32,000 people and 152,000 acres of agricultural crops are exposed in the 100-year floodplain, with about 133,000 people and 163,000 acres of agricultural crops exposed in the 500-year floodplain. More than 40 sensitive plant species and 60 sensitive animal species are exposed in the 100-year and 500-year floodplains. About 90 facilities are exposed in the 100-year floodplain, and more than 230 facilities are exposed in the 500-year floodplain. No Native American tribal lands are exposed to 100-year and 500-year floodplains in this region.

Common flood types:

- ✓ Stormwater
- ✓ Slow rise
- ✓ Coastal

Other possible flood types:

- ✓ Tsunami
- ✓ Engineered structure failure



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Delta Key Results

Total Population:	461,800	Transportation Facilities:	251
Population Exposed:	218,100	Transportation Segments (miles):	246
Percent of Population Exposed:	47	Essential Facilities:	92
Exposed Structures:	74,500	Lifeline Utilities:	13
Value of Exposed Structure and Contents:	\$18.0 Billion	Dept. of Defense Facilities:	2
Total Area (acres)	737,700	Dept. of Defense Facilities (acres):	52
Exposed Area (acres)	553,100	High Potential Loss Facilities:	47
Percent of Area Exposed:	75	Native American Tribes:	-
Exposed Ag. Crops (acres):	383,000	Native American Tribal Lands (acres):	-
Percent of Ag. Crops Exposed:	78	Sensitive Animal Species Exposed:	106
Value of Exposed Ag. Crops:	\$1.0 Billion	Sensitive Plant Species Exposed:	72

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Figure F-53
 Statewide Flood Hazard Exposure Summary for the Sacramento-San Joaquin Delta Region 500-year Floodplain

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4.2.14 Mountain Counties Overlay Region

Physical Setting

The Mountain Counties Overlay Region of California includes the foothills and mountains of the western slope of the Sierra Nevada Mountains and a portion of the Cascade Range. The area extends from the southern tip of Lassen County to the northern part of Fresno County and overlays the eastern portions of the Sacramento River and San Joaquin River hydrologic regions. The foothills and mountain areas of these two hydrologic regions are grouped together to present their common characteristics.

The region includes all or portions of 15 counties, including Plumas, Sierra, Nevada, Placer, El Dorado, Amador, Calaveras, Tuolumne, Mariposa, and Madera counties. Elevations vary from around 100 feet near the edge of the valley floor to nearly 14,000 feet at peaks along the crest of the southern Sierra Nevada. Major rivers include the Feather, Yuba, Bear, and American rivers in the Sacramento River Hydrologic Region and the Cosumnes, Mokelumne, Calaveras, Stanislaus, Tuolumne, Merced, Chowchilla, Fresno, and San Joaquin rivers in the San Joaquin River Hydrologic Region. These watersheds account for about a quarter of all natural river runoff in California and over half of all snowmelt runoff in the state.

Flood Hazards

Common flood types include stormwater, slow rise, flash, and debris flow flooding. Other possible flood types include engineered structure failure. Floodwaters in the region originate from rainfall or melting of the Sierra Nevada snowpack. Floods are often of short duration, but due to the steep stream gradients, they can be destructive. Towns and roads along major streams at the bottom of canyons are especially vulnerable.

Description of Exposure to Flood Hazard Results

Figures F-54 and F-55 depict the 100-year and 500-year floodplains in the Mountain Counties Hydrologic Region, as well as key results for the exposure to flood hazard analysis within the hydrologic region for each floodplain. About 11,000 people and 30,000 acres of agricultural crops are exposed in the 100-year floodplain, with about 13,000 people and 31,000 acres of agricultural crops exposed in the 500-year floodplain. More than 100 sensitive plant species and 80 sensitive animal species are exposed in the 100-year and 500-year floodplains. More than 220 facilities are exposed in the 100-year floodplain, and more than 230 facilities are exposed in the 500-year floodplain. Two Native American tribal lands are exposed to 100-year and 500-year floodplains in this region.

Common flood types:

- ✓ Stormwater
- ✓ Slow rise
- ✓ Flash
- ✓ Debris flow

Other possible flood types:

- ✓ Engineered structure failure



Mountain Counties Key Results

Total Population:	540,400	Transportation Facilities:	141
Population Exposed:	11,300	Transportation Segments (miles):	81
Percent of Population Exposed:	2	Essential Facilities:	14
Exposed Structures:	6,000	Lifeline Utilities:	1
Value of Exposed Structure and Contents:	\$1.4 Billion	Dept. of Defense Facilities:	-
Total Area (acres)	10.1 Million	Dept. of Defense Facilities (acres):	-
Exposed Area (acres)	268,400	High Potential Loss Facilities:	70
Percent of Area Exposed:	3	Native American Tribes:	2
Exposed Ag.Crops (acres):	30,200	Native American Tribal Lands (acres):	412
Percent of Ag. Crops Exposed:	20	Sensitive Animal Species Exposed:	87
Value of Exposed Ag. Crops:	\$1.4 Million	Sensitive Plant Species Exposed:	123

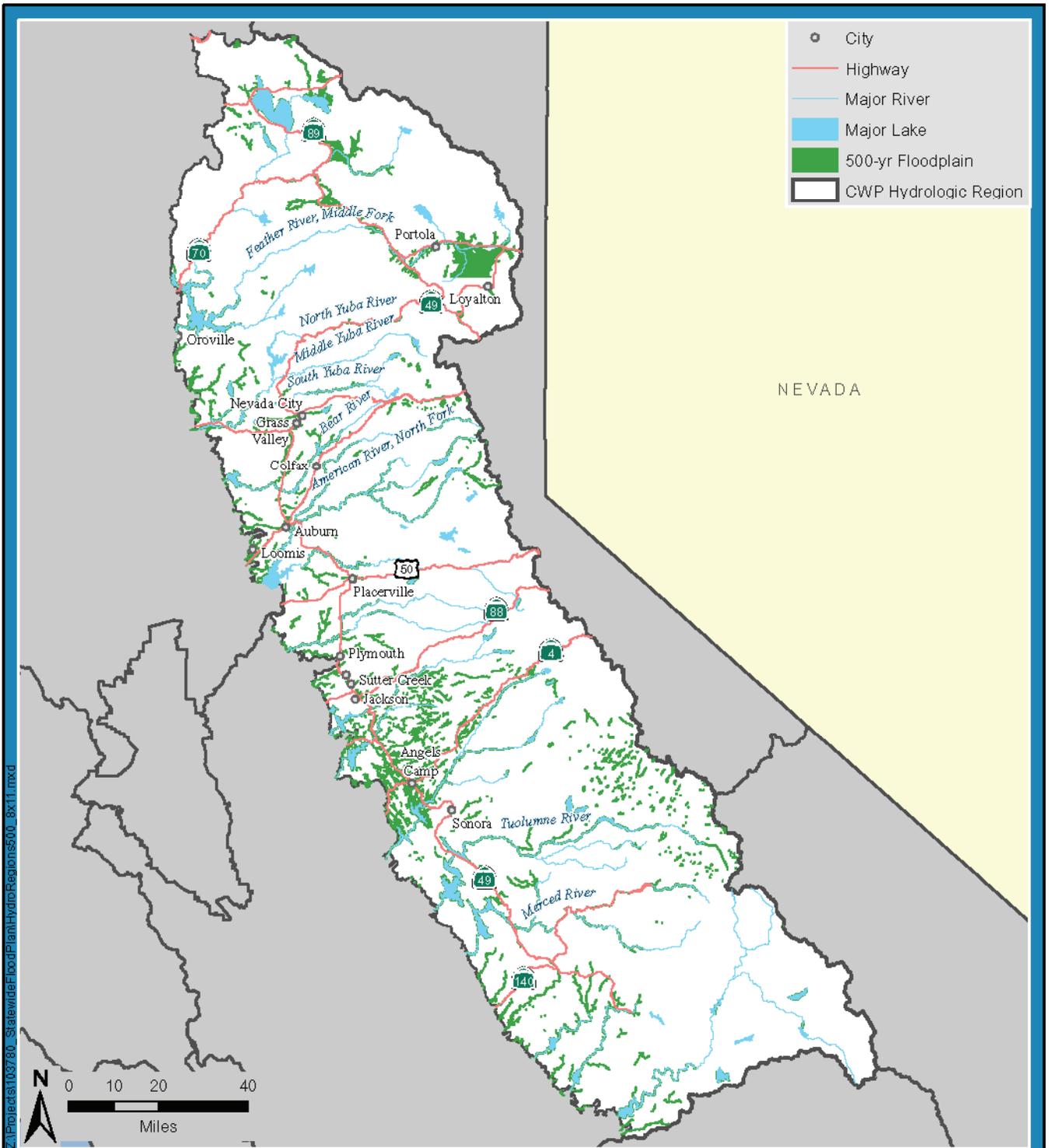
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Figure F-54
Statewide Flood Hazard
Exposure Summary for the
Mountain Counties Region
100-year Floodplain

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Mountain Counties Key Results

Total Population:	540,400	Transportation Facilities:	147
Population Exposed:	13,600	Transportation Segments (miles):	86
Percent of Population Exposed:	3	Essential Facilities:	18
Exposed Structures:	7,200	Lifeline Utilities:	1
Value of Exposed Structure and Contents:	\$1.6 Billion	Dept. of Defense Facilities:	-
Total Area (acres)	10.1 Million	Dept. of Defense Facilities (acres):	-
Exposed Area (acres)	270,300	High Potential Loss Facilities:	70
Percent of Area Exposed:	3	Native American Tribes:	2
Exposed Ag.Crops (acres):	30,900	Native American Tribal Lands (acres):	412
Percent of Ag. Crops Exposed:	20	Sensitive Animal Species Exposed:	87
Value of Exposed Ag. Crops:	\$1.4 Million	Sensitive Plant Species Exposed:	123

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Figure F-55
Statewide Flood Hazard Exposure Summary for the Mountain Counties Region 500-year Floodplain

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5.0 Future Impacts on Exposure to Flood Hazard

This section provides a qualitative discussion of future impacts on exposure to flood hazard, which could increase or decrease as a result from changes in population, growth patterns, land use, or climate. Flood exposure in California is dynamic because these influencing factors are constantly changing.

5.1 How Population, Growth Patterns, and Land Use Changes Impact the Flood Hazard Exposure Analysis

Population increase and growth patterns could add to the number of people, amount of property, and infrastructure exposed to flood hazards. New development that is required to accommodate population growth could occur within existing floodplains near creeks, streams, the coast, or other bodies of water, thus increasing exposure to flood hazards. For example, in portions of Sacramento, Stockton, Marysville, and Yuba City, new developments have often been constructed in areas subject to flooding, with protection provided by flood management measures put in place (e.g., levees). Although flood management measures provide a certain level of protection, new development in the floodplain still exposes additional people to potential flood hazards.

As noted in Section 2 of this attachment, the flood hazard exposure analysis used year 2000 population data to estimate the number of people exposed to the 100-year and 500-year floodplain. However, between 2000 and 2010, California's population increased by about 10 percent from 33.9 million to 37.3 million, which has likely resulted in greater exposure to flooding.

Table F-15 shows the increase in population from 2000 to 2010 in each county. Riverside and Placer counties experienced the greatest growth rates in the state, with increases of more than 40 percent. Nine counties (Riverside, Placer, Kern, Imperial, Madera, Tulare, San Joaquin, Merced, and Sutter) had population increases of more than 20 percent between 2000 and 2010. The four counties with the greatest exposure to flood hazards using the 2000 population data (Orange, Santa Clara, San Mateo, and Los Angeles) each had less than 6 percent growth between 2000 and 2010.

Future conditions, including increases in population and changes in growth patterns, are likely to lead to a greater number of people and amount of property exposed to flood hazards.

FUTURE IMPACTS ON EXPOSURE TO FLOOD HAZARD

Table F-15. Change in Population in Each County from 2000 to 2010

County	2000	2010	% Change
Alameda	1,443,547	1,510,271	4.6
Alpine	1,210	1,175	-2.9
Amador	35,100	38,091	8.5
Butte	203,166	220,000	8.3
Calaveras	40,552	45,578	12.4
Colusa	18,804	21,419	13.9
Contra Costa	949,049	1,049,025	10.5
Del Norte	27,471	28,610	4.1
El Dorado	156,255	181,058	15.9
Fresno	798,799	930,450	16.5
Glenn	26,448	28,122	6.3
Humboldt	126,477	134,623	6.4
Imperial	142,359	174,528	22.6
Inyo	17,944	18,546	3.4
Kern	661,591	839,631	26.9
Kings	129,475	152,982	18.2
Lake	58,308	64,665	10.9
Lassen	33,828	34,895	3.2
Los Angeles	9,515,955	9,818,605	3.2
Madera	123,106	150,865	22.5
Marin	247,239	252,409	2.1
Mariposa	17,140	18,251	6.5
Mendocino	86,198	87,841	1.9
Merced	211,108	255,793	21.2
Modoc	9,445	9,686	2.6
Mono	12,851	14,202	10.5
Monterey	401,683	415,057	3.3
Napa	124,232	136,484	9.9
Nevada	92,066	98,764	7.3
Orange	2,843,086	3,010,232	5.9
Placer	248,254	348,432	40.4
Plumas	20,828	20,007	-3.9
Riverside	1,545,114	2,189,641	41.7
Sacramento	1,223,622	1,418,788	15.9
San Benito	53,194	55,269	3.9
San Bernardino	1,709,927	2,035,210	19.0
San Diego	2,811,030	3,095,313	10.1
San Francisco	776,637	805,235	3.7
San Joaquin	563,610	685,306	21.6
San Luis Obispo	246,652	269,637	9.3
San Mateo	706,815	718,451	1.6
Santa Barbara	398,960	423,895	6.2
Santa Clara	1,682,689	1,781,642	5.9

Table F-15. Change in Population in Each County from 2000 to 2010

County	2000	2010	% Change
Santa Cruz	255,435	262,382	2.7
Shasta	163,241	177,223	8.6
Sierra	3,556	3,240	-8.9
Siskiyou	44,307	44,900	1.3
Solano	395,264	413,344	4.6
Sonoma	458,520	483,878	5.5
Stanislaus	447,034	514,453	15.1
Sutter	78,927	94,737	20.0
Tehama	56,050	63,463	13.2
Trinity	13,021	13,786	5.9
Tulare	368,064	442,179	20.1
Tuolumne	54,508	55,365	1.6
Ventura	753,402	823,318	9.3
Yolo	168,013	200,849	19.5
Yuba	60,223	72,155	19.8
Total	33,861,390	37,253,956	10.0

Source: *DOF, 2013*

California’s population is expected to continue to increase in the future. In the Central Valley, State law requires that new development in urban and urbanizing areas comply with requirements for a 200-year level (0.5 percent annual chance) of protection after 2015. There are no similar requirements for development outside the Central Valley. However, even when the level of flood protection is significantly improved (e.g., where a 200-year level of protection is required), exposure to flood hazard can increase simply by putting more people, property, and infrastructure in the floodplain.

As California’s population increases in the future and urban development further encroaches on agricultural land areas, the estimated exposure of population and urban property to the 100-year and 500-year floodplains can be expected to increase in many parts of the state while the exposure of agricultural crops would decrease. The conversion of agricultural land to urban uses could also cause an increase in local runoff, thereby causing a shift in the extents of the 100-year and 500-year floodplains. The magnitude of impact that these changes would have on flood hazard exposure would depend on the rate of population increase and corresponding urban encroachment on agricultural land areas, which cannot be predicted with certainty. In order to depict a range of future uncertainty in future population and land use, the CWP Update 2009 (DWR, 2009b) has identified the following three future scenarios through the year 2050:

- Scenario 1 – Current Trends: Assumes that recent trends continue into the future. Under this scenario, urban flood hazard exposure would increase and agricultural flood hazard exposure would decrease, compared to current conditions.

FUTURE IMPACTS ON EXPOSURE TO FLOOD HAZARD

- Scenario 2 – Slow and Strategic Growth: Assumes more efficient planning and development that is less resource intensive than current conditions. Urban development is more compact, and less agricultural land is converted to urban uses than in the Current Trends scenario. Therefore, future urban flood hazard exposure would be expected to be less and future agricultural flood hazard exposure would be expected to be greater than in the Current Trends scenario.
- Scenario 3 – Expansive Growth: Assumes that future development is more resource intensive than current conditions. Urban development is less dense and urban areas are expanding resulting in a more aggressive conversion from other land uses (e.g., agriculture, open space) than in the Current Trends scenario. Therefore, future urban flood hazard exposure would be expected to be greater and future agricultural flood hazard exposure would be expected to be less than in the Current Trends scenario.

The CWP has projected future population growth in each CWP hydrologic region through 2050 for each scenario. These projections are shown in Table F-16. In the three scenarios, the greatest growth is projected to occur in the San Joaquin, Tulare Lake, South Lahontan, and Colorado River regions.

Table F-16. Projected Change in Population in Each Hydrologic Region from 2000 to 2050 for each CWP Scenario

CWP Hydrologic Region	2000 Population	California Water Plan Scenario					
		Slow and Strategic Growth		Current Trends		Expansive Growth	
		2050 Population	% Change	2050 Population	% Change	2050 Population	% Change
North Coast Region	640,000	780,000	21.9	1,030,000	60.9	1,190,000	85.9
San Francisco Bay Region	6,070,000	6,140,000	1.2	8,950,000	47.4	11,020,000	81.5
Central Coast Region	1,450,000	1,660,000	14.5	2,150,000	48.3	2,720,000	87.6
South Coast Region	18,070,000	21,530,000	18.8	27,110,000	49.6	32,130,000	77.3
Sacramento River Region	2,570,000	3,970,000	54.5	5,350,000	108.2	5,920,000	130.4
San Joaquin River Region	1,750,000	3,460,000	97.7	4,890,000	179.4	5,180,000	196.0
Tulare Lake Region	1,870,000	3,580,000	91.4	5,190,000	177.5	5,530,000	195.7
North Lahontan Region	100,000	130,000	30.0	150,000	50.0	170,000	70.0
South Lahontan Region	720,000	1,360,000	88.9	2,390,000	231.9	3,380,000	369.4
Colorado River Region	600,000	1,590,000	165.0	2,310,000	285.0	2,570,000	328.3
Total	33,820,000	44,200,000	30.5	59,510,000	75.7	69,800,000	106.1

Source: DWR, 2009b

5.2 How Climate Change Impacts the Flood Hazard Exposure Analysis

Climate change could have a significant impact on the timing and magnitude of runoff in California. In addition, increasing temperatures could result in a rise in sea level due to the melting of land-based glaciers, snowfields and ice sheets, along with thermal expansion of the ocean as the surface layer warms (DWR, 2008). These changes could result in expansions of the 100-year and 500-year floodplains, thereby causing an increase in the people, property, and infrastructure exposed to flood hazards in the future. The potential future climate change effects on precipitation and runoff patterns and on sea level rise, including the effect that these changes might have on flood hazard exposure, are described in the following sections.

5.2.1 Changes in Precipitation and Runoff Patterns

Climate change is projected to cause increases in global temperatures that will likely lead to shifts in the timing and magnitude of precipitation and runoff in California. Researchers suggest that, although the total volume of precipitation is not likely to change significantly during the next several decades, the seasonal timing of the precipitation might shift, which could increase flood peak flows and flood volumes (Miller et al., 2003; Fissekis, 2008; CEC, 2009a; Das et al., 2011). Increased temperature may alter precipitation and runoff patterns, resulting in higher snowline elevations, snowmelt occurring earlier in the year, and less overall snowpack. If precipitation events occur concurrently with warmer temperatures, more of the precipitation will fall as rain rather than snow. This would increase the extent and depth of floodplains because more watershed area contributes to direct runoff. In this case, the precipitation would flow into the watersheds instead of accumulating as snowpack, thus increasing the amount of runoff during winter months.

Figure F-56 depicts an example, as described in *Progress on Incorporating Climate Change into Management of California's Water Resources*, of how the level of precipitation during an extreme weather event could increase in the future (DWR, 2006). Figure F-56 shows the changes in runoff for an example storm on the Feather River. In this example, a 1-degree increase in future temperature results in about a 20 percent increase in peak flow, and a 5-degree increase in future temperature results in about a 130 percent increase in peak flow.

The projected temporal shift in reservoir inflows could pose significant challenges for management of flood storage capacity in major system reservoirs. Flood management space requirements are generally specified using reservoir drawdown curves as a function of accumulated snowpack forecasts, measured rainfall, and the seasonability of precipitation. Changes in precipitation form (rain rather than snow) associated with temporal shifts in runoff, along with potential increases in flood frequencies and magnitudes, are likely to require reevaluation of existing operational rules that were developed based on previously accepted historical conditions.

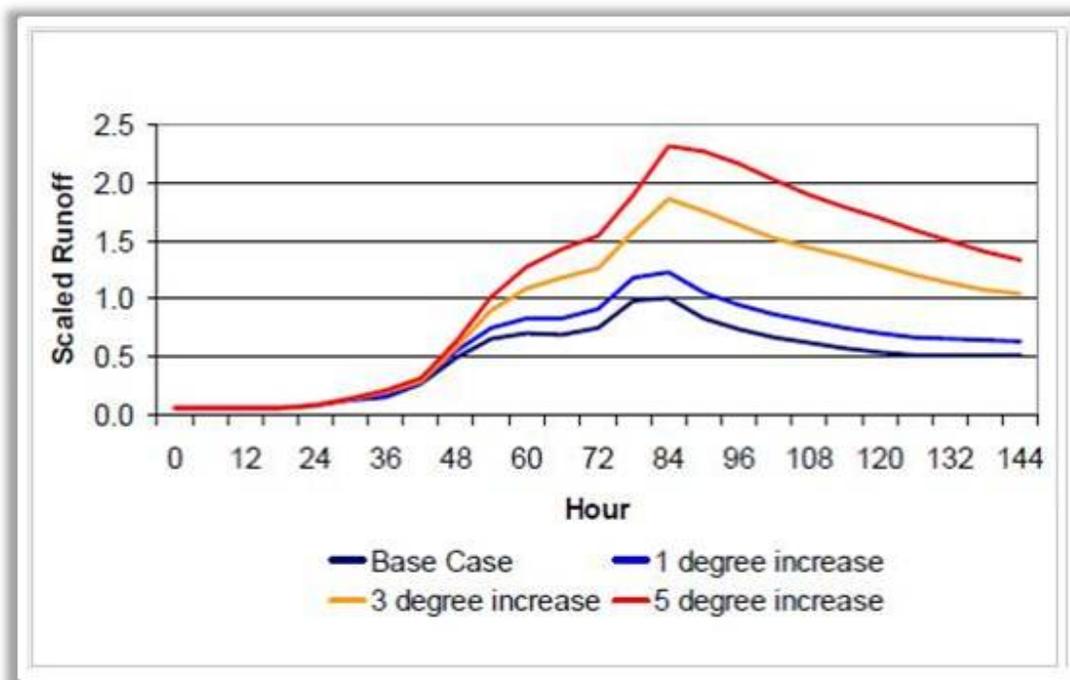


Figure F-56. Changes in Runoff for an Example under Different Climate Futures
 (Source: DWR, 2006)

Although many water resource factors are affected by average conditions, some of the most important impacts, such as flooding, will result not from changes in averages but from changes in local extremes.

Flooding is a result of individual weather events that can be considered random phenomena on the scale of climate (e.g., 30 to 50 years). It can be difficult to understand how these long-term trends will affect the frequency and magnitude of flood events. From year to year, a large amount of variability exists in winter rainfall and associated runoff patterns. This variability creates uncertainty when evaluating potential changes in weather events due to climate change. Existing climate projections that are currently used for some hydrologic consequences of climate change (e.g., mean runoff change, earlier snowmelt) might not be useful for showing the consequences of short-term flood events. Flood modeling requires high-resolution (spatial and temporal) climate projections that are currently unavailable with high quality from most climate models.

Increased temperature alone might be expected to alter flooding patterns; however, changes in storm types, frequencies, or magnitudes might result in more direct impacts. Historically, the most dangerous storms in California have been extreme events (e.g., warm and wet storms that strike in winter, producing intense rains over large areas).

Therefore, climate change likely will result in more frequent extreme precipitation events. Although uncertainties remain about future changes in long-term average precipitation rates in California, it is generally expected that extreme precipitation episodes will become even more extreme as the climate changes (Dettinger, 2011). The projected increases in the frequency and magnitude of extreme storm events would result in increased exposure of population, property, and facilities to the 100-year and 500-year floodplains in many parts of the state.

5.2.2 Sea Level Rise

The projected increases in future temperature also would result in sea level rise due to the melting of land-based glaciers, snowfields, and ice sheets, along with thermal expansion of the ocean as the surface layer warms (DWR, 2008). In the last century, sea level has risen about 20 centimeters (cm) (7 inches) along California’s coast (DWR, 2008). Figure F-57 shows the projected range in potential sea level rise in the future.

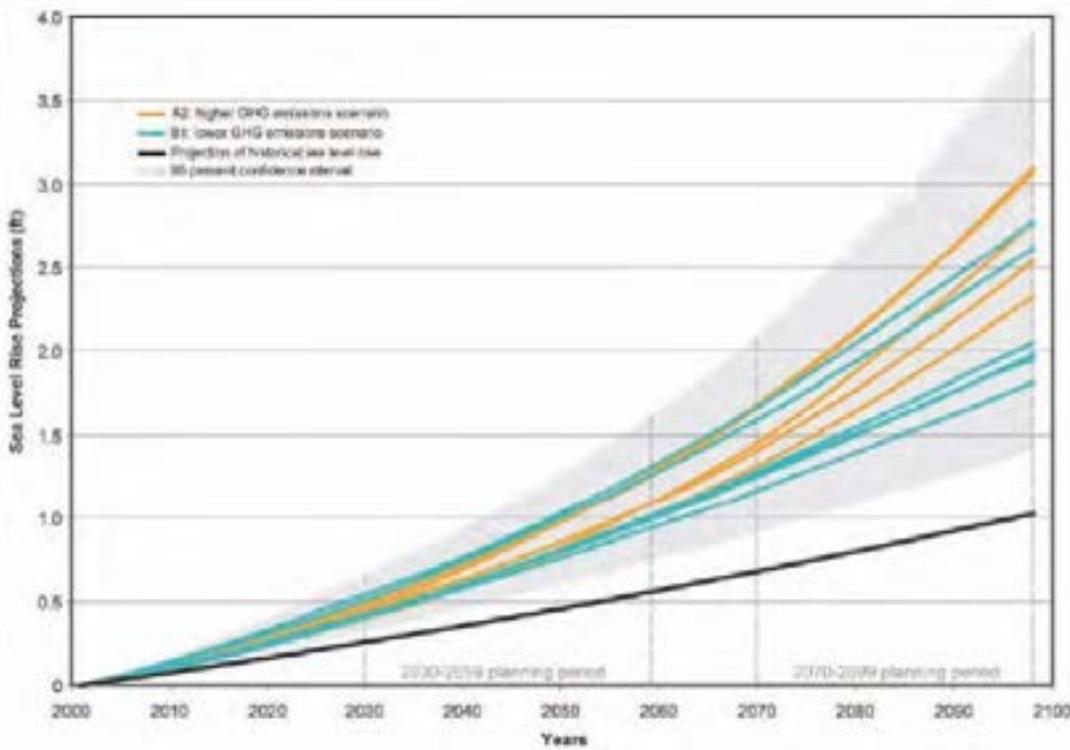


Figure F-57. Sea Level Rise Projections Based on Air Temperatures from 12 Future Climate Scenarios
 (Source: CEC, 2009)

Continuation or acceleration of this sea level rise, in combination with changes in precipitation and runoff patterns, likely would result in an increase in flood events, especially in the Central Valley (Knox, 1993; Florsheim and Dettinger, 2007). In coastal areas, a rise in sea level is likely to produce more frequent and potentially more damaging floods, increasing the exposure of people, property, and infrastructure to flood hazards, not only by exacerbating existing hazards but also by increasing the size of coastal floodplains (CEC, 2009b; Knowles, 2010; Heberger et al., 2011). As an example, Figure F-58 shows the projected increase in flood inundation in the San Francisco Bay under one scenario of sea level rise. In Figure F-58, Plot A shows areas inundated or vulnerable to inundation under 100-year high-water levels for present-day (blue) and a 150-cm sea level rise (red). Plot B shows the same areas inundated with a 150-cm sea level rise as in Plot A, but colored according to land-use type (Knowles, 2010). (Note that the inundation

shown in Figure F-58 does not take into account existing flood infrastructure along the San Francisco Bay shoreline.)

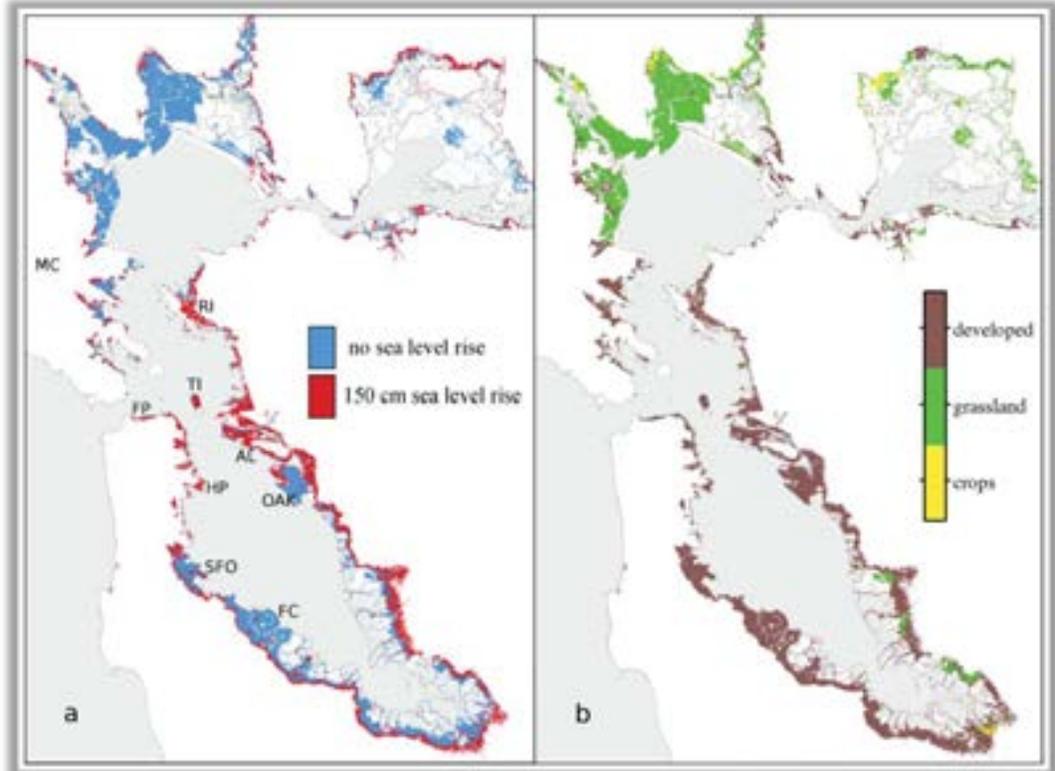


Figure F-58. Projected San Francisco Bay Flood Inundation under a 150-cm Sea Level Rise Scenario

(Source: Knowles, 2010)

The National Research Council, in partnership with the Committee on Sea Level Rise in California, Oregon, and Washington, the Board on Earth Sciences and Resources, and the Ocean Studies Board, developed a study of the impacts of sea level rise on the California coast. The study, *Sea Level Rise for the Coasts of California, Oregon and Washington: Past, Present, and Future*, was published in late 2012 and provides guidance for incorporating sea level rise projections into planning and decision making for projects in California (Committee on Sea Level Rise in California, Oregon, and Washington, et al., 2012).

Rising sea levels are likely to have a direct effect on water levels in the Delta because most of the islands of land within the Delta are below sea level, many by as much as 20 to 25 feet. Rising sea levels will cause backwater effects upstream of the Delta. Global sea level rise, combined with short-term or episodic factors that increase sea level and water levels in the Delta, will reduce available levee freeboard unless levees are raised. Short-term and episodic increases in water levels in the Delta include high river flows, ocean/atmospheric phenomena such as El Niño, storm surges, barometric high tides, and high astronomical tides (particularly during perigee, perihelion, and either new or full moon). The impacts of sea level rise would be most significant for the Delta, where a rise in sea-level would increase hydrostatic pressure on levees currently protecting low-lying land. These effects

threaten to cause potentially catastrophic levee failures that inundate communities, damage infrastructure, and interrupt water supplies throughout the state (Hanak and Lund, 2008). For example, a 1-foot rise in sea level could increase the frequency of the 100-year peak high tide to a 10-year event in the western Delta at Antioch (Roos, 2005). The resulting higher tides, in combination with increases in storm intensity and flood volumes, would likely aggravate existing flood problems in upstream areas along the Sacramento and San Joaquin rivers.

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6.0 Findings

An important objective of the SFMP Program is to characterize current and future flood risks throughout California based on the best available information. This attachment describes the flood hazard exposure analysis that was performed to provide insight into potential flood risks throughout the state. This analysis supplements the information presented in the SFMP Flood Future Report with a detailed description of the method and results of the flood hazard exposure analysis. The results of this flood hazard exposure analysis provide useful insight into the potential risks due to flooding that currently exist in California. The following are some conclusions that can be drawn from the results of the analysis:

- A significant proportion of California’s people and structures are subject to potential flooding. Of the statewide population of approximately 34 million (based on the 2000 census), 1.4 million people live within the 100-year floodplain and 7.3 million people live within the 500-year floodplain. With the 2010 population having increased to more than 37 million, even more people are likely to be currently exposed to potential flooding. In addition, about \$137 billion and \$577 billion in the value of structures and contents are within the 100-year floodplain and 500-year floodplain, respectively. Some level of flooding occurs in almost all parts of the state.
- A large proportion of the state’s exposed population and value of structures and contents is in urban regions with high-density populations. For example, the South Coast Hydrologic Region has 3.4 million people and \$230 billion in value of structures and contents residing in the 500-year floodplain. In addition, many highly urbanized counties (such as Orange, Santa Clara, San Mateo, and Los Angeles counties) have large numbers of people and a great amount of property exposed in the floodplain. Forty-five percent of the statewide exposure to the 500-year floodplain in terms of population and structures occurs in just three counties—Orange, Santa Clara, and Los Angeles counties.
- A significant proportion of California’s crops are subject to potential flooding. Statewide, \$5.4 billion in crop values are exposed to the 100-year floodplain, and \$7.5 billion in crop values are exposed to the 500-year floodplain. Twelve counties (San Joaquin, Fresno, Kern, Kings, Merced, Yolo, Tulare, Monterey, Madera, Sutter, Ventura, and Butte counties) have more than \$100 million in agricultural crops exposed to both the 100-year and 500-year floodplains. Sacramento County also has more than \$100 million in agricultural crops exposed to the 500-year floodplain.
- CNDDDB sensitive plant species and sensitive animal species are exposed to potential flooding in many regions of the state. The South Coast Hydrologic Region has the largest number of sensitive plant species exposed in both 100-year and 500-year floodplains. The Sacramento River Hydrologic Region

Statewide Results

100-Year Floodplain (1% annual chance of flooding)

1.4 million people

\$137 billion in structures
and contents values

\$5.4 billion in crop
values

500-Year Floodplain (0.2% annual chance of flooding)

7.3 million people

\$577 billion in structures
and contents values

\$7.5 billion in crop
values

has the largest number of sensitive animal species exposed in both 100-year and 500-year floodplains.

- The South Coast, San Francisco Bay, and Sacramento River hydrologic regions have the most essential, high potential loss, and lifeline facilities exposed to both the 100-year and 500-year floodplains. However, the South Coast region has far more exposure of these types of facilities in the 500-year floodplain than the other regions, with more than 40 percent of the statewide total.
- Exposure of transportation facilities occurs in many parts of the state, with the South Coast, San Francisco Bay, Sacramento River, San Joaquin River, Tulare Lake, and Central Coast hydrologic regions having large numbers exposed in both the 100-year and 500-year floodplains.
- Department of Defense facilities are exposed to potential flooding in many parts of the state. The South Coast Hydrologic Region has the largest number of exposed DoD facilities in both the 100-year and 500-year floodplains.
- Native American tribal land areas are also exposed to potential flooding in many parts of the state. The majority of exposed Native American tribal lands are in the Sacramento River and Colorado River hydrologic regions.

When using these results, it should be noted that the data available to perform the analysis for different parts of the state varied in completeness and quality. For example, structure values within the CVFPP boundary were derived from the data available in the ParcelQuest database, while values from the FEMA HAZUS database were used outside the CVFPP boundary. The study would be improved if floodplains and other data were available for other parts of the state that were of the same quality as what has been developed for the CVFPP boundary.

This analysis of exposure to flood hazard within California provides useful information for making flood management decisions, as follows:

- This analysis shows that significant residual exposure to flooding in California exists. Millions of citizens are subject to inundation, along with homes, businesses, and crops. The relative magnitudes of exposure across the state can be used to help set priorities for more detailed studies to understand better the actual flood risks.
- This analysis shows the locations of areas of greatest urban flooding potential and areas of greatest agricultural flooding potential, which better informs decisions about structuring subsequent detailed studies and formulation of alternatives in those studies.
- It identifies areas that could benefit from enhanced emergency response; these are areas with significant numbers of lives exposed. Enhanced emergency response would provide a better opportunity for evacuation and temporary protection. This analysis will help inform priorities for assessing further those opportunities or for allocating funding for action.

- This analysis shows that a significant portion of California's valuable agricultural land is exposed to flood hazard. Although the detail of this analysis is limited, a major flood (on the order of the 500-year flood) clearly would have significant adverse economic impacts in agricultural regions.
- This analysis shows that sensitive plant and animal species are exposed to flooding. Of the sensitive species exposed, a small percentage is listed by the State of California or by the Federal government as *endangered* or *threatened*.
- It shows that infrastructure critical to continuity of functioning of the State's economy is exposed to hazard. For example, thousands of miles of roadways in the state will be inundated by a 500-year flood, which would limit or stop movement of goods through the state and beyond, with far-reaching impacts. This analysis will help make better decisions about prioritizing risk management studies for those facilities.
- It shows that facilities vital to the national defense are exposed to flooding; a significant flood would impair the ability of those facilities. This analysis will help make better decisions about prioritizing risk management studies for those facilities.

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Appendix A: Flood Future Report Components

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Appendix A: Flood Future Report Components

California’s Flood Future Report is composed of three layers of documents, which were developed with different audiences and purposes, as shown in Figure F-A-1. The three main layers are the Policy Brief, Highlights, and main report including the technical attachments (or technical memoranda).

The Policy Brief document provides a high-level summary of the key information contained in the Flood Future Report and its technical attachments. This document is meant to inform legislators, legislative staff, and agency executives about the report.

The Highlights document, which is an Executive Summary of the Flood Future Report, is more detailed than the Policy Brief slightly expanding the level of detail of the information provided in the Policy Brief. The Highlights document is intended for use by legislators, legislative staff, agency executives, and the public.

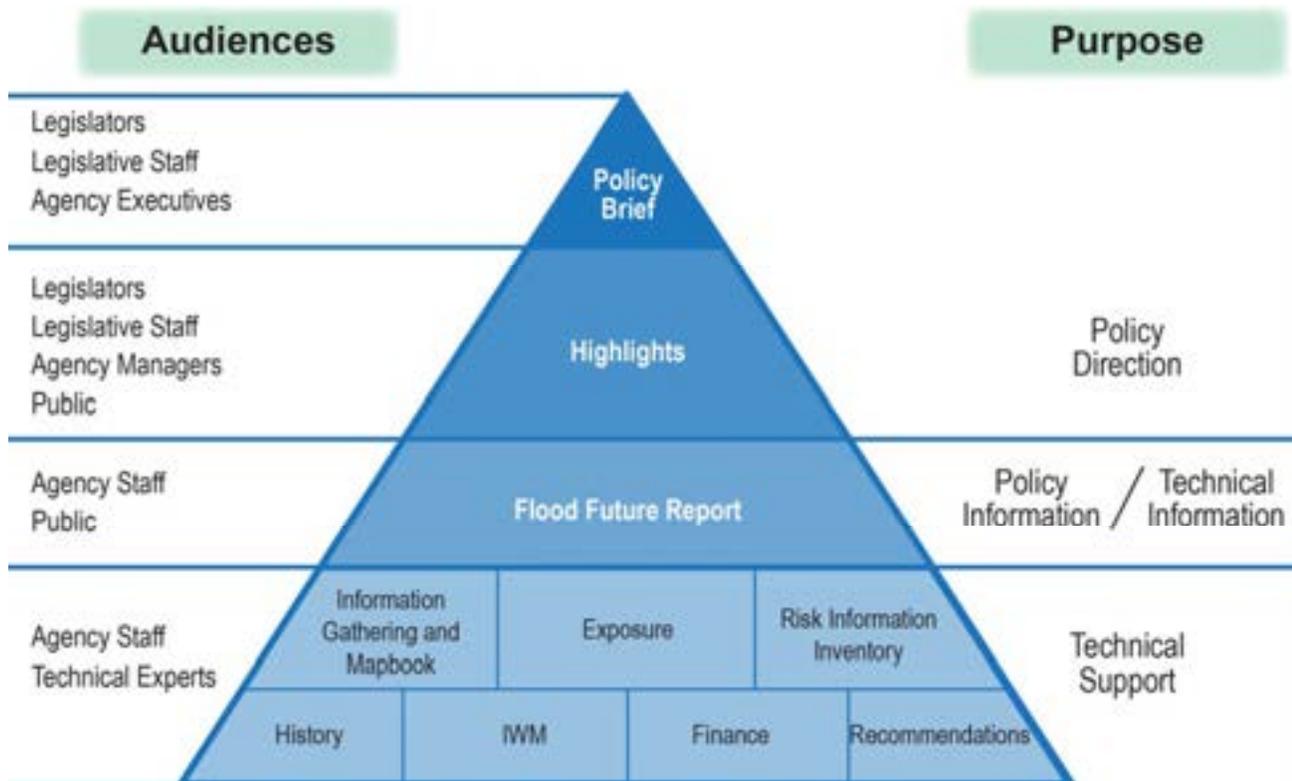


Figure F-A-1. Flood Future Report Components Diagram

The Flood Future Report provides a compilation of the information developed in the technical attachments. This document contains a comprehensive look at flooding throughout the state, and it describes the challenges and opportunities facing flood management. The Flood Future Report also provides information to make decisions about policies and financial investments to improve public safety, environmental stewardship, and economic stability.

This report is supported by eight technical attachments:

- **Attachment A: References**
- **Attachment B: Glossary**
- **Attachment C: History of California Flooding.** This attachment provides a detailed history of flooding in the 10 major California Water Plan hydrologic regions.
- **Attachment D: Summary of Exposure and Infrastructure Inventory by County (Mapbook).** This attachment is a mapbook organized by county providing information on exposure to flooding, flood infrastructure, flood types present, list of major floods, and information on the planned/proposed projects.
- **Attachment E: Existing Conditions of Flood Management in California (Information Gathering Findings).** This attachment provides an overview of the information gathering effort to collect flood management information from local, State, Tribal, and Federal agencies, as well as a detailed summary of the results of the information gathering effort. The purpose of this effort was to develop a better understanding of flood risk management in the State of California.
- **Attachment F: Flood Hazard Exposure Analysis.** This attachment describes the methodology used to identify flood hazard exposure statewide as well as the results of the flood hazard exposure analysis. This analysis was performed to provide insight into potential flood risks throughout the state.
- **Attachment G: Risk Information Inventory.** This attachment provides a better understanding of flood risk statewide, based on the best available information. To characterize flood risk in the California, the SFMP developed a risk exposure analysis used in conjunction with an inventory of risk-relevant information gathered from agency meetings.
- **Attachment H: Practicing Flood Management Using an Integrated Water Management Approach.** This attachment provides a description of the evolution of flood management practices toward and using an IWM approach, an overview of IWM, the benefits of using an IWM approach, and sample case studies of projects that have used an IWM approach.
- **Attachment I: Finance Strategies.** This attachment provides an understanding of the current status of flood management financing and the challenges that lie ahead as California develops recommendations to address flood management issues.
- **Attachment J: Recommendations to Improve Flood Management in California.** This attachment provides a detailed description of how the Flood Future Report recommendations were developed and outlines the recommendations along with other high-level challenges.

Each of the documents follows a color scheme that was developed for the Highlights document. The documents are formatted using different-colored headers to indicate the purpose of a given section. The color scheme follows the following coding format:

- Introduction (light blue)
- Understanding the Situation (brown)
- The Problem (goldenrod)
- The Solution (royal blue)
- Recommendations (green)
- The Path Forward (yellow)

Any and all appendices to an attachment were coded using a light blue to represent that this is background or supporting information.

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Appendix B: Analysis of Exposure to Flood Hazard, by CWP Hydrologic Region

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Table F-B-1. Analysis of Exposure to Flood Hazard – CWP Hydrologic Regions, 100-year Floodplain

CWP Hydrologic Region	Total Area (Acres)	Exposed Area (Acres)	Percent Area Exposed	Population and Structures							Crops				
				Total Population	Exposed Population	Percent Population Exposed	Exposed Structures	Total Depreciated Replacement Value of Exposed Structures (\$1,000s)	Total Depreciated Replacement Value of Exposed Contents (\$1,000s)	Total Depreciated Replacement Value of Exposed Structures and Contents (\$1,000s)	Total Crops (Acres)	Exposed Crops (Acres)	Percent of Crops Exposed	Exposed Crops for which Valuation was Computed (Acres)	Value of Exposed Crops (\$1,000s)
Central Coast	7,228,502	335,997	5	1,447,398	92,733	6	31,649	5,972,119	4,317,504	10,289,623	692,587	123,649	18	88,806	564,644
Colorado River	12,712,131	504,296	4	600,888	31,420	5	18,400	1,555,744	966,990	2,522,734	690,492	48,994	7	39,705	146,117
North Coast	12,445,876	400,766	3	636,763	33,325	5	17,434	1,814,484	1,170,821	2,985,305	427,315	108,320	25	28,675	84,022
North Lahontan	3,915,848	487,372	12	97,822	3,591	4	3,158	445,783	268,443	714,226	160,153	42,920	27	17,328	9,936
Sacramento River	17,413,576	1,737,257	10	2,570,331	200,200	8	74,998	10,444,957	6,243,272	16,688,229	2,261,702	896,917	40	462,452	1,141,176
San Francisco Bay	2,883,074	445,960	15	6,066,125	355,014	6	109,831	27,164,649	19,044,147	46,208,796	142,908	33,340	23	15,265	17,297
San Joaquin River	9,792,186	1,149,240	12	1,752,408	157,091	9	54,190	6,993,551	4,319,724	11,313,275	2,147,089	682,143	32	548,997	1,402,924
South Coast	6,995,709	262,225	4	18,066,362	393,083	2	116,120	21,160,556	14,563,774	35,724,330	397,881	46,170	12	30,446	216,037
South Lahontan	17,076,619	652,384	4	715,062	19,890	3	9,672	1,053,001	647,911	1,700,912	256,356	41,376	16	20,488	25,601
Tulare Lake	10,768,547	1,211,091	11	1,870,489	134,098	7	41,226	4,971,407	3,325,160	8,296,567	3,420,940	802,174	23	665,167	1,761,310
Statewide Totals	101,232,068	7,186,589		33,823,647	1,420,445		476,678	81,576,251	54,867,746	136,443,997	10,597,422	2,826,003		1,917,329	5,369,065
Overlay Regions															
Sacramento-San Joaquin Delta Region	737,665	389,023	53	461,784	59,278	13	23,773	3,827,867	2,245,266	6,073,133	491,972	248,916	51	218,533	682,746
Mountain Region	10,075,484	268,437	3	540,357	11,302	2	6,038	859,582	527,502	1,387,084	150,992	30,237	20	3,338	1,401

Notes:

- (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-B-1. Analysis of Exposure to Flood Hazard – CWP Hydrologic Regions, 100-year Floodplain

CWP Hydrologic Region	Facilities Summary					DoD Facilities		Native American Tribal Lands	
	Essential Facilities	High Potential Loss Facilities	Lifeline Utilities	Transportation Facilities	Transportation Segments (Miles)	Number of Department of Defense Facilities Exposed ⁽¹⁾	Department of Defense Facilities Exposed (Acres) ⁽¹⁾	Number of Native American Tribal Land Areas Exposed ⁽¹⁾	Native American Tribal Land Areas Exposed (Acres) ⁽¹⁾
Central Coast	50	24	23	466	275	5	13,480	0	0
Colorado River	20	10	9	141	180	4	16,962	9	29,154
North Coast	45	32	10	429	330	0	0	4	5,568
North Lahontan	3	9	2	70	94	1	56,674	1	9
Sacramento River	135	108	25	1,087	626	5	4,970	8	2,747
San Francisco Bay	140	168	47	560	361	8	2,813	0	0
San Joaquin River	93	92	12	646	428	2	597	1	3
South Coast	165	101	21	803	423	16	1,252	5	583
South Lahontan	16	9	4	60	169	4	6,498	1	3
Tulare Lake	71	50	11	538	487	7	25,143	2	109
Statewide Totals	738	603	164	4,800	3,372	52	128,390	31	38,176
Overlay Regions									
Sacramento-San Joaquin Delta Region	20	19	4	134	135	2	34	0	0
Mountain Region	14	70	1	141	81	0	0	2	412

Notes:

- (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
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Table F-B-1. Analysis of Exposure to Flood Hazard – CWP Hydrologic Regions, 100-year Floodplain

CWP Hydrologic Region	Sensitive Species		Essential Facilities					High Potential Loss Facilities	
	All Sensitive Plants ⁽²⁾	All Sensitive Animals ⁽²⁾	Care Facilities	Emergency Centers	Fire Stations	Police Stations	Schools	Dams	Hazardous Material Sites
Central Coast	202	111	0	0	6	11	33	14	10
Colorado River	78	99	0	0	1	1	18	1	9
North Coast	203	117	1	0	9	4	31	17	15
North Lahontan	68	46	0	0	1	0	2	9	0
Sacramento River	203	142	2	1	24	3	105	80	28
San Francisco Bay	167	106	3	0	8	14	115	16	152
San Joaquin River	130	131	3	0	9	14	67	53	39
South Coast	210	136	5	0	7	11	142	32	69
South Lahontan	100	113	0	0	1	2	13	8	1
Tulare Lake	94	101	0	0	5	2	64	17	33
Statewide Totals			14	1	71	62	590	247	356
Overlay Regions									
Sacramento-San Joaquin Delta Region	46	61	0	0	3	1	16	1	18
Mountain Region	123	87	2	0	5	0	7	56	14

Notes:

(1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-B-1. Analysis of Exposure to Flood Hazard – CWP Hydrologic Regions, 100-year Floodplain

CWP Hydrologic Region	Lifeline Utilities					
	Wastewater Facilities	Potable Water Facilities	Oil Facilities	Natural Gas Facilities	Electric Power Facilities	Communications Facilities
Central Coast	11	0	0	0	0	12
Colorado River	0	0	0	0	7	2
North Coast	4	0	0	0	1	5
North Lahontan	1	0	0	0	0	1
Sacramento River	4	1	0	0	2	18
San Francisco Bay	19	5	3	0	8	12
San Joaquin River	3	0	0	0	2	7
South Coast	6	3	3	0	2	7
South Lahontan	1	0	0	0	1	2
Tulare Lake	3	1	1	0	2	4
Statewide Totals	52	10	7	0	25	70
Overlay Regions						
Sacramento-San Joaquin Delta Region	0	0	0	0	0	4
Mountain Region	0	1	0	0	0	0

Notes:

- (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this, the reported statewide totals will be less than the sum of the individual analyses regions.
- (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-B-1. Analysis of Exposure to Flood Hazard – CWP Hydrologic Regions, 100-year Floodplain

CWP Hydrologic Region	Transportation Facilities								
	Runways	Railway Bridges	Rail Facilities	Port Facilities	Light Rail Facilities	Highway Bridges	Ferry Facilities	Bus Facilities	Airport Facilities
Central Coast	3	5	1	0	0	451	0	5	1
Colorado River	1	0	0	0	0	139	0	0	1
North Coast	2	2	0	11	0	411	0	1	2
North Lahontan	2	0	0	0	0	65	0	1	2
Sacramento River	4	3	5	9	0	1,058	1	4	3
San Francisco Bay	3	15	0	30	21	481	4	3	3
San Joaquin River	4	1	3	1	1	624	7	2	3
South Coast	5	1	6	49	10	721	4	3	4
South Lahontan	0	3	0	0	0	56	0	1	0
Tulare Lake	2	8	1	0	0	524	0	1	2
Statewide Totals	26	38	16	100	32	4,530	16	21	21
Overlay Regions									
Sacramento-San Joaquin Delta Region	1	1	2	13	0	108	8	0	1
Mountain Region	1	0	0	0	0	139	0	0	1

Notes:

- (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-B-1. Analysis of Exposure to Flood Hazard – CWP Hydrologic Regions, 100-year Floodplain

CWP Hydrologic Region	Transportation Segment			Sensitive Species							
	Railway Segments (Miles)	Light Rail Segments (Miles)	Highway Segments (Miles)	CA State Listing Endangered Plants ⁽²⁾	CA State Listing Endangered Animals ⁽²⁾	CA State Listing Threatened Plants ⁽²⁾	CA State Listing Threatened Animals ⁽²⁾	Federal Listing Endangered Plants ⁽²⁾	Federal Listing Endangered Animals ⁽²⁾	Federal Listing Threatened Plants ⁽²⁾	Federal Listing Threatened Animals ⁽²⁾
Central Coast	57	1	218	17	17	5	6	26	22	7	8
Colorado River	86	0	93	2	13	0	6	2	10	1	3
North Coast	125	0	205	18	9	3	10	19	9	1	8
North Lahontan	20	0	74	1	2	0	5	0	1	0	2
Sacramento River	197	0	429	15	10	2	11	15	8	3	10
San Francisco Bay	136	24	201	16	8	5	6	28	16	3	11
San Joaquin River	138	7	283	13	10	3	11	9	11	8	9
South Coast	89	42	292	23	9	5	5	26	19	15	7
South Lahontan	40	1	128	4	10	0	8	4	9	2	3
Tulare Lake	156	0	331	9	10	2	10	7	11	4	7
Statewide Totals	1,044	74	2,254								
Overlay Regions											
Sacramento-San Joaquin Delta Region	44	3	87	7	7	0	8	6	11	1	9
Mountain Region	16	0	65	9	3	3	9	4	1	8	7

Notes:

- (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-B-2. Analysis of Exposure to Flood Hazard – CWP Hydrologic Regions, 500-year Floodplain

CWP Hydrologic Region	Total Area (Acres)	Exposed Area (Acres)	Percent Area Exposed	Population and Structures							Crops				
				Total Population	Exposed Population	Percent Population Exposed	Exposed Structures	Total Depreciated Replacement Value of Exposed Structures (\$1,000s)	Total Depreciated Replacement Value of Exposed Contents (\$1,000s)	Total Depreciated Replacement Value of Exposed Structures and Contents (\$1,000s)	Total Crops (Acres)	Exposed Crops (Acres)	Percent of Crops Exposed	Exposed Crops for which Valuation was Computed (Acres)	Value of Exposed Crops (\$1,000s)
Central Coast	7,228,502	393,509	5	1,447,398	426,918	29	125,434	22,032,283	14,231,956	36,264,239	692,587	146,315	21	106,140	689,329
Colorado River	12,712,131	609,168	5	600,888	227,121	38	100,584	12,838,242	7,781,699	20,619,942	690,492	79,141	11	66,284	275,662
North Coast	12,445,876	412,372	3	636,763	43,428	7	22,576	2,508,742	1,649,784	4,158,526	427,315	112,158	26	29,474	87,734
North Lahontan	3,915,848	488,372	12	97,822	4,049	4	3,497	513,180	309,811	822,992	160,153	43,189	27	17,357	9,952
Sacramento River	17,413,576	2,242,354	13	2,570,331	925,807	36	320,797	42,944,596	23,394,484	66,339,080	2,261,702	1,215,489	54	631,772	1,683,098
San Francisco Bay	2,883,074	553,644	19	6,066,125	1,041,409	17	322,678	79,275,629	54,523,866	133,799,495	142,908	44,028	31	17,106	23,941
San Joaquin River	9,792,186	1,418,403	14	1,752,408	535,276	31	172,325	24,500,609	15,117,156	39,617,764	2,147,089	878,688	41	704,264	1,888,139
South Coast	6,995,709	578,350	8	18,066,362	3,411,852	19	883,145	138,889,416	92,390,387	231,279,802	397,881	79,947	20	51,772	424,839
South Lahontan	17,076,619	820,326	5	715,062	153,203	21	57,183	7,501,035	4,421,189	11,922,225	256,356	72,244	28	47,461	59,475
Tulare Lake	10,768,547	1,491,797	14	1,870,489	498,231	27	152,247	19,538,340	12,499,837	32,038,176	3,420,940	990,803	29	819,747	2,271,947
Statewide Totals		9,008,295		33,823,647	7,267,294		2,160,467	350,542,072	226,320,169	576,862,241	10,597,422	3,662,001		2,491,378	7,414,116
Overlay Regions															
Sacramento-San Joaquin Delta Region	737,665	553,106	75	461,784	218,128	47	74,490	11,446,947	6,580,778	737,665	491,972	383,126	78	337,615	1,012,951
Mountain Region	10,075,484	270,302	3	540,357	13,619	3	7,206	996,301	618,934	10,075,484	150,992	30,937	20	3,356	1,408

Notes:

- (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-B-2. Analysis of Exposure to Flood Hazard – CWP Hydrologic Regions, 500-year Floodplain

CWP Hydrologic Region	Facilities Summary					DoD Facilities		Native American Tribal Lands	
	Essential Facilities	High Potential Loss Facilities	Lifeline Utilities	Transportation Facilities	Transportation Segments (Miles)	Number of Department of Defense Facilities Exposed ⁽¹⁾	Department of Defense Facilities Exposed (Acres) ⁽¹⁾	Number of Native American Tribal Land Areas Exposed ⁽¹⁾	Native American Tribal Land Areas Exposed (Acres) ⁽¹⁾
Central Coast	230	32	33	624	412	5	15,332	0	0
Colorado River	113	15	22	221	319	4	16,963	10	57,499
North Coast	54	35	13	461	355	0	0	4	5,748
North Lahontan	3	9	2	75	96	1	56,674	2	14
Sacramento River	510	147	53	1,620	1,191	6	5,841	8	2,833
San Francisco Bay	466	303	58	1,022	709	8	2,914	0	0
San Joaquin River	298	134	29	901	718	2	831	1	3
South Coast	1,299	772	87	2,074	1,626	16	4,337	5	586
South Lahontan	77	10	8	94	295	4	9,377	1	10
Tulare Lake	254	71	25	808	744	7	25,396	2	109
Statewide Totals	3,304	1,528	330	7,900	6,465				
Overlay Regions									
Sacramento-San Joaquin Delta Region	92	47	13	251	246	2	52	0	0
Mountain Region	18	70	1	147	86	0	0	2	412

Notes:

(1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-B-2. Analysis of Exposure to Flood Hazard – CWP Hydrologic Regions, 500-year Floodplain

CWP Hydrologic Region	Sensitive Species		Essential Facilities					High Potential Loss Facilities	
	All Sensitive Plants ⁽²⁾	All Sensitive Animals ⁽²⁾	Care Facilities	Emergency Centers	Fire Stations	Police Stations	Schools	Dams	Hazardous Material Sites
Central Coast	204	112	4	1	26	24	175	14	18
Colorado River	85	101	2	1	7	17	86	3	12
North Coast	203	117	1	0	11	7	35	18	17
North Lahontan	68	46	0	0	1	0	2	9	0
Sacramento River	205	142	17	1	41	19	432	83	64
San Francisco Bay	169	110	10	2	29	39	386	19	284
San Joaquin River	131	131	8	0	21	24	245	55	79
South Coast	210	137	39	1	29	61	1,169	38	734
South Lahontan	104	113	0	1	3	5	68	8	2
Tulare Lake	94	103	7	1	13	22	211	18	53
Statewide Totals			88	8	181	218	2,809	265	1,263
Overlay Regions									
Sacramento-San Joaquin Delta Region	46	64	1	0	7	1	83	3	44
Mountain Region	123	87	3	0	5	1	9	56	14

Notes:

(1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-B-2. Analysis of Exposure to Flood Hazard – CWP Hydrologic Regions, 500-year Floodplain

CWP Hydrologic Region	Lifeline Utilities					
	Wastewater Facilities	Potable Water Facilities	Oil Facilities	Natural Gas Facilities	Electric Power Facilities	Communications Facilities
Central Coast	16	1	0	0	2	14
Colorado River	4	1	0	0	8	9
North Coast	6	0	0	0	2	5
North Lahontan	1	0	0	0	0	1
Sacramento River	12	1	0	0	6	34
San Francisco Bay	21	6	4	0	10	17
San Joaquin River	5	2	0	1	5	16
South Coast	17	7	18	3	16	26
South Lahontan	1	0	0	1	1	5
Tulare Lake	7	1	1	0	2	14
Statewide Totals	90	19	23	5	52	141
Overlay Regions						
Sacramento-San Joaquin Delta Region	1	0	0	1	1	10
Mountain Region	0	1	0	0	0	0

Notes:

- (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-B-2. Analysis of Exposure to Flood Hazard – CWP Hydrologic Regions, 500-year Floodplain

CWP Hydrologic Region	Transportation Facilities								
	Runways	Railway Bridges	Rail Facilities	Port Facilities	Light Rail Facilities	Highway Bridges	Ferry Facilities	Bus Facilities	Airport Facilities
Central Coast	7	10	3	0	2	584	0	15	3
Colorado River	3	3	1	0	0	211	0	1	2
North Coast	2	2	0	11	0	442	0	2	2
North Lahontan	2	0	0	0	0	70	0	1	2
Sacramento River	15	23	6	10	29	1,515	3	9	10
San Francisco Bay	8	31	5	30	48	887	4	4	5
San Joaquin River	7	14	17	6	2	839	7	4	5
South Coast	10	47	23	97	30	1,835	8	16	8
South Lahontan	3	3	1	0	1	84	0	1	1
Tulare Lake	8	14	2	0	0	774	0	3	7
Statewide Totals	65	147	58	154	112	7,241	22	56	45
Overlay Regions									
Sacramento-San Joaquin Delta Region	1	2	6	18	0	213	10	0	1
Mountain Region	2	0	0	0	0	142	0	1	2

Notes:

- (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-B-2. Analysis of Exposure to Flood Hazard – CWP Hydrologic Regions, 500-year Floodplain

CWP Hydrologic Region	Transportation Segment			Sensitive Species							
	Railway Segments (Miles)	Light Rail Segments (Miles)	Highway Segments (Miles)	CA State Listing Endangered Plants ⁽²⁾	CA State Listing Endangered Animals ⁽²⁾	CA State Listing Threatened Plants ⁽²⁾	CA State Listing Threatened Animals ⁽²⁾	Federal Listing Endangered Plants ⁽²⁾	Federal Listing Endangered Animals ⁽²⁾	Federal Listing Threatened Plants ⁽²⁾	Federal Listing Threatened Animals ⁽²⁾
Central Coast	93	6	313	17	17	5	6	28	22	7	8
Colorado River	118	0	201	2	13	0	6	2	10	1	3
North Coast	137	0	218	18	9	3	10	19	9	1	8
North Lahontan	20	0	76	1	2	0	5	0	1	0	2
Sacramento River	315	16	860	15	10	2	11	15	8	3	10
San Francisco Bay	216	60	434	17	8	5	6	29	16	3	11
San Joaquin River	217	9	491	13	10	3	11	9	11	9	9
South Coast	329	118	1,180	23	9	5	5	26	19	15	7
South Lahontan	64	2	229	4	10	0	8	4	9	2	3
Tulare Lake	222	0	522	9	10	2	10	7	11	4	7
Statewide Totals	1,730	211	4,524								
Overlay Regions											
Sacramento-San Joaquin Delta Region	56	4	187	7	7	0	6	11	1	9	6
Mountain Region	18	0	68	9	3	3	4	1	8	7	4

Notes:

(1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Appendix C: Analysis of Exposure to Flood Hazard, by County

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Table F-C-1. Analysis of Exposure to Flood Hazard – Counties, 100-year Floodplain

Counties	Total Area (Acres)	Exposed Area (Acres)	Percent Area Exposed	Population and Structures							Crops				
				Total Population	Exposed Population	Percent Population Exposed	Exposed Structures	Total Depreciated Replacement Value of Exposed Structures (\$1,000s)	Total Depreciated Replacement Value of Exposed Contents (\$1,000s)	Total Depreciated Replacement Value of Exposed Structures and Contents (\$1,000s)	Total Crops (Acres)	Exposed Crops (Acres)	Percent of Crops Exposed	Exposed Crops for which Valuation was Computed (Acres)	Value of Exposed Crops (\$1,000s)
Alameda	525,337	45,821	9	1,443,547	32,985	2	10,132	3,114,327	2,469,828	5,584,155	10,613	1,037	10	820	291
Alpine	474,266	0	0	1,210	0	0	0	0	0	0	4,212	0	0	0	-
Amador	387,826	16,917	4	35,100	1,470	4	718	97,510	63,300	160,810	8,822	3,378	38	2,013	4,617
Butte	1,073,263	198,831	19	203,166	13,698	7	5,316	652,558	411,552	1,064,110	223,923	119,038	53	46,611	146,850
Calaveras	662,841	34,562	5	40,552	1,609	4	975	137,911	82,662	220,573	3,252	313	10	210	843
Colusa	740,383	175,332	24	18,804	5,800	31	2,334	216,471	117,487	333,958	293,219	121,018	41	41,672	78,068
Contra Costa	514,018	112,987	22	949,049	39,525	4	15,252	3,014,033	1,839,074	4,853,107	48,440	23,151	48	16,673	48,367
Del Norte	648,967	19,320	3	27,471	1,652	6	855	79,581	51,521	131,102	10,744	5,422	50	N/A	N/A
El Dorado	1,144,948	43,461	4	156,255	2,525	2	1,623	296,317	179,886	476,203	47,228	508	1	10	123
Fresno	3,846,409	327,940	9	798,799	30,132	4	9,108	1,109,032	730,741	1,839,773	1,303,233	230,877	18	197,584	546,014
Glenn	849,133	123,291	15	26,448	4,678	18	1,833	155,096	90,856	245,952	244,663	80,945	33	34,979	86,452
Humboldt	2,293,973	95,713	4	126,477	9,952	8	5,007	433,757	273,424	707,181	45,940	33,192	72	1,903	3,189
Imperial	2,868,458	349,600	12	142,359	1,423	1	1,123	62,018	40,868	102,886	518,912	32,048	6	28,821	76,916
Inyo	6,546,560	319,193	5	17,944	205	1	200	10,397	6,176	16,573	11,210	165	1	16	13
Kern	5,224,314	557,295	11	661,591	46,227	7	15,701	1,490,122	995,459	2,485,581	984,344	240,411	24	165,880	503,839
Kings	890,801	343,579	39	129,475	9,155	7	1,034	204,391	121,416	325,807	568,709	275,436	48	240,131	476,999
Lake	850,838	69,700	8	58,308	9,698	17	6,438	579,196	340,074	919,270	28,454	7,215	25	5,476	22,047
Lassen	3,021,452	355,793	12	33,828	1,725	5	1,089	91,293	53,743	145,036	121,369	54,529	45	20,605	11,707
Los Angeles	2,612,678	112,898	4	9,515,955	79,112	1	23,239	3,729,169	2,609,034	6,338,203	209,607	23,449	11	20,735	27,077
Madera	1,377,575	188,583	14	123,106	12,235	10	3,292	392,488	245,734	638,222	356,548	140,092	39	100,117	229,035
Marin	378,665	34,604	9	247,239	39,739	16	13,141	3,299,912	2,256,173	5,556,085	6,664	3,963	59	2,422	677
Mariposa	935,608	17,356	2	17,140	249	1	181	29,019	16,982	46,001	3,642	98	3	N/A	N/A
Mendocino	2,248,057	48,590	2	86,198	7,227	8	3,152	353,016	237,565	590,581	80,134	17,151	21	8,183	50,181
Merced	1,265,631	371,139	29	211,108	61,886	29	20,588	2,055,548	1,339,672	3,395,220	550,475	225,663	41	193,763	370,352
Modoc	2,689,713	294,725	11	9,445	914	10	626	46,683	33,530	80,213	182,946	46,391	25	8,790	8,031
Mono	2,003,706	65,911	3	12,851	304	2	318	34,064	19,307	53,371	37,129	5,228	14	612	469
Monterey	2,121,220	121,375	6	401,683	18,185	5	5,650	1,090,789	796,798	1,887,587	262,671	54,385	21	37,556	311,046
Napa	505,857	51,436	10	124,232	13,559	11	4,926	849,835	486,639	1,467,195	48,639	8,780	18	201	337
Nevada	623,851	14,159	2	92,066	1,255	1	739	96,626	59,705	156,331	6,358	58	1	10	58
Orange	509,718	24,357	5	2,843,086	142,298	5	37,758	7,038,018	4,535,365	11,573,383	67,565	3,165	5	1,066	4,386
Placer	960,039	91,103	9	248,254	8,099	3	3,939	772,862	480,932	1,253,794	51,075	10,560	21	2,106	3,989
Plumas	1,672,708	84,763	5	20,828	1,454	7	1,118	142,993	88,449	231,442	41,918	23,115	55	3,122	1,054
Riverside	4,672,928	159,192	3	1,545,114	49,486	3	22,494	2,752,648	1,863,213	4,615,861	221,540	26,433	12	16,653	57,089
Sacramento	636,078	119,331	19	1,223,622	44,414	4	13,847	2,150,461	1,198,581	3,349,042	174,779	50,598	29	28,615	91,619
San Benito	889,408	33,811	4	53,194	2,436	5	899	153,160	89	266,217	49,810	13,834	28	8,381	30,218
San Bernardino	12,867,935	120,270	1	1,709,927	41,024	2	16,367	2,004,972	1,336,352	3,341,324	67,081	2,451	4	995	2,168
San Diego	2,712,196	83,991	3	2,811,030	75,704	3	23,905	4,959,539	3,543,476	8,503,015	92,386	7,605	8	4,683	27,627
San Francisco	68,670	409	1	776,637	0	0	0	28	18	46	0	0	0	0	-
San Joaquin	912,596	242,854	27	563,610	42,392	8	15,987	2,179,320	1,349,140	3,528,460	565,975	183,857	32	155,706	566,479
San Luis Obispo	2,124,278	100,617	5	246,652	10,994	4	5,850	846,983	598,661	1,445,644	201,428	20,144	10	15,545	62,036
San Mateo	353,452	88,006	25	706,815	100,138	14	30,285	8,388,867	5,388,120	13,776,987	7,259	643	9	497	3,036
Santa Barbara	1,758,231	51,772	3	398,960	26,228	7	7,955	1,557,053	1,103,054	2,660,107	109,900	15,508	14	9,819	52,139
Santa Clara	835,231	60,869	7	1,682,689	132,577	8	37,069	8,774,881	6,437,633	15,212,514	71,313	20,072	28	13,524	50,490
Santa Cruz	285,713	12,517	4	255,435	27,135	11	8,882	1,725,675	1,279,284	3,004,959	22,547	5,331	24	3,891	58,425
Shasta	2,465,233	75,246	3	163,241	9,847	6	4,378	528,494	320,108	848,602	60,152	8,833	15	1,863	3,887
Sierra	615,317	2,002	0	3,556	373	10	286	21,664	12,708	34,372	19,257	926	5	69	22
Siskiyou	4,062,265	135,198	3	44,307	3,877	9	2,803	171,745	108,488	280,233	177,899	36,828	21	16,918	27,290
Solano	582,369	199,186	34	395,264	22,482	6	7,156	1,495,401	982,878	2,478,279	199,038	53,418	27	47,530	95,390
Sonoma	1,026,091	58,498	6	458,520	15,037	3	7,928	1,248,325	899,514	2,147,839	93,700	22,310	24	10,445	8,226
Stanislaus	970,172	61,984	6	447,034	14,544	3	3,879	497,872	304,350	802,222	376,858	40,331	11	31,440	54,398
Sutter	389,310	194,962	50	78,927	6,173	8	2,132	266,318	139,366	405,684	282,471	164,273	58	74,309	218,821
Tehama	1,892,926	86,788	5	56,050	8,094	14	3,829	386,740	238,211	624,951	112,353	24,274	22	21,256	62,304
Trinity	2,052,767	10,285	1	13,021	967	7	610	50,229	31,513	81,742	2,751	217	8	46	18
Tulare	3,099,336	176,123	6	368,064	62,135	17	20,447	2,678,545	1,777,898	4,456,443	753,785	112,898	15	98,934	326,356
Tuolumne	1,457,657	41,249	3	54,508	515	1	229	28,360	16,719	45,079	1,431	6	0	3	27
Ventura	1,187,858	52,208	4	753,402	49,560	7	16,395	2,982,103	2,106,784	5,088,887	110,478	21,701	20	17,730	192,755
Yolo	653,450	239,867	37	168,013	56,822	34	19,505	3,528,557	2,260,113	5,788,670	348,037	180,459	52	147,456	330,686
Yuba	412,018	51,827	13	60,223	20,833	35	7,372	697,708	361,116	1,058,824	92,602	22,279	24	8,940	34,545
Statewide Totals		7,169,398		33,861,390	1,422,764		477,892	81,750,680	54,975,028	136,725,708		2,826,011		1,917,337	5,369,076

Notes:
 (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses.
 (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.
 (4) The state did not have a standard procedure to compute the values for the agricultural land in Del Norte and Mariposa counties, so the exposure values are not applicable (N/A).

APPENDIX C: ANALYSIS OF EXPOSURE TO FLOOD HAZARD, BY COUNTY

Table F-C-1. Analysis of Exposure to Flood Hazard – Counties, 100-year Floodplain

Counties	Facilities Summary					DoD Facilities		Native American Tribal Lands		Sensitive Species		Essential Facilities				
	Essential Facilities	High Potential Loss Facilities	Lifeline Utilities	Transportation Facilities	Transportation Segments (Miles)	Number of Department of Defense Facilities Exposed ⁽¹⁾	Department of Defense Facilities Exposed (Acres) ⁽¹⁾	Number of Native American Tribal Land Areas Exposed ⁽¹⁾	Native American Tribal Land Areas Exposed (Acres) ⁽¹⁾	All Sensitive Plants ⁽²⁾	All Sensitive Animals ⁽²⁾	Care Facilities	Emergency Centers	Fire Stations	Police Stations	Schools
Alameda	8	6	6	43	48	3	215	0	0	29	45	1	0	0	0	7
Alpine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Amador	4	6	0	16	9	0	0	0	0	5	12	1	0	1	1	1
Butte	3	2	2	174	45	0	0	0	0	33	35	0	0	0	0	3
Calaveras	2	11	0	14	11	0	0	1	3	18	25	0	0	1	0	1
Colusa	11	9	0	80	30	0	0	1	407	30	29	0	1	1	0	9
Contra Costa	20	64	12	110	60	1	173	0	0	49	63	1	0	0	3	16
Del Norte	1	0	2	18	11	0	0	1	3,595	49	32	0	0	0	0	1
El Dorado	0	3	2	13	6	0	0	0	0	20	25	0	0	0	0	0
Fresno	27	21	2	199	126	2	8,434	0	0	44	67	0	0	4	1	22
Glenn	8	1	1	98	41	1	2,331	1	100	17	20	0	0	2	0	6
Humboldt	10	9	4	119	101	0	0	2	1,433	46	43	1	0	4	0	5
Imperial	0	10	5	79	110	3	16,952	2	8,111	35	64	0	0	0	0	0
Inyo	0	3	0	8	30	1	3,858	1	3	53	59	0	0	0	0	0
Kern	18	16	4	122	244	5	12,929	0	0	55	74	0	0	1	0	17
Kings	0	5	2	54	73	1	911	1	105	8	23	0	0	0	0	0
Lake	11	1	1	36	23	0	0	2	59	35	24	0	0	2	1	8
Lassen	8	15	1	63	75	1	56,674	1	9	62	39	0	0	2	0	6
Los Angeles	17	50	10	203	122	3	1,214	0	0	78	93	0	0	0	3	14
Madera	8	10	1	85	38	0	0	0	0	14	30	0	0	0	0	8
Marin	23	3	4	76	28	0	0	0	0	70	49	0	0	4	2	17
Mariposa	0	4	0	7	14	0	0	0	0	35	39	0	0	0	0	0
Mendocino	9	11	2	75	69	0	0	1	505	70	39	0	0	1	0	8
Merced	44	11	9	187	140	0	0	0	0	25	38	1	0	2	7	34
Modoc	4	24	0	42	30	0	0	2	1,490	50	33	0	0	1	2	1
Mono	2	2	1	6	17	0	0	0	0	23	28	0	0	0	0	2
Monterey	9	6	4	92	75	4	12,746	0	0	79	56	0	0	1	1	7
Napa	11	1	3	42	24	1	102	0	0	39	28	0	0	1	1	9
Nevada	0	6	0	14	11	0	0	0	0	15	18	0	0	0	0	0
Orange	48	17	1	131	70	4	137	0	0	41	61	1	0	1	2	44
Placer	2	11	0	47	24	1	41	0	0	24	39	0	0	0	0	2
Plumas	2	14	0	45	28	0	0	1	409	31	20	0	0	1	0	1
Riverside	27	8	7	113	104	1	11	7	14,302	70	106	1	0	2	0	24
Sacramento	13	12	8	124	62	2	785	0	0	24	38	1	0	0	0	12
San Benito	2	2	2	37	21	0	0	0	0	20	38	0	0	0	0	2
San Bernardino	30	16	3	128	95	5	714	4	7,118	95	103	2	0	3	2	23
San Diego	46	23	5	221	98	9	601	3	138	122	89	1	0	3	6	36
San Francisco	0	0	0	0	0	0	0	0	0	6	9	0	0	0	0	0
San Joaquin	18	29	1	187	129	2	597	0	0	28	40	0	0	2	2	14
San Luis Obispo	2	4	6	127	65	1	0	0	0	104	65	0	0	1	0	1
San Mateo	31	54	9	82	34	0	0	0	0	43	39	1	0	1	4	25
Santa Barbara	17	1	6	125	51	1	736	0	0	55	54	0	0	2	1	14
Santa Clara	49	42	9	210	134	1	131	0	0	38	40	0	0	0	5	44
Santa Cruz	14	8	5	45	31	0	0	0	0	36	32	0	0	2	7	5
Shasta	6	7	2	87	46	0	0	0	0	25	59	0	0	2	0	4
Sierra	4	0	0	3	7	0	0	0	0	7	7	0	0	2	0	2
Siskiyou	12	7	1	123	103	0	0	0	0	55	53	0	0	3	0	9
Solano	7	2	4	71	67	2	1,515	0	0	43	46	0	0	1	1	5
Sonoma	8	3	1	114	64	1	683	1	9	62	38	0	0	2	2	4
Stanislaus	6	1	1	37	29	0	0	0	0	19	34	0	0	1	3	2
Sutter	8	1	3	51	57	0	0	0	0	6	18	0	0	1	0	7
Tehama	5	4	2	130	32	1	1,513	0	0	20	35	0	0	0	0	5
Trinity	8	1	0	13	21	0	0	1	27	11	19	0	0	1	2	5
Tulare	33	12	3	199	128	2	4,076	1	4	38	48	0	0	1	2	30
Tuolumne	3	10	0	6	2	0	0	0	0	30	44	1	0	1	0	1
Ventura	30	1	4	111	74	2	161	0	0	31	51	0	0	0	2	28
Yolo	37	9	4	116	153	0	0	1	282	18	41	1	0	8	0	28
Yuba	14	4	0	42	38	1	293	0	0	5	14	0	0	2	0	12
Statewide Totals	740	613	165	4,800	3,378							14	1	71	63	591

Notes:

(1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-C-1. Analysis of Exposure to Flood Hazard – Counties, 100-year Floodplain

Counties	High Potential Loss Facilities		Lifeline Utilities						Transportation Facilities								
	Dams	Hazardous Material Sites	Wastewater Facilities	Potable Water Facilities	Oil Facilities	Natural Gas Facilities	Electric Power Facilities	Communications Facilities	Runways	Railway Bridges	Rail Facilities	Port Facilities	Light Rail Facilities	Highway Bridges	Ferry Facilities	Bus Facilities	Airport Facilities
Alameda	1	5	2	0	0	0	2	2	0	2	0	5	1	35	0	0	0
Alpine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Amador	6	0	0	0	0	0	0	0	0	0	0	0	0	16	0	0	0
Butte	2	0	1	0	0	0	0	1	0	0	1	0	0	173	0	0	0
Calaveras	11	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0
Colusa	6	3	0	0	0	0	0	0	0	0	0	0	0	79	0	1	0
Contra Costa	3	61	3	3	3	0	2	1	0	4	1	16	0	86	3	0	0
Del Norte	0	0	0	0	0	0	0	2	0	0	0	0	0	17	0	1	0
El Dorado	3	0	1	1	0	0	0	0	1	0	0	0	0	11	0	0	1
Fresno	11	10	0	0	0	0	1	1	1	0	0	0	0	197	0	0	1
Glenn	1	0	0	0	0	0	0	1	0	0	0	0	0	98	0	0	0
Humboldt	2	7	0	0	0	0	1	3	1	0	0	10	0	107	0	0	1
Imperial	1	9	0	0	0	0	5	0	0	0	0	0	0	79	0	0	0
Inyo	3	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0
Kern	4	12	1	1	1	0	1	0	1	5	1	0	0	113	0	1	1
Kings	5	0	0	0	0	0	0	2	0	0	0	0	0	54	0	0	0
Lake	1	0	0	0	0	0	0	1	0	0	0	0	0	36	0	0	0
Lassen	15	0	0	0	0	0	0	1	1	1	0	0	0	59	0	1	1
Los Angeles	9	41	2	0	2	0	4	2	1	1	4	48	3	144	1	0	1
Madera	5	5	0	0	0	0	1	0	0	0	0	0	0	85	0	0	0
Marin	3	0	3	0	0	0	0	1	1	1	0	0	0	68	4	1	1
Mariposa	4	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0
Mendocino	3	8	2	0	0	0	0	0	0	0	0	0	0	75	0	0	0
Merced	1	10	2	0	0	0	1	6	1	0	1	0	0	182	0	2	1
Modoc	24	0	0	0	0	0	0	0	0	0	0	0	0	41	0	1	0
Mono	2	0	0	0	0	0	1	0	0	0	0	0	0	6	0	0	0
Monterey	3	3	2	0	0	0	0	2	0	0	0	0	0	92	0	0	0
Napa	0	1	2	0	0	0	0	1	0	0	0	0	0	42	0	0	0
Nevada	6	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0
Orange	13	4	1	0	0	0	0	0	0	1	0	0	0	127	2	1	0
Placer	11	0	0	0	0	0	0	0	0	0	0	0	0	47	0	0	0
Plumas	0	14	0	0	0	0	0	0	1	0	0	0	0	43	0	0	1
Riverside	5	3	1	2	0	0	2	2	2	0	0	0	0	110	0	0	1
Sacramento	8	4	0	0	0	0	0	8	2	0	0	0	0	120	0	0	2
San Benito	2	0	0	0	0	0	0	2	0	0	0	0	0	37	0	0	0
San Bernardino	4	12	1	1	0	0	0	1	1	1	0	0	0	124	0	1	1
San Diego	3	20	1	0	0	0	0	4	2	0	2	8	6	200	0	1	2
San Francisco	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Joaquin	8	21	0	0	0	0	0	1	2	0	1	0	1	178	4	0	1
San Luis Obispo	4	0	4	0	0	0	0	2	0	1	0	0	0	124	0	2	0
San Mateo	4	50	4	0	0	0	2	3	1	2	0	7	1	70	0	0	1
Santa Barbara	1	0	3	0	0	0	0	3	3	2	1	0	0	117	0	1	1
Santa Clara	7	35	3	2	0	0	2	2	1	5	0	0	19	182	0	2	1
Santa Cruz	1	7	2	0	0	0	0	3	0	2	0	0	0	41	0	2	0
Shasta	7	0	0	0	0	0	0	2	0	0	0	0	0	87	0	0	0
Sierra	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0
Siskiyou	7	0	1	0	0	0	0	0	0	1	1	0	0	121	0	0	0
Solano	2	0	2	0	0	0	0	2	0	1	0	3	0	66	1	0	0
Sonoma	3	0	1	0	0	0	0	0	1	1	0	0	0	111	0	0	1
Stanislaus	1	0	1	0	0	0	0	0	0	1	0	0	0	36	0	0	0
Sutter	1	0	0	0	0	0	1	2	0	0	0	0	0	51	0	0	0
Tehama	4	0	1	0	0	0	0	1	0	0	0	0	0	130	0	0	0
Trinity	1	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0
Tulare	1	11	2	0	0	0	0	1	0	4	0	0	0	194	0	1	0
Tuolumne	10	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0
Ventura	1	0	1	0	1	0	0	2	0	0	0	2	1	108	0	0	0
Yolo	1	8	1	0	0	0	1	2	1	1	3	9	0	99	0	2	1
Yuba	2	2	0	0	0	0	0	0	1	1	0	0	0	40	0	0	0
Statewide Totals	247	366	51	10	7	0	27	70	26	38	16	108	32	4,523	15	21	21

Notes:
 (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

APPENDIX C: ANALYSIS OF EXPOSURE TO FLOOD HAZARD, BY COUNTY

Table F-C-1. Analysis of Exposure to Flood Hazard – Counties, 100-year Floodplain

Counties	Transportation Segment			Sensitive Species							
	Railway Segments (Miles)	Light Rail Segments (Miles)	Highway Segments (Miles)	CA State Listing Endangered Plants ⁽²⁾	CA State Listing Endangered Animals ⁽²⁾	CA State Listing Threatened Plants ⁽²⁾	CA State Listing Threatened Animals ⁽²⁾	Federal Listing Endangered Plants ⁽²⁾	Federal Listing Endangered Animals ⁽²⁾	Federal Listing Threatened Plants ⁽²⁾	Federal Listing Threatened Animals ⁽²⁾
Alameda	18	5	25	2	3	0	5	4	7	1	6
Alpine	0	0	0	0	0	0	0	0	0	0	0
Amador	3	0	6	1	1	0	0	1	0	1	1
Butte	18	0	27	2	2	0	8	2	2	2	5
Calaveras	0	0	11	2	1	0	1	0	0	1	3
Colusa	6	0	24	4	1	1	3	2	1	1	2
Contra Costa	29	0	31	4	4	0	6	6	6	0	6
Del Norte	0	0	11	2	1	0	1	2	1	0	2
El Dorado	0	0	6	2	3	0	2	2	0	0	2
Fresno	44	0	82	5	6	1	8	5	4	3	5
Glenn	8	0	33	1	2	0	3	0	1	1	3
Humboldt	55	0	46	3	4	0	2	3	3	0	4
Imperial	77	0	33	2	9	0	5	0	6	1	1
Inyo	0	0	30	2	7	0	6	3	5	2	2
Kern	86	0	158	5	7	0	8	4	7	1	6
Kings	12	0	61	1	3	0	4	2	5	0	3
Lake	0	0	23	5	2	1	0	3	0	0	0
Lassen	22	0	53	1	3	0	5	0	2	1	0
Los Angeles	27	8	87	8	7	1	6	9	14	3	6
Madera	8	0	30	4	5	0	4	3	3	3	4
Marin	8	0	20	4	4	3	1	8	8	2	4
Mariposa	0	0	14	1	2	1	4	0	0	1	2
Mendocino	40	0	29	4	1	3	1	4	3	0	3
Merced	48	0	92	5	2	0	4	2	5	3	4
Modoc	11	0	19	2	4	0	4	1	3	1	1
Mono	0	0	17	0	5	0	2	0	2	0	0
Monterey	17	0	58	7	5	1	3	8	8	3	6
Napa	12	0	12	3	4	2	2	9	3	0	4
Nevada	6	0	5	2	2	0	4	0	0	0	2
Orange	12	8	50	5	5	3	2	4	7	4	4
Placer	2	0	22	2	2	0	6	0	0	0	5
Plumas	13	0	15	1	2	0	5	0	0	1	0
Riverside	17	3	84	7	12	1	6	10	14	2	8
Sacramento	22	0	40	2	2	0	5	2	2	0	5
San Benito	0	0	21	0	5	0	4	0	5	1	2
San Bernardino	28	5	62	7	11	1	6	11	12	4	4
San Diego	21	12	65	13	7	0	5	10	13	6	3
San Francisco	0	0	0	2	1	0	1	2	2	0	1
San Joaquin	41	7	81	3	3	0	6	2	4	1	7
San Luis Obispo	10	0	55	5	9	4	6	11	12	3	6
San Mateo	8	2	24	5	4	0	3	6	7	0	4
Santa Barbara	11	0	40	5	8	3	7	12	12	1	4
Santa Clara	40	18	76	0	5	0	4	6	6	0	6
Santa Cruz	7	0	24	5	3	0	3	6	6	2	5
Shasta	21	0	25	1	5	0	7	0	3	1	4
Sierra	1	0	6	0	0	0	0	0	0	0	1
Siskiyou	21	0	82	2	6	0	7	1	2	1	2
Solano	28	0	39	4	4	0	5	6	6	2	8
Sonoma	28	0	36	8	5	0	3	12	6	0	4
Stanislaus	12	0	17	4	4	0	2	2	6	2	3
Sutter	12	0	45	1	1	0	5	1	1	0	3
Tehama	11	0	21	1	3	0	4	0	3	2	3
Trinity	2	0	19	0	0	0	2	0	0	0	0
Tulare	46	0	80	4	4	1	7	2	6	3	5
Tuolumne	0	0	2	0	3	1	2	0	0	2	3
Ventura	11	7	56	3	8	0	2	4	8	3	5
Yolo	47	0	106	1	4	0	5	2	4	0	7
Yuba	18	0	20	1	2	0	4	1	1	0	4
Statewide Totals	1,045	74	2,255								

Notes:

(1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-C-2. Analysis of Exposure to Flood Hazard – Counties, 500-year Floodplain

Counties	Total Area (Acres)	Exposed Area (Acre)	Percent Area Exposed	Population and Structures								Crops				
				Total Population	Exposed Population	Percent Population Exposed	Exposed Structures	Total Depreciated Replacement Value of Exposed Structures (\$1,000s)	Total Depreciated Replacement Value of Exposed Contents (\$1,000s)	Total Depreciated Value of Exposed Structures and Contents (\$1,000s)	Total Depreciated Replacement Value of Exposed Structures and Contents (\$1,000s)	Total Crops (Acres)	Exposed Crops (Acres)	Percent of Crops Exposed	Exposed Crops for which Valuation was Computed (Acres)	Value of Exposed Crops (\$1,000s)
Alameda	525,337	60,199	11	1,443,547	126,622	9	36,503	9,537,124	7,158,908	16,696,032	23,854,940	10,613	1,394	13	1,038	447
Alpine	474,266	0	0	1,210	0	0	0	0	0	0	0	4,212	0	0	0	-
Amador	387,826	17,105	4	35,100	1,709	5	837	113,106	72,455	185,561	258,016	8,822	3,472	39	2,092	4,660
Butte	1,073,263	271,287	25	203,166	51,968	26	19,446	2,301,859	1,410,432	3,712,291	5,122,723	223,923	161,405	72	66,220	228,613
Calaveras	662,841	34,562	5	40,552	1,609	4	975	137,911	82,662	220,574	303,236	3,252	313	10	210	843
Colusa	740,383	229,213	31	18,804	8,320	44	3,463	332,399	181,420	513,819	695,239	293,219	159,064	54	53,475	99,893
Contra Costa	514,018	125,291	24	949,049	66,806	7	25,291	5,350,862	3,332,704	8,683,566	12,016,270	48,440	28,478	59	20,953	62,020
Del Norte	648,967	20,174	3	27,471	2,553	9	1,404	139,114	95,540	234,654	330,194	10,744	5,697	53	N/A	N/A
El Dorado	1,144,948	43,788	4	156,255	2,735	2	1,776	321,860	198,395	520,254	718,649	47,228	508	1	10	123
Fresno	3,846,409	396,652	10	798,799	223,383	28	63,404	8,123,408	5,210,695	13,334,103	18,544,798	1,303,233	269,841	21	230,375	641,699
Glenn	849,133	133,835	16	26,448	9,451	36	3,850	315,491	187,850	503,341	691,191	244,663	88,250	36	37,999	93,168
Humboldt	2,293,973	97,400	4	126,477	11,392	9	5,714	488,895	5,714	799,051	1,109,206	45,940	33,843	74	1,916	3,223
Imperial	2,868,458	373,508	13	142,359	4,778	3	2,775	135,307	86,581	221,887	308,468	518,912	49,639	10	46,218	160,617
Inyo	6,546,560	368,801	6	17,944	495	3	415	28,384	18,611	46,994	65,605	11,210	407	4	17	14
Kern	5,224,314	607,722	12	661,591	100,102	15	37,503	4,232,212	2,659,607	6,891,819	9,551,426	984,344	257,120	26	176,631	537,414
Kings	890,801	344,861	39	129,475	21,366	17	2,682	402,240	234,070	636,310	870,380	568,709	276,129	49	240,715	478,228
Lake	850,838	72,269	8	58,308	11,982	21	7,803	685,151	398,879	1,084,030	1,482,909	28,454	8,470	30	6,622	28,122
Lassen	3,021,452	355,971	12	33,828	1,909	6	1,199	99,941	58,979	158,920	217,899	121,369	54,556	20	20,632	11,722
Los Angeles	2,612,678	268,665	10	9,515,955	1,368,279	14	355,712	45,590,513	29,101,302	74,691,815	103,793,117	209,607	51,486	25	48,431	64,657
Madera	1,377,575	208,011	15	123,106	22,792	19	5,617	686,891	438,916	1,125,807	1,564,723	356,548	155,017	43	106,971	246,434
Marin	378,665	38,374	10	247,239	63,380	26	22,147	5,497,251	3,810,016	9,307,267	13,117,283	6,664	3,964	59	2,423	679
Mariposa	935,608	17,356	2	17,140	249	1	181	29,019	16,982	46,002	62,984	3,642	98	3	N/A	N/A
Mendocino	2,248,057	49,988	2	86,198	8,881	10	3,788	431,910	292,335	724,245	1,016,580	80,134	17,775	22	8,736	53,567
Merced	1,265,631	391,669	31	211,108	70,103	33	22,983	2,460,908	1,562,027	4,022,935	5,584,962	550,475	237,841	43	203,618	390,955
Modoc	2,689,713	294,876	11	9,445	1,007	11	695	54,415	40,458	94,873	135,331	182,946	46,490	25	8,819	8,049
Mono	2,003,706	66,251	3	12,851	370	3	371	39,988	22,634	62,622	85,256	37,129	5,403	15	613	470
Monterey	2,121,220	154,034	7	401,683	216,515	54	54,575	8,754,598	5,495,473	14,250,071	19,745,544	262,671	69,310	26	48,837	411,172
Napa	505,857	53,775	11	124,232	17,322	14	6,509	1,120,307	800,219	1,920,527	2,720,746	48,639	9,992	21	210	342
Nevada	623,851	14,415	2	92,066	1,704	2	960	125,802	81,142	206,944	288,086	6,358	64	1	13	60
Orange	509,718	122,438	24	2,843,086	1,375,987	48	338,076	60,540,364	40,863,033	101,403,398	142,266,431	67,565	10,550	16	2,567	10,579
Placer	960,039	92,537	10	248,254	9,351	4	4,502	4,502	1,455,532	902,652	2,008,412	51,075	10,956	21	2,160	4,154
Plumas	1,672,708	86,195	5	20,828	3,126	15	1,950	237,051	149,116	386,167	535,283	41,918	23,804	57	3,137	1,059
Riverside	4,672,928	272,444	6	1,545,114	377,503	24	145,540	20,185,046	12,719,023	32,904,069	45,623,092	221,540	41,888	19	28,049	107,192
Sacramento	636,078	273,476	43	1,223,622	588,012	48	189,975	25,821,791	13,398,893	39,220,684	52,619,577	174,779	115,028	66	75,636	248,070
San Benito	889,408	33,849	4	53,194	2,740	5	1,003	167,691	415,248	291,470	5,512,248	49,810	13,841	28	8,381	30,218
San Bernardino	12,867,935	197,556	2	1,709,927	254,304	15	78,402	11,347,035	7,563,007	18,910,042	26,473,049	67,081	8,632	13	2,902	7,851
San Diego	2,712,196	98,636	4	2,811,030	182,429	6	50,037	10,096,129	6,895,635	16,991,764	23,887,399	92,386	8,407	9	4,995	29,732
San Francisco	68,670	409	1	776,637	0	0	0	28	18	46	64	0	0	0	0	-
San Joaquin	912,596	435,189	48	563,610	371,248	66	119,373	17,176,215	10,715,610	27,891,824	38,607,434	565,975	326,714	58	270,388	947,925
San Luis Obispo	2,124,278	108,303	5	246,652	44,453	18	19,552	2,713,388	1,780,232	4,493,620	6,273,852	201,428	21,137	10	16,191	64,458
San Mateo	353,452	92,328	26	706,815	149,675	21	44,665	11,566,137	7,665,289	19,231,426	26,896,715	7,259	643	9	497	3,036
Santa Barbara	1,758,231	56,823	3	398,960	60,317	15	18,429	3,089,923	2,070,198	5,160,120	7,230,318	109,900	16,519	15	10,342	54,222
Santa Clara	835,231	145,236	17	1,682,689	664,061	39	201,571	50,270,585	33,995,061	84,265,646	118,260,707	71,313	32,232	45	18,304	68,402
Santa Cruz	285,713	13,242	5	255,435	30,072	12	9,961	1,901,478	1,392,517	3,293,995	4,686,512	22,547	5,513	24	4,030	60,755
Shasta	2,465,233	82,408	3	163,241	22,710	14	9,864	1,205,490	740,491	1,945,981	2,686,472	60,152	10,819	18	2,231	6,726
Sierra	615,317	2,002	0	3,556	373	10	286	34,372	12,708	47,080	47,080	19,257	926	5	69	22
Siskiyou	4,062,265	138,319	3	44,307	5,797	13	4,050	258,151	170,659	428,811	599,470	177,899	37,134	21	17,044	27,376
Solano	582,369	224,388	39	395,264	71,932	18	23,094	4,720,704	2,853,412	7,574,116	10,427,528	199,038	71,989	36	63,365	133,924
Sonoma	1,026,091	63,726	6	458,520	22,425	5	11,580	1,914,688	1,340,337	3,255,025	4,595,362	93,700	24,515	26	10,565	8,436
Stanislaus	970,172	81,320	8	447,034	36,621	8	10,434	1,374,616	814,608	2,189,224	3,003,832	376,858	54,493	14	44,012	91,804
Sutter	389,310	308,438	79	78,927	74,432	94	26,158	3,320,742	1,730,958	5,051,700	6,782,658	282,471	256,273	91	113,984	343,192
Tehama	1,892,926	90,325	5	56,050	11,317	20	5,325	551,901	335,752	887,653	1,223,405	112,353	25,859	23	22,295	66,191
Trinity	2,052,767	10,862	1	13,021	1,149	9	725	60,207	38,628	98,835	137,463	2,751	264	10	46	19
Tulare	3,099,336	366,339	12	368,064	191,873	52	64,835	8,647,695	5,464,862	14,112,556	19,577,418	753,785	254,318	34	216,380	721,302
Tuolumne	1,457,657	41,249	3	54,508	515	1	229	28,360	16,719	45,079	61,798	1,431	6	0	3	27
Ventura	1,187,858	87,712	7	753,402	203,378	27	58,603	10,136,898	6,677,112	16,814,010	23,491,122	110,478	38,683	35	32,353	379,420
Yolo	653,450	260,585	40	168,013	59,783	36	20,530	3,695,105	2,355,713	6,050,818	8,406,531	348,037	199,809	57	161,214	360,677
Yuba	412,018	95,439	23	60,223	41,372	69	16,676	1,630,928	858,333	2,489,260	3,347,593	92,602	55,029	59	26,456	110,169
Statewide Totals		8,991,824		33,861,390	7,274,737		2,164,001	351,119,528	226,654,029	577,773,557	804,427,586		3,662,010		2,491,389	7,414,131

Notes:
 (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.
 (4) The state did not have a standard procedure to compute the values for the agricultural land in Del Norte and Mariposa counties, so the exposure values are not applicable (N/A).

APPENDIX C: ANALYSIS OF EXPOSURE TO FLOOD HAZARD, BY COUNTY

Table F-C-2. Analysis of Exposure to Flood Hazard – Counties, 500-year Floodplain

Counties	Facilities Summary					DoD Facilities		Native American Tribal Lands		Sensitive Species		Essential Facilities				
	Essential Facilities	High Potential Loss Facilities	Lifeline Utilities	Transportation Facilities	Transportation Segments (Miles)	Number of Department of Defense Facilities Exposed ⁽¹⁾	Department of Defense Facilities Exposed (Acres) ⁽¹⁾	Number of Native American Tribal Land Areas Exposed ⁽¹⁾	Native American Tribal Land Areas Exposed (Acres) ⁽¹⁾	All Sensitive Plants ⁽²⁾	All Sensitive Animals ⁽²⁾	Care Facilities	Emergency Centers	Fire Stations	Police Stations	Schools
Alameda	45	42	7	113	100	3	276	0	0	29	45	1	0	1	2	41
Alpine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Amador	4	6	0	16	9	0	0	0	0	5	12	1	0	1	1	1
Butte	35	5	4	250	92	0	0	0	0	37	35	1	0	2	1	31
Calaveras	2	11	0	14	11	0	0	1	3	18	25	0	0	1	0	1
Colusa	14	9	0	96	49	0	0	1	487	31	30	0	1	2	1	10
Contra Costa	38	65	14	135	82	1	210	0	0	49	64	1	0	1	6	30
Del Norte	3	0	3	18	12	0	0	1	3,774	49	32	0	0	0	1	2
El Dorado	0	3	2	16	6	0	0	0	0	20	25	0	0	0	0	0
Fresno	107	36	7	312	220	2	8,434	0	0	44	67	2	1	6	4	94
Glenn	14	1	1	110	52	1	2,331	1	100	17	23	0	0	3	2	9
Humboldt	10	9	5	122	106	0	0	2	1,433	46	43	1	0	4	0	5
Imperial	6	10	5	105	122	3	16,952	2	28,294	36	64	0	0	1	1	4
Inyo	1	3	0	9	39	1	4,972	1	10	55	59	0	0	1	0	0
Kern	55	19	6	155	302	5	13,691	0	0	56	74	2	0	3	4	46
Kings	3	5	2	55	77	1	911	1	105	8	23	0	0	0	1	2
Lake	12	1	1	39	26	0	0	2	65	35	24	0	0	3	1	8
Lassen	8	15	1	65	76	1	56,674	1	9	62	39	0	0	2	0	6
Los Angeles	509	391	36	714	584	3	1,742	0	0	85	94	14	2	5	23	465
Madera	18	10	2	85	45	0	0	0	0	14	30	0	0	1	1	16
Marin	45	3	6	94	39	0	0	0	0	70	51	2	0	7	6	30
Mariposa	0	4	0	7	14	0	0	0	0	35	39	0	0	0	0	0
Mendocino	10	11	2	88	77	0	0	1	505	70	39	0	0	1	0	9
Merced	49	11	9	190	152	0	0	0	0	26	38	2	0	2	9	36
Modoc	7	24	0	42	30	0	0	3	1,495	50	33	1	0	1	2	3
Mono	2	2	1	6	18	0	0	0	0	23	28	0	0	0	0	2
Monterey	106	8	7	139	146	4	14,571	0	0	79	57	3	0	13	10	80
Napa	12	1	3	51	27	1	102	0	0	40	28	0	0	1	1	10
Nevada	0	6	0	17	12	0	0	0	0	15	18	0	0	0	0	0
Orange	475	254	12	507	496	4	871	0	0	41	62	18	0	6	15	436
Placer	2	11	0	48	26	1	41	0	0	24	39	0	0	0	0	2
Plumas	6	14	0	48	32	0	0	1	409	31	20	1	0	1	1	3
Riverside	192	24	25	248	305	1	13	8	22,467	77	113	5	1	10	21	155
Sacramento	249	47	28	437	391	3	1,656	0	0	24	43	9	0	6	4	230
San Benito	2	2	2	37	21	0	0	0	0	20	38	0	0	0	0	2
San Bernardino	130	65	15	296	258	5	2,067	4	7,118	95	103	2	0	9	7	112
San Diego	78	40	12	310	143	9	673	3	141	122	89	1	0	5	8	64
San Francisco	0	0	0	0	0	0	0	0	0	6	9	0	0	0	0	0
San Joaquin	188	71	17	416	380	2	831	0	0	28	40	4	0	11	8	165
San Luis Obispo	29	7	10	173	86	1	0	0	0	104	65	1	1	4	1	22
San Mateo	58	56	9	105	56	0	0	0	0	46	40	1	0	4	6	47
Santa Barbara	32	1	8	152	67	1	763	0	0	55	54	0	0	3	3	26
Santa Clara	287	139	14	536	394	1	133	0	0	40	42	5	2	14	17	249
Santa Cruz	20	8	6	54	34	0	0	0	0	37	32	0	0	3	7	10
Shasta	13	7	3	103	56	0	0	0	0	25	59	0	0	2	0	11
Sierra	4	0	0	3	7	0	0	0	0	7	7	0	0	2	0	2
Siskiyou	16	7	1	124	109	0	0	0	0	55	53	0	0	5	2	9
Solano	35	4	4	100	86	2	1,515	0	0	43	46	2	0	4	5	24
Sonoma	14	6	3	130	73	1	683	1	9	62	38	0	0	3	2	9
Stanislaus	23	1	1	51	40	0	0	0	0	19	34	0	0	3	4	16
Sutter	56	2	7	98	127	0	0	0	0	9	21	1	0	3	3	49
Tehama	6	4	2	135	35	1	1,513	0	0	20	35	0	0	0	0	6
Trinity	9	1	0	17	21	0	0	1	27	11	19	0	0	1	2	6
Tulare	110	15	11	334	259	2	4,095	1	4	39	50	3	0	5	14	88
Tuolumne	3	10	0	6	2	0	0	0	0	30	44	1	0	1	0	1
Ventura	81	19	12	189	198	2	1,889	0	0	31	52	1	0	2	9	69
Yolo	39	9	4	120	166	0	0	1	282	19	41	1	0	9	0	29
Yuba	34	4	1	66	84	1	293	0	0	7	14	1	0	3	3	27
Statewide Totals	3,306	1,539	331	7,906	6,477							88	8	181	219	2,810

Notes:
 (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-C-2. Analysis of Exposure to Flood Hazard – Counties, 500-year Floodplain

Counties	High Potential Loss Facilities		Lifeline Utilities						Transportation Facilities								
	Dams	Hazardous Material Sites	Wastewater Facilities	Potable Water Facilities	Oil Facilities	Natural Gas Facilities	Electric Power Facilities	Communications Facilities	Runways	Railway Bridges	Rail Facilities	Port Facilities	Light Rail Facilities	Highway Bridges	Ferry Facilities	Bus Facilities	Airport Facilities
Alameda	1	41	2	1	0	0	2	2	1	5	3	5	5	93	0	0	1
Alpine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Amador	6	0	0	0	0	0	0	0	0	0	0	0	0	16	0	0	0
Butte	2	3	3	0	0	0	0	1	0	1	1	0	0	247	0	1	0
Calaveras	11	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0
Colusa	6	3	0	0	0	0	0	0	1	0	0	0	0	93	0	1	1
Contra Costa	3	62	3	3	4	0	2	2	3	4	2	16	0	106	3	0	1
Del Norte	0	0	1	0	0	0	0	2	0	0	0	0	0	17	0	1	0
El Dorado	3	0	1	1	0	0	0	0	1	0	0	0	0	14	0	0	1
Fresno	11	25	1	0	0	0	1	5	4	4	1	0	0	299	0	1	3
Glenn	1	0	0	0	0	0	0	1	2	0	0	0	0	107	0	0	1
Humboldt	2	7	0	0	0	0	2	3	1	0	0	10	0	110	0	0	1
Imperial	1	9	0	0	0	0	5	0	0	3	0	0	0	102	0	0	0
Inyo	3	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	0
Kern	5	14	1	1	1	0	1	2	6	7	1	0	0	136	0	1	4
Kings	5	0	0	0	0	0	0	2	0	0	0	0	0	55	0	0	0
Lake	1	0	0	0	0	0	0	1	0	0	0	0	0	39	0	0	0
Lassen	15	0	0	0	0	0	0	1	1	1	0	0	0	61	0	1	1
Los Angeles	10	381	4	1	16	0	8	7	1	26	12	88	8	571	6	1	1
Madera	5	5	0	0	0	0	1	1	0	0	0	0	0	85	0	0	0
Marin	3	0	4	0	0	0	0	2	1	2	0	0	0	85	4	1	1
Mariposa	4	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0
Mendocino	3	8	2	0	0	0	0	0	0	0	0	0	0	88	0	0	0
Merced	1	10	2	0	0	0	1	6	1	0	1	0	0	185	0	2	1
Modoc	24	0	0	0	0	0	0	0	0	0	0	0	0	41	0	1	0
Mono	2	0	0	0	0	0	1	0	0	0	0	0	0	6	0	0	0
Monterey	3	5	4	0	0	0	0	3	3	3	1	0	0	128	0	3	1
Napa	0	1	2	0	0	0	0	1	0	0	0	0	0	51	0	0	0
Nevada	6	0	0	0	0	0	0	0	0	0	0	0	0	17	0	0	0
Orange	13	241	3	0	1	0	4	4	1	15	4	0	9	469	2	6	1
Placer	11	0	0	0	0	0	0	0	0	0	0	0	0	48	0	0	0
Plumas	0	14	0	0	0	0	0	0	2	0	0	0	0	43	0	1	2
Riverside	7	17	6	4	0	0	4	11	4	1	0	0	1	237	0	3	2
Sacramento	11	36	3	0	0	0	3	22	7	10	1	1	29	382	1	2	4
San Benito	2	0	0	0	0	0	0	2	0	0	0	0	0	37	0	0	0
San Bernardino	7	58	4	2	0	1	1	7	3	7	4	0	0	277	0	3	2
San Diego	4	36	2	0	0	1	2	7	2	0	2	9	11	281	0	3	2
San Francisco	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Joaquin	10	61	2	2	0	1	3	9	3	13	15	5	2	370	4	2	2
San Luis Obispo	4	3	6	1	0	0	1	2	0	2	1	0	0	164	0	6	0
San Mateo	4	52	4	0	0	0	2	3	1	4	0	7	5	87	0	0	1
Santa Barbara	1	0	3	0	0	0	1	4	4	2	1	0	0	140	0	3	2
Santa Clara	10	129	3	2	0	0	4	5	2	16	1	0	40	473	0	3	1
Santa Cruz	1	7	3	0	0	0	0	3	0	2	0	0	0	50	0	2	0
Shasta	7	0	1	0	0	0	0	2	0	0	0	0	0	103	0	0	0
Sierra	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0
Siskiyou	7	0	1	0	0	0	0	0	0	1	1	0	0	121	0	1	0
Solano	2	2	2	0	0	0	0	2	0	1	0	3	0	93	2	1	0
Sonoma	4	2	3	0	0	0	0	0	1	1	0	0	0	127	0	0	1
Stanislaus	1	0	1	0	0	0	0	0	1	1	0	0	0	49	0	0	0
Sutter	1	1	1	0	0	0	2	4	1	2	0	0	0	94	0	0	1
Tehama	4	0	1	0	0	0	0	1	0	0	0	0	0	135	0	0	0
Trinity	1	0	0	0	0	0	0	0	0	0	0	0	0	17	0	0	0
Tulare	1	14	5	0	0	0	0	6	2	4	0	0	0	324	0	2	2
Tuolumne	10	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0
Ventura	2	17	3	1	1	2	2	3	2	0	3	12	2	167	0	1	2
Yolo	1	8	1	0	0	0	1	2	1	1	3	9	0	103	0	2	1
Yuba	2	2	1	0	0	0	0	0	2	8	0	0	0	54	0	1	1
Statewide Totals	265	1,274	89	19	23	5	54	141	65	147	58	165	112	7,236	22	56	45

Notes:
 (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

APPENDIX C: ANALYSIS OF EXPOSURE TO FLOOD HAZARD, BY COUNTY

Table F-C-2. Analysis of Exposure to Flood Hazard – Counties, 500-year Floodplain

Counties	Transportation Segment			Sensitive Species							
	Railway Segments (Miles)	Light Rail Segments (Miles)	Highway Segments (Miles)	CA State Listing Endangered Plants ⁽²⁾	CA State Listing Endangered Animals ⁽²⁾	CA State Listing Threatened Plants ⁽²⁾	CA State Listing Threatened Animals ⁽²⁾	Federal Listing Endangered Plants ⁽²⁾	Federal Listing Endangered Animals ⁽²⁾	Federal Listing Threatened Plants ⁽²⁾	Federal Listing Threatened Animals ⁽²⁾
Alameda	38	13	49	2	3	0	5	4	7	1	6
Alpine	0	0	0	0	0	0	0	0	0	0	0
Amador	3	0	6	1	1	0	0	1	0	1	1
Butte	35	0	57	2	2	0	8	2	2	2	5
Calaveras	0	0	11	2	1	0	1	0	0	1	3
Colusa	7	0	42	4	1	1	3	2	1	1	3
Contra Costa	37	1	44	4	4	0	6	6	6	0	6
Del Norte	0	0	12	2	1	0	1	2	1	0	2
El Dorado	0	0	6	2	3	0	2	2	0	0	2
Fresno	63	0	157	5	6	1	8	5	4	3	5
Glenn	10	0	42	1	2	0	4	0	1	1	3
Humboldt	58	0	48	3	4	0	2	3	3	0	4
Imperial	82	0	40	2	9	0	5	0	6	1	1
Inyo	0	0	39	2	7	0	6	3	5	2	2
Kern	94	0	208	5	7	0	8	4	7	1	6
Kings	13	0	64	1	3	0	4	2	5	0	3
Lake	0	0	26	5	2	1	0	3	0	0	0
Lassen	23	0	53	1	3	0	5	0	2	1	0
Los Angeles	119	26	439	9	7	2	6	11	14	3	6
Madera	10	0	35	4	5	0	4	3	3	3	4
Marin	9	0	30	4	4	3	1	8	8	2	4
Mariposa	0	0	14	1	2	1	4	0	0	1	2
Mendocino	46	0	31	4	1	3	1	4	3	0	3
Merced	52	0	100	5	2	0	4	2	5	4	4
Modoc	11	0	19	2	4	0	4	1	3	1	1
Mono	0	0	18	0	5	0	2	0	2	0	0
Monterey	37	0	109	7	5	1	3	8	8	3	6
Napa	13	0	14	3	4	2	2	9	3	0	4
Nevada	6	0	6	2	2	0	4	0	0	0	2
Orange	79	32	385	5	5	3	2	4	7	4	4
Placer	3	0	23	2	2	0	6	0	0	0	5
Plumas	15	0	17	1	2	0	5	0	0	1	0
Riverside	61	11	233	7	12	1	6	10	14	2	8
Sacramento	77	16	298	2	2	0	5	2	2	0	5
San Benito	0	0	21	0	5	0	4	0	5	1	2
San Bernardino	80	11	167	7	11	1	6	11	12	4	4
San Diego	29	21	93	13	7	0	5	10	13	6	3
San Francisco	0	0	0	2	1	0	1	2	2	0	1
San Joaquin	107	9	264	3	3	0	6	2	4	1	7
San Luis Obispo	16	0	70	5	9	4	6	11	12	3	6
San Mateo	16	7	33	6	4	0	3	7	7	0	4
Santa Barbara	15	0	52	5	8	3	7	12	12	1	4
Santa Clara	89	45	260	0	5	0	4	6	6	0	6
Santa Cruz	8	0	26	5	3	0	3	6	6	2	5
Shasta	22	0	34	1	5	0	7	0	3	1	4
Sierra	1	0	6	0	0	0	0	0	0	0	1
Siskiyou	24	0	85	2	6	0	7	1	2	1	2
Solano	30	0	56	4	4	0	5	6	6	2	8
Sonoma	31	0	42	8	5	0	3	12	6	0	4
Stanislaus	16	0	24	4	4	0	2	2	6	2	3
Sutter	26	0	101	1	1	0	6	1	1	0	4
Tehama	12	0	23	1	3	0	4	0	3	2	3
Trinity	2	0	19	0	0	0	2	0	0	0	0
Tulare	88	0	171	4	4	1	7	2	6	3	5
Tuolumne	0	0	2	0	3	1	2	0	0	2	3
Ventura	38	18	142	3	8	0	2	4	8	3	5
Yolo	48	0	118	1	4	0	5	2	4	0	7
Yuba	40	0	44	1	2	0	4	1	1	0	4
Statewide Totals	1,735	211	4,527								

Notes:

(1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Appendix D: Analysis of Exposure to Flood Hazard, by U.S. Congressional District

APPENDIX D: ANALYSIS OF EXPOSURE TO FLOOD HAZARD, BY U.S. CONGRESSIONAL DISTRICT

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Table F-D-1. Analysis of Exposure to Flood Hazard – U.S. Congressional Districts, 100-year Floodplain

Analysis Region	Total Area (Acres)	Exposed Area (Acres)	Percent Area Exposed	Population and Structures							Crops				
				Total Population	Exposed Population	Percent Population Exposed	Exposed Structures	Total Depreciated Replacement Value of Exposed Structures (\$1,000s)	Total Depreciated Replacement Value of Exposed Contents (\$1,000s)	Total Depreciated Replacement Value of Exposed Structures and Contents (\$1,000s)	Total Crops (Acres)	Exposed Crops (Acres)	Percent of Crops Exposed	Exposed Crops for which Valuation was Computed (Acres)	Value of Exposed Crops (\$1,000s)
1	7,804,837	467,257	6	638,940	97,923	15	39,907	5,864,175	3,815,309	9,679,484	418,902	165,388	39	89,917	227,325
2	14,065,518	1,140,063	8	639,086	76,006	12	31,102	3,229,384	1,880,062	5,109,446	1,656,643	668,958	40	319,905	837,389
3	2,190,274	204,524	9	639,088	20,897	3	7,974	1,505,896	906,573	2,412,469	261,404	89,505	34	61,923	147,739
4	10,981,490	907,046	8	639,083	18,719	3	10,421	1,572,839	973,806	2,546,645	475,706	136,815	29	34,893	25,294
5	95,959	4,700	5	639,088	27,335	4	7,771	932,004	473,213	1,405,217	5,269	97	2	3	3
6	1,356,110	102,621	8	638,950	51,890	8	19,751	4,332,329	3,011,885	7,344,214	71,606	21,130	30	12,688	8,484
7	283,563	98,501	35	639,088	30,355	5	10,392	1,846,550	1,201,523	3,048,073	12,873	2,728	21	1,733	6,928
8	72,695	414	1	639,088	0	0	0	-	-	0	0	0	0	0	-
9	97,483	3,467	4	639,088	7,517	1	1,772	404,544	264,499	669,043	74	0	0	0	-
10	694,369	159,241	23	639,088	24,941	4	9,154	1,843,234	1,168,311	3,011,545	142,314	31,316	22	24,577	67,043
11	1,482,120	258,743	17	639,088	38,178	6	14,475	2,766,776	1,664,444	4,431,220	576,641	188,492	33	159,917	584,955
12	232,191	60,648	26	638,978	81,452	13	25,148	7,345,344	4,600,840	11,946,184	108	3	3	3	19
13	179,769	36,834	20	639,088	20,743	3	6,707	2,186,329	1,872,955	4,059,284	1,316	361	27	226	53
14	659,325	51,215	8	638,881	49,950	8	16,617	3,454,881	2,572,726	6,027,607	17,209	1,919	11	981	10,243
15	184,908	25,070	14	639,088	45,067	7	11,612	3,193,826	2,270,508	5,464,334	22,396	9,588	43	7,367	27,536
16	148,513	11,972	8	639,088	54,600	9	14,027	3,072,955	2,311,016	5,383,971	26,663	4,683	18	1,284	4,794
17	3,447,063	184,858	5	638,824	44,294	7	13,767	2,728,052	2,039,463	4,767,515	326,277	72,879	22	49,403	392,670
18	1,984,396	516,532	26	639,088	94,741	15	30,998	3,452,547	2,211,073	5,663,620	866,662	330,390	38	278,282	529,640
19	4,339,654	244,926	6	639,088	16,985	3	4,770	642,064	427,307	1,069,371	626,332	120,338	19	80,296	205,180
20	3,192,916	699,911	22	639,088	53,048	8	12,795	1,331,699	861,706	2,193,405	1,917,798	522,262	27	453,907	1,002,190
21	5,177,318	252,332	5	639,088	76,842	12	25,712	3,325,019	2,171,720	5,496,739	995,959	148,179	15	127,325	462,150
22	6,690,444	497,398	7	639,088	19,666	3	9,644	1,102,270	764,571	1,866,841	812,106	172,924	21	112,708	359,558
23	1,586,832	63,341	4	638,203	31,905	5	11,406	2,065,708	1,482,541	3,548,249	62,834	10,893	17	8,328	90,345
24	2,660,280	89,847	3	639,075	50,954	8	17,020	3,026,013	2,122,568	5,148,581	170,133	33,511	20	24,787	192,171
25	13,838,398	481,596	3	639,087	20,326	3	7,484	1,271,252	875,570	2,146,822	153,402	21,724	14	14,368	17,689
26	483,140	3,802	1	639,088	5,504	1	2,326	345,889	206,543	552,432	8,079	100	1	15	285
27	96,999	1,846	2	639,088	3,467	1	1,035	169,428	114,168	283,596	3,699	131	4	117	592
28	49,778	1,405	3	639,087	1,481	0	365	75,272	65,045	140,317	150	55	37	55	280
29	65,008	148	0	639,088	345	0	105	29,033	24,776	53,809	0	0	0	0	-
30	248,180	5,459	2	638,849	4,887	1	2,374	465,687	304,591	770,278	5,609	216	4	0	1
31	25,373	503	2	639,088	10,227	2	1,001	239,096	166,337	405,433	0	0	0	0	-
32	59,341	393	1	639,087	546	0	169	27,363	17,490	44,853	2,216	42	2	42	213
33	30,931	939	3	639,088	20,553	3	4,793	445,675	309,528	755,203	0	0	0	0	-
34	37,765	343	1	639,088	779	0	109	17,118	12,015	29,133	0	0	0	0	-
35	35,484	63	0	639,088	604	0	177	12,314	7,278	19,592	89	0	0	0	-
36	78,342	2,657	3	638,016	1,794	0	638	108,663	75,574	184,237	0	0	0	0	-
37	48,065	957	2	639,088	1,434	0	645	179,890	191,242	371,132	1,197	75	6	75	381
38	67,289	533	1	639,088	594	0	195	26,597	21,256	47,853	4,199	3	0	3	15
39	41,909	385	1	639,088	1,777	0	382	50,442	34,859	85,301	391	0	0	0	-
40	64,990	1,914	3	639,088	8,283	1	1,902	363,378	239,541	602,919	4,448	240	5	0	-
41	8,544,119	100,109	1	639,087	25,832	4	12,677	1,286,447	817,648	2,104,095	46,569	5,839	13	3,690	5,286
42	203,028	7,778	4	639,088	9,853	2	2,722	771,351	588,422	1,359,773	22,526	1,626	7	677	558
43	123,405	9,912	8	639,087	10,486	2	2,195	411,013	316,796	727,809	7,744	119	2	20	91
44	351,131	18,744	5	639,040	10,491	2	3,429	725,582	488,291	1,213,873	22,702	1,102	5	408	1,188
45	3,879,890	103,734	3	639,088	26,383	4	13,508	1,370,549	874,714	2,245,263	177,231	17,475	10	10,943	50,377
46	528,197	25,617	5	636,345	68,442	11	21,646	3,686,466	2,195,524	5,881,990	5,242	277	5	10	43
47	35,254	3,053	9	639,087	53,662	8	10,252	1,458,623	942,652	2,401,275	981	30	3	7	27
48	192,912	8,753	5	637,594	16,353	3	6,747	1,415,398	998,019	2,413,417	34,561	1,313	4	1,049	4,316
49	1,137,916	38,387	3	638,916	24,518	4	8,633	1,438,962	1,037,734	2,476,696	81,288	6,107	8	2,982	6,711
50	233,585	12,487	5	638,759	18,145	3	5,557	1,351,569	925,400	2,276,969	11,818	816	7	331	1,252
51	3,133,568	360,699	12	638,544	15,430	2	5,021	678,770	468,031	1,146,801	524,396	32,384	6	28,906	77,060
52	1,362,870	41,279	3	639,087	14,646	2	5,730	956,144	623,621	1,579,765	11,657	3,976	34	3,182	20,999
53	160,804	11,561	7	637,233	11,916	2	3,130	1,148,274	963,750	2,112,024	0	0	0	0	-
Statewide Totals		7,326,516		33,861,390	1,422,764		477,892	81,750,683	54,975,034	136,725,717	10,597,416	2,826,011		1,917,337	5,369,076

Notes:
 (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

APPENDIX D: ANALYSIS OF EXPOSURE TO FLOOD HAZARD, BY U.S. CONGRESSIONAL DISTRICT

Table F-D-1. Analysis of Exposure to Flood Hazard – U.S. Congressional Districts, 100-year Floodplain

Analysis Region	Facilities Summary					DoD Facilities		Native American Tribal Lands		Sensitive Species		Essential Facilities				
	Essential Facilities	High Potential Loss Facilities	Lifeline Utilities	Transportation Facilities	Transportation Segments (Miles)	Number of Department of Defense Facilities Exposed ⁽¹⁾	Department of Defense Facilities Exposed (Acres) ⁽¹⁾	Number of Native American Tribal Land Areas Exposed ⁽¹⁾	Native American Tribal Land Areas Exposed (Acres) ⁽¹⁾	All Sensitive Plants ⁽²⁾	All Sensitive Animals ⁽²⁾	Care Facilities	Emergency Centers	Fire Stations	Police Stations	Schools
1	73	30	17	380	345	1	40	6	5,600	179	117	2	0	13	2	56
2	81	36	12	835	462	2	4,137	4	817	139	122	0	1	15	2	63
3	9	29	6	153	78	2	552	1	3	50	58	1	0	2	1	5
4	20	74	3	243	186	2	56,715	4	1,908	138	87	0	0	6	2	12
5	10	1	0	18	11	1	234	0	0	3	13	1	0	0	0	9
6	31	6	4	171	75	1	746	0	0	106	63	0	0	6	4	21
7	12	63	13	87	78	2	1,484	0	0	36	40	1	0	0	3	8
8	0	0	0	0	0	0	0	0	0	2	6	0	0	0	0	0
9	1	0	0	8	6	1	102	0	0	13	22	0	0	0	0	1
10	15	2	5	72	33	2	204	0	0	68	70	0	0	1	1	13
11	15	15	2	168	108	3	151	0	0	51	50	0	0	1	3	11
12	19	19	5	57	18	0	0	0	0	25	28	0	0	1	2	16
13	6	5	5	22	36	1	81	0	0	20	34	1	0	0	0	5
14	25	40	8	79	40	1	131	0	0	59	42	1	0	0	2	22
15	9	16	2	67	56	0	0	0	0	13	26	0	0	0	1	8
16	21	18	3	94	50	0	0	0	0	19	17	0	0	0	2	19
17	25	15	11	157	121	4	13,049	0	0	91	76	0	0	3	8	14
18	60	31	11	272	218	1	479	0	0	36	49	1	0	4	11	44
19	10	27	0	119	85	0	0	0	0	80	90	1	0	1	0	8
20	20	14	6	176	221	1	3,583	1	105	32	52	0	0	2	1	17
21	52	21	3	288	146	3	9,839	1	4	57	66	0	0	4	2	46
22	9	20	6	177	243	6	13,056	0	0	107	94	0	0	1	0	8
23	12	0	11	154	66	3	220	0	0	97	65	0	0	2	0	10
24	36	2	3	135	84	2	781	0	0	48	53	0	0	0	3	33
25	10	11	5	72	105	4	5,168	1	3	99	108	0	0	0	2	8
26	6	2	0	7	7	0	0	0	0	20	21	0	0	0	0	6
27	1	2	0	10	4	0	0	0	0	10	15	0	0	0	0	1
28	0	2	0	6	1	0	0	0	0	3	5	0	0	0	0	0
29	0	0	0	0	2	0	0	0	0	4	5	0	0	0	0	0
30	2	1	1	12	6	0	0	0	0	25	26	0	0	0	1	1
31	2	5	0	17	6	0	0	0	0	5	6	0	0	0	0	2
32	0	0	0	2	1	0	0	0	0	1	3	0	0	0	0	0
33	3	0	0	3	4	0	0	0	0	5	6	0	0	0	0	3
34	0	0	0	4	4	0	0	0	0	3	7	0	0	0	0	0
35	0	0	0	0	0	0	0	0	0	1	3	0	0	0	0	0
36	1	0	0	2	1	0	0	0	0	19	24	0	0	0	0	1
37	1	1	0	16	4	0	0	0	0	6	3	0	0	0	1	0
38	0	0	0	2	2	0	0	0	0	1	3	0	0	0	0	0
39	0	4	0	5	3	0	0	0	0	1	4	0	0	0	0	0
40	4	2	0	12	6	2	16	0	0	8	11	0	0	0	1	3
41	19	3	1	71	54	2	309	6	7,886	85	101	2	0	4	0	13
42	3	5	1	31	15	0	0	0	0	19	28	0	0	0	0	3
43	3	10	0	40	26	0	0	0	0	22	24	1	0	0	0	2
44	7	7	0	29	16	0	0	0	0	26	47	0	0	0	0	7
45	10	1	5	56	64	1	11	5	13,665	53	88	0	0	0	0	10
46	24	30	4	149	29	4	288	0	0	35	35	0	0	0	1	23
47	15	2	0	12	14	0	0	0	0	4	1	1	0	0	0	14
48	6	8	1	55	20	2	100	0	0	30	40	0	0	1	1	4
49	19	7	2	65	41	1	44	4	141	49	59	0	0	1	3	15
50	11	5	1	47	24	1	15	0	0	43	38	0	0	1	1	9
51	6	13	5	115	129	5	17,349	2	8,133	90	102	0	0	0	0	6
52	14	6	2	44	10	2	6	0	0	75	57	0	0	2	2	10
53	2	2	2	64	19	6	431	0	0	53	35	1	0	0	0	1
Statewide Totals	740	613	166	4,880	3,378							14	1	71	63	591

Notes:

(1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-D-1. Analysis of Exposure to Flood Hazard – U.S. Congressional Districts, 100-year Floodplain

Analysis Region	High Potential Loss Facilities		Lifeline Utilities						Transportation Facilities								
	Dams	Hazardous Material Sites	Wastewater Facilities	Potable Water Facilities	Oil Facilities	Natural Gas Facilities	Electric Power Facilities	Communications Facilities	Runways	Railway Bridges	Rail Facilities	Port Facilities	Light Rail Facilities	Highway Bridges	Ferry Facilities	Bus Facilities	Airport Facilities
1	6	24	6	0	0	0	2	9	3	2	3	20	0	346	0	3	3
2	31	5	4	0	0	0	1	7	1	2	2	0	0	829	0	1	0
3	26	3	0	0	0	0	0	6	2	0	0	0	0	148	1	0	2
4	60	14	1	1	0	0	0	1	3	1	0	0	0	234	0	2	3
5	0	1	0	0	0	0	0	0	0	0	0	0	0	18	0	0	0
6	6	0	3	0	0	0	0	1	1	1	0	0	0	163	4	1	1
7	2	61	5	1	3	0	2	2	0	5	0	18	0	64	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	1	0	7	0	0	0
10	2	0	0	2	0	0	0	3	0	1	1	1	0	66	3	0	0
11	13	2	1	0	0	0	0	1	0	0	0	0	0	164	4	0	0
12	1	18	3	0	0	0	0	2	1	1	0	0	1	53	0	0	1
13	0	5	1	0	0	0	2	2	0	1	0	4	1	16	0	0	0
14	4	36	3	1	0	0	3	1	1	1	0	7	5	64	0	0	1
15	2	14	1	0	0	0	1	0	0	0	0	0	1	66	0	0	0
16	1	17	0	1	0	0	0	2	0	5	0	0	13	74	0	2	0
17	5	10	4	0	0	0	0	7	0	2	0	0	0	153	0	2	0
18	2	29	3	0	0	0	2	6	3	1	2	0	1	261	0	2	2
19	19	8	0	0	0	0	0	0	0	0	0	0	0	119	0	0	0
20	7	7	0	0	1	0	2	3	2	2	1	0	0	169	0	0	2
21	10	11	2	0	0	0	0	1	0	4	0	0	0	283	0	1	0
22	8	12	2	1	0	0	0	3	0	4	0	0	0	172	0	1	0
23	0	0	5	0	0	0	0	6	3	3	1	2	0	141	0	3	1
24	2	0	2	0	1	0	0	0	0	0	0	0	1	134	0	0	0
25	10	1	2	0	1	0	2	0	1	0	1	0	1	68	0	0	1
26	2	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0
27	1	1	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0
28	2	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	1	0	1	0	0	0	0	0	0	0	1	0	0	11	0	0	0
31	0	5	0	0	0	0	0	0	0	0	1	0	1	15	0	0	0
32	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
33	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0
34	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0	0
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
37	0	1	0	0	0	0	0	0	0	0	0	1	0	15	0	0	0
38	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
39	0	4	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0
40	2	0	0	0	0	0	0	0	0	1	0	0	0	11	0	0	0
41	2	1	0	1	0	0	0	0	1	1	0	0	0	67	0	1	1
42	3	2	0	0	0	0	0	1	0	0	0	0	0	31	0	0	0
43	0	10	0	0	0	0	0	0	0	0	0	0	0	40	0	0	0
44	4	3	0	0	0	0	0	0	1	0	0	0	0	27	0	0	1
45	1	0	1	0	0	0	2	2	1	0	0	0	0	55	0	0	0
46	0	30	0	0	1	0	3	0	0	0	1	91	0	53	4	0	0
47	0	2	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0
48	8	0	1	0	0	0	0	0	0	0	0	0	0	51	3	1	0
49	1	6	0	2	0	0	0	0	1	0	0	0	0	63	0	0	1
50	2	3	1	0	0	0	0	0	0	0	0	0	0	47	0	0	0
51	1	12	0	0	0	0	5	0	0	0	2	1	2	110	0	0	0
52	0	6	0	0	0	0	0	2	1	0	0	0	0	42	0	0	1
53	0	2	0	0	0	0	0	2	0	0	0	12	4	47	0	1	0
Statewide Totals	247	366	52	10	7	0	27	70	26	38	16	158	32	4,549	19	21	21

Notes:
 (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

APPENDIX D: ANALYSIS OF EXPOSURE TO FLOOD HAZARD, BY U.S. CONGRESSIONAL DISTRICT

Table F-D-1. Analysis of Exposure to Flood Hazard – U.S. Congressional Districts, 100-year Floodplain

Analysis Region	Transportation Segment			Sensitive Species							
	Railway Segments (Miles)	Light Rail Segments (Miles)	Highway Segments (Miles)	CA State Listing Endangered Plants ⁽²⁾	CA State Listing Endangered Animals ⁽²⁾	CA State Listing Threatened Plants ⁽²⁾	CA State Listing Threatened Animals ⁽²⁾	Federal Listing Endangered Plants ⁽²⁾	Federal Listing Endangered Animals ⁽²⁾	Federal Listing Threatened Plants ⁽²⁾	Federal Listing Threatened Animals ⁽²⁾
1	158	0	187	15	10	6	7	18	11	0	14
2	123	0	339	8	8	1	14	6	6	3	7
3	24	0	55	6	3	0	4	2	2	3	6
4	57	0	128	5	6	0	8	3	4	1	7
5	2	0	8	0	0	0	2	0	1	0	3
6	24	0	51	11	5	3	3	15	8	2	5
7	40	0	37	2	4	0	4	6	4	0	6
8	0	0	0	1	0	0	1	1	1	0	1
9	2	0	3	1	2	0	3	2	3	1	3
10	11	0	22	8	4	0	7	11	8	2	8
11	23	5	80	2	3	0	6	3	5	1	8
12	4	2	13	3	4	0	1	5	6	0	3
13	15	5	16	1	3	0	5	3	5	1	5
14	9	5	26	7	5	0	3	9	9	1	5
15	24	5	27	0	3	0	3	1	4	0	5
16	10	7	32	0	0	0	2	5	0	0	4
17	24	0	97	9	9	1	4	9	12	5	7
18	85	4	130	6	6	0	4	3	9	3	4
19	25	0	60	8	7	2	9	5	7	6	7
20	61	0	160	3	4	0	5	4	7	0	6
21	49	0	97	5	7	2	8	3	6	4	6
22	70	0	173	6	9	0	9	5	12	2	10
23	19	1	46	7	8	4	4	15	10	3	5
24	9	6	69	6	6	1	5	8	8	3	5
25	16	5	84	6	10	0	7	6	9	2	5
26	1	1	5	1	0	0	0	1	4	0	1
27	0	0	4	3	1	0	0	2	1	0	2
28	0	0	0	1	1	0	0	1	1	0	2
29	1	0	1	1	1	0	0	0	1	0	0
30	0	0	5	5	0	1	1	5	3	3	1
31	1	1	3	0	1	0	1	0	1	0	0
32	0	0	1	0	0	0	1	0	0	0	0
33	1	0	3	1	1	0	0	1	1	0	1
34	2	1	1	0	1	0	1	0	1	0	0
35	0	0	0	1	0	0	0	1	2	0	0
36	0	0	1	4	2	1	1	3	4	0	1
37	0	0	4	1	0	0	0	1	2	0	0
38	1	0	1	0	0	0	1	0	0	0	1
39	0	0	2	0	1	0	1	0	0	0	0
40	2	1	3	0	1	0	0	0	1	0	1
41	9	0	45	8	12	0	7	11	12	4	5
42	3	2	10	2	3	0	1	1	3	1	2
43	13	4	9	4	2	1	1	5	3	0	2
44	3	3	10	4	4	0	1	4	6	0	2
45	11	0	54	4	11	1	6	6	12	2	6
46	7	0	22	3	3	2	2	5	6	0	3
47	1	1	11	0	0	0	0	0	0	0	0
48	4	3	13	2	4	2	2	1	6	3	1
49	7	0	34	4	6	1	2	6	9	2	2
50	6	3	16	8	5	0	1	6	7	4	2
51	83	2	44	6	13	0	5	4	12	3	4
52	0	0	10	6	3	0	3	4	8	4	1
53	5	7	7	8	4	0	1	8	4	1	3
Statewide Totals	1,046	74	2,258								

Notes:

(1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

APPENDIX D: ANALYSIS OF EXPOSURE TO FLOOD HAZARD, BY U.S. CONGRESSIONAL DISTRICT

Table F-D-2. Analysis of Exposure to Flood Hazard – U.S. Congressional Districts, 500-year Floodplain

Analysis Region	Total Area (Acres)	Exposed Area (Acres)	Percent Area Exposed	Population and Structures							Crops				
				Total Population	Exposed Population	Percent Population Exposed	Exposed Structures	Total Depreciated Replacement Value of Exposed Structures (\$1,000s)	Total Depreciated Replacement Value of Exposed Contents (\$1,000s)	Total Depreciated Replacement Value of Exposed Structures and Contents (\$1,000s)	Total Crops (Acres)	Exposed Crops (Acres)	Percent of Crops Exposed	Exposed Crops for which Valuation was Computed (Acres)	Value of Exposed Crops (\$1,000s)
1	7,804,837	494,629	6	638,940	114,082	18	47,433	6,924,992	4,488,188	11,413,180	418,902	185,876	44	102,337	259,804
2	14,065,518	1,448,605	10	639,086	226,308	35	89,286	9,986,786	5,647,722	15,634,508	1,656,643	888,545	54	415,876	1,160,554
3	2,190,274	281,311	13	639,088	85,383	13	32,496	5,372,108	2,878,868	8,250,976	261,404	142,748	55	98,041	252,732
4	10,981,490	914,632	8	639,083	25,042	4	13,219	1,973,458	1,232,986	3,206,444	475,706	138,460	29	35,375	26,725
5	95,959	74,906	78	639,088	505,390	79	159,213	20,674,707	10,676,602	31,351,309	5,269	4,964	94	3,709	8,341
6	1,356,110	110,026	8	638,950	79,699	12	30,724	6,869,137	4,804,872	11,674,009	71,606	22,687	32	12,758	8,566
7	283,563	106,044	37	639,088	66,882	10	22,898	4,263,714	2,666,678	6,930,392	12,873	5,157	40	3,414	12,859
8	72,695	414	1	639,088	0	0	0	-	-	0	0	0	0	0	-
9	97,483	5,752	6	639,088	36,089	6	8,972	1,505,970	1,119,376	2,625,346	74	0	0	0	-
10	694,369	191,128	28	639,088	63,221	10	21,319	4,601,153	2,931,843	7,532,996	142,314	54,792	39	46,677	144,457
11	1,482,120	446,377	30	639,088	272,677	43	93,756	18,394,107	11,401,838	29,795,945	576,641	333,798	58	275,545	971,428
12	232,191	63,331	27	638,978	107,724	17	32,893	5,978,220	15,171,563	15,171,563	108	3	3	3	19
13	179,769	44,039	24	639,088	69,630	11	20,145	5,409,033	4,168,831	9,577,864	1,316	466	35	277	178
14	659,325	95,585	14	638,881	336,062	53	106,385	24,064,262	15,446,760	39,511,022	17,209	2,279	13	1,008	10,601
15	184,908	55,848	30	639,088	269,320	42	78,714	20,497,097	14,152,962	34,650,059	22,396	15,836	71	9,677	36,188
16	148,513	16,340	11	639,088	70,939	11	18,625	5,268,099	4,269,099	9,537,198	26,663	6,808	26	1,584	5,914
17	3,447,063	217,992	6	638,824	245,143	38	63,515	10,524,146	6,823,188	17,347,334	326,277	87,973	27	60,807	494,846
18	1,984,396	585,054	29	639,088	264,981	41	80,372	9,249,253	5,955,285	15,204,538	866,662	368,654	43	305,714	600,960
19	4,339,654	264,535	6	639,088	60,553	9	17,707	2,330,268	1,502,414	3,832,682	626,332	131,783	21	89,081	228,111
20	3,192,916	756,654	24	639,088	164,340	26	40,730	4,244,552	2,840,752	7,085,304	1,917,798	562,778	29	489,824	1,096,103
21	5,177,318	461,282	9	639,088	279,565	44	91,009	12,587,264	7,814,087	20,401,351	995,959	296,574	30	248,708	880,376
22	6,690,444	571,059	9	639,088	117,245	18	47,943	6,524,561	4,045,572	10,570,133	812,106	195,230	24	130,906	390,500
23	1,586,832	80,023	5	638,203	151,819	24	44,527	7,194,512	4,656,499	11,851,011	62,834	14,137	22	10,817	142,083
24	2,660,280	115,778	4	639,075	126,723	20	40,343	7,046,391	4,777,910	11,824,301	170,133	48,350	28	37,533	329,282
25	13,838,398	596,026	4	639,087	100,213	16	33,743	4,756,791	2,972,342	7,729,133	153,402	34,049	22	25,921	32,139
26	483,140	8,329	2	639,088	19,085	3	6,698	1,152,276	6,698	1,822,086	8,079	272	3	141	1,583
27	96,999	2,216	2	639,088	7,309	1	2,185	313,027	201,745	514,772	3,699	150	4	128	648
28	49,778	1,437	3	639,087	1,673	0	450	87,262	71,432	158,694	150	55	37	55	280
29	65,008	248	0	639,088	668	0	227	56,671	48,561	105,232	0	0	0	0	-
30	248,180	6,960	3	638,849	15,314	2	5,091	1,394,835	1,077,547	2,472,382	5,609	251	4	0	1
31	25,373	1,150	5	639,088	32,213	5	4,183	750,480	502,983	1,253,463	0	0	0	0	-
32	59,341	8,660	15	639,087	87,417	14	24,165	3,280,011	1,969,679	5,249,690	2,216	289	13	289	1,460
33	30,931	5,302	17	639,088	119,041	19	28,619	2,622,550	1,614,757	4,237,307	0	0	0	0	-
34	37,765	13,241	35	639,088	215,036	34	49,466	6,482,253	4,006,768	10,489,021	0	0	0	0	-
35	35,484	836	2	639,088	9,292	1	2,449	138,889	81,207	220,096	89	15	17	0	-
36	78,342	4,342	6	638,016	20,126	3	6,819	1,226,812	766,455	1,993,267	0	0	0	0	-
37	48,065	19,834	41	639,088	275,197	43	65,203	7,411,038	5,057,060	12,468,098	1,197	485	40	285	1,439
38	67,289	10,974	16	639,088	144,125	23	36,289	3,893,001	2,459,430	6,352,431	4,199	26	1	26	132
39	41,909	18,010	43	639,088	260,404	41	66,683	8,705,433	5,697,293	14,402,726	391	234	60	231	1,168
40	64,990	37,681	58	639,088	428,412	67	110,095	19,549,434	13,303,024	32,852,458	4,448	2,070	47	18	90
41	8,544,119	131,033	2	639,087	112,978	18	45,198	4,834,939	2,871,867	7,706,806	46,569	8,580	18	4,910	9,334
42	203,028	13,300	7	639,088	30,665	5	9,819	3,276,610	2,900,122	6,176,732	22,526	3,476	15	997	1,002
43	123,405	39,450	32	639,087	147,135	23	37,678	6,106,295	4,199,683	10,305,978	7,744	3,525	46	982	2,480
44	351,131	28,716	8	639,040	70,697	11	19,449	2,558,217	2,558,289	6,116,506	22,702	1,331	6	540	1,779
45	3,879,890	185,831	5	639,088	227,126	36	96,575	13,043,492	7,918,156	20,961,648	177,231	31,439	18	21,362	97,465
46	528,197	60,390	11	636,345	383,800	60	123,487	21,749,524	14,006,073	35,755,597	5,242	2,927	56	526	2,167
47	35,254	30,310	86	639,087	548,167	86	100,710	15,189,271	9,791,364	24,980,635	981	623	63	78	319
48	192,912	14,552	8	637,594	55,438	9	21,620	4,593,660	3,335,080	7,928,740	34,561	2,289	7	1,946	8,008
49	1,137,916	48,084	4	638,916	77,137	12	24,590	3,988,000	2,534,676	6,522,676	81,288	7,155	9	3,460	8,979
50	233,585	14,844	6	638,759	42,226	7	11,083	2,432,806	1,660,398	4,093,204	11,818	822	7	333	1,256
51	3,133,568	387,246	12	638,544	44,484	7	11,523	1,645,674	1,084,880	2,730,554	524,396	50,064	10	46,304	160,763
52	1,362,870	45,143	3	639,087	35,725	6	10,095	2,030,603	1,396,435	3,427,038	11,657	3,984	34	3,186	21,009
53	160,804	13,700	9	637,233	24,820	4	7,587	2,150,760	1,616,360	3,767,120	0	0	0	0	-
Statewide Totals		9,149,190		33,861,390	7,274,737		2,164,001	351,119,527	226,654,028	577,773,555	10,597,416	3,662,010		2,491,389	7,414,131

Notes:
 (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

APPENDIX D: ANALYSIS OF EXPOSURE TO FLOOD HAZARD, BY U.S. CONGRESSIONAL DISTRICT

Table F-D-2. Analysis of Exposure to Flood Hazard – U.S. Congressional Districts, 500-year Floodplain

Analysis Region	Facilities Summary					DoD Facilities		Native American Tribal Lands		Sensitive Species		Essential Facilities				
	Essential Facilities	High Potential Loss Facilities	Lifeline Utilities	Transportation Facilities	Transportation Segments (Miles)	Number of Department of Defense Facilities Exposed ⁽¹⁾	Department of Defense Facilities Exposed (Acres) ⁽¹⁾	Number of Native American Tribal Land Areas Exposed ⁽¹⁾	Native American Tribal Land Areas Exposed (Acres) ⁽¹⁾	All Sensitive Plants ⁽²⁾	All Sensitive Animals ⁽²⁾	Care Facilities	Emergency Centers	Fire Stations	Police Stations	Schools
1	84	33	19	419	377	1	40	6	5,785	180	117	2	0	15	3	64
2	203	40	19	1,031	673	2	4,137	4	897	142	122	3	1	24	14	161
3	41	32	6	194	141	2	629	1	3	51	61	1	0	5	1	34
4	27	74	4	262	196	2	56,715	5	1,913	138	87	2	0	6	3	16
5	214	33	14	289	278	2	1,027	0	0	5	22	9	0	4	4	197
6	55	6	8	196	91	1	746	0	0	106	65	2	0	10	8	35
7	31	64	14	110	93	2	1,521	0	0	36	40	3	0	2	6	20
8	0	0	0	0	0	0	0	0	0	2	6	0	0	0	0	0
9	15	4	0	44	28	1	102	0	0	13	22	0	0	0	0	15
10	40	7	12	104	57	2	204	0	0	68	70	0	0	2	5	33
11	147	34	11	315	299	3	446	0	0	56	50	1	0	9	7	130
12	33	19	5	74	34	0	0	0	0	26	28	0	0	2	3	28
13	22	34	6	40	55	1	81	0	0	20	34	1	0	1	0	20
14	160	50	11	214	143	1	133	0	0	61	44	4	1	11	7	137
15	103	79	5	222	180	0	0	0	0	14	26	2	0	4	5	92
16	29	41	3	131	78	0	0	0	0	20	17	0	1	0	6	22
17	125	17	14	208	193	4	14,874	0	0	91	77	3	0	15	17	90
18	146	57	18	392	323	1	479	0	0	37	50	5	0	9	18	114
19	32	27	1	127	99	0	0	0	0	81	91	1	0	2	2	27
20	68	26	9	266	283	1	3,583	1	105	32	53	1	0	3	6	58
21	160	27	13	445	316	3	9,857	1	4	58	68	4	1	9	14	132
22	73	26	8	250	338	6	13,819	0	0	111	94	2	0	6	4	61
23	50	13	22	230	131	3	1,934	0	0	98	65	2	1	3	7	37
24	70	7	6	179	164	2	822	0	0	49	55	0	0	3	5	62
25	43	12	8	92	173	4	7,519	1	10	103	109	0	1	1	4	37
26	19	2	0	28	20	0	0	0	0	23	29	0	0	0	0	19
27	5	2	0	14	6	0	0	0	0	11	16	0	0	0	0	5
28	0	2	0	6	1	0	0	0	0	3	6	0	0	0	0	0
29	0	1	0	0	2	0	0	0	0	7	6	0	0	0	0	0
30	11	1	1	12	10	0	0	0	0	27	28	1	0	0	1	9
31	11	6	0	19	11	0	0	0	0	5	6	0	0	0	0	11
32	42	8	0	37	19	0	0	0	0	3	8	2	0	1	2	37
33	39	1	2	6	25	0	0	0	0	12	9	0	0	0	1	38
34	70	28	1	44	51	0	0	0	0	5	9	4	0	1	3	62
35	2	0	0	9	4	0	0	0	0	7	14	0	0	0	0	2
36	5	3	0	15	11	0	0	0	0	19	25	1	0	0	1	3
37	88	181	6	125	118	0	0	0	0	11	8	2	0	1	7	78
38	58	8	0	63	60	0	0	0	0	3	3	1	0	0	2	55
39	98	81	9	100	76	0	0	0	0	8	8	3	1	0	2	92
40	163	106	5	183	164	2	166	0	0	9	14	7	0	1	7	148
41	73	6	1	102	94	2	860	6	7,886	85	102	2	0	9	6	56
42	13	24	3	51	43	0	0	0	0	19	28	1	0	0	0	12
43	67	53	8	154	116	0	0	0	0	22	24	1	0	4	3	59
44	39	14	4	84	65	0	0	0	0	26	47	1	0	2	2	34
45	94	5	19	123	194	1	13	6	21,829	58	96	3	1	2	13	75
46	136	120	15	341	169	4	575	0	0	36	35	3	0	2	4	127
47	165	62	2	90	141	0	0	0	0	4	2	6	0	2	4	153
48	31	9	1	88	43	2	490	0	0	30	41	1	0	2	2	26
49	40	12	3	83	57	1	46	4	144	49	60	0	0	2	4	34
50	16	6	1	67	32	1	16	0	0	43	40	0	0	2	1	13
51	19	22	8	159	152	5	17,391	2	28,316	91	102	0	0	2	1	16
52	27	12	5	63	17	2	6	0	0	75	57	0	0	2	4	21
53	4	2	2	86	33	6	457	0	0	53	35	1	0	0	0	3
Statewide Totals	3,306	1,539	332	7,986	6,476							88	8	181	219	2,810

Notes:
 (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-D-2. Analysis of Exposure to Flood Hazard – U.S. Congressional Districts, 500-year Floodplain

Analysis Region	High Potential Loss Facilities		Lifeline Utilities						Transportation Facilities								
	Dams	Hazardous Material Sites	Wastewater Facilities	Potable Water Facilities	Oil Facilities	Natural Gas Facilities	Electric Power Facilities	Communications Facilities	Runways	Railway Bridges	Rail Facilities	Port Facilities	Light Rail Facilities	Highway Bridges	Ferry Facilities	Bus Facilities	Airport Facilities
1	7	26	7	0	0	0	3	9	3	2	3	20	0	385	0	3	3
2	31	9	8	0	0	0	2	9	6	11	2	0	0	1,005	0	3	4
3	26	6	0	0	0	0	0	6	4	0	0	0	0	185	2	0	3
4	60	14	2	1	0	0	0	1	4	2	0	0	0	248	0	4	4
5	3	30	3	0	0	0	3	8	3	10	1	1	29	242	0	2	1
6	6	0	6	0	0	0	0	2	1	2	0	0	0	187	4	1	1
7	2	62	5	1	4	0	2	2	3	5	1	18	0	82	0	0	1
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	4	0	0	0	0	0	0	0	3	1	1	2	37	0	0	0
10	2	5	0	2	0	0	0	10	0	1	1	1	1	95	4	1	0
11	14	20	3	1	0	1	1	5	1	5	2	0	1	300	4	1	1
12	1	18	3	0	0	0	0	2	1	3	0	0	3	66	0	0	1
13	0	34	1	1	0	0	2	2	1	1	2	4	2	29	0	0	1
14	5	45	4	1	0	0	3	3	1	2	0	7	16	187	0	0	1
15	4	75	1	0	0	0	3	1	0	7	1	0	8	205	0	1	0
16	1	40	0	1	0	0	0	2	1	7	0	0	17	104	0	2	0
17	5	12	6	0	0	0	0	8	3	5	1	0	0	193	0	5	1
18	3	54	3	1	0	0	4	10	4	10	14	5	2	352	0	3	2
19	19	8	0	0	0	0	0	1	0	1	0	0	0	126	0	0	0
20	7	19	0	0	1	0	2	6	5	5	2	0	0	249	0	1	4
21	10	17	6	0	0	0	0	7	2	4	0	0	0	435	0	2	2
22	9	17	2	1	0	0	0	5	5	7	1	0	0	230	0	4	3
23	0	13	8	2	0	1	4	7	4	3	1	12	0	202	0	6	2
24	3	4	3	0	1	1	0	1	2	0	3	0	2	169	0	1	2
25	10	2	2	0	1	1	2	2	1	0	2	0	2	86	0	0	1
26	2	0	0	0	0	0	0	0	0	0	1	0	0	27	0	0	0
27	1	1	0	0	0	0	0	0	0	0	1	0	0	13	0	0	0
28	2	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0
29	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	1	0	1	0	0	0	0	0	0	0	1	0	0	11	0	0	0
31	0	6	0	0	0	0	0	0	0	0	1	0	1	17	0	0	0
32	0	8	0	0	0	0	0	0	0	0	0	0	0	36	0	1	0
33	0	1	0	0	0	0	0	2	0	0	0	0	0	6	0	0	0
34	0	28	0	0	1	0	0	0	0	3	0	0	1	40	0	0	0
35	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	0
36	0	3	0	0	0	0	0	0	0	0	1	0	0	14	0	0	0
37	0	181	0	0	6	0	0	0	0	9	5	1	3	107	0	0	0
38	0	8	0	0	0	0	0	0	0	7	0	0	1	55	0	0	0
39	0	81	1	1	4	0	1	2	0	6	0	0	0	94	0	0	0
40	2	104	0	0	1	0	2	2	1	7	2	0	2	170	0	0	1
41	5	1	0	1	0	0	0	0	1	1	1	0	0	97	0	1	1
42	3	21	1	0	0	0	1	1	0	0	0	0	1	50	0	0	0
43	1	52	2	1	0	0	0	5	2	6	1	0	0	142	0	2	1
44	4	10	1	0	0	0	1	2	1	1	0	0	2	78	0	1	1
45	2	3	5	2	0	0	3	9	3	0	0	0	0	118	0	1	1
46	0	120	3	0	4	0	8	0	0	0	2	131	0	197	9	2	0
47	0	62	0	0	0	0	0	2	0	7	1	0	2	79	0	1	0
48	8	1	1	0	0	0	0	0	0	1	1	0	3	77	3	3	0
49	2	10	0	2	0	0	0	1	1	0	0	0	0	80	0	1	1
50	2	4	1	0	0	0	0	0	0	0	0	0	0	67	0	0	0
51	1	21	1	0	0	1	6	0	0	3	2	2	3	149	0	0	0
52	0	12	0	0	0	0	1	4	1	0	0	0	0	60	0	1	1
53	0	2	0	0	0	0	0	2	0	0	0	12	8	64	0	2	0
Statewide Totals	265	1,274	90	19	23	5	54	141	65	147	58	215	112	7,262	26	56	45

Notes:
 (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
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APPENDIX D: ANALYSIS OF EXPOSURE TO FLOOD HAZARD, BY U.S. CONGRESSIONAL DISTRICT

Table F-D-2. Analysis of Exposure to Flood Hazard – U.S. Congressional Districts, 500-year Floodplain

Analysis Region	Transportation Segment			Sensitive Species							
	Railway Segments (Miles)	Light Rail Segments (Miles)	Highway Segments (Miles)	CA State Listing Endangered Plants ⁽²⁾	CA State Listing Endangered Animals ⁽²⁾	CA State Listing Threatened Plants ⁽²⁾	CA State Listing Threatened Animals ⁽²⁾	Federal Listing Endangered Plants ⁽²⁾	Federal Listing Endangered Animals ⁽²⁾	Federal Listing Threatened Plants ⁽²⁾	Federal Listing Threatened Animals ⁽²⁾
1	169	0	208	16	10	6	7	19	11	0	14
2	184	0	489	8	8	1	14	6	6	3	7
3	27	0	114	6	3	0	4	2	2	3	6
4	60	0	136	5	6	0	8	3	4	1	7
5	54	16	208	0	0	0	3	0	1	0	3
6	26	0	65	11	5	3	3	15	8	2	5
7	45	1	47	2	4	0	4	6	4	0	6
8	0	0	0	1	0	0	1	1	1	0	1
9	11	3	14	1	2	0	3	2	3	1	3
10	17	3	38	8	4	0	7	11	8	2	8
11	65	10	224	3	3	0	6	5	5	1	8
12	9	6	20	4	4	0	1	6	6	0	3
13	23	6	27	1	3	0	5	3	5	1	5
14	24	17	102	8	5	0	3	10	9	1	5
15	51	15	114	0	3	0	3	1	4	0	5
16	17	11	50	0	0	0	2	5	0	0	4
17	45	0	149	9	9	1	4	9	12	5	7
18	122	5	196	6	6	0	4	3	9	4	4
19	28	0	71	9	7	2	9	5	7	6	7
20	76	0	207	3	4	0	5	4	7	0	6
21	94	0	222	5	7	2	8	3	6	4	6
22	86	0	252	6	9	0	9	5	12	2	10
23	35	2	95	7	8	4	4	16	10	3	5
24	25	16	123	6	6	1	5	8	8	3	5
25	34	6	133	6	10	0	7	6	9	2	5
26	4	2	14	2	1	0	0	2	5	0	1
27	1	0	5	3	1	0	0	2	1	0	2
28	0	0	0	1	1	0	0	1	1	0	2
29	1	0	1	1	1	0	0	0	1	0	0
30	0	0	10	5	0	1	1	5	3	3	1
31	1	1	8	0	1	0	1	0	1	0	0
32	0	0	18	0	0	0	1	0	0	0	1
33	5	0	20	2	1	1	0	4	1	0	1
34	9	3	40	1	2	0	1	1	1	0	0
35	0	0	4	2	3	1	0	1	4	0	0
36	4	0	7	4	2	1	1	3	4	0	1
37	30	6	82	3	1	0	0	3	3	0	0
38	15	6	40	0	0	0	1	0	0	0	1
39	10	3	63	2	2	0	1	2	1	0	0
40	27	10	127	1	1	0	0	1	1	0	1
41	16	0	78	8	12	0	7	11	12	4	5
42	9	7	28	2	3	0	1	1	3	1	2
43	42	9	65	4	2	1	1	5	3	0	2
44	20	13	32	4	4	0	1	4	6	0	2
45	35	0	159	4	11	1	6	6	12	2	6
46	35	0	133	4	3	2	2	6	6	0	3
47	23	7	110	0	0	0	0	0	0	0	0
48	8	6	29	2	4	2	2	1	6	3	1
49	8	0	49	4	6	1	2	6	9	2	2
50	7	4	21	8	5	0	1	6	7	4	2
51	92	5	55	6	13	0	5	4	12	3	4
52	0	1	15	6	3	0	3	4	8	4	1
53	7	10	16	8	4	0	1	8	4	1	3
Statewide Totals	1,736	211	4,530								

Notes:

(1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

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Appendix E: Analysis of Exposure to Flood Hazard, by State Assembly District

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Table F-E-1. Analysis of Exposure to Flood Hazard – State Assembly Districts, 100-year Floodplain

Analysis Region	Total Area (Acres)	Exposed Area (Acres)	Percent Area Exposed	Population and Structures							Crops				
				Total Population	Exposed Population	Percent Population Exposed	Exposed Structures	Total Depreciated Replacement Value of Exposed Structures (\$1,000s)	Total Depreciated Replacement Value of Exposed Contents (\$1,000s)	Total Depreciated Replacement Value of Exposed Structures and Contents (\$1,000s)	Total Crops (Acres)	Exposed Crops (Acres)	Percent of Crops Exposed	Exposed Crops for which Valuation was Computed (Acres)	Value of Exposed Crops (\$1,000s)
1	9,564,695	311,043	3	423,170	37,930	9	20,830	2,084,329	1,316,069	3,400,398	216,428	72,662	34	16,173	77,447
2	13,838,999	1,364,768	10	423,397	47,988	11	21,156	2,233,781	1,330,433	3,564,214	1,766,984	701,187	40	328,568	826,275
3	7,313,654	552,388	8	423,393	35,011	8	14,243	1,454,891	842,477	2,297,368	314,934	104,153	33	34,272	52,101
4	2,352,234	133,855	6	423,392	14,697	3	6,874	1,220,569	733,336	1,953,905	79,832	11,115	14	2,432	4,457
5	116,405	6,862	6	423,402	15,304	4	5,175	802,031	477,468	1,279,499	20,027	106	1	5	20
6	772,332	83,459	11	423,342	45,526	11	15,931	3,896,466	2,732,761	6,629,227	44,050	15,098	34	12,301	6,882
7	721,072	82,961	12	423,392	20,296	5	7,577	1,308,158	918,070	2,226,228	67,014	12,803	19	1,614	6,845
8	644,013	288,006	45	423,393	69,289	16	22,942	4,429,740	2,853,767	7,283,507	314,986	128,676	41	109,831	220,199
9	48,843	1,968	4	423,401	16,638	4	4,300	547,939	257,025	804,964	801	0	0	0	-
10	758,086	70,349	9	423,401	8,267	2	3,441	640,456	380,669	1,021,125	110,944	30,111	27	11,213	33,402
11	180,917	35,060	19	423,398	16,018	4	6,232	1,037,235	670,444	1,707,679	1,048	87	8	77	358
12	103,402	65	0	423,402	5	0	3	346	223	569	88	0	0	0	-
13	53,061	414	1	423,388	0	0	0	-	-	0	0	0	0	0	-
14	124,509	21,752	17	423,398	10,140	2	3,006	646,524	413,612	1,060,136	528	186	35	180	148
15	884,121	283,208	32	423,394	25,394	6	9,830	2,134,230	1,255,504	3,389,734	358,082	177,649	50	148,719	558,383
16	56,611	3,974	7	423,396	4,172	1	1,005	264,354	197,759	462,113	0	0	0	0	-
17	1,788,834	394,803	22	423,390	80,099	19	28,611	3,104,136	1,978,918	5,083,054	674,007	237,570	35	205,286	391,818
18	119,918	13,677	11	423,387	18,037	4	5,783	1,397,979	1,021,367	2,419,346	670	142	21	105	25
19	389,689	64,993	17	423,078	71,671	17	21,354	5,574,012	3,448,366	9,022,378	6,827	643	9	497	3,036
20	136,527	24,471	18	423,398	22,215	5	5,972	2,210,914	1,847,668	4,058,582	4,746	1,083	23	226	53
21	197,025	32,938	17	423,400	47,911	11	16,104	4,244,933	2,839,065	7,083,998	1,777	94	5	0	-
22	64,855	20,786	32	423,392	29,932	7	8,425	2,793,794	2,442,875	5,236,669	7,191	2,258	31	0	-
23	38,476	3,268	8	423,404	38,798	9	8,075	1,397,235	903,044	2,300,279	3,152	266	8	0	-
24	46,193	2,692	6	423,401	19,348	5	6,777	1,310,795	876,748	2,187,543	3,049	369	12	0	-
25	6,687,654	330,078	5	423,391	11,676	3	4,326	581,449	349,336	930,785	457,987	127,997	28	98,764	222,918
26	658,272	101,539	15	423,394	28,052	7	7,945	1,031,626	656,301	1,687,927	434,088	75,152	17	57,223	136,253
27	1,453,116	65,189	4	423,129	26,218	6	10,167	1,954,185	1,287,806	3,241,991	68,548	17,401	25	12,855	126,513
28	2,786,467	153,698	6	423,390	32,180	8	8,388	1,812,497	1,441,581	3,254,078	319,633	72,488	23	50,497	323,662
29	2,091,108	75,355	4	423,393	15,703	4	4,672	687,037	453,433	1,140,470	194,603	30,834	16	11,385	53,551
30	3,565,017	774,666	22	423,400	56,420	13	14,966	1,530,228	1,028,945	2,559,173	1,893,616	575,539	30	484,122	1,179,610
31	1,024,840	151,583	15	423,394	22,146	5	6,345	647,304	415,773	1,063,077	758,645	111,462	15	93,982	237,152
32	3,166,917	241,676	8	423,397	6,838	2	3,811	349,822	232,690	582,512	467,826	105,372	23	83,504	262,442
33	3,021,826	144,658	5	423,329	14,357	3	7,000	1,025,338	711,304	1,736,642	269,133	30,978	12	22,338	106,756
34	20,636,890	572,710	3	423,390	55,126	13	19,970	2,585,395	1,696,975	4,282,370	428,190	61,084	14	37,466	143,337
35	1,949,795	43,190	2	422,725	23,893	6	7,350	1,520,670	1,115,365	2,636,035	54,992	6,390	12	4,548	53,004
36	1,370,289	84,873	6	423,387	8,078	2	3,416	447,352	286,075	733,427	114,761	16,721	15	15,762	19,716
37	1,440,316	49,575	3	423,398	39,213	9	12,774	2,227,746	1,561,721	3,789,467	140,473	15,618	11	13,022	60,467
38	244,568	11,253	5	423,394	22,024	5	6,993	1,439,261	990,433	2,429,694	12,540	1,728	14	88	428
39	27,893	1,202	4	423,395	1,158	0	281	65,911	62,276	128,187	557	65	12	65	326
40	35,875	355	1	423,402	2,345	1	637	99,020	65,702	164,722	1,868	40	2	33	168

Notes:
 (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

APPENDIX E: ANALYSIS OF EXPOSURE TO FLOOD HAZARD, BY STATE ASSEMBLY DISTRICT

Table F-E-1. Analysis of Exposure to Flood Hazard – State Assembly Districts, 100-year Floodplain

Analysis Region	Total Area (Acres)	Exposed Area (Acres)	Percent Area Exposed	Population and Structures							Crops				
				Total Population	Exposed Population	Percent Population Exposed	Exposed Structures	Total Depreciated Replacement Value of Exposed Structures (\$1,000s)	Total Depreciated Replacement Value of Exposed Contents (\$1,000s)	Total Depreciated Replacement Value of Exposed Structures and Contents (\$1,000s)	Total Crops (Acres)	Exposed Crops (Acres)	Percent of Crops Exposed	Exposed Crops for which Valuation was Computed (Acres)	Value of Exposed Crops (\$1,000s)
41	367,618	19,333	5	423,009	5,015	1	2,521	543,656	367,709	911,365	32,079	10,032	31	7,837	92,508
42	50,878	464	1	423,388	415	0	162	26,598	16,168	42,766	33	0	0	0	-
43	40,073	293	1	423,399	677	0	245	49,366	41,032	90,398	0	0	0	0	-
44	63,395	0	0	423,393	0	0	0	-	-	0	201	0	0	0	-
45	19,155	537	3	423,395	6,997	2	843	169,687	125,943	295,630	0	0	0	0	-
46	19,312	75	0	423,393	432	0	3	4,038	2,122	6,160	0	0	0	0	-
47	23,912	630	3	423,404	14,830	4	3,353	315,507	203,729	519,236	0	0	0	0	-
48	13,416	389	3	423,402	10,141	2	2,196	255,787	186,430	442,217	0	0	0	0	-
49	29,130	0	0	423,394	0	0	0	-	-	0	505	0	0	0	-
50	23,737	240	1	423,393	1,045	0	225	30,979	24,874	55,853	0	0	0	0	-
51	25,749	41	0	423,392	105	0	46	6,492	4,965	11,457	69	0	0	0	-
52	21,424	184	1	423,397	570	0	134	13,816	8,996	22,812	141	31	22	31	158
53	69,883	2,414	3	422,324	1,272	0	342	77,672	54,586	132,258	0	0	0	0	-
54	462,507	16,288	4	422,353	13,774	3	5,754	715,369	422,557	1,137,926	130	0	0	0	-
55	37,474	2,036	5	423,384	1,016	0	587	219,360	245,668	465,028	1,077	44	4	44	222
56	34,859	200	1	423,403	947	0	226	36,966	28,545	65,511	493	23	5	0	-
57	43,660	198	0	423,398	535	0	166	26,929	17,227	44,156	843	11	1	11	56
58	44,439	803	2	423,401	980	0	281	29,810	18,030	47,840	3,093	34	1	34	172
59	861,457	11,973	1	423,388	4,300	1	1,831	236,083	129,890	365,973	12,224	241	2	100	419
60	101,807	2,622	3	423,387	4,078	1	1,152	354,430	309,891	664,321	9,144	516	6	119	64
61	71,199	3,429	5	423,396	3,729	1	571	130,337	106,742	237,079	13,077	727	6	575	582
62	75,590	5,972	8	423,397	8,302	2	1,774	336,941	256,758	593,699	1,865	45	2	3	4
63	134,444	9,191	7	423,401	9,688	2	2,911	503,639	352,334	855,973	9,327	249	3	150	1,053
64	793,431	13,295	2	423,389	4,675	1	1,738	256,911	151,941	408,852	19,853	2,437	12	1,373	7,754
65	974,643	57,892	6	423,388	22,685	5	11,529	1,099,799	685,406	1,785,205	31,327	11,415	36	7,702	7,042
66	920,267	25,584	3	423,393	7,628	2	3,278	658,328	527,849	1,186,177	59,546	1,652	3	720	3,995
67	71,186	6,418	9	421,697	36,557	9	10,172	2,031,113	1,193,782	3,224,895	3,747	219	6	0	-
68	33,197	2,282	7	423,394	23,994	6	6,973	1,067,598	615,116	1,682,714	1,574	54	3	8	32
69	23,572	2,800	12	423,400	49,979	12	9,553	1,373,520	895,908	2,269,428	1,732	46	3	9	38
70	121,194	6,163	5	422,066	10,689	3	4,533	1,000,522	693,522	1,694,044	24,840	1,077	4	952	3,917
71	231,846	12,173	5	423,400	8,733	2	2,967	727,242	469,792	1,197,034	28,405	1,310	5	403	1,077
72	56,850	1,569	3	423,391	6,305	1	1,416	338,087	252,680	590,767	5,082	322	6	0	-
73	334,917	7,590	2	423,024	18,334	4	6,351	1,064,051	746,932	1,810,983	13,116	488	4	226	718
74	177,362	7,760	4	423,073	14,336	3	4,282	960,656	667,694	1,628,350	10,215	260	3	79	487
75	206,491	9,972	5	423,291	8,777	2	2,703	855,248	655,526	1,510,774	11,140	1,237	11	385	1,286
76	92,189	6,224	7	422,419	7,553	2	2,178	860,660	687,933	1,548,593	0	0	0	0	-
77	1,375,587	40,131	3	423,387	10,911	3	4,614	684,143	439,447	1,123,590	10,011	4,036	40	3,217	21,047
78	71,858	2,975	4	423,399	5,686	1	1,674	343,212	239,775	582,987	3,834	35	1	35	29
79	87,875	12,026	14	422,080	14,548	3	3,670	540,579	369,828	910,407	740	223	30	21	68
80	6,082,378	434,962	7	423,392	22,408	5	12,252	1,065,858	664,320	1,730,178	673,324	44,112	7	36,142	118,581
Statewide Total		7,326,492		33,861,390	1,422,764		477,892	81,750,677	54,975,031	136,725,708	10,597,416	2,826,003		1,917,332	5,369,059

Notes:
 (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-E-1. Analysis of Exposure to Flood Hazard – State Assembly Districts, 100-year Floodplain

Analysis Region	Essential Facilities	High Potential Loss Facilities	Lifeline Utilities	Transportation Facilities	Transportation Segments (Miles)	Number of Department of Defense Facilities Exposed ⁽¹⁾	Department of Defense Facilities Exposed (Acres) ⁽¹⁾	Number of Native American Tribal Land Areas Exposed ⁽¹⁾	Native American Tribal Land Areas Exposed (Acres) ⁽¹⁾	All Sensitive Plants ⁽²⁾	All Sensitive Animals ⁽²⁾	Care Facilities	Emergency Centers	Fire Stations	Police Stations	Schools
1	45	23	11	328	254	0	0	6	5,627	182	102	1	0	9	5	30
2	61	55	11	776	421	1	3,844	5	2,279	158	126	0	1	13	2	45
3	30	44	2	245	178	2	56,968	2	418	114	68	0	0	7	0	23
4	2	10	7	68	31	1	47	0	0	34	44	0	0	0	0	2
5	5	5	1	23	14	1	262	0	0	4	20	1	0	0	0	4
6	25	3	4	118	62	1	746	0	0	84	55	0	0	5	2	18
7	12	3	5	66	42	2	1,354	0	0	57	38	0	0	1	1	10
8	37	9	5	113	149	1	202	0	0	41	49	1	0	6	1	29
9	6	1	0	6	4	0	0	0	0	0	6	0	0	0	0	6
10	5	11	0	59	31	1	517	0	0	12	36	1	0	1	1	2
11	13	52	6	62	38	1	173	0	0	31	42	1	0	0	3	9
12	0	0	0	0	0	0	0	0	0	10	3	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	2	6	0	0	0	0	0
14	4	12	6	20	8	0	0	0	0	17	27	0	0	0	0	4
15	7	5	2	115	80	1	29	0	0	43	49	0	0	0	1	6
16	1	0	0	8	5	2	183	0	0	11	15	0	0	0	0	1
17	55	26	9	236	194	2	484	0	0	35	48	1	0	4	10	40
18	6	0	3	19	15	1	32	0	0	11	31	0	0	0	0	6
19	18	20	3	60	20	0	0	0	0	38	31	0	0	1	2	15
20	4	7	3	27	38	0	0	0	0	14	24	1	0	0	0	3
21	23	36	9	47	21	0	0	0	0	26	30	1	0	0	2	20
22	8	29	4	50	41	1	131	0	0	11	20	0	0	0	1	7
23	13	3	1	44	21	0	0	0	0	10	9	0	0	0	2	11
24	9	1	1	25	13	0	0	0	0	9	9	0	0	0	0	9
25	12	37	2	109	68	0	0	1	3	100	86	1	0	2	0	9
26	9	13	2	117	58	1	84	0	0	18	31	0	0	1	1	7
27	16	12	8	85	53	3	3,788	0	0	87	56	0	0	2	8	6
28	15	9	3	139	113	3	9,260	0	0	66	60	0	0	1	2	12
29	10	6	0	72	29	1	5,762	0	0	26	41	0	0	1	0	9
30	32	16	6	265	292	1	3,583	1	105	37	47	0	0	3	1	28
31	13	10	1	83	76	0	0	0	0	20	39	0	0	2	2	9
32	2	10	2	54	83	4	12,776	0	0	47	60	0	0	0	0	2
33	5	4	6	150	83	2	789	0	0	110	74	0	0	1	0	4
34	26	15	2	154	157	5	8,482	5	6,855	108	120	0	0	0	0	26
35	14	1	9	123	43	0	0	0	0	44	51	0	0	2	1	11
36	9	2	3	21	50	2	1,038	0	0	23	39	0	0	0	2	7
37	23	3	0	81	44	0	0	0	0	30	45	0	0	0	2	21
38	10	2	3	38	35	0	0	0	0	16	28	0	0	0	0	10
39	0	0	0	6	1	0	0	0	0	3	6	0	0	0	0	0
40	0	1	0	7	1	0	0	0	0	1	3	0	0	0	0	0

Notes:
 (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

APPENDIX E: ANALYSIS OF EXPOSURE TO FLOOD HAZARD, BY STATE ASSEMBLY DISTRICT

Table F-E-1. Analysis of Exposure to Flood Hazard – State Assembly Districts, 100-year Floodplain

Analysis Region	Essential Facilities	High Potential Loss Facilities	Lifeline Utilities	Transportation Facilities	Transportation Segments (Miles)	Number of Department of Defense Facilities Exposed ⁽¹⁾	Department of Defense Facilities Exposed (Acres) ⁽¹⁾	Number of Native American Tribal Land Areas Exposed ⁽¹⁾	Native American Tribal Land Areas Exposed (Acres) ⁽¹⁾	All Sensitive Plants ⁽²⁾	All Sensitive Animals ⁽²⁾	Care Facilities	Emergency Centers	Fire Stations	Police Stations	Schools
41	3	1	2	28	22	2	216	0	0	29	34	0	0	0	1	2
42	0	2	0	1	0	0	0	0	0	6	7	0	0	0	0	0
43	0	0	0	1	3	0	0	0	0	5	5	0	0	0	0	0
44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45	2	5	0	19	7	0	0	0	0	7	7	0	0	0	0	2
46	0	0	0	0	1	0	0	0	0	2	7	0	0	0	0	0
47	1	0	0	4	3	0	0	0	0	3	6	0	0	0	0	1
48	2	0	0	0	1	0	0	0	0	3	3	0	0	0	0	2
49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	0	4	0	2	1	0	0	0	0	0	0	0	0	0	0	0
51	0	0	0	0	0	0	0	0	0	6	3	0	0	0	0	0
52	0	0	0	8	2	0	0	0	0	0	0	0	0	0	0	0
53	0	0	0	1	0	0	0	0	0	14	22	0	0	0	0	0
54	3	10	3	101	7	2	211	0	0	28	26	0	0	0	1	2
55	2	21	1	29	10	1	56	0	0	9	8	0	0	0	1	1
56	1	0	0	1	1	0	0	0	0	3	5	0	0	0	1	0
57	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0
58	0	0	0	4	2	0	0	0	0	1	3	0	0	0	0	0
59	1	2	0	12	9	0	0	0	0	32	45	0	0	1	0	0
60	0	3	0	11	6	0	0	0	0	13	16	0	0	0	0	0
61	2	2	1	15	5	0	0	0	0	9	10	0	0	0	0	2
62	3	9	0	25	18	1	51	0	0	23	24	1	0	0	0	2
63	9	2	0	34	22	1	248	0	0	22	32	1	0	1	0	7
64	2	3	0	15	9	1	11	1	15	32	54	0	0	1	0	1
65	15	2	2	34	44	1	10	3	516	72	63	1	0	2	0	12
66	5	4	2	39	20	0	0	4	141	44	54	0	0	0	0	5
67	12	0	0	20	10	2	37	0	0	13	22	0	0	0	0	12
68	10	0	0	14	8	0	0	0	0	7	2	0	0	0	0	10
69	15	2	0	14	12	0	0	0	0	2	2	1	0	0	0	14
70	3	5	1	50	12	2	29	0	0	24	31	0	0	1	1	1
71	6	4	0	30	13	1	70	0	0	15	37	0	0	0	0	6
72	2	1	0	9	8	0	0	0	0	5	9	0	0	0	0	2
73	12	9	0	25	18	1	44	0	0	28	38	0	0	0	1	11
74	8	4	1	23	14	0	0	0	0	36	35	0	0	1	3	4
75	11	1	0	44	17	0	0	0	0	46	40	0	0	1	1	9
76	2	6	0	43	10	4	252	0	0	46	24	1	0	0	0	1
77	11	0	2	34	12	2	20	0	0	70	49	0	0	1	1	9
78	3	0	0	10	7	0	0	0	0	30	38	0	0	0	0	3
79	1	5	2	44	14	4	577	0	0	46	42	0	0	0	0	1
80	8	10	9	117	164	3	16,952	7	22,305	52	90	0	0	0	0	8
Statewide Total	740	613	166	4,880	3,378							14	1	71	63	591

Notes:

(1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-E-1. Analysis of Exposure to Flood Hazard – State Assembly Districts, 100-year Floodplain

Analysis Region	High Potential Loss Facilities		Lifeline Utilities						Transportation Facilities								
	Dams	Hazardous Material Sites	Wastewater Facilities	Potable Water Facilities	Oil Facilities	Natural Gas Facilities	Electric Power Facilities	Communications Facilities	Runways	Railway Bridges	Rail Facilities	Port Facilities	Light Rail Facilities	Highway Bridges	Ferry Facilities	Bus Facilities	Airport Facilities
1	8	15	4	0	0	0	1	6	2	1	0	11	0	311	0	1	2
2	51	4	4	0	0	0	1	6	0	1	2	0	0	771	0	2	0
3	28	16	0	0	0	0	0	2	3	2	1	0	0	236	0	1	2
4	10	0	1	1	0	0	0	5	2	0	0	0	0	64	0	0	2
5	5	0	0	0	0	0	0	1	0	0	0	0	0	23	0	0	0
6	3	0	3	0	0	0	0	1	1	1	0	0	0	110	4	1	1
7	2	1	3	0	0	0	0	2	0	0	0	1	0	65	0	0	0
8	2	7	1	0	0	0	1	3	1	2	2	11	0	93	1	2	1
9	0	1	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0
10	11	0	0	0	0	0	0	0	1	0	0	0	0	57	0	0	1
11	2	50	2	1	2	0	1	0	0	4	1	13	0	44	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	1	11	1	2	1	0	1	1	0	0	0	3	0	17	0	0	0
15	1	4	0	0	0	0	0	2	0	1	0	0	0	107	7	0	0
16	0	0	0	0	0	0	0	0	0	0	0	5	0	3	0	0	0
17	1	25	2	0	0	0	1	6	1	0	2	0	1	229	0	2	1
18	0	0	2	0	0	0	0	1	0	0	0	0	1	18	0	0	0
19	3	17	2	0	0	0	1	0	0	1	0	0	1	58	0	0	0
20	1	6	0	0	0	0	2	1	0	1	0	0	0	26	0	0	0
21	2	34	3	1	0	0	1	4	2	1	0	7	0	35	0	0	2
22	0	29	2	0	0	0	2	0	0	0	0	0	14	34	0	2	0
23	0	3	0	0	0	0	0	1	0	5	0	0	2	37	0	0	0
24	0	1	0	1	0	0	0	0	0	0	0	0	3	22	0	0	0
25	32	5	0	0	0	0	2	0	0	0	0	0	0	109	0	0	0
26	8	5	1	0	0	0	0	1	2	1	0	0	0	113	0	0	1
27	6	6	3	0	0	0	0	5	0	2	0	0	0	81	0	2	0
28	5	4	1	0	0	0	0	2	0	0	0	0	0	139	0	0	0
29	6	0	0	0	0	0	0	0	0	0	0	0	0	72	0	0	0
30	9	7	0	0	1	0	2	3	1	2	1	0	0	260	0	0	1
31	1	9	1	0	0	0	0	0	1	0	0	0	0	81	0	0	1
32	4	6	1	1	0	0	0	0	0	2	0	0	0	52	0	0	0
33	4	0	4	0	0	0	0	2	0	1	0	0	0	147	0	2	0
34	4	11	1	0	0	0	0	1	0	5	0	0	0	147	0	2	0
35	1	0	3	0	1	0	0	5	3	2	1	0	0	115	0	1	1
36	1	1	1	0	0	0	0	2	0	2	0	0	0	19	0	0	0
37	3	0	0	0	0	0	0	0	1	0	1	0	1	77	0	0	1
38	2	0	1	0	1	0	1	0	0	0	1	0	1	36	0	0	0
39	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0
40	0	1	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0

Notes:

- (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

APPENDIX E: ANALYSIS OF EXPOSURE TO FLOOD HAZARD, BY STATE ASSEMBLY DISTRICT

Table F-E-1. Analysis of Exposure to Flood Hazard – State Assembly Districts, 100-year Floodplain

Analysis Region	High Potential Loss Facilities		Lifeline Utilities						Transportation Facilities								
	Dams	Hazardous Material Sites	Wastewater Facilities	Potable Water Facilities	Oil Facilities	Natural Gas Facilities	Electric Power Facilities	Communications Facilities	Runways	Railway Bridges	Rail Facilities	Port Facilities	Light Rail Facilities	Highway Bridges	Ferry Facilities	Bus Facilities	Airport Facilities
41	1	0	2	0	0	0	0	0	0	0	0	2	0	26	0	0	0
42	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
43	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45	0	5	0	0	0	0	0	0	0	0	1	0	2	16	0	0	0
46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
47	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0
48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	0	4	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
52	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0
53	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
54	0	10	0	0	1	0	2	0	0	0	0	72	0	25	4	0	0
55	0	21	0	0	0	0	1	0	0	0	1	20	0	8	0	0	0
56	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
58	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0
59	2	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0
60	1	2	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0
61	0	2	0	0	0	0	0	1	0	0	0	0	0	15	0	0	0
62	0	9	0	0	0	0	0	0	0	0	0	0	0	25	0	0	0
63	2	0	0	0	0	0	0	0	0	0	0	0	0	34	0	0	0
64	3	0	0	0	0	0	0	0	0	0	0	0	0	15	0	0	0
65	2	0	0	2	0	0	0	0	2	0	0	0	0	30	0	1	1
66	1	3	1	1	0	0	0	0	0	0	0	0	0	39	0	0	0
67	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0	0	0
68	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0
69	0	2	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0
70	5	0	1	0	0	0	0	0	0	0	0	0	0	46	3	1	0
71	4	0	0	0	0	0	0	0	1	0	0	0	0	28	0	0	1
72	1	0	0	0	0	0	0	0	0	1	0	0	0	8	0	0	0
73	3	6	0	0	0	0	0	0	1	0	0	0	0	23	0	0	1
74	1	3	1	0	0	0	0	0	0	0	0	0	0	23	0	0	0
75	1	0	0	0	0	0	0	0	0	0	0	1	43	0	0	0	
76	0	6	0	0	0	0	0	0	0	0	0	5	2	36	0	0	0
77	0	0	0	0	0	0	0	2	1	0	0	0	0	32	0	0	1
78	0	0	0	0	0	0	0	0	0	0	0	0	1	9	0	0	0
79	0	5	0	0	0	0	0	2	0	0	2	8	2	31	0	1	0
80	1	9	0	0	0	0	7	2	0	0	0	0	0	117	0	0	0
Statewide Total	247	366	52	10	7	0	27	70	26	38	16	158	32	4,549	19	21	21

Notes:

- (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-E-1. Analysis of Exposure to Flood Hazard – State Assembly Districts, 100-year Floodplain

Analysis Region	Transportation Segment			Sensitive Species							
	Railway Segments (Miles)	Light Rail Segments (Miles)	Highway Segments (Miles)	CA State Listing Endangered Plants ⁽²⁾	CA State Listing Endangered Animals ⁽²⁾	CA State Listing Threatened Plants ⁽²⁾	CA State Listing Threatened Animals ⁽²⁾	Federal Listing Endangered Plants ⁽²⁾	Federal Listing Endangered Animals ⁽²⁾	Federal Listing Threatened Plants ⁽²⁾	Federal Listing Threatened Animals ⁽²⁾
1	109	0	144	18	6	4	4	19	7	0	8
2	112	0	310	9	9	1	13	6	7	3	7
3	64	0	115	5	4	0	8	2	3	1	5
4	3	0	28	3	3	0	6	2	0	0	5
5	5	0	9	0	0	0	3	0	1	0	3
6	24	0	39	8	5	3	3	12	8	2	5
7	15	0	26	7	5	2	4	14	3	0	7
8	64	0	85	5	7	0	6	7	8	2	9
9	1	0	3	0	0	0	1	0	1	0	2
10	11	0	20	2	2	0	5	1	1	2	4
11	21	0	17	3	4	0	4	5	5	0	5
12	0	0	0	1	1	0	0	3	1	0	0
13	0	0	0	1	0	0	1	1	1	0	1
14	3	0	5	1	2	0	3	2	3	1	3
15	21	0	59	3	2	0	7	4	4	0	7
16	3	0	2	1	3	0	3	2	4	1	3
17	79	1	114	6	5	0	5	3	7	3	7
18	5	1	9	1	3	0	5	2	4	1	5
19	4	1	15	5	3	0	2	6	6	0	3
20	15	4	20	0	3	0	4	3	4	0	5
21	5	1	15	0	4	0	2	4	5	0	3
22	16	13	13	0	3	0	2	1	3	0	4
23	6	1	15	0	0	0	2	3	0	0	3
24	2	3	9	0	0	0	2	1	0	0	3
25	6	0	62	9	8	2	8	4	6	7	7
26	16	7	36	1	3	0	3	1	4	0	5
27	15	1	37	12	5	1	4	15	9	3	7
28	21	0	92	1	5	1	5	4	6	4	6
29	3	0	26	4	4	1	5	3	2	3	3
30	97	0	194	3	3	0	5	4	5	1	6
31	33	0	42	3	4	0	6	3	4	1	4
32	15	0	67	5	7	0	7	4	7	1	5
33	13	0	70	7	11	4	6	12	15	3	6
34	47	0	110	6	16	1	12	5	14	5	6
35	10	1	32	5	8	1	6	12	11	1	4
36	12	1	37	0	3	0	3	0	5	0	2
37	4	3	36	5	5	0	1	5	6	3	3
38	9	6	20	4	3	0	1	3	5	0	2
39	0	0	0	2	2	0	0	1	1	0	2
40	0	0	1	0	0	0	0	0	0	0	0

Notes:
 (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

APPENDIX E: ANALYSIS OF EXPOSURE TO FLOOD HAZARD, BY STATE ASSEMBLY DISTRICT

Table F-E-1. Analysis of Exposure to Flood Hazard – State Assembly Districts, 100-year Floodplain

Analysis Region	Transportation Segment			Sensitive Species							
	Railway Segments (Miles)	Light Rail Segments (Miles)	Highway Segments (Miles)	CA State Listing Endangered Plants ⁽²⁾	CA State Listing Endangered Animals ⁽²⁾	CA State Listing Threatened Plants ⁽²⁾	CA State Listing Threatened Animals ⁽²⁾	Federal Listing Endangered Plants ⁽²⁾	Federal Listing Endangered Animals ⁽²⁾	Federal Listing Threatened Plants ⁽²⁾	Federal Listing Threatened Animals ⁽²⁾
41	1	1	21	4	4	1	1	5	4	4	2
42	0	0	0	0	1	0	0	1	1	0	0
43	1	0	2	1	1	0	0	0	1	0	0
44	0	0	0	0	0	0	0	0	0	0	0
45	3	2	2	0	1	0	1	0	1	0	0
46	0	0	0	0	1	0	1	0	1	0	0
47	0	0	3	1	1	0	0	1	1	0	1
48	0	0	1	1	1	0	0	1	1	0	0
49	0	0	0	0	0	0	0	0	0	0	0
50	0	0	1	0	0	0	0	0	0	0	0
51	0	0	0	2	0	1	0	1	1	0	0
52	0	0	2	0	0	0	0	0	0	0	0
53	0	0	0	3	2	1	1	2	4	0	1
54	3	0	4	2	2	1	2	3	5	0	2
55	4	0	6	2	2	0	0	2	3	0	0
56	0	0	0	0	1	0	1	0	0	0	0
57	0	0	0	0	0	0	0	0	0	0	0
58	1	0	2	0	0	0	1	0	0	0	1
59	0	0	9	3	5	0	2	2	6	1	3
60	1	2	3	1	2	0	1	1	2	0	2
61	1	0	4	1	2	0	0	1	2	0	0
62	10	3	4	4	2	1	2	5	4	0	2
63	8	1	12	4	3	0	2	4	6	0	1
64	1	0	7	7	6	1	2	8	9	1	3
65	6	0	37	7	5	1	4	12	6	5	4
66	1	1	18	5	4	1	1	8	8	0	3
67	1	0	8	2	3	1	1	3	2	0	3
68	0	0	8	0	1	0	0	0	0	0	0
69	1	1	10	0	0	0	0	0	0	0	0
70	1	1	10	1	4	2	2	1	5	2	1
71	1	2	9	2	3	0	1	1	5	1	2
72	3	1	3	0	1	0	0	0	1	0	1
73	7	3	8	2	5	0	2	2	7	1	2
74	4	1	9	6	5	0	1	4	6	4	2
75	4	4	9	8	5	0	2	7	8	3	2
76	1	3	5	7	4	0	0	8	3	0	2
77	1	1	10	4	2	0	3	3	6	3	1
78	1	1	5	4	4	0	0	3	5	2	1
79	5	1	7	4	5	0	1	4	4	2	3
80	85	0	79	4	12	0	7	3	10	1	4
Statewide Total	1,046	74	2,258								

Notes:

(1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-E-2. Analysis of Exposure to Flood Hazard – State Assembly Districts, 500-year Floodplain

Analysis Region	Total Area (Acres)	Exposed Area (Acres)	Percent Area Exposed	Population and Structures							Crops				
				Total Population	Exposed Population	Percent Population Exposed	Exposed Structures	Total Depreciated Replacement Value of Exposed Structures (\$1,000s)	Total Depreciated Replacement Value of Exposed Contents (\$1,000s)	Total Depreciated Replacement Value of Exposed Structures and Contents (\$1,000s)	Total Crops (Acres)	Exposed Crops (Acres)	Percent of Crops Exposed	Exposed Crops for which Valuation was Computed (Acres)	Value of Exposed Crops (\$1,000s)
1	9,564,695	321,445	3	423,170	47,204	11	25,710	2,693,048	1,728,165	4,421,213	216,428	77,154	36	17,970	87,123
2	13,838,999	1,607,976	12	423,397	145,454	34	58,142	6,638,053	3,753,001	10,391,054	1,766,984	877,810	50	398,684	1,029,938
3	7,313,654	624,040	9	423,393	92,426	22	37,372	4,038,248	2,346,689	6,384,937	314,934	149,424	47	61,645	175,238
4	2,352,234	136,593	6	423,392	17,713	4	8,157	1,444,642	860,630	2,305,272	79,832	11,565	14	2,513	4,750
5	116,405	45,542	39	423,402	59,096	14	31,710	4,901,889	2,626,463	7,528,352	20,027	19,188	96	8,172	17,826
6	772,332	88,664	11	423,342	73,055	17	26,794	6,423,172	4,493,546	10,916,718	44,050	15,469	35	12,335	6,914
7	721,072	88,253	12	423,392	26,802	6	10,255	1,719,936	1,197,108	2,917,044	67,014	16,138	24	3,041	12,144
8	644,013	326,446	51	423,393	119,543	28	39,057	7,712,737	4,743,594	12,456,331	314,986	159,968	51	133,751	273,807
9	48,843	43,315	89	423,401	402,041	95	113,329	13,905,348	7,058,228	20,963,576	801	800	100	508	710
10	758,086	128,317	17	423,401	219,018	52	73,712	11,886,208	6,689,308	18,575,516	110,944	54,413	49	20,475	70,394
11	180,917	36,228	20	423,398	21,325	5	8,232	1,458,430	977,227	2,435,657	1,048	127	12	117	516
12	103,402	74	0	423,402	38	0	13	2,630	2,080	4,710	88	0	0	0	-
13	53,061	414	1	423,388	0	0	0	-	-	0	0	0	-	0	-
14	124,509	23,604	19	423,398	22,414	5	6,971	1,369,210	921,218	2,290,428	528	257	49	180	148
15	884,121	390,550	44	423,394	47,505	11	19,860	4,519,158	2,680,985	7,200,143	358,082	268,834	75	231,227	808,961
16	56,611	7,292	13	423,396	29,124	7	7,075	1,162,222	898,655	2,060,877	0	0	-	0	-
17	1,788,834	443,406	25	423,390	199,020	47	64,952	7,151,577	4,653,498	11,805,075	674,007	264,641	39	228,829	441,106
18	119,918	19,168	16	423,387	59,488	14	17,799	4,412,656	3,096,127	7,508,783	670	238	36	115	58
19	389,689	67,492	17	423,078	97,964	23	28,984	7,375,673	4,757,880	12,133,553	6,827	643	9	497	3,036
20	136,527	31,491	23	423,398	67,856	16	18,793	6,591,825	5,270,259	11,862,084	4,746	3,451	73	289	254
21	197,025	62,383	32	423,400	174,599	41	63,019	14,017,964	9,249,661	23,267,625	1,777	216	12	12	79
22	64,855	49,967	77	423,392	297,143	70	82,585	23,286,455	16,347,167	39,633,622	7,191	5,565	77	0	-
23	38,476	4,295	11	423,404	50,457	12	10,730	1,980,930	1,311,405	3,292,335	3,152	285	9	0	-
24	46,193	13,079	28	423,401	77,560	18	27,429	5,762,891	3,561,907	9,324,798	3,049	711	23	0	-
25	6,687,654	347,260	5	423,391	14,837	4	5,515	792,734	466,166	1,258,900	457,987	141,842	31	106,909	245,963
26	658,272	201,609	31	423,394	159,862	38	48,418	7,325,698	4,562,076	11,887,774	434,088	149,424	34	119,720	382,241
27	1,453,116	82,807	6	423,129	96,644	23	34,650	6,512,541	4,132,208	10,644,749	68,548	25,330	37	18,830	167,668
28	2,786,467	182,037	7	423,390	231,435	55	54,693	10,274,392	6,606,629	16,881,021	319,633	85,756	27	60,687	402,686
29	2,091,108	101,467	5	423,393	120,775	29	33,869	5,205,625	3,231,906	8,437,531	194,603	40,540	21	15,753	75,897
30	3,565,017	847,746	24	423,400	87,343	21	21,453	2,209,937	1,437,298	3,647,235	1,893,616	630,269	33	526,549	1,267,076
31	1,024,840	201,160	20	423,394	133,151	31	37,303	3,686,378	2,462,891	6,149,269	758,645	144,863	19	123,824	330,893
32	3,166,917	274,427	9	423,397	39,519	9	17,933	2,312,238	1,445,105	3,757,343	467,826	113,984	24	89,561	277,838
33	3,021,826	155,665	5	423,329	77,012	18	29,314	4,106,621	2,630,285	6,736,906	269,133	32,572	12	23,263	110,195
34	20,636,890	758,869	4	423,390	177,193	42	65,002	8,688,042	5,438,789	14,126,831	428,190	156,366	37	117,154	452,137
35	1,949,795	50,471	3	422,725	60,045	14	16,735	3,078,699	2,240,414	5,319,113	54,992	8,388	15	6,074	86,662
36	1,370,289	168,949	12	423,387	113,028	27	37,824	5,324,834	3,173,386	8,498,220	114,761	35,978	31	34,443	43,083
37	1,440,316	73,283	5	423,398	84,484	20	27,286	4,866,604	3,343,570	8,210,174	140,473	30,560	22	26,920	123,492
38	244,568	12,106	5	423,394	29,237	7	9,188	1,818,284	1,219,191	3,037,475	12,540	1,792	14	99	483
39	27,893	1,202	4	423,395	1,158	0	281	65,911	62,276	128,187	557	65	12	65	326
40	35,875	596	2	423,402	5,425	1	1,540	215,143	137,533	352,676	1,868	41	2	33	168

Notes:
 (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

APPENDIX E: ANALYSIS OF EXPOSURE TO FLOOD HAZARD, BY STATE ASSEMBLY DISTRICT

Table F-E-2. Analysis of Exposure to Flood Hazard – State Assembly Districts, 500-year Floodplain

Analysis Region	Total Area (Acres)	Exposed Area (Acres)	Percent Area Exposed	Population and Structures							Crops				
				Total Population	Exposed Population	Percent Population Exposed	Exposed Structures	Total Depreciated Replacement Value of Exposed Structures (\$1,000s)	Total Depreciated Replacement Value of Exposed Contents (\$1,000s)	Total Depreciated Replacement Value of Exposed Structures and Contents (\$1,000s)	Total Crops (Acres)	Exposed Crops (Acres)	Percent of Crops Exposed	Exposed Crops for which Valuation was Computed (Acres)	Value of Exposed Crops (\$1,000s)
41	367,618	36,576	10	423,009	81,862	19	22,954	3,907,990	2,299,350	6,207,340	32,079	18,796	59	15,523	193,865
42	50,878	1,227	2	423,388	14,583	3	3,163	912,392	767,581	1,679,973	33	0	0	0	-
43	40,073	472	1	423,399	1,997	0	699	104,983	82,225	187,208	0	0	-	0	-
44	63,395	151	0	423,393	266	0	100	14,463	8,252	22,715	201	0	0	0	-
45	19,155	641	3	423,395	10,913	3	1,321	301,094	213,300	514,394	0	0	-	0	-
46	19,312	599	3	423,393	15,494	4	2,626	288,470	190,746	479,216	0	0	-	0	-
47	23,912	3,088	13	423,404	60,213	14	15,880	1,390,507	891,517	2,282,024	0	0	-	0	-
48	13,416	2,565	19	423,402	74,775	18	15,526	1,498,859	897,601	2,396,460	0	0	-	0	-
49	29,130	0	0	423,394	0	0	0	-	-	0	505	0	0	0	-
50	23,737	11,085	47	423,393	188,849	45	41,441	5,154,380	3,263,001	8,417,381	0	0	-	0	-
51	25,749	378	1	423,392	262	0	89	15,466	10,915	26,381	69	11	16	0	-
52	21,424	9,415	44	423,397	170,815	40	38,291	4,115,003	2,812,314	6,927,317	141	58	41	58	292
53	69,883	3,709	5	422,324	19,074	5	6,224	1,140,135	694,030	1,834,165	0	0	-	0	-
54	462,507	28,219	6	422,353	123,488	29	40,800	4,908,371	2,838,701	7,747,072	130	0	0	0	-
55	37,474	17,533	47	423,384	172,912	41	46,884	6,120,227	4,261,297	10,381,524	1,077	431	40	227	1,147
56	34,859	17,481	50	423,403	234,148	55	58,922	8,139,928	5,219,090	13,359,018	493	333	67	251	1,268
57	43,660	8,482	19	423,398	87,603	21	24,217	3,285,741	1,973,088	5,258,829	843	258	31	258	1,304
58	44,439	11,318	25	423,401	135,870	32	34,342	4,213,235	2,721,531	6,934,766	3,093	37	1	37	189
59	861,457	19,788	2	423,388	29,943	7	10,557	1,328,904	742,025	2,070,929	12,224	1,553	13	557	2,249
60	101,807	6,280	6	423,387	26,513	6	8,149	2,212,459	1,835,554	4,048,013	9,144	1,596	17	248	334
61	71,199	19,681	28	423,396	69,310	16	16,731	3,220,334	2,468,026	5,688,360	13,077	3,939	30	1,452	2,740
62	75,590	15,905	21	423,397	51,061	12	13,623	1,855,628	1,271,240	3,126,868	1,865	548	29	281	431
63	134,444	23,137	17	423,401	70,281	17	20,735	3,273,573	1,989,406	5,262,979	9,327	551	6	279	2,264
64	793,431	28,317	4	423,389	49,245	12	26,883	4,518,220	2,822,296	7,340,516	19,853	2,582	13	1,459	8,140
65	974,643	80,218	8	423,388	89,040	21	37,142	3,898,093	2,376,625	6,274,718	31,327	14,122	45	9,868	10,740
66	920,267	32,444	4	423,393	39,373	9	12,117	2,284,620	1,550,579	3,835,199	59,546	1,908	3	814	5,326
67	71,186	34,013	48	421,697	358,362	85	105,686	18,575,542	11,578,119	30,153,661	3,747	1,658	44	18	90
68	33,197	25,306	76	423,394	325,772	77	82,418	13,375,844	8,513,613	21,889,457	1,574	1,574	100	319	1,313
69	23,572	16,815	71	423,400	313,113	74	52,496	8,881,497	6,073,602	14,955,099	1,732	999	58	285	1,173
70	121,194	10,398	9	422,066	42,222	10	16,419	3,504,706	2,546,496	6,051,202	24,840	1,881	8	1,740	7,162
71	231,846	19,564	8	423,400	56,388	13	16,729	3,205,571	2,254,106	5,459,677	28,405	1,519	5	544	1,672
72	56,850	19,158	34	423,391	215,417	51	47,392	9,595,387	7,405,574	17,000,961	5,082	1,767	35	0	-
73	334,917	10,027	3	423,024	40,543	10	12,934	2,224,222	1,434,234	3,658,456	13,116	682	5	292	992
74	177,362	9,615	5	423,073	32,834	8	8,867	1,749,072	1,194,910	2,943,982	10,215	265	3	80	489
75	206,491	11,775	6	423,291	18,353	4	4,910	1,378,301	1,042,655	2,420,956	11,140	1,589	14	528	1,815
76	92,189	7,487	8	422,419	14,626	3	4,944	1,459,970	1,113,856	2,573,826	0	0	-	0	-
77	1,375,587	43,404	3	423,387	29,150	7	8,083	1,548,711	1,043,096	2,591,807	10,011	4,068	41	3,237	21,074
78	71,858	3,559	5	423,399	9,421	2	2,520	592,200	415,185	1,007,385	3,834	36	1	36	30
79	87,875	15,256	17	422,080	43,326	10	9,816	1,680,813	1,066,072	2,746,885	740	311	42	21	68
80	6,082,378	524,382	9	423,392	179,326	42	69,683	8,306,028	4,957,695	13,263,723	673,324	74,261	11	62,724	248,132
Statewide Total		9,149,160		33,861,390	7,274,737		2,164,001	351,119,522	226,654,027	577,773,549	10,597,416	3,662,000		2,491,382	7,414,109

Notes:

- (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-E-2. Analysis of Exposure to Flood Hazard – State Assembly Districts, 500-year Floodplain

Analysis Region	Facilities Summary					DoD Facilities		Native American Tribal Lands		Sensitive Species		Essential Facilities				
	Essential Facilities	High Potential Loss Facilities	Lifeline Utilities	Transportation Facilities	Transportation Segments (Miles)	Number of Department of Defense Facilities Exposed ⁽¹⁾	Department of Defense Facilities Exposed (Acres) ⁽¹⁾	Number of Native American Tribal Land Areas Exposed ⁽¹⁾	Native American Tribal Land Areas Exposed (Acres) ⁽¹⁾	All Sensitive Plants ⁽²⁾	All Sensitive Animals ⁽²⁾	Care Facilities	Emergency Centers	Fire Stations	Police Stations	Schools
1	51	26	13	361	276	0	0	6	5,813	182	102	1	0	10	6	34
2	141	56	17	910	560	1	3,844	6	2,364	161	126	2	1	19	11	108
3	78	47	4	319	259	2	56,968	2	418	115	68	3	0	10	4	61
4	2	10	7	73	33	1	51	0	0	34	44	0	0	0	0	2
5	26	7	4	74	59	1	427	0	0	6	23	1	0	1	0	24
6	52	3	8	141	76	1	746	0	0	84	57	2	0	9	6	35
7	16	3	5	78	46	2	1,354	0	0	57	38	0	0	1	2	13
8	64	11	5	141	176	1	202	0	0	41	49	3	0	10	4	47
9	172	23	7	210	192	0	0	0	0	2	20	7	0	4	3	158
10	104	26	6	138	155	2	1,220	0	0	12	41	3	0	4	4	93
11	19	52	6	69	44	1	210	0	0	31	42	1	0	0	4	14
12	0	0	0	0	0	0	0	0	0	10	3	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	2	6	0	0	0	0	0
14	10	13	8	30	20	0	0	0	0	17	27	0	0	1	0	9
15	21	9	8	153	137	1	46	0	0	43	51	0	0	2	3	16
16	12	4	0	44	24	2	183	0	0	11	16	0	0	0	0	12
17	121	58	17	334	278	2	484	0	0	36	49	5	0	6	16	94
18	24	11	3	38	27	1	93	0	0	11	32	0	0	1	2	21
19	31	21	3	76	36	0	0	0	0	40	32	0	0	2	3	26
20	21	38	4	63	64	0	0	0	0	14	25	1	0	1	1	18
21	95	43	10	127	78	0	0	0	0	29	32	4	0	4	6	81
22	113	103	8	178	168	1	133	0	0	11	20	2	1	7	3	100
23	19	3	1	71	29	0	0	0	0	10	9	0	1	0	5	13
24	33	2	1	64	43	0	0	0	0	10	10	0	0	1	2	30
25	12	37	2	110	70	0	0	1	3	100	86	1	0	2	0	9
26	77	18	8	220	172	1	301	0	0	18	31	0	0	6	2	69
27	60	15	9	116	86	3	5,612	0	0	89	58	0	0	9	10	41
28	110	11	6	194	183	3	9,261	0	0	66	60	3	0	10	10	87
29	56	9	2	97	73	1	5,762	0	0	26	41	1	1	3	2	49
30	46	16	6	280	318	1	3,583	1	105	38	50	0	0	3	4	39
31	68	22	5	178	134	0	0	0	0	20	39	2	0	3	7	56
32	22	13	4	85	120	4	13,438	0	0	48	62	2	0	2	2	16
33	44	7	11	209	116	2	816	0	0	110	74	1	1	5	3	34
34	100	18	10	280	312	5	9,744	5	6,862	110	120	2	0	5	9	84
35	29	2	14	157	73	0	0	0	0	44	51	0	0	2	4	23
36	53	3	6	39	124	2	2,246	0	0	26	39	0	1	1	5	46
37	45	7	1	102	81	0	0	0	0	30	47	0	0	2	4	39
38	11	2	3	45	40	0	0	0	0	16	28	0	0	0	0	11
39	0	0	0	6	1	0	0	0	0	3	6	0	0	0	0	0
40	4	1	0	7	2	0	0	0	0	1	3	0	0	0	0	4

Notes:
 (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
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APPENDIX E: ANALYSIS OF EXPOSURE TO FLOOD HAZARD, BY STATE ASSEMBLY DISTRICT

Table F-E-2. Analysis of Exposure to Flood Hazard – State Assembly Districts, 500-year Floodplain

Analysis Region	Facilities Summary					DoD Facilities		Native American Tribal Lands		Sensitive Species		Essential Facilities				
	Essential Facilities	High Potential Loss Facilities	Lifeline Utilities	Transportation Facilities	Transportation Segments (Miles)	Number of Department of Defense Facilities Exposed ⁽¹⁾	Department of Defense Facilities Exposed (Acres) ⁽¹⁾	Number of Native American Tribal Land Areas Exposed ⁽¹⁾	Native American Tribal Land Areas Exposed (Acres) ⁽¹⁾	All Sensitive Plants ⁽²⁾	All Sensitive Animals ⁽²⁾	Care Facilities	Emergency Centers	Fire Stations	Police Stations	Schools
41	22	14	5	63	82	2	1,944	0	0	29	34	1	0	0	3	18
42	10	2	0	1	5	0	0	0	0	10	11	1	0	0	0	9
43	0	1	0	3	5	0	0	0	0	7	6	0	0	0	0	0
44	0	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0
45	3	5	0	20	8	0	0	0	0	8	7	0	0	0	0	3
46	6	7	0	0	5	0	0	0	0	2	7	0	0	0	1	5
47	21	1	2	7	17	0	0	0	0	11	6	0	0	0	1	20
48	20	0	0	1	11	0	0	0	0	9	4	0	0	0	0	20
49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	58	31	3	54	50	0	0	0	0	3	4	3	0	0	1	54
51	0	0	0	0	2	0	0	0	0	6	3	0	0	0	0	0
52	60	72	5	65	59	0	0	0	0	3	4	1	1	1	3	54
53	2	0	0	6	5	0	0	0	0	14	24	0	0	0	0	2
54	53	18	7	211	54	2	304	0	0	30	27	1	0	0	4	48
55	55	209	10	128	98	1	56	0	0	12	10	3	0	1	5	46
56	94	18	2	125	78	0	0	0	0	5	6	3	0	0	2	89
57	42	8	0	35	19	0	0	0	0	3	7	2	0	1	2	37
58	50	14	1	30	53	0	0	0	0	5	3	1	0	1	2	46
59	13	3	0	30	19	0	0	0	0	33	49	0	0	2	0	11
60	8	8	0	25	25	0	0	0	0	15	17	0	0	0	0	8
61	22	28	4	74	48	0	0	0	0	9	11	0	0	1	1	20
62	31	24	6	60	55	1	530	0	0	23	24	1	0	1	2	27
63	45	8	1	82	60	1	319	0	0	22	34	1	0	3	1	40
64	20	4	1	32	44	1	13	1	98	32	57	1	0	2	3	14
65	60	6	3	63	75	1	11	3	516	72	64	2	0	5	6	47
66	21	4	2	48	34	0	0	4	144	44	55	1	0	2	2	16
67	127	42	3	100	104	2	381	0	0	13	23	4	0	0	3	120
68	117	19	1	60	96	0	0	0	0	9	4	3	0	2	4	108
69	78	74	2	53	79	0	0	0	0	3	2	5	0	1	2	70
70	23	6	1	75	27	2	361	0	0	24	32	1	0	2	2	18
71	38	10	3	80	43	1	128	0	0	16	40	1	0	1	0	36
72	82	96	4	138	113	0	0	0	0	6	9	3	0	1	3	75
73	17	9	1	35	27	1	46	0	0	28	38	0	0	0	1	16
74	15	4	1	41	17	0	0	0	0	36	39	0	0	2	3	10
75	15	3	0	54	22	0	0	0	0	46	42	0	0	1	1	13
76	2	6	0	58	20	4	255	0	0	48	24	1	0	0	0	1
77	21	6	5	48	19	2	22	0	0	70	49	0	0	1	3	17
78	5	0	0	14	10	0	0	0	0	31	39	0	0	1	0	4
79	9	14	5	66	27	4	642	0	0	46	42	0	0	0	0	9
80	79	15	22	184	276	3	16,952	8	50,569	61	93	1	1	3	11	63
Statewide Total	3,306	1,539	332	7,986	6,476							88	8	181	219	2,810

Notes:

(1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-E-2. Analysis of Exposure to Flood Hazard – State Assembly Districts, 500-year Floodplain

Analysis Region	High Potential Loss Facilities		Lifeline Utilities						Transportation facilities								
	Dams	Hazardous Material Sites	Wastewater Facilities	Potable Water Facilities	Oil Facilities	Natural Gas Facilities	Electric Power Facilities	Communications Facilities	Runways	Railway Bridges	Rail Facilities	Port Facilities	Light Rail Facilities	Highway Bridges	Ferry Facilities	Bus Facilities	Airport Facilities
1	9	17	5	0	0	0	2	6	2	1	0	11	0	344	0	1	2
2	51	5	7	0	0	0	2	8	4	3	2	0	0	895	0	3	3
3	28	19	2	0	0	0	0	2	5	10	1	0	0	295	0	4	4
4	10	0	1	1	0	0	0	5	2	0	0	0	0	69	0	0	2
5	5	2	0	0	0	0	0	4	2	1	0	0	0	70	0	0	1
6	3	0	6	0	0	0	0	2	1	2	0	0	0	132	4	1	1
7	2	1	3	0	0	0	0	2	0	0	0	1	0	77	0	0	0
8	2	9	1	0	0	0	1	3	1	2	2	11	0	119	2	3	1
9	0	23	2	0	0	0	1	4	3	9	1	1	23	171	0	1	1
10	14	12	2	0	0	0	3	1	1	4	1	0	6	123	0	2	1
11	2	50	2	1	2	0	1	0	3	4	2	13	0	46	0	0	1
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	1	12	1	2	2	0	1	2	0	0	0	3	0	27	0	0	0
15	2	7	0	0	0	0	0	8	0	1	0	0	1	143	8	0	0
16	0	4	0	0	0	0	0	0	1	3	1	5	2	31	0	0	1
17	2	56	2	1	0	1	3	10	1	7	12	5	2	303	0	3	1
18	0	11	2	0	0	0	0	1	0	0	1	0	2	35	0	0	0
19	3	18	2	0	0	0	1	0	0	3	0	0	4	69	0	0	0
20	1	37	0	1	0	0	2	1	0	2	1	0	1	59	0	0	0
21	5	38	3	1	0	0	1	5	2	3	0	7	4	109	0	0	2
22	0	103	2	0	0	0	4	2	0	5	1	0	26	144	0	2	0
23	0	3	0	0	0	0	0	1	0	6	0	0	4	61	0	0	0
24	0	2	0	1	0	0	0	0	1	1	0	0	4	58	0	0	0
25	32	5	0	0	0	0	2	0	0	0	0	0	0	110	0	0	0
26	8	10	2	1	0	0	0	5	4	3	3	0	0	208	0	0	2
27	6	9	4	0	0	0	0	5	0	3	0	0	1	110	0	2	0
28	5	6	3	0	0	0	0	3	3	3	1	0	1	181	0	4	1
29	6	3	0	0	0	0	0	2	0	1	0	0	0	96	0	0	0
30	9	7	0	0	1	0	2	3	1	2	1	0	0	275	0	0	1
31	1	21	2	0	0	0	0	3	4	3	1	0	0	165	0	2	3
32	5	8	1	1	0	0	0	2	5	4	0	0	0	73	0	0	3
33	4	3	6	1	0	0	1	3	1	2	1	0	0	197	0	7	1
34	4	14	4	0	0	0	0	6	2	5	1	0	0	268	0	2	2
35	1	1	4	0	1	1	2	6	3	2	1	0	0	147	0	3	1
36	1	2	1	0	0	1	0	4	0	2	1	0	1	35	0	0	0
37	4	3	0	0	0	1	0	0	2	0	3	0	2	93	0	0	2
38	2	0	1	0	1	0	1	0	0	0	2	0	1	42	0	0	0
39	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0
40	0	1	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0

Notes:
 (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

APPENDIX E: ANALYSIS OF EXPOSURE TO FLOOD HAZARD, BY STATE ASSEMBLY DISTRICT

Table F-E-2. Analysis of Exposure to Flood Hazard – State Assembly Districts, 500-year Floodplain

Analysis Region	High Potential Loss Facilities		Lifeline Utilities						Transportation Facilities								
	Dams	Hazardous Material Sites	Wastewater Facilities	Potable Water Facilities	Oil Facilities	Natural Gas Facilities	Electric Power Facilities	Communications Facilities	Runways	Railway Bridges	Rail Facilities	Port Facilities	Light Rail Facilities	Highway Bridges	Ferry Facilities	Bus Facilities	Airport Facilities
41	1	13	3	1	0	0	1	0	1	0	0	12	0	49	0	0	1
42	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
43	1	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0
44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45	0	5	0	0	0	0	0	0	0	0	1	0	2	17	0	0	0
46	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
47	0	1	0	0	0	0	0	2	0	0	0	0	0	7	0	0	0
48	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	0	31	0	1	2	0	0	0	0	3	0	0	0	51	0	0	0
51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
52	0	72	0	0	2	0	1	2	0	5	0	0	1	59	0	0	0
53	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0
54	0	18	1	0	3	0	3	0	0	0	0	104	1	97	9	0	0
55	0	209	0	0	7	0	3	0	0	9	8	28	1	82	0	0	0
56	0	18	1	0	0	0	0	1	0	3	1	0	1	120	0	0	0
57	0	8	0	0	0	0	0	0	0	0	0	0	0	34	0	1	0
58	0	14	0	0	1	0	0	0	0	6	0	0	0	24	0	0	0
59	3	0	0	0	0	0	0	0	0	0	0	0	0	30	0	0	0
60	1	7	0	0	0	0	0	0	0	1	0	0	0	24	0	0	0
61	0	28	2	0	0	0	1	1	2	4	0	0	0	67	0	0	1
62	1	23	1	1	0	0	0	4	0	2	1	0	0	55	0	2	0
63	3	5	0	0	0	0	0	1	0	0	1	0	0	81	0	0	0
64	3	1	0	0	0	0	0	1	0	1	0	0	0	31	0	0	0
65	2	4	0	3	0	0	0	0	2	0	0	0	0	58	0	2	1
66	1	3	1	1	0	0	0	0	0	0	0	0	0	48	0	0	0
67	0	42	2	0	0	0	1	0	0	0	0	0	0	100	0	0	0
68	0	19	0	0	0	0	1	0	0	0	0	0	0	60	0	0	0
69	0	74	0	0	0	0	0	2	0	2	1	0	1	45	0	4	0
70	5	1	1	0	0	0	0	0	0	1	0	0	1	68	3	2	0
71	4	6	1	0	0	0	1	1	1	0	0	0	1	76	0	1	1
72	1	95	0	0	1	0	2	1	1	10	1	0	4	121	0	0	1
73	3	6	0	0	0	0	0	1	1	0	1	0	3	29	0	0	1
74	1	3	1	0	0	0	0	0	0	0	0	0	0	41	0	0	0
75	2	1	0	0	0	0	0	0	0	0	0	0	1	53	0	0	0
76	0	6	0	0	0	0	0	0	0	0	0	5	5	48	0	0	0
77	0	6	0	0	0	0	1	4	1	0	0	0	0	45	0	1	1
78	0	0	0	0	0	0	0	0	0	0	0	0	1	13	0	0	0
79	0	14	1	0	0	1	1	2	0	0	2	9	4	49	0	2	0
80	3	12	4	1	0	0	8	9	2	3	0	0	0	177	0	1	1
Statewide Total	265	1,274	90	19	23	5	54	141	65	147	58	215	112	7,262	26	56	45

Notes:

(1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-E-2. Analysis of Exposure to Flood Hazard – State Assembly Districts, 500-year Floodplain

Analysis Region	Transportation Segment			Sensitive Species							
	Railway Segments (Miles)	Light Rail Segments (Miles)	Highway Segments (Miles)	CA State Listing Endangered Plants ⁽²⁾	CA State Listing Endangered Animals ⁽²⁾	CA State Listing Threatened Plants ⁽²⁾	CA State Listing Threatened Animals ⁽²⁾	Federal Listing Endangered Plants ⁽²⁾	Federal Listing Endangered Animals ⁽²⁾	Federal Listing Threatened Plants ⁽²⁾	Federal Listing Threatened Animals ⁽²⁾
1	119	0	156	18	6	4	4	19	7	0	8
2	144	0	416	9	9	1	13	6	7	3	7
3	95	0	164	5	4	0	8	2	3	1	5
4	3	0	31	3	3	0	6	2	0	0	5
5	7	0	52	0	0	0	3	0	1	0	3
6	26	0	51	8	5	3	3	12	8	2	5
7	17	0	29	7	5	2	4	14	3	0	7
8	66	0	109	5	7	0	6	7	8	2	9
9	33	9	150	0	0	0	3	0	1	0	3
10	46	6	102	2	2	0	5	1	1	2	4
11	22	0	21	3	4	0	4	5	5	0	5
12	0	0	0	1	1	0	0	3	1	0	0
13	0	0	0	1	0	0	1	1	1	0	1
14	7	0	12	1	2	0	3	2	3	1	3
15	28	2	107	3	2	0	7	4	4	0	7
16	10	3	11	1	3	0	3	2	4	1	3
17	109	2	167	6	5	0	5	3	7	4	7
18	10	2	15	1	3	0	5	2	4	1	5
19	9	5	22	5	3	0	2	6	6	0	3
20	27	6	32	0	3	0	4	3	4	0	5
21	14	6	57	1	4	0	2	5	5	0	3
22	36	28	105	0	3	0	2	1	3	0	4
23	7	3	19	0	0	0	2	3	0	0	3
24	7	3	33	0	0	0	2	1	0	0	3
25	6	0	64	9	8	2	8	4	6	7	7
26	43	8	122	1	3	0	3	1	4	0	5
27	23	5	58	12	5	1	4	16	9	3	7
28	40	2	140	1	5	1	5	4	6	4	6
29	8	0	65	4	4	1	5	3	2	3	3
30	109	0	209	3	3	0	5	4	5	1	6
31	48	0	87	3	4	0	6	3	4	1	4
32	20	0	99	5	7	0	7	4	7	1	5
33	22	0	94	7	11	4	6	12	15	3	6
34	96	0	216	6	16	1	12	5	14	5	6
35	16	2	55	5	8	1	6	12	11	1	4
36	23	2	99	0	3	0	3	0	5	0	2
37	13	8	60	5	5	0	1	5	6	3	3
38	9	7	23	4	3	0	1	3	5	0	2
39	0	0	0	2	2	0	0	1	1	0	2
40	0	0	2	0	0	0	0	0	0	0	0

Notes:
 (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

APPENDIX E: ANALYSIS OF EXPOSURE TO FLOOD HAZARD, BY STATE ASSEMBLY DISTRICT

Table F-E-2. Analysis of Exposure to Flood Hazard – State Assembly Districts, 500-year Floodplain

Analysis Region	Transportation Segment			Sensitive Species							
	Railway Segments (Miles)	Light Rail Segments (Miles)	Highway Segments (Miles)	CA State Listing Endangered Plants ⁽²⁾	CA State Listing Endangered Animals ⁽²⁾	CA State Listing Threatened Plants ⁽²⁾	CA State Listing Threatened Animals ⁽²⁾	Federal Listing Endangered Plants ⁽²⁾	Federal Listing Endangered Animals ⁽²⁾	Federal Listing Threatened Plants ⁽²⁾	Federal Listing Threatened Animals ⁽²⁾
41	14	5	62	4	4	1	1	5	4	4	2
42	0	0	5	0	1	0	0	1	1	0	0
43	1	0	3	1	1	0	0	0	1	0	0
44	0	0	0	1	1	0	0	1	1	0	0
45	3	2	3	0	1	0	1	0	1	0	0
46	2	0	3	0	1	0	1	0	1	0	0
47	2	0	14	2	1	1	0	4	1	0	1
48	3	0	8	2	1	1	0	4	1	0	0
49	0	0	0	0	0	0	0	0	0	0	0
50	7	3	39	1	2	0	0	1	1	0	0
51	0	0	2	2	0	1	0	1	1	0	0
52	9	3	47	0	1	0	0	0	1	0	0
53	0	0	5	3	2	1	1	2	4	0	1
54	16	2	36	3	2	1	2	4	5	0	2
55	35	2	61	3	2	0	0	3	3	0	0
56	11	3	63	1	1	0	1	1	0	0	0
57	0	0	18	0	0	0	0	0	0	0	1
58	12	4	37	1	0	0	1	1	0	0	1
59	0	0	19	3	5	0	2	2	6	1	3
60	4	5	16	1	2	0	1	1	2	0	2
61	9	2	37	1	2	0	0	1	2	0	0
62	24	5	25	4	2	1	2	5	4	0	2
63	19	4	37	4	3	0	2	4	6	0	1
64	8	4	32	7	7	1	2	8	10	1	3
65	12	0	63	7	5	1	4	12	6	5	4
66	2	1	31	5	4	1	1	8	8	0	3
67	9	0	95	2	3	1	1	3	2	0	3
68	10	0	86	0	1	0	0	0	0	0	0
69	12	4	62	0	0	0	0	0	0	0	0
70	3	2	23	1	4	2	2	1	5	2	1
71	11	7	26	2	3	0	1	1	6	1	2
72	31	12	71	0	1	0	0	0	1	0	1
73	10	6	11	2	5	0	2	2	7	1	2
74	4	1	12	6	5	0	1	4	7	4	2
75	6	5	11	8	5	0	2	7	8	3	2
76	2	7	11	8	4	0	0	9	3	0	2
77	1	2	15	4	2	0	3	3	6	3	1
78	2	1	7	4	4	0	0	3	5	2	1
79	9	4	14	4	5	0	1	4	4	2	3
80	112	0	164	4	12	0	7	3	10	1	4
Statewide Total	1,736	211	4,530								

Notes:

(1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Appendix F: Analysis of Exposure to Flood Hazard, by State Senate District

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Table F-F-1. Analysis of Exposure to Flood Hazard – State Senate Districts, 100-year Floodplain

Analysis Region	Total Area (Acres)	Exposed Area (Acres)	Percent Area Exposed	Population and Structures							Crops				
				Total Population	Exposed Population	Percent Population Exposed	Exposed Structures	Total Depreciated Replacement Value of Exposed Structures (\$1,000s)	Total Depreciated Replacement Value of Exposed Contents (\$1,000s)	Total Depreciated Replacement Value of Exposed Structures and Contents (\$1,000s)	Total Crops (Acres)	Exposed Crops (Acres)	Percent of Crops Exposed	Exposed Crops for which Valuation was Computed (Acres)	Value of Exposed Crops (\$1,000s)
1	14,133,163	1,053,007	7	846,785	25,391	3	13,079	2,133,697	1,318,034	3,451,731	543,438	168,108	31	50,505	73,751
2	7,653,923	449,196	6	846,600	56,702	7	27,553	3,391,352	2,258,517	5,649,869	328,845	86,100	26	24,636	98,395
3	829,714	85,900	10	846,734	45,323	5	15,810	3,890,867	2,732,083	6,622,950	49,189	16,467	33	12,551	8,101
4	15,216,418	1,106,317	7	846,753	80,023	9	33,306	3,564,799	2,095,377	5,660,176	1,556,627	593,755	38	248,718	662,317
5	1,287,306	494,750	38	846,790	104,238	12	37,156	6,336,674	3,985,174	10,321,848	725,749	349,275	48	303,835	856,203
6	152,114	9,708	6	846,790	33,843	4	10,073	1,337,398	704,963	2,042,361	21,509	512	2	272	259
7	493,774	103,192	21	846,791	35,479	4	14,170	2,825,503	1,720,306	4,545,809	47,858	22,825	48	16,374	47,536
8	352,887	60,378	17	846,481	71,113	8	21,091	5,536,997	3,424,574	8,961,571	2,082	71	3	71	433
9	260,958	17,497	7	846,791	12,273	1	3,257	828,910	559,288	1,388,198	9,009	713	8	633	275
10	321,292	52,628	16	846,791	53,783	6	15,936	5,171,459	4,298,069	9,469,528	10,890	2,843	26	229	58
11	531,197	45,943	9	846,649	66,907	8	22,629	5,368,415	3,565,682	8,934,097	10,462	713	7	448	2,807
12	3,147,304	563,371	18	846,792	90,272	11	27,837	3,127,489	2,059,014	5,186,503	1,013,626	357,104	35	289,721	674,806
13	494,856	30,894	6	846,790	68,595	8	16,539	3,591,090	2,631,974	6,223,064	33,168	13,391	40	11,893	44,420
14	6,887,556	373,507	5	846,791	32,463	4	9,925	1,375,364	890,104	2,265,468	1,141,637	203,662	18	140,302	426,372
15	4,884,190	241,082	5	846,601	46,326	5	17,857	3,300,238	2,359,866	5,660,104	413,785	58,073	14	41,832	323,819
16	4,050,515	912,304	23	846,791	82,343	10	21,975	2,216,432	1,438,852	3,655,284	2,613,800	674,216	26	578,782	1,366,251
17	2,504,388	126,733	5	846,792	35,594	4	11,649	1,645,658	1,061,812	2,707,470	223,545	29,937	13	26,542	55,129
18	24,961,428	807,141	3	846,791	61,725	7	25,762	3,097,544	2,055,316	5,152,860	739,382	148,341	20	97,546	362,577
19	2,912,263	92,627	3	846,111	61,160	7	20,319	4,227,958	3,054,953	7,282,911	158,121	28,721	18	19,837	195,351
20	61,814	1,916	3	846,791	3,097	0	799	147,199	117,928	265,127	1,252	125	10	120	605
21	89,528	563	1	846,791	1,714	0	561	81,428	61,010	142,438	1,075	27	3	27	137
22	38,143	466	1	846,792	7,964	1	667	171,337	123,847	295,184	0	0	0	0	-
23	368,403	9,431	3	846,395	4,980	1	2,461	506,099	327,789	833,888	7,865	322	4	116	655
24	75,666	187	0	846,792	535	0	166	26,931	17,229	44,160	1,949	11	1	11	56
25	110,874	3,393	3	846,335	1,478	0	567	175,539	175,835	351,374	561	75	13	75	381
26	41,642	1,012	2	846,792	22,526	3	4,960	500,444	343,448	843,892	0	0	0	0	-
27	434,261	14,912	3	846,197	14,545	2	5,879	696,153	401,155	1,097,308	441	0	0	0	-
28	100,649	3,211	3	845,719	3,595	0	1,362	260,491	224,654	485,145	805	0	0	0	-
29	479,548	6,297	1	846,792	7,719	1	1,825	538,287	466,669	1,004,956	22,651	1,432	6	677	558
30	70,553	823	1	846,792	1,380	0	379	56,778	42,352	99,130	1,343	34	3	34	172
31	775,335	21,503	3	846,792	19,610	2	7,592	1,067,309	695,707	1,763,016	17,581	521	3	360	1,984
32	145,880	10,187	7	846,792	11,168	1	2,425	449,415	347,579	796,994	8,967	119	1	20	91
33	272,946	8,087	3	846,792	13,475	2	3,974	1,039,330	684,790	1,724,120	32,769	1,250	4	268	1,102
34	48,315	3,311	7	846,792	58,893	7	11,373	1,620,190	1,033,483	2,653,673	1,101	34	3	6	27
35	209,178	14,746	7	843,605	61,542	7	19,542	3,706,986	2,252,313	5,959,299	26,408	1,143	4	791	3,257
36	2,045,530	57,971	3	846,792	19,348	2	7,873	1,410,641	984,785	2,395,426	76,505	6,368	8	3,921	25,398
37	3,114,056	93,421	3	846,791	27,173	3	13,530	1,608,882	1,038,330	2,647,212	51,359	12,595	25	8,655	8,266
38	489,484	17,234	4	846,249	33,274	4	10,343	1,963,411	1,347,758	3,311,169	26,859	1,341	5	597	1,833
39	184,631	10,396	6	845,710	13,689	2	4,323	1,515,952	1,240,049	2,756,001	259	79	31	79	252
40	4,533,594	421,250	9	845,472	31,506	4	11,367	1,240,032	834,359	2,074,391	674,943	45,698	7	36,843	125,425
Statewide Totals		7,326,492			1,422,764		477,892	81,750,678	54,975,027	136,725,705		2,826,003		1,917,332	5,369,059

Notes:

- (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

APPENDIX F: ANALYSIS OF EXPOSURE TO FLOOD HAZARD, BY STATE SENATE DISTRICT

Table F-F-1. Analysis of Exposure to Flood Hazard – State Senate Districts, 100-year Floodplain

Analysis Region	Facilities Summary					DoD Facilities		Native American Tribal Lands		Sensitive Species		Essential Facilities				
	Essential Facilities	High Potential Loss Facilities	Lifeline Utilities	Transportation Facilities	Transportation Segments (Miles)	Number of Department of Defense Facilities Exposed ⁽¹⁾	Department of Defense Facilities Exposed (Acres) ⁽¹⁾	Number of Native American Tribal Land Areas Exposed ⁽¹⁾	Native American Tribal Land Areas Exposed (Acres) ⁽¹⁾	All Sensitive Plants ⁽²⁾	All Sensitive Animals ⁽²⁾	Care Facilities	Emergency Centers	Fire Stations	Police Stations	Schools
1	30	101	4	309	246	3	57,192	5	1,911	164	116	1	0	8	3	18
2	48	24	16	380	282	3	1,357	6	2,005	183	109	1	0	9	4	34
3	25	4	4	121	63	1	746	0	0	90	56	0	0	5	2	18
4	76	38	13	849	432	3	4,178	4	4,130	186	136	0	1	12	2	61
5	58	31	6	243	272	3	719	1	282	50	56	1	0	10	2	45
6	11	1	6	40	17	2	268	0	0	5	14	1	0	0	0	10
7	20	53	8	103	56	1	173	0	0	47	58	1	0	0	3	16
8	16	19	3	53	18	0	0	0	0	29	25	0	0	1	2	13
9	2	11	4	22	12	3	214	0	0	27	42	0	0	0	0	2
10	14	26	9	72	78	1	1	0	0	20	33	1	0	0	1	12
11	36	40	11	86	33	0	0	0	0	53	40	1	0	1	8	26
12	60	15	13	306	222	1	179	0	0	53	76	1	0	3	11	45
13	21	18	3	106	68	1	131	0	0	29	24	0	0	0	2	19
14	19	42	2	271	122	2	5,840	0	0	105	105	1	0	3	1	14
15	20	16	12	242	156	5	12,925	0	0	177	98	0	0	3	3	14
16	44	28	7	299	361	1	3,583	1	105	41	59	0	0	5	3	36
17	20	6	5	90	89	2	1,028	0	0	34	67	0	0	1	3	16
18	32	20	4	234	248	10	21,278	6	7,155	158	159	0	0	1	0	31
19	39	3	11	201	113	2	816	0	0	76	69	0	0	2	2	35
20	1	1	0	9	2	0	0	0	0	8	11	0	0	0	0	1
21	0	0	0	13	5	0	0	0	0	7	9	0	0	0	0	0
22	2	5	0	12	7	0	0	0	0	7	7	0	0	0	0	2
23	2	2	1	14	7	2	133	0	0	27	34	0	0	0	1	1
24	0	0	0	0	0	0	0	0	0	1	4	0	0	0	0	0
25	0	0	0	71	9	2	98	0	0	10	12	0	0	0	0	0
26	3	1	0	4	4	0	0	0	0	8	8	0	0	0	0	3
27	3	30	4	64	10	1	169	0	0	26	21	0	0	0	1	2
28	2	1	0	7	3	0	0	0	0	20	26	0	0	0	1	1
29	3	3	1	18	12	0	0	0	0	26	28	0	0	0	0	3
30	0	4	0	5	3	0	0	0	0	1	3	0	0	0	0	0
31	11	6	1	49	36	1	247	0	0	61	55	1	0	1	0	9
32	3	11	0	42	26	1	52	0	0	24	25	1	0	0	0	2
33	4	8	0	36	17	2	95	0	0	19	32	0	0	0	0	4
34	18	2	0	20	15	0	0	0	0	6	3	1	0	0	1	16
35	23	4	1	70	26	4	42	0	0	29	42	0	0	1	1	21
36	20	0	4	69	24	2	5	4	141	82	74	0	0	2	2	16
37	18	6	4	77	60	1	11	4	4,348	57	88	1	0	2	0	15
38	23	12	1	53	31	1	44	0	0	45	45	0	0	0	4	19
39	4	6	0	83	32	4	266	0	0	54	39	1	0	1	0	2
40	9	15	8	137	162	8	17,529	5	18,188	107	113	0	0	0	0	9
Statewide Totals	740	613	166	4,880	3,378							14	1	71	63	591

Notes:

(1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-F-1. Analysis of Exposure to Flood Hazard – State Senate Districts, 100-year Floodplain

Analysis Region	High Potential Loss Facilities		Lifeline Utilities						Transportation facilities								
	Dams	Hazardous Material Sites	Wastewater Facilities	Potable Water Facilities	Oil Facilities	Natural Gas Facilities	Electric Power Facilities	Communications Facilities	Runways	Railway Bridges	Rail Facilities	Port Facilities	Light Rail Facilities	Highway Bridges	Ferry Facilities	Bus Facilities	Airport Facilities
1	84	17	1	1	0	0	1	1	4	1	0	0	0	298	0	2	4
2	8	16	8	0	0	0	1	7	2	2	0	14	0	360	0	0	2
3	4	0	3	0	0	0	0	1	1	1	0	0	0	113	4	1	1
4	33	5	3	0	0	0	1	9	1	2	2	0	0	842	0	2	0
5	3	28	1	0	0	0	1	4	3	1	4	9	1	216	5	2	2
6	0	1	0	0	0	0	0	6	1	0	0	0	0	38	0	0	1
7	3	50	2	3	2	0	1	0	0	4	1	13	0	82	3	0	0
8	2	17	2	0	0	0	1	0	0	1	0	0	1	51	0	0	0
9	0	11	1	0	1	0	1	1	0	1	0	8	0	13	0	0	0
10	2	24	3	1	0	0	3	2	0	1	0	0	10	59	0	2	0
11	3	37	4	1	0	0	1	5	2	3	0	7	0	70	0	2	2
12	5	10	4	0	0	0	1	8	1	1	1	0	0	300	0	2	1
13	3	15	1	0	0	0	1	1	0	5	0	0	10	91	0	0	0
14	36	6	0	0	0	0	1	1	0	0	0	0	0	271	0	0	0
15	9	7	6	0	0	0	0	6	0	1	0	0	0	239	0	2	0
16	9	19	1	0	1	0	2	3	2	2	1	0	0	292	0	0	2
17	5	1	1	0	1	0	1	2	1	2	1	0	1	84	0	0	1
18	6	14	2	1	0	0	0	1	1	7	0	0	0	222	0	3	1
19	3	0	5	0	1	0	0	5	3	2	1	0	1	192	0	1	1
20	0	1	0	0	0	0	0	0	0	0	0	0	0	9	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0
22	0	5	0	0	0	0	0	0	0	0	1	0	2	9	0	0	0
23	2	0	1	0	0	0	0	0	0	0	1	2	0	11	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	59	0	11	1	0	0
26	1	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0
27	0	30	0	0	1	0	3	0	0	0	1	33	0	27	3	0	0
28	0	1	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0
29	1	2	0	0	0	0	0	1	0	0	0	0	0	18	0	0	0
30	0	4	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0
31	6	0	0	1	0	0	0	0	0	0	0	0	0	49	0	0	0
32	0	11	0	0	0	0	0	0	0	0	0	0	0	42	0	0	0
33	8	0	0	0	0	0	0	0	0	1	0	0	0	35	0	0	0
34	0	2	0	0	0	0	0	0	0	0	0	0	0	20	0	0	0
35	4	0	1	0	0	0	0	0	0	0	0	0	0	66	3	1	0
36	0	0	1	1	0	0	0	2	1	0	0	0	0	67	0	0	1
37	3	3	0	1	0	0	2	1	2	0	0	0	0	74	0	0	1
38	3	9	1	0	0	0	0	0	1	0	0	0	0	51	0	0	1
39	0	6	0	0	0	0	0	0	0	0	0	9	4	70	0	0	0
40	1	14	0	0	0	0	5	3	0	0	2	4	2	128	0	1	0
Staterwide Totals	247	366	52	10	7	0	27	70	26	38	16	158	32	4,549	19	21	21

Notes:

- (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

APPENDIX F: ANALYSIS OF EXPOSURE TO FLOOD HAZARD, BY STATE SENATE DISTRICT

Table F-F-1. Analysis of Exposure to Flood Hazard – State Senate Districts, 100-year Floodplain

Analysis Region	Transportation Segment			Sensitive Species							
	Railway Segments (Miles)	Light Rail Segments (Miles)	Highway Segments (Miles)	CA State Listing Endangered Plants ⁽²⁾	CA State Listing Endangered Animals ⁽²⁾	CA State Listing Threatened Plants ⁽²⁾	CA State Listing Threatened Animals ⁽²⁾	Federal Listing Endangered Plants ⁽²⁾	Federal Listing Endangered Animals ⁽²⁾	Federal Listing Threatened Plants ⁽²⁾	Federal Listing Threatened Animals ⁽²⁾
1	71	0	174	8	8	0	7	4	7	3	7
2	135	0	147	18	9	6	6	24	12	0	11
3	24	0	39	11	5	3	4	15	8	2	6
4	118	0	315	11	8	1	14	8	7	3	9
5	89	4	180	7	6	0	7	7	8	2	8
6	5	0	12	1	0	0	2	0	1	0	3
7	27	0	29	4	4	0	6	6	6	0	6
8	4	1	13	3	3	0	1	5	5	0	3
9	5	0	7	2	3	0	4	3	6	1	5
10	29	12	37	1	3	0	5	3	5	1	5
11	7	1	25	6	5	0	3	8	7	1	4
12	66	0	156	7	8	0	6	4	11	5	5
13	21	9	38	0	4	0	2	4	4	0	5
14	26	3	92	10	8	3	9	6	7	7	9
15	32	1	124	17	11	5	6	27	17	6	8
16	116	0	245	5	5	1	6	6	7	2	6
17	17	3	69	4	6	0	4	3	8	0	4
18	74	0	174	11	19	1	16	13	18	6	8
19	22	9	83	11	8	3	7	18	11	4	6
20	0	0	2	3	2	0	0	2	1	0	2
21	1	0	3	1	1	0	1	0	1	0	1
22	3	2	2	0	1	0	1	0	1	0	0
23	0	0	7	5	4	1	1	5	5	3	3
24	0	0	0	0	0	0	1	0	0	0	0
25	4	0	5	2	1	0	1	2	4	0	1
26	1	0	3	1	1	0	0	1	1	0	1
27	3	0	7	1	3	1	2	2	2	0	1
28	0	0	3	4	2	1	1	3	4	0	2
29	2	2	8	1	3	0	1	1	4	0	2
30	1	0	1	0	0	0	1	0	0	0	1
31	8	2	25	7	4	0	2	9	7	4	2
32	13	4	9	4	2	1	1	5	3	0	2
33	3	2	12	3	2	0	0	1	4	2	2
34	1	1	12	0	0	0	0	0	0	0	0
35	2	1	24	2	4	3	2	3	5	2	3
36	0	0	24	8	5	0	3	5	9	5	2
37	12	2	46	5	10	1	6	8	11	2	8
38	8	3	20	6	5	0	3	5	7	4	2
39	10	10	13	8	5	0	1	9	6	1	2
40	85	1	75	6	14	0	5	6	12	3	5
Statewide Totals	1,046	74	2,258								

Notes:

(1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

APPENDIX F: ANALYSIS OF EXPOSURE TO FLOOD HAZARD, BY STATE SENATE DISTRICT

Table F-F-2. Analysis of Exposure to Flood Hazard – State Senate Districts, 500-year Floodplain

Analysis Region	Total Area (Acres)	Exposed Area (Acres)	Percent Area Exposed	Population and Structures							Crops				
				Total Population	Exposed Population	Percent Population Exposed	Exposed Structures	Total Depreciated Replacement Value of Exposed Structures (\$1,000s)	Total Depreciated Replacement Value of Exposed Contents (\$1,000s)	Total Depreciated Replacement Value of Exposed Structures and Contents (\$1,000s)	Total Crops (Acres)	Exposed Crops (Acres)	Percent of Crops Exposed	Exposed Crops for which Valuation was Computed (Acres)	Value of Exposed Crops (\$1,000s)
1	14,133,163	1,063,856	8	846,785	70,542	8	29,195	4,801,864	2,734,979	7,536,843	543,438	169,336	31	50,712	74,040
2	7,653,923	463,767	6	846,600	72,777	9	35,228	4,448,387	2,949,619	7,398,006	328,845	93,834	29	28,401	115,079
3	829,714	91,632	11	846,734	71,548	8	25,938	6,328,928	4,458,012	10,786,940	49,189	17,242	35	12,591	8,141
4	15,216,418	1,416,900	9	846,753	234,281	28	93,159	10,537,763	6,012,177	16,549,940	1,556,627	810,862	52	341,938	979,627
5	1,287,306	668,862	52	846,790	425,821	50	138,628	21,929,666	13,328,270	35,257,936	725,749	473,385	65	411,594	1,168,643
6	152,114	99,745	66	846,790	515,677	61	162,258	21,279,531	10,993,936	32,273,467	21,509	20,761	97	9,256	19,360
7	493,774	114,467	23	846,791	56,186	7	22,409	4,907,016	3,043,075	7,950,091	47,858	27,971	58	20,554	60,647
8	352,887	62,892	18	846,481	97,442	12	28,732	7,341,192	4,736,080	12,077,272	2,082	71	3	71	433
9	260,958	24,449	9	846,791	50,180	6	13,572	2,718,066	2,013,618	4,731,684	9,009	963	11	801	307
10	321,292	68,549	21	846,791	156,419	18	44,823	14,732,010	11,592,878	26,324,888	10,890	7,660	70	303	292
11	531,197	74,899	14	846,649	199,305	24	69,073	15,792,844	10,509,814	26,302,658	10,462	796	8	463	2,900
12	3,147,304	622,511	20	846,792	291,593	34	74,235	10,613,895	6,650,223	17,264,118	1,013,626	389,695	38	315,530	769,516
13	494,856	60,715	12	846,790	367,463	43	98,599	23,844,579	15,782,974	39,627,553	33,168	17,267	52	14,441	53,938
14	6,887,556	530,857	8	846,791	192,766	23	63,477	9,152,528	5,752,970	14,905,498	1,141,637	325,188	28	225,463	740,034
15	4,884,190	283,465	6	846,601	207,780	25	79,430	14,597,051	9,310,130	23,907,181	413,785	70,550	17	50,906	394,660
16	4,050,515	1,062,312	26	846,791	246,657	29	63,734	6,791,872	4,418,446	11,210,318	2,613,800	782,293	30	666,788	1,604,355
17	2,504,388	210,593	8	846,792	151,371	18	50,217	6,999,625	4,141,251	11,140,876	223,545	59,376	27	54,547	93,935
18	24,961,428	1,014,519	4	846,791	220,667	26	86,553	11,487,962	7,284,200	18,772,162	739,382	231,192	31	167,246	627,403
19	2,912,263	120,335	4	846,111	133,984	16	42,775	8,315,932	5,852,155	14,168,087	158,121	44,736	28	33,257	366,954
20	61,814	2,106	3	846,791	5,668	1	1,490	232,655	170,780	403,435	1,252	125	10	120	605
21	89,528	889	1	846,791	3,213	0	1,092	152,987	110,369	263,356	1,075	27	3	27	137
22	38,143	1,258	3	846,792	34,844	4	5,030	660,110	436,273	1,096,383	0	0	0	0	-
23	368,403	20,380	6	846,395	107,690	13	28,647	5,173,310	3,296,911	8,470,221	7,865	1,123	14	760	12,668
24	75,666	8,470	11	846,792	87,804	10	24,265	3,290,300	1,975,469	5,265,769	1,949	251	13	251	1,266
25	110,874	16,203	15	846,335	183,706	22	42,886	4,678,515	3,310,474	7,988,989	561	215	38	152	767
26	41,642	5,953	14	846,792	137,437	16	32,035	3,076,577	1,905,110	4,981,687	0	0	0	0	-
27	434,261	53,302	12	846,197	542,998	64	144,851	18,725,826	11,611,204	30,337,030	441	234	53	231	1,168
28	100,649	10,032	10	845,719	53,145	6	16,585	2,891,014	2,063,035	4,954,049	805	285	35	133	672
29	479,548	13,695	3	846,792	40,618	5	11,225	3,772,992	3,500,285	7,273,277	22,651	3,748	17	1,055	1,294
30	70,553	13,770	20	846,792	192,641	23	45,845	4,910,965	3,104,497	8,015,462	1,343	56	4	56	284
31	775,335	39,222	5	846,792	80,759	10	26,287	3,784,813	2,351,721	6,136,534	17,581	1,372	8	1,086	5,279
32	145,880	41,412	28	846,792	162,459	19	41,890	6,607,526	4,498,419	11,105,945	8,967	3,525	39	982	2,480
33	272,946	23,010	8	846,792	139,527	16	38,431	8,821,936	6,641,577	15,463,513	32,769	2,252	7	590	2,428
34	48,315	43,031	89	846,792	753,500	89	146,238	21,673,487	13,668,620	35,342,107	1,101	636	58	67	277
35	209,178	53,009	25	843,605	445,931	53	142,549	26,554,910	17,363,743	43,918,653	26,408	5,186	20	1,911	7,881
36	2,045,530	65,568	3	846,792	44,348	5	13,866	2,760,345	1,919,572	4,679,917	76,505	7,018	9	4,164	27,222
37	3,114,056	155,493	5	846,791	222,820	26	97,934	13,865,464	8,659,110	22,524,574	51,359	15,259	30	10,766	12,073
38	489,484	21,811	4	846,249	79,322	9	22,347	4,054,085	2,652,976	6,707,061	26,859	1,494	6	666	2,112
39	184,631	12,274	7	845,710	24,117	3	7,967	2,418,701	1,897,746	4,316,447	259	79	31	79	252
40	4,533,594	492,948	11	845,472	169,733	20	50,501	6,392,293	3,951,326	10,343,619	674,943	75,937	11	63,426	254,978
Statewide Totals		9,149,160			7,274,737		2,164,001	351,119,522	226,654,024	577,773,546		3,662,000		2,491,382	7,414,109

Notes:

- (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

APPENDIX F: ANALYSIS OF EXPOSURE TO FLOOD HAZARD, BY STATE SENATE DISTRICT

Table F-F-2. Analysis of Exposure to Flood Hazard – State Senate Districts, 500-year Floodplain

Analysis Region	Facilities Summary					DoD Facilities		Native American Tribal Lands		Sensitive Species		Essential Facilities				
	Essential Facilities	High Potential Loss Facilities	Lifeline Utilities	Transportation Facilities	Transportation Segments (Miles)	Number of Department of Defense Facilities Exposed ⁽¹⁾	Department of Defense Facilities Exposed (Acres) ⁽¹⁾	Number of Native American Tribal Land Areas Exposed ⁽¹⁾	Native American Tribal Land Areas Exposed (Acres) ⁽¹⁾	All Sensitive Plants ⁽²⁾	All Sensitive Animals ⁽²⁾	Care Facilities	Emergency Centers	Fire Stations	Police Stations	Schools
1	62	102	4	330	270	3	57,254	6	1,916	164	116	3	0	8	4	47
2	59	27	17	424	309	3	1,357	6	2,011	183	109	1	0	10	5	43
3	48	4	8	143	77	1	746	0	0	90	58	2	0	9	6	31
4	200	42	22	1,051	645	3	4,178	4	4,389	189	136	3	1	21	15	160
5	207	65	23	438	472	3	781	1	282	50	58	6	0	17	9	175
6	215	30	19	323	299	3	1,077	0	0	7	24	9	0	5	4	197
7	37	53	9	124	71	1	210	0	0	48	59	1	0	0	6	30
8	29	20	3	69	35	0	0	0	0	29	25	0	0	2	3	24
9	17	19	5	74	47	3	267	0	0	27	42	0	0	1	1	15
10	49	91	10	137	138	1	9	0	0	20	34	1	0	2	4	42
11	113	44	12	155	94	0	0	0	0	56	42	3	0	5	12	93
12	169	17	17	354	305	1	180	0	0	54	76	5	0	15	22	127
13	143	70	7	270	201	1	133	0	0	29	25	2	2	8	7	124
14	110	59	10	381	264	2	6,012	0	0	105	105	3	0	11	4	92
15	118	25	17	370	238	5	14,749	0	0	177	98	2	1	13	10	92
16	116	41	13	425	474	1	3,583	1	105	42	62	2	1	6	12	95
17	68	6	7	116	163	2	1,474	0	0	37	67	0	1	3	6	58
18	128	27	13	380	429	10	23,965	6	7,162	162	159	4	0	9	11	104
19	70	8	16	266	200	2	857	0	0	76	69	0	0	4	4	62
20	5	1	0	9	3	0	0	0	0	8	11	0	0	0	0	5
21	0	1	0	15	6	0	0	0	0	11	12	0	0	0	0	0
22	9	12	0	17	12	0	0	0	0	7	7	0	0	0	1	8
23	37	15	5	46	53	2	1,847	0	0	27	36	2	0	0	5	30
24	42	8	0	35	19	0	0	0	0	3	8	2	0	1	2	37
25	52	88	6	180	112	2	190	0	0	14	15	0	0	2	2	48
26	45	2	2	13	28	0	0	0	0	12	9	0	0	0	1	44
27	203	137	18	265	144	1	170	0	0	31	23	9	1	1	8	184
28	18	101	3	46	40	0	0	0	0	21	29	1	0	0	4	13
29	17	46	4	56	48	0	0	0	0	28	30	1	0	0	0	16
30	76	33	0	91	79	0	0	0	0	5	6	1	0	0	2	73
31	38	8	3	89	87	1	319	0	0	62	57	2	0	2	2	32
32	74	55	7	156	117	1	530	0	0	24	25	1	0	5	4	64
33	64	57	3	145	100	2	397	0	0	20	34	3	0	1	3	57
34	231	73	3	134	189	0	0	0	0	7	4	10	0	2	7	212
35	165	81	5	193	161	4	474	0	0	29	43	4	0	3	5	153
36	36	6	7	90	38	2	5	4	144	82	75	0	0	4	4	28
37	125	18	9	167	157	1	13	4	7,750	63	91	3	1	7	10	104
38	36	13	2	84	42	1	46	0	0	45	47	0	0	1	4	31
39	5	7	0	104	48	4	271	0	0	54	39	1	0	1	0	3
40	70	27	23	221	265	7	17,594	6	43,133	109	116	1	0	2	10	57
Statewide Totals	3,306	1,539	332	7,986	6,476							88	8	181	219	2,810

Notes:

(1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-F-2. Analysis of Exposure to Flood Hazard – State Senate Districts, 500-year Floodplain

Analysis Region	High Potential Loss Facilities		Lifeline Utilities						Transportation Facilities								
	Dams	Hazardous Material Sites	Wastewater Facilities	Potable Water Facilities	Oil Facilities	Natural Gas Facilities	Electric Power Facilities	Communications Facilities	Runways	Railway Bridges	Rail Facilities	Port Facilities	Light Rail Facilities	Highway Bridges	Ferry Facilities	Bus Facilities	Airport Facilities
1	84	18	1	1	0	0	1	1	5	1	0	0	0	316	0	3	5
2	9	18	8	0	0	0	2	7	2	2	0	14	0	404	0	0	2
3	4	0	6	0	0	0	0	2	1	2	0	0	0	134	4	1	1
4	33	9	9	0	0	0	2	11	6	12	2	0	0	1,022	0	5	4
5	7	58	3	2	0	1	3	14	3	9	16	14	2	381	7	4	2
6	0	30	2	0	0	0	3	14	6	10	1	1	29	271	0	2	3
7	3	50	2	3	2	0	1	1	3	4	2	13	0	98	3	0	1
8	2	18	2	0	0	0	1	0	0	3	0	0	4	62	0	0	0
9	0	19	1	0	2	0	1	1	1	4	1	8	3	56	0	0	1
10	2	89	3	2	0	0	3	2	1	3	2	0	14	115	0	2	0
11	4	40	4	1	0	0	1	6	2	4	0	7	4	134	0	2	2
12	5	12	6	0	0	0	1	10	4	4	2	0	0	337	0	5	2
13	3	67	1	0	0	0	3	3	0	11	1	0	24	233	0	1	0
14	37	22	2	0	0	0	2	6	2	6	2	0	0	369	0	1	1
15	11	14	9	1	0	0	1	6	0	4	1	0	1	358	0	6	0
16	9	32	2	0	1	0	2	8	5	5	2	0	0	407	0	2	4
17	5	1	1	0	1	1	1	3	1	2	2	0	2	108	0	0	1
18	7	20	4	1	0	1	0	7	8	9	1	0	0	353	0	3	6
19	4	4	6	0	1	1	1	7	5	2	4	0	2	246	0	4	3
20	0	1	0	0	0	0	0	0	0	0	0	0	0	9	0	0	0
21	1	0	0	0	0	0	0	0	0	0	1	0	0	14	0	0	0
22	0	12	0	0	0	0	0	0	0	0	1	0	2	14	0	0	0
23	2	13	2	1	0	0	2	0	1	0	1	12	0	31	0	0	1
24	0	8	0	0	0	0	0	0	0	0	0	0	0	34	0	1	0
25	0	88	0	0	4	0	2	0	0	7	2	91	2	76	2	0	0
26	1	1	0	0	0	0	0	2	0	0	0	0	0	13	0	0	0
27	0	137	2	1	8	0	5	2	0	5	1	41	1	210	7	0	0
28	0	101	0	0	3	0	0	0	0	2	5	0	0	39	0	0	0
29	1	45	1	0	0	0	2	1	0	0	0	0	2	54	0	0	0
30	0	33	0	0	0	0	0	0	0	11	0	0	1	79	0	0	0
31	7	1	0	1	0	0	0	2	0	1	1	0	0	87	0	0	0
32	2	53	2	1	0	0	0	4	2	6	1	0	0	144	0	2	1
33	8	49	0	0	1	0	1	1	1	11	2	0	3	125	0	2	1
34	0	73	0	0	0	0	0	3	0	4	1	0	2	125	0	2	0
35	4	77	3	0	0	0	2	0	0	0	0	0	0	188	3	2	0
36	0	6	1	1	0	0	1	4	1	0	0	0	0	87	0	1	1
37	5	13	1	2	0	0	3	3	2	0	0	0	1	161	0	2	1
38	4	9	1	0	0	0	0	1	1	0	1	0	2	79	0	0	1
39	0	7	0	0	0	0	0	0	0	0	0	9	7	88	0	0	0
40	1	26	5	1	0	1	7	9	2	3	2	5	4	201	0	3	1
Statewide Totals	265	1,274	90	19	23	5	54	141	65	147	58	215	112	7,262	26	56	45

Notes:

(1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

APPENDIX F: ANALYSIS OF EXPOSURE TO FLOOD HAZARD, BY STATE SENATE DISTRICT

Table F-F-2. Analysis of Exposure to Flood Hazard – State Senate Districts, 500-year Floodplain

Analysis Region	Transportation Segment			Sensitive Species							
	Railway Segments (Miles)	Light Rail Segments (Miles)	Highway Segments (Miles)	CA State Listing Endangered Plants ⁽²⁾	CA State Listing Endangered Animals ⁽²⁾	CA State Listing Threatened Plants ⁽²⁾	CA State Listing Threatened Animals ⁽²⁾	Federal Listing Endangered Plants ⁽²⁾	Federal Listing Endangered Animals ⁽²⁾	Federal Listing Threatened Plants ⁽²⁾	Federal Listing Threatened Animals ⁽²⁾
1	77	0	193	8	8	0	7	4	7	3	7
2	146	0	162	18	9	6	6	24	12	0	11
3	26	0	51	11	5	3	4	15	8	2	6
4	179	0	466	11	8	1	14	8	7	3	9
5	127	5	339	7	6	0	7	7	8	2	8
6	56	16	228	1	0	0	3	0	1	0	3
7	32	1	38	4	4	0	6	6	6	0	6
8	9	5	21	3	3	0	1	5	5	0	3
9	19	6	22	2	3	0	4	3	6	1	5
10	51	16	71	1	3	0	5	3	5	1	5
11	17	7	70	7	5	0	3	9	7	1	4
12	90	0	216	7	8	0	6	4	11	6	5
13	42	27	132	0	4	0	2	4	4	0	5
14	59	4	201	10	8	3	9	6	7	7	9
15	52	5	181	17	11	5	6	27	17	6	8
16	150	0	324	5	5	1	6	6	7	2	6
17	30	5	128	4	6	0	4	3	8	0	4
18	122	0	307	11	19	1	16	13	18	6	8
19	39	19	143	11	8	3	7	18	11	4	6
20	1	0	2	3	2	0	0	2	1	0	2
21	1	0	4	2	1	0	1	1	1	0	1
22	5	2	6	0	1	0	1	0	1	0	0
23	12	1	40	5	4	1	1	5	5	3	3
24	0	0	18	0	0	0	1	0	0	0	1
25	41	3	67	3	2	0	1	3	5	0	1
26	5	0	23	2	1	1	0	4	1	0	1
27	16	7	121	2	4	1	2	3	3	0	1
28	10	1	29	4	2	1	1	4	4	0	2
29	9	7	31	2	3	0	1	2	4	0	2
30	20	6	53	0	0	0	1	0	0	0	1
31	20	8	59	7	4	0	2	9	7	4	2
32	42	9	66	4	2	1	1	5	3	0	2
33	26	12	62	3	2	0	0	1	4	2	2
34	26	7	156	0	0	0	0	0	0	0	0
35	16	1	144	2	4	3	2	3	5	2	3
36	0	1	37	8	5	0	3	5	9	5	2
37	26	6	126	5	11	1	6	8	12	2	8
38	11	5	27	6	5	0	3	5	8	4	2
39	13	15	20	8	5	0	1	9	6	1	2
40	116	4	145	6	15	0	5	6	13	3	5
Statewide Totals	1,736	211	4,530								

Notes:

(1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Appendix G: Analysis of Exposure to Flood Hazard, by Delta Primary/Secondary Zones and Mountain Counties

APPENDIX G: ANALYSIS OF EXPOSURE TO FLOOD HAZARD, BY DELTA PRIMARY/SECONDARY ZONES AND MOUNTAIN COUNTIES

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Table F-G-1. Analysis of Exposure to Flood Hazard – Delta Zones, 100-year Floodplain

DWR Hydrologic Regions	Total Area (Acres)	Exposed Area (Acres)	Percent Area Exposed	Population and Structures							Crops				
				Total Population	Exposed Population	Percent Population Exposed	Exposed Structures	Total Depreciated Replacement Value of Exposed Structures (\$1,000s)	Total Depreciated Replacement Value of Exposed Contents (\$1,000s)	Total Depreciated Replacement Value of Exposed Structures and Contents (\$1,000s)	Total Crops (Acres)	Exposed Crops (Acres)	Percent of Crops Exposed	Exposed Agricultural Land Area for which Valuation was Computed (Acres)	Value of Exposed Agricultural Land Area (\$1,000s)
Primary Delta	490,252	299,463	61	12,673	5,415	43	1,934	378,484	213,977	592,461	357,736	197,471	55	175,725	589,762
Secondary Delta	247,413	89,560	36	449,112	53,864	12	21,839	3,449,383	2,031,289	5,480,672	134,236	51,445	38	42,808	92,984
Total for Delta Zones	737,665	389,023		461,784	59,278		23,773	3,827,867	2,245,266	6,073,133	\$491,972	248,916		218,533	682,746

Notes:

- (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-G-1. Analysis of Exposure to Flood Hazard – Delta Zones, 100-year Floodplain

DWR Hydrologic Regions	Facilities Summary					DoD Facilities		Native American Tribal Lands		Sensitive Species		Essential Facilities Details				
	Essential Facilities	High Potential Loss Facilities	Lifeline Utilities	Transportation Facilities	Transportation Segments (Miles)	Number of Department of Defense Facilities Exposed ⁽¹⁾	Department of Defense Facilities Exposed (Acres) ⁽¹⁾	Number of Native American Tribal Land Areas Exposed ⁽¹⁾	Native American Tribal Land Areas Exposed (Acres) ⁽¹⁾	All Sensitive Plants ⁽²⁾	All Sensitive Animals ⁽²⁾	Care Facilities	Emergency Centers	Fire Stations	Police Stations	Schools
Primary Delta	4	4	2	35	39	1	29	0	0	43	47	0	0	1	0	3
Secondary Delta	16	15	2	99	96	1	5	0	0	29	52	0	0	2	1	13
Total for Delta Zones	20	19	4	134	135							0	0	3	1	16

Notes:

(1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-G-1. Analysis of Exposure to Flood Hazard – Delta Zones, 100-year Floodplain

DWR Hydrologic Regions	High Potential Loss Facilities Details		Lifeline Utilities Details						Transportation Facilities Details								
	Dams	Hazardous Material Sites	Wastewater Facilities	Potable Water Facilities	Oil Facilities	Natural Gas Facilities	Electric Power Facilities	Communications Facilities	Runways	Railway Bridges	Rail Facilities	Port Facilities	Light Rail Facilities	Highway Bridges	Ferry Facilities	Bus Facilities	Airport Facilities
Primary Delta	1	3	0	0	0	0	0	2	1	0	1	2	0	22	8	0	1
Secondary Delta	0	15	0	0	0	0	0	2	0	1	1	11	0	86	0	0	0
Total for Delta Zones	1	18	0	0	0	0	0	4	1	1	2	13	0	108	8	0	1

Notes:

- (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-G-1. Analysis of Exposure to Flood Hazard – Delta Zones, 100-year Floodplain

DWR Hydrologic Regions	Transportation Segments Details			Sensitive Species							
	Railway Segments (Miles)	Light Rail Segments (Miles)	Highway Segments (Miles)	CA State Listing Endangered Plants ⁽²⁾	CA State Listing Endangered Animals ⁽²⁾	CA State Listing Threatened Plants ⁽²⁾	CA State Listing Threatened Animals ⁽²⁾	Federal Listing Endangered Plants ⁽²⁾	Federal Listing Endangered Animals ⁽²⁾	Federal Listing Threatened Plants ⁽²⁾	Federal Listing Threatened Animals ⁽²⁾
Primary Delta	8	0	30	5	4	0	6	5	6	1	5
Secondary Delta	36	3	57	4	6	0	7	4	9	0	8
Total for Delta Zones	44	3	87								

Notes:

(1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-G-2. Analysis of Exposure to Flood Hazard – Delta Zones, 500-year Floodplain

DWR Hydrologic Regions	Total Area (Acres)	Exposed Area (Acres)	Percent Area Exposed	Population and Structures							Crops				
				Total Population	Exposed Population	Percent Population Exposed	Exposed Structures	Total Depreciated Replacement Value of Exposed Structures (\$1,000s)	Total Depreciated Replacement Value of Exposed Contents (\$1,000s)	Total Depreciated Replacement Value of Exposed Structures and Contents (\$1,000s)	Total Crops (Acres)	Exposed Agricultural Land Area (Acres)	Percent of Crops Exposed	Exposed Agricultural Land Area for which Valuation was Computed (Acres)	Value of Exposed Agricultural Land Area (\$1,000s)
Primary Delta	490,252	417,963	85	12,673	9,895	78	2,952	527,782	282,748	810,530	357,736	309,230	86	275,379	865,095
Secondary Delta	247,413	135,143	55	449,112	208,233	46	71,538	10,919,164	6,298,031	17,217,195	134,236	73,896	55	62,235	147,857
Total for Delta Zones	737,665	553,106		461,784	218,128		74,490	11,446,946	6,580,779	18,027,725	491,972	383,126		337,615	1,012,951

Notes:

- (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-G-2. Analysis of Exposure to Flood Hazard – Delta Zones, 500-year Floodplain

DWR Hydrologic Regions	Facilities Summary					DoD Facilities		Native American Tribal Lands		Sensitive Species		Essential Facilities Details				
	Essential Facilities	High Potential Loss Facilities	Lifeline Utilities	Transportation Facilities	Transportation Segments (Miles)	Number of Department of Defense Facilities Exposed ⁽¹⁾	Department of Defense Facilities Exposed (Acres) ⁽¹⁾	Number of Native American Tribal Land Areas Exposed ⁽¹⁾	Native American Tribal Land Areas Exposed (Acres) ⁽¹⁾	All Sensitive Plants ⁽²⁾	All Sensitive Animals ⁽²⁾	Care Facilities	Emergency Centers	Fire Stations	Police Stations	Schools
Primary Delta	10	5	9	48	76	1	46	0	0	43	48	0	0	3	0	7
Secondary Delta	82	42	4	203	170	1	5	0	0	29	58	1	0	4	1	76
Total for Delta Zones	92	47	13	251	246							1	0	7	1	83

Notes:

(1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-G-2. Analysis of Exposure to Flood Hazard – Delta Zones, 500-year Floodplain

DWR Hydrologic Regions	High Potential Loss Facilities Details		Lifeline Utilities Details						Transportation Facilities Details								
	Dams	Hazardous Material Sites	Wastewater Facilities	Potable Water Facilities	Oil Facilities	Natural Gas Facilities	Electric Power Facilities	Communications Facilities	Runways	Railway Bridges	Rail Facilities	Port Facilities	Light Rail Facilities	Highway Bridges	Ferry Facilities	Bus Facilities	Airport Facilities
Primary Delta	2	3	0	0	0	1	0	8	1	0	1	2	0	33	10	0	1
Secondary Delta	1	41	1	0	0	0	1	2	0	2	5	16	0	180	0	0	0
Total for Delta Zones	3	44	1	0	0	1	1	10	1	2	6	18	0	213	10	0	1

Notes:

- (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-G-2. Analysis of Exposure to Flood Hazard – Delta Zones, 500-year Floodplain

DWR Hydrologic Regions	Transportation Segments Details			Sensitive Species							
	Railway Segments (Miles)	Light Rail Segments (Miles)	Highway Segments (Miles)	CA State Listing Endangered Plants ⁽²⁾	CA State Listing Endangered Animals ⁽²⁾	CA State Listing Threatened Plants ⁽²⁾	CA State Listing Threatened Animals ⁽²⁾	Federal Listing Endangered Plants ⁽²⁾	Federal Listing Endangered Animals ⁽²⁾	Federal Listing Threatened Plants ⁽²⁾	Federal Listing Threatened Animals ⁽²⁾
Primary Delta	11	0	65	5	4	0	6	5	6	1	6
Secondary Delta	45	4	122	4	6	0	7	4	9	0	8
Total for Delta Zones	56	4	187								

Notes:

(1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-G-3. Analysis of Exposure to Flood Hazard – Mountain Counties, 100-year Floodplain

Analysis Region	Total Area (Acres)	Exposed Area (Acres)	Percent Area Exposed	Population and Structures							Crops				
				Total Population	Exposed Population	Percent Population Exposed	Exposed Structures	Total Depreciated Replacement Value of Exposed Structures (\$1,000s)	Total Depreciated Replacement Value of Exposed Contents (\$1,000s)	Total Depreciated Replacement Value of Exposed Structures and Contents (\$1,000s)	Total Crops (Acres)	Exposed Crops (Acres)	Percent of Crops Exposed	Exposed Crops for which Valuation was Computed (Acres)	Value of Exposed Crops (\$1,000s)
Mountain Counties	10,075,484	268,437	3	540,357	11,302	2	6,038	859,582	527,502	1,387,084	150,992	30,237	20	3,338	1,401

Notes:

- (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-G-3. Analysis of Exposure to Flood Hazard – Mountain Counties, 100-year Floodplain

Analysis Region	Facilities Summary					DoD Facilities		Sensitive Species		Essential facilities				
	Essential Facilities	High Potential Loss Facilities	Lifeline Utilities	Transportation Facilities	Transportation Segments (Miles)	Number of Department of Defense Facilities Exposed ⁽¹⁾	Department of Defense Facilities Exposed (Acres) ⁽¹⁾	All Sensitive Plants ⁽²⁾	All Sensitive Animals ⁽²⁾	Care Facilities	Emergency Centers	Fire Stations	Police Stations	Schools
Mountain Counties	14	70	1	141	81	0	0	123	87	2	0	5	0	7

Notes:

(1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-G-3. Analysis of Exposure to Flood Hazard – Mountain Counties, 100-year Floodplain

Analysis Region	High Potential Loss Facilities		Lifeline Utilities						Transportation Facilities Details								
	Dams	Hazardous Material Sites	Wastewater Facilities	Potable Water Facilities	Oil Facilities	Natural Gas Facilities	Electric Power Facilities	Communications Facilities	Runways	Railway Bridges	Rail Facilities	Port Facilities	Light Rail Facilities	Highway Bridges	Ferry Facilities	Bus Facilities	Airport Facilities
Mountain Counties	56	14	0	1	0	0	0	0	1	0	0	0	0	139	0	0	1

Notes:

- (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-G-3. Analysis of Exposure to Flood Hazard – Mountain Counties, 100-year Floodplain

Analysis Region	Transportation Segments Details			Sensitive Species							
	Railway Segments (Miles)	Light Rail Segments (Miles)	Highway Segments (Miles)	CA State Listing Endangered Plants ⁽²⁾	CA State Listing Endangered Animals ⁽²⁾	CA State Listing Threatened Plants ⁽²⁾	CA State Listing Threatened Animals ⁽²⁾	Federal Listing Endangered Plants ⁽²⁾	Federal Listing Endangered Animals ⁽²⁾	Federal Listing Threatened Plants ⁽²⁾	Federal Listing Threatened Animals ⁽²⁾
Mountain Counties	16	0	65	9	3	3	9	4	1	8	7

Notes:

(1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-G-4. Analysis of Exposure to Flood Hazard – Mountain Counties, 500-year Floodplain

Analysis Region	Total Area (Acres)	Exposed Area (Acres)	Percent Area Exposed	Population and Structures						Crops				
				Total Population	Exposed Population	Percent Population Exposed	Exposed Structures	Total Depreciated Replacement Value of Exposed Structures (\$1,000s)	Total Depreciated Replacement Value of Exposed Contents (\$1,000s)	Total Crops (Acres)	Exposed Crops (Acres)	Percent of Crops Exposed	Exposed Crops for which Valuation was Computed (Acres)	Value of Exposed Crops (\$1,000s)
Mountain Counties	10,075,484	270,302	3	540,357	13,619	3	7,206	996,301	618,934	150,992	30,937	20	3,356	1,408

Notes:

- (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-G-4. Analysis of Exposure to Flood Hazard – Mountain Counties, 500-year Floodplain

Analysis Region	Facilities Summary					DoD Facilities		Native American Tribal Lands		Sensitive Species		Essential Facilities				
	Essential Facilities	High Potential Loss Facilities	Lifeline Utilities	Transportation Facilities	Transportation Segments (Miles)	Number of Department of Defense Facilities Exposed ⁽¹⁾	Department of Defense Facilities Exposed (Acres) ⁽¹⁾	Number of Native American Tribal Land Areas Exposed ⁽¹⁾	Native American Tribal Land Areas Exposed (Acres) ⁽¹⁾	All Sensitive Plants ⁽²⁾	All Sensitive Animals ⁽²⁾	Care Facilities	Emergency Centers	Fire Stations	Police Stations	Schools
Mountain Counties	18	70	1	147	86	0	0	2	412	123	87	3	0	5	1	9

Notes:

(1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-G-4. Analysis of Exposure to Flood Hazard – Mountain Counties, 500-year Floodplain

Analysis Region	High Potential Loss Facilities		Lifeline Utilities						Transportation Facilities Details								
	Dams	Hazardous Material Sites	Wastewater Facilities	Potable Water Facilities	Oil Facilities	Natural Gas Facilities	Electric Power Facilities	Communications Facilities	Runways	Railway Bridges	Rail Facilities	Port Facilities	Light Rail Facilities	Highway Bridges	Ferry Facilities	Bus Facilities	Airport Facilities
Mountain Counties	56	14	0	1	0	0	0	0	2	0	0	0	0	142	0	1	2

Notes:

- (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-G-4. Analysis of Exposure to Flood Hazard – Mountain Counties, 500-year Floodplain

Analysis Region	Transportation Segments Details			Sensitive Species							
	Railway Segments (Miles)	Light Rail Segments (Miles)	Highway Segments (Miles)	CA State Listing Endangered Plants ⁽²⁾	CA State Listing Endangered Animals ⁽²⁾	CA State Listing Threatened Plants ⁽²⁾	CA State Listing Threatened Animals ⁽²⁾	Federal Listing Endangered Plants ⁽²⁾	Federal Listing Endangered Animals ⁽²⁾	Federal Listing Threatened Plants ⁽²⁾	Federal Listing Threatened Animals ⁽²⁾
Mountain Counties	18	0	68	9	3	3	9	4	1	8	7

Notes:

(1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Appendix H: Analysis of Exposure to Flood Hazard, by IRWM Region

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Table F-H-1. Analysis of Exposure to Flood Hazard – IRWM Regions, 100-year Floodplain

Analysis Region Number	Analysis Region Name	Total Area (Acres)	Exposed Area (Acres)	Percent Area Exposed	Population and Structures							Crops				
					Total Population	Exposed Population	Percent Population Exposed	Exposed Structures	Total Depreciated Replacement Value of Exposed Structures (\$1,000s)	Total Depreciated Replacement Value of Exposed Contents (\$1,000s)	Total Depreciated Replacement Value of Exposed Structures and Contents (\$1,000s)	Total Crops (Acres)	Exposed Crops (Acres)	Percent of Crops Exposed	Exposed Crops for which Valuation was Computed (Acres)	Value of Exposed Crops (\$1,000s)
1	American River Basin	789,739	118,434	15	1,435,079	51,586	4	16,697	2,761,658	1,582,451	4,344,109	161,516	47,282	29	22,005	66,858
2	Antelope Valley	1,574,216	166,417	11	319,924	10,196	3	4,148	471,442	299,381	770,823	199,297	38,435	19	20,472	25,588
3	Anza Borrego Desert	881,447	30,473	3	7,707	2,194	28	1,913	169,357	102,657	272,014	4,027	3,601	89	2,931	20,821
4	Yosemite – Mariposa	934,965	17,346	2	17,134	249	1	181	29,018	16,981	45,999	3,640	98	3	0	-
5	Coachella Valley	907,216	71,886	8	319,667	19,925	6	10,620	995,011	622,155	1,617,166	65,461	12,970	20	7,602	48,049
6	Consumnes American Bear Yuba	2,719,754	33,779	1	287,436	3,799	1	1,898	286,532	174,267	460,799	69,700	937	1	93	225
7	East Contra Costa County	222,120	68,058	31	237,359	14,019	6	5,874	1,253,688	710,846	1,964,534	46,558	22,896	49	16,429	48,094
8	Eastern San Joaquin	618,446	160,864	26	491,314	36,419	7	15,217	2,061,614	1,280,451	3,342,065	392,885	121,810	31	95,883	366,957
9	Gateway Region	152,017	3,998	3	2,070,196	15,823	1	6,298	894,285	632,666	1,526,951	896	78	9	78	394
10	Greater Los Angeles County	1,317,199	22,696	2	9,513,425	71,254	1	19,388	2,959,833	2,054,907	5,014,740	28,816	1,032	4	430	1,571
11	Greater Monterey County	2,047,718	116,131	6	287,742	11,792	4	3,420	614,032	420,865	1,034,897	257,282	50,645	20	34,670	236,307
12	Imperial	1,989,532	133,119	7	135,189	764	1	416	34,119	24,537	58,656	491,830	26,152	5	23,655	65,422
13	Inyo – Mono	10,987,551	403,809	4	64,736	1,796	3	1,393	129,374	75,408	204,782	51,122	5,398	11	627	482
14	Kaweah River Basin	422,592	84,179	20	213,379	41,963	20	13,657	2,056,705	1,396,774	3,453,479	337,644	64,893	19	60,583	208,622
15	Kern County	3,642,515	420,704	12	591,791	38,664	7	12,034	1,120,557	771,575	1,892,132	961,170	224,132	23	166,961	510,341
16	Madera	1,378,193	188,522	14	123,492	12,478	10	3,346	397,237	248,173	645,410	357,632	140,781	39	100,738	230,264
17	Merced	607,125	217,846	36	147,365	52,753	36	16,285	1,846,068	1,230,753	3,076,821	318,906	147,059	46	120,426	238,111
18	Mojave	3,119,753	30,427	1	321,322	7,205	2	3,569	352,400	226,991	579,391	32,618	1,106	3	0	-
19	Mokelumne/Amador/Calaveras	941,439	37,840	4	62,548	2,630	4	1,318	185,632	115,796	301,428	10,973	3,595	33	2,150	5,409
20	Monterey Peninsula, Carmel Bay, South Monterey Bay	218,039	4,038	2	108,799	2,328	2	1,331	298,888	221,748	520,636	1,067	374	35	288	2,283
21	North Coast	12,443,337	401,202	3	636,670	33,320	5	17,425	1,812,894	1,169,833	2,982,727	427,312	108,317	25	28,675	84,022
22	North Sacramento Valley Group	6,042,111	808,888	13	535,947	47,409	9	19,262	2,161,868	1,291,625	3,453,493	1,185,059	514,197	43	220,314	596,319
23	Pajaro River Watershed	829,066	58,980	7	215,462	26,523	12	7,387	1,595,942	1,286,572	2,882,514	111,240	36,610	33	28,321	211,145
24	Poso Creek	597,672	137,672	23	106,744	5,835	5	1,750	188,099	148,294	336,393	414,102	77,243	19	53,891	145,148
26	San Diego	1,909,983	62,215	3	2,802,986	73,264	3	21,844	4,768,261	3,428,245	8,196,506	88,485	4,004	5	1,752	6,806
27	San Francisco Bay Area	2,892,901	453,288	16	6,066,110	355,002	6	109,825	27,163,717	19,043,582	46,207,299	142,908	33,340	23	15,265	17,297
28	San Luis Obispo	2,125,023	106,315	5	247,123	11,005	4	5,847	847,066	598,906	1,445,972	201,245	20,082	10	15,551	61,997
29	Santa Ana Watershed Project Authority	1,818,920	111,291	6	4,831,337	182,241	4	51,423	8,733,120	5,729,782	14,462,902	122,849	15,775	13	10,357	14,808
30	Santa Barbara Countywide	1,633,605	51,492	3	398,960	26,228	7	7,955	1,557,051	1,103,053	2,660,104	109,935	15,508	14	9,819	52,138
31	Santa Cruz County	240,758	8,855	4	235,276	25,046	11	8,208	1,619,629	1,211,562	2,831,191	11,311	2,957	26	2,024	28,399
32	South Orange County Watershed Management Area	167,600	5,186	3	469,254	12,419	3	4,373	943,970	607,129	1,551,099	19,455	936	5	0	-
33	Southern Sierra	3,953,798	36,011	1	26,491	977	4	653	85,538	49,031	134,569	10,243	295	3	107	613
34	Tahoe – Sierra	789,167	95,386	12	64,115	1,956	3	2,064	351,572	212,707	564,279	4,311	0	0	0	-
35	Tule	429,649	93,561	22	82,109	6,967	8	2,421	212,160	127,788	339,948	325,563	69,933	21	59,691	122,309
36	Tuolumne – Stanislaus	1,733,887	54,752	3	67,719	954	1	598	77,582	46,545	124,127	2,534	102	4	77	79
37	Upper Feather River Watershed	2,290,355	114,992	5	34,037	1,928	6	1,434	167,329	102,500	269,829	65,716	28,436	43	3,191	1,076
38	Upper Kings Basin Water Forum	982,912	154,087	16	781,397	32,463	4	10,486	1,165,424	746,358	1,911,782	735,187	114,955	16	95,963	306,277
39	Upper Pit River Watershed	2,891,797	146,880	5	16,426	1,890	12	1,177	89,344	58,684	148,028	144,393	58,099	40	12,366	9,500
40	Upper Sacramento – McCloud	1,296,748	8,472	1	13,915	1,015	7	732	28,371	17,623	45,994	2,755	310	11	0	-
41	Upper Santa Clara River	503,075	19,237	4	215,235	12,622	6	4,092	910,457	645,623	1,556,080	17,304	2,443	14	7	28
42	Upper Santa Margarita	405,807	5,825	1	150,538	2,231	1	899	313,154	285,484	598,638	17,990	898	5	402	452
43	Watersheds Coalition of Ventura County	1,139,806	51,482	5	719,824	48,886	7	16,097	2,927,485	2,077,124	5,004,609	109,376	21,271	19	17,595	192,681
44	Westside – San Joaquin	1,322,336	326,403	25	165,354	20,055	12	7,434	601,572	351,728	953,300	1,060,606	221,998	21	203,019	469,793
45	Westside (Yolo, Solano, Napa, Lake, Colusa)	1,911,465	404,853	21	347,511	76,514	22	28,480	4,637,321	2,900,263	7,537,584	562,057	238,610	42	198,739	441,175
46	Yuba County	430,799	53,502	12	61,432	20,874	34	7,373	697,925	361,230	1,059,155	93,260	23,043	25	9,987	37,316
47	East Stanislaus	563,741	63,846	11	434,056	11,346	3	2,647	297,943	178,831	476,774	330,432	42,446	13	33,388	43,636
48	Fremont Basin	513,994	33,793	7	8,995	427	5	258	33,587	21,571	55,158	9,258	1,382	15	0	-
49	Lahontan Basins	2,027,402	298,963	15	27,094	1,381	5	890	79,360	47,142	126,502	78,705	32,626	41	16,586	9,347
	Statewide Totals		6,497,995			1,438,616		482,035	82,985,191	56,058,197	139,043,388		2,599,088		1,713,106	4,928,160

Notes:
 (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

APPENDIX H: ANALYSIS OF EXPOSURE TO FLOOD HAZARD, BY IRWM REGION

Table F-H-1. Analysis of Exposure to Flood Hazard – IRWM Regions, 100-year Floodplain

Analysis Region Number	Analysis Region Name	Facilities Summary					DoD Facilities		Native American Tribal Lands		Sensitive Species		Essential Facilities				
		Essential Facilities	High Potential Loss Facilities	Lifeline Utilities	Transportation Facilities	Transportation Segments (Miles)	Number of Department of Defense Facilities Exposed ⁽¹⁾	Department of Defense Facilities Exposed (Acres) ⁽¹⁾	Number of Native American Tribal Land Areas Exposed ⁽¹⁾	Native American Tribal Land Areas Exposed (Acres) ⁽¹⁾	All Sensitive Plants ⁽²⁾	All Sensitive Animals ⁽²⁾	Care Facilities	Emergency Centers	Fire Stations	Police Stations	Schools
1	American River Basin	15	20	6	145	73	2	826	0	0	22	35	1	0	0	0	14
2	Antelope Valley	4	2	2	22	82	1	1,190	0	0	22	31	0	0	0	0	4
3	Anza Borrego Desert	7	0	0	2	0	0	0	0	0	19	15	0	0	1	1	5
4	Yosemite – Mariposa	0	4	0	7	14	0	0	0	0	35	39	0	0	0	0	0
5	Coachella Valley	8	0	4	42	50	0	0	4	9,291	22	50	0	0	0	0	8
6	Consumnes American Bear Yuba	1	13	1	32	13	0	0	0	0	21	34	0	0	0	0	1
7	East Contra Costa County	3	2	0	32	25	1	90	0	0	32	44	0	0	0	0	3
8	Eastern San Joaquin	15	28	1	161	103	1	563	0	0	23	28	0	0	2	1	12
9	Gateway Region	2	35	4	56	18	1	104	0	0	9	16	0	0	0	1	1
10	Greater Los Angeles County	15	46	5	196	55	3	261	0	0	48	64	0	0	0	3	12
11	Greater Monterey County	7	5	1	84	73	3	12,588	0	0	64	56	0	0	0	1	6
12	Imperial	0	9	5	44	75	3	1,731	0	0	27	43	0	0	0	0	0
13	Inyo – Mono	2	6	1	19	61	1	4,913	1	3	68	73	0	0	0	0	2
14	Kaweah River Basin	22	10	2	91	51	0	0	0	0	13	19	0	0	0	0	22
15	Kern County	15	15	4	107	179	3	11,722	0	0	49	62	0	0	1	0	14
16	Madera	8	10	1	85	38	0	0	0	0	15	31	0	0	0	0	8
17	Merced	37	10	9	151	108	0	0	0	0	22	36	0	0	1	6	30
18	Mojave	10	1	1	14	18	2	395	0	0	17	33	0	0	1	2	7
19	Mokelumne/Amador/Calaveras	4	11	0	25	17	0	0	1	3	12	23	1	0	1	1	1
20	Monterey Peninsula, Carmel Bay, South Monterey Bay	1	1	3	6	2	2	170	0	0	38	20	0	0	1	0	0
21	North Coast	45	32	10	431	330	0	0	4	5,568	203	117	1	0	9	4	31
22	North Sacramento Valley Group	39	21	10	592	223	1	3,844	2	507	72	66	0	1	4	0	34
23	Pajaro River Watershed	14	8	3	89	71	0	0	0	0	27	33	0	0	1	3	10
24	Poso Creek	2	1	1	63	70	0	0	0	0	14	22	0	0	1	0	1
26	San Diego	39	23	5	229	98	8	842	3	138	104	79	1	0	2	5	31
27	San Francisco Bay Area	140	168	47	561	361	8	2,813	0	0	168	107	3	0	8	14	115
28	San Luis Obispo	2	4	6	127	64	1	7	0	0	104	66	0	0	1	0	1
29	Santa Ana Watershed Project Authority	72	37	4	262	159	6	447	1	442	105	97	4	0	4	1	63
30	Santa Barbara Countywide	17	1	6	125	51	1	736	0	0	40	46	0	0	2	1	14
31	Santa Cruz County	14	9	4	39	27	0	0	0	0	39	30	0	0	2	7	5
32	South Orange County Watershed Management Area	8	2	0	21	15	0	0	0	0	22	27	0	0	1	1	6
33	Southern Sierra	1	6	0	18	4	3	9,795	1	4	41	44	0	0	0	0	1
34	Tahoe – Sierra	0	2	1	18	24	0	0	0	0	16	20	0	0	0	0	0
35	Tule	6	1	0	54	47	1	115	0	0	11	17	0	0	0	1	5
36	Tuolumne – Stanislaus	5	16	0	11	6	0	0	0	0	35	44	1	0	2	0	2
37	Upper Feather River Watershed	6	15	0	53	36	0	0	1	409	42	20	0	0	3	0	3
38	Upper Kings Basin Water Forum	27	15	2	162	72	1	238	0	0	22	30	0	0	4	1	22
39	Upper Pit River Watershed	11	33	0	69	45	0	0	2	1,441	49	42	0	0	4	2	5
40	Upper Sacramento – McCloud	2	0	1	16	29	0	0	0	0	13	35	0	0	1	0	1
41	Upper Santa Clara River	3	3	3	40	31	0	0	0	0	16	32	0	0	0	0	3
42	Upper Santa Margarita	2	0	2	16	2	0	0	1	3	14	26	0	0	0	0	2
43	Watersheds Coalition of Ventura County	30	0	4	111	74	2	165	0	0	29	49	0	0	0	2	28
44	Westside – San Joaquin	16	5	0	95	113	1	3,321	0	0	28	43	1	0	3	4	8
45	Westside (Yolo, Solano, Napa, Lake, Colusa)	49	11	5	196	197	1	25	3	341	72	61	1	0	10	1	37
46	Yuba County	14	4	0	41	38	1	293	0	0	5	14	0	0	2	0	12
47	East Stanislaus	1	1	1	23	15	0	0	0	0	16	32	0	0	0	1	0
48	Fremont Basin	0	0	0	6	15	0	0	0	0	7	20	0	0	0	0	0
49	Lahontan Basins	3	5	1	46	57	1	56,674	1	9	42	32	0	0	1	0	2
	Statewide Totals	744	651	166	4,835	3,325							14	1	73	64	592

Notes:

(1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.

(3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-H-1. Analysis of Exposure to Flood Hazard – IRWM Regions, 100-year Floodplain

Analysis Region Number	Analysis Region Name	High Potential Loss Facilities		Lifeline Utilities						Transportation Facilities Details								
		Dams	Hazardous Material Sites	Wastewater Facilities	Potable Water Facilities	Oil Facilities	Natural Gas Facilities	Electric Power Facilities	Communications Facilities	Runways	Railway Bridges	Rail Facilities	Port Facilities	Light Rail Facilities	Highway Bridges	Ferry Facilities	Bus Facilities	Airport Facilities
1	American River Basin	16	4	0	0	0	0	0	6	2	0	0	0	0	141	0	0	2
2	Antelope Valley	2	0	0	0	0	0	0	2	0	1	0	0	0	20	0	1	0
3	Anza Borrego Desert	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	
4	Yosemite – Mariposa	4	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0
5	Coachella Valley	0	0	0	0	0	0	2	2	0	0	0	0	0	42	0	0	0
6	Consumnes American Bear Yuba	13	0	0	1	0	0	0	0	0	0	0	0	0	32	0	0	0
7	East Contra Costa County	0	2	0	0	0	0	0	0	0	1	1	4	0	23	3	0	0
8	Eastern San Joaquin	8	20	0	0	0	0	0	1	2	0	1	0	1	154	2	0	1
9	Gateway Region	0	35	0	0	1	0	3	0	0	0	1	21	0	34	0	0	0
10	Greater Los Angeles County	5	41	1	0	1	0	3	0	0	1	3	89	2	99	2	0	0
11	Greater Monterey County	2	3	1	0	0	0	0	0	0	0	0	0	0	84	0	0	0
12	Imperial	0	9	0	0	0	0	5	0	0	0	0	0	0	44	0	0	0
13	Inyo – Mono	6	0	0	0	0	0	1	0	0	0	0	0	0	19	0	0	0
14	Kaweah River Basin	0	10	1	0	0	0	0	1	0	4	0	0	0	86	0	1	0
15	Kern County	3	12	1	1	1	0	1	0	1	4	1	0	0	100	0	0	1
16	Madera	5	5	0	0	0	0	1	0	0	0	0	0	0	85	0	0	0
17	Merced	1	9	2	0	0	0	1	6	1	0	1	0	0	146	0	2	1
18	Mojave	0	1	1	0	0	0	0	0	0	1	0	0	0	13	0	0	0
19	Mokelumne/Amador/Calaveras	11	0	0	0	0	0	0	0	0	0	0	0	0	25	0	0	0
20	Monterey Peninsula, Carmel Bay, South Monterey Bay	1	0	1	0	0	0	0	2	0	0	0	0	0	6	0	0	0
21	North Coast	17	15	4	0	0	0	1	5	2	2	0	11	0	413	0	1	2
22	North Sacramento Valley Group	18	3	2	0	0	0	1	7	0	0	1	0	0	590	0	1	0
23	Pajaro River Watershed	4	4	1	0	0	0	0	2	0	0	0	0	0	89	0	0	0
24	Poso Creek	0	1	0	0	0	0	1	0	1	2	1	0	0	58	0	0	1
26	San Diego	3	20	1	0	0	0	0	4	1	0	2	13	6	205	0	1	1
27	San Francisco Bay Area	16	152	19	5	3	0	8	12	3	15	0	30	21	482	4	3	3
28	San Luis Obispo	4	0	4	0	0	0	0	2	0	1	0	0	0	124	0	2	0
29	Santa Ana Watershed Project Authority	19	18	1	2	0	0	0	1	3	1	0	0	0	252	3	1	2
30	Santa Barbara Countywide	1	0	3	0	0	0	0	3	3	2	1	0	0	117	0	1	1
31	Santa Cruz County	2	7	1	0	0	0	0	3	0	2	0	0	0	35	0	2	0
32	South Orange County Watershed Management Area	2	0	0	0	0	0	0	0	0	0	0	0	0	20	0	1	0
33	Southern Sierra	6	0	0	0	0	0	0	0	0	0	0	0	0	18	0	0	0
34	Tahoe – Sierra	2	0	1	0	0	0	0	0	1	0	0	0	0	16	0	0	1
35	Tule	0	1	0	0	0	0	0	0	0	0	0	0	0	54	0	0	0
36	Tuolumne – Stanislaus	16	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0
37	Upper Feather River Watershed	1	14	0	0	0	0	0	0	1	0	0	0	0	51	0	0	1
38	Upper Kings Basin Water Forum	8	7	1	0	0	0	0	1	0	0	0	0	0	162	0	0	0
39	Upper Pit River Watershed	33	0	0	0	0	0	0	0	0	1	0	0	0	67	0	1	0
40	Upper Sacramento – McCloud	0	0	1	0	0	0	0	0	0	0	1	0	0	15	0	0	0
41	Upper Santa Clara River	3	0	1	0	1	0	1	0	1	0	1	0	1	36	0	0	1
42	Upper Santa Margarita	0	0	1	1	0	0	0	0	0	0	0	0	0	16	0	0	0
43	Watersheds Coalition of Ventura County	0	0	1	0	1	0	0	2	0	0	0	2	1	108	0	0	0
44	Westside – San Joaquin	1	4	0	0	0	0	0	0	0	0	0	0	0	95	0	0	0
45	Westside (Yolo, Solano, Napa, Lake, Colusa)	3	8	1	0	0	0	1	3	1	1	3	9	0	178	1	2	1
46	Yuba County	2	2	0	0	0	0	0	0	1	1	0	0	0	39	0	0	0
47	East Stanislaus	1	0	1	0	0	0	0	0	0	1	0	0	0	22	0	0	0
48	Fremont Basin	0	0	0	0	0	0	0	0	0	1	0	0	0	5	0	0	0
49	Lahontan Basins	5	0	0	0	0	0	0	1	1	0	0	0	0	43	0	1	1
	Statewide Totals	244	407	52	10	8	0	30	66	26	42	18	179	32	4,481	15	21	21

Notes:
 (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
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APPENDIX H: ANALYSIS OF EXPOSURE TO FLOOD HAZARD, BY IRWM REGION

Table F-H-1. Analysis of Exposure to Flood Hazard – IRWM Regions, 100-year Floodplain

Analysis Region Number	Analysis Region Name	Transportation Segments Details			Sensitive Species							
		Railway Segments (Miles)	Light Rail Segments (Miles)	Highway Segments (Miles)	CA State Listing Endangered Plants ⁽²⁾	CA State Listing Endangered Animals ⁽²⁾	CA State Listing Threatened Plants ⁽²⁾	CA State Listing Threatened Animals ⁽²⁾	Federal Listing Endangered Plants ⁽²⁾	Federal Listing Endangered Animals ⁽²⁾	Federal Listing Threatened Plants ⁽²⁾	Federal Listing Threatened Animals ⁽²⁾
1	American River Basin	24	0	48	1	2	0	5	0	1	0	4
2	Antelope Valley	24	1	57	1	1	0	3	1	4	0	2
3	Anza Borrego Desert	0	0	0	1	2	0	2	0	3	1	0
4	Yosemite – Mariposa	0	0	14	1	2	1	4	0	0	1	2
5	Coachella Valley	6	0	45	0	5	0	4	2	7	0	3
6	Consumnes American Bear Yuba	0	0	12	2	3	0	5	2	0	0	3
7	East Contra Costa County	14	0	11	4	4	0	6	5	6	0	6
8	Eastern San Joaquin	35	6	63	3	3	0	4	2	3	1	5
9	Gateway Region	5	1	12	1	3	0	1	1	1	0	2
10	Greater Los Angeles County	15	4	36	7	5	1	2	7	10	3	5
11	Greater Monterey County	11	0	61	3	5	1	3	4	8	2	6
12	Imperial	60	0	15	2	3	0	5	0	4	1	1
13	Inyo – Mono	2	0	59	2	9	0	7	3	5	2	2
14	Kaweah River Basin	23	0	29	2	2	1	2	1	4	3	2
15	Kern County	61	0	118	5	7	0	6	4	7	1	5
16	Madera	8	0	30	4	5	1	4	3	3	3	4
17	Merced	44	0	64	5	2	0	4	2	5	3	4
18	Mojave	5	0	13	0	4	0	2	0	5	0	2
19	Mokelumne/Amador/Calaveras	3	0	13	1	2	0	1	1	0	1	4
20	Monterey Peninsula, Carmel Bay, South Monterey Bay	0	0	2	5	0	1	2	7	1	2	5
21	North Coast	125	0	205	18	9	3	10	19	9	1	8
22	North Sacramento Valley Group	57	0	166	7	3	1	9	5	3	3	5
23	Pajaro River Watershed	22	1	47	1	3	0	3	1	4	3	5
24	Poso Creek	26	0	44	2	2	0	3	3	3	1	1
26	San Diego	21	12	65	12	6	0	3	10	11	5	3
27	San Francisco Bay Area	136	24	201	17	8	5	6	29	16	3	11
28	San Luis Obispo	10	0	54	5	9	4	6	11	12	3	6
29	Santa Ana Watershed Project Authority	36	12	111	11	8	2	5	15	13	6	6
30	Santa Barbara Countywide	11	0	40	4	8	3	5	7	11	0	4
31	Santa Cruz County	7	0	20	5	3	0	2	6	6	2	3
32	South Orange County Watershed Management Area	4	2	8	1	2	2	0	0	4	3	1
33	Southern Sierra	0	0	4	3	3	2	5	1	4	2	4
34	Tahoe – Sierra	6	0	18	1	2	0	3	0	0	0	1
35	Tule	20	0	27	2	2	1	3	1	3	1	3
36	Tuolumne – Stanislaus	0	0	6	2	3	1	2	0	0	3	3
37	Upper Feather River Watershed	15	0	21	1	2	0	5	0	0	1	0
38	Upper Kings Basin Water Forum	23	0	49	5	3	0	4	3	4	4	4
39	Upper Pit River Watershed	18	0	27	2	4	0	6	1	2	1	0
40	Upper Sacramento – McCloud	23	0	6	0	3	0	4	0	0	0	1
41	Upper Santa Clara River	7	4	20	4	4	0	0	3	5	0	3
42	Upper Santa Margarita	0	0	2	1	1	0	1	2	3	0	1
43	Watersheds Coalition of Ventura County	11	7	56	3	7	0	2	3	7	2	5
44	Westside – San Joaquin	37	0	75	3	5	0	6	3	8	0	3
45	Westside (Yolo, Solano, Napa, Lake, Colusa)	51	0	146	8	6	2	5	8	6	1	8
46	Yuba County	18	0	20	1	2	0	4	1	1	0	3
47	East Stanislaus	1	0	14	4	4	0	2	2	6	2	3
48	Fremont Basin	8	0	6	1	0	0	2	0	0	0	2
49	Lahontan Basins	14	0	43	0	1	0	5	0	1	0	0
	Statewide Totals	1,046	74	2,205								

Notes:

- (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
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Table F-H-2. Analysis of Exposure to Flood Hazard – IRWM Regions, 500-year Floodplain

Analysis Region Number	Analysis Region Name	Total Area (Acres)	Exposed Area (Acres)	Percent Area Exposed	Population and Structures							Crops				
					Total Population	Exposed Population	Percent Population Exposed	Exposed Structures	Total Depreciated Replacement Value of Exposed Structures (\$1,000s)	Total Depreciated Replacement Value of Exposed Contents (\$1,000s)	Total Depreciated Replacement Value of Exposed Structures and Contents (\$1,000s)	Total Crops (Acres)	Exposed Crops (Acre)	Percent of Crops Exposed	Exposed Crops for Which Valuation was Computed (Acres)	Value of Exposed Crops (\$1,000s)
1	American River Basin	789,739	241,642	31	1,435,079	594,234	41	192,813	26,439,187	13,797,914	40,237,101	161,516	81,832	51	40,346	119,076
2	Antelope Valley	1,574,216	241,674	15	319,924	109,414	34	37,210	5,085,279	2,940,888	8,026,167	199,297	66,788	34	47,395	59,265
3	Anza Borrego Desert	881,447	31,333	4	7,707	2,231	29	2,002	176,692	106,397	283,089	4,027	3,601	89	2,931	20,821
4	Yosemite – Mariposa	934,965	17,346	2	17,134	249	1	181	29,018	16,981	45,999	3,640	98	3	0	-
5	Coachella Valley	907,216	149,217	16	319,667	205,974	64	88,002	11,945,887	7,219,171	19,165,058	65,461	25,529	39	16,787	93,899
6	Consumnes American Bear Yuba	2,719,754	34,048	1	287,436	4,261	1	2,128	314,629	195,375	510,004	69,700	945	1	96	227
7	East Contra Costa County	222,120	76,930	35	237,359	22,096	9	9,122	2,165,243	1,201,839	3,367,082	46,558	28,114	60	20,671	61,622
8	Eastern San Joaquin	618,446	300,441	49	491,314	362,931	74	117,930	17,019,929	10,625,723	27,645,652	392,885	213,912	54	162,127	634,675
9	Gateway Region	152,017	66,646	44	2,070,196	930,342	45	235,114	28,425,359	18,079,477	46,504,836	896	449	50	409	2,066
10	Greater Los Angeles County	1,317,199	137,592	10	9,513,425	1,641,373	17	406,733	55,079,176	35,639,721	90,718,897	28,816	2,647	9	1,219	5,559
11	Greater Monterey County	2,047,718	144,819	7	287,742	179,038	62	41,287	6,989,506	4,364,374	11,353,880	257,282	65,403	25	45,854	335,419
12	Imperial	1,989,532	133,310	7	135,189	820	1	446	36,050	25,674	61,724	491,830	26,153	5	23,655	65,422
13	Inyo – Mono	10,987,551	465,689	4	64,736	14,639	23	7,244	905,165	515,981	1,421,146	51,122	6,398	13	630	484
14	Kaweah River Basin	422,592	193,863	46	213,379	131,099	61	45,146	6,747,455	4,328,651	11,076,106	337,644	148,075	44	133,507	483,247
15	Kern County	3,642,515	449,695	12	591,791	67,992	11	22,892	2,524,620	1,679,785	4,204,405	961,170	238,774	25	177,714	543,917
16	Madera	1,378,193	207,925	15	123,492	23,034	19	5,672	691,640	441,354	1,132,994	357,632	155,703	44	107,592	247,664
17	Merced	607,125	235,914	39	147,365	60,845	41	18,641	2,248,976	1,451,725	3,700,701	318,906	158,636	50	129,738	257,782
18	Mojave	3,119,753	60,048	2	321,322	27,239	8	11,408	1,338,956	879,239	2,218,195	32,618	2,655	8	0	-
19	Mokelumne/Amador/Calaveras	941,439	38,028	4	62,548	2,870	5	1,438	201,231	124,952	326,183	10,973	3,689	34	2,229	5,454
20	Monterey Peninsula, Carmel Bay, South Monterey Bay	218,039	7,857	4	108,799	33,374	31	12,376	1,580,258	970,716	2,550,974	1,067	422	40	289	2,294
21	North Coast	12,443,337	412,808	3	636,670	43,422	7	22,567	2,507,157	1,648,801	4,155,958	427,312	112,154	26	29,474	87,734
22	North Sacramento Valley Group	6,042,111	1,069,802	18	535,947	177,046	33	67,410	7,973,623	4,554,993	12,528,616	1,185,059	697,483	59	295,826	837,718
23	Pajaro River Watershed	829,066	70,068	8	215,462	91,471	42	26,775	6,214,004	4,046,961	10,260,965	111,240	41,832	38	33,272	232,090
24	Poso Creek	597,672	151,864	25	106,744	12,062	11	3,341	327,583	234,103	561,686	414,102	90,341	22	59,388	167,534
26	San Diego	1,909,983	75,974	4	2,802,986	179,791	6	47,827	9,881,594	6,767,821	16,649,415	88,485	4,806	5	2,063	8,911
27	San Francisco Bay Area	2,892,901	560,971	19	6,066,110	1,041,398	17	322,671	79,274,668	54,523,259	133,797,927	142,908	44,027	31	17,106	23,941
28	San Luis Obispo	2,125,023	113,936	5	247,123	44,440	18	19,537	2,711,483	1,779,266	4,490,749	201,245	21,075	10	16,197	64,419
29	Santa Ana Watershed Project Authority	1,818,920	287,266	16	4,831,337	1,738,636	36	446,148	76,209,141	51,280,871	127,490,012	122,849	30,511	25	15,976	30,936
30	Santa Barbara Countywide	1,633,605	56,542	3	398,960	60,317	15	18,429	3,089,921	2,070,196	5,160,117	109,935	16,519	15	10,342	54,222
31	Santa Cruz County	240,758	9,417	4	235,276	27,840	12	9,236	1,786,894	1,319,700	3,106,594	11,311	3,024	27	2,073	29,573
32	South Orange County Watershed Management Area	167,600	6,026	4	469,254	15,834	3	5,633	1,266,045	838,669	2,104,714	19,455	1,050	5	0	-
33	Southern Sierra	3,953,798	37,052	1	26,491	1,315	5	855	109,516	63,504	173,020	10,243	330	3	116	646
34	Tahoe – Sierra	789,167	95,856	12	64,115	2,197	3	2,278	407,691	247,353	655,044	4,311	0	0	0	-
35	Tule	429,649	135,621	32	82,109	16,859	21	5,769	631,200	363,324	994,524	325,563	97,534	30	84,988	151,435
36	Tuolumne – Stanislaus	1,733,887	54,752	3	67,719	954	1	598	77,582	46,545	124,127	2,534	102	4	77	79
37	Upper Feather River Watershed	2,290,355	116,461	5	34,037	3,622	11	2,292	262,105	163,549	425,654	65,716	29,125	44	3,206	1,081
38	Upper Kings Basin Water Forum	982,912	217,440	22	781,397	239,783	31	68,741	8,490,172	5,420,571	13,910,743	735,187	145,428	20	117,282	408,271
39	Upper Pit River Watershed	2,891,797	147,104	5	16,426	2,253	14	1,377	107,302	71,444	178,746	144,393	58,131	40	12,395	9,518
40	Upper Sacramento – McCloud	1,296,748	8,791	1	13,915	1,509	11	1,038	37,667	22,972	60,639	2,755	330	12	0	-
41	Upper Santa Clara River	503,075	19,947	4	215,235	16,235	8	5,446	1,117,725	764,259	1,881,984	17,304	2,487	14	7	28
42	Upper Santa Margarita	405,807	8,182	2	150,538	5,176	3	2,098	604,057	496,644	1,100,701	17,990	961	5	402	452
43	Watersheds Coalition of Ventura County	1,139,806	87,015	8	719,824	202,665	28	58,285	10,079,448	6,645,952	16,725,400	109,376	38,254	35	32,218	379,346
44	Westside – San Joaquin	1,322,336	365,513	28	1,65,354	33,661	20	11,371	1,154,240	668,223	1,822,463	1,060,606	254,748	24	233,929	551,430
45	Westside (Yolo, Solano, Napa, Lake, Colusa)	1,911,465	448,047	23	347,511	105,898	30	39,169	6,603,203	4,003,732	10,606,935	562,057	275,635	49	227,940	509,609
46	Yuba County	430,799	96,963	23	61,432	41,413	67	16,676	1,631,015	858,382	2,489,397	93,260	55,752	60	27,492	112,906
47	East Stanislaus	563,741	75,981	13	434,056	23,360	5	5,917	674,408	406,887	1,081,295	330,432	51,309	16	41,359	67,098
48	Fremont Basin	513,994	35,483	7	8,995	1,902	21	1,176	118,640	69,383	188,023	9,258	1,473	16	0	-
49	Lahontan Basins	2,027,402	299,103	15	27,094	1,543	6	975	87,290	51,995	139,285	78,705	32,653	41	16,613	9,362
	Statewide Totals		8,298,004			8,546,659		2,471,421	393,379,630	254,035,296	647,414,926		3,336,900		2,192,929	6,677,231

Notes:
 (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

APPENDIX H: ANALYSIS OF EXPOSURE TO FLOOD HAZARD, BY IRWM REGION

Table F-H-2. Analysis of Exposure to Flood Hazard – IRWM Regions, 500-year Floodplain

Analysis Region Number	Analysis Region Name	Facilities Summary					DoD Facilities		Native American Tribal Lands		Sensitive Species		Essential facilities				
		Essential Facilities	High Potential Loss Facilities	Lifeline Utilities	Transportation Facilities	Transportation Segments (Miles)	Number of Department of Defense Facilities Exposed ⁽¹⁾	Department of Defense Facilities Exposed (Acres) ⁽¹⁾	Number of Native American Tribal Land Areas Exposed ⁽¹⁾	Native American Tribal Land Areas Exposed (Acres) ⁽¹⁾	All Sensitive Plants ⁽²⁾	All Sensitive Animals ⁽²⁾	Care Facilities	Emergency Centers	Fire Stations	Police Stations	Schools
1	American River Basin	250	55	23	456	395	3	1,697	0	0	22	39	9	0	6	4	231
2	Antelope Valley	52	2	3	36	154	1	1,725	0	0	25	31	0	1	1	2	48
3	Anza Borrego Desert	7	0	0	2	0	0	0	0	19	15	0	0	1	1	5	
4	Yosemite – Mariposa	0	4	0	7	14	0	0	0	35	39	0	0	0	0	0	
5	Coachella Valley	87	5	17	90	169	0	0	5	17,456	31	55	2	1	3	12	69
6	Consumnes American Bear Yuba	1	13	1	35	13	0	0	0	0	21	34	0	0	0	0	1
7	East Contra Costa County	6	2	0	36	32	1	91	0	0	32	45	0	0	0	0	6
8	Eastern San Joaquin	183	62	16	382	338	1	780	0	0	23	28	4	0	10	7	162
9	Gateway Region	335	253	19	405	305	1	105	0	0	15	19	10	1	2	14	308
10	Greater Los Angeles County	612	441	32	839	594	4	407	0	0	54	65	20	1	5	26	560
11	Greater Monterey County	89	7	4	121	137	3	12,847	0	0	64	57	3	0	10	8	68
12	Imperial	0	9	5	44	75	3	1,731	0	0	27	43	0	0	0	0	0
13	Inyo – Mono	8	6	2	26	83	1	6,454	1	10	70	73	0	0	1	0	7
14	Kaweah River Basin	69	13	6	187	141	0	0	0	13	21	1	0	2	8	58	
15	Kern County	38	18	5	133	206	3	11,956	0	0	50	63	2	0	3	4	29
16	Madera	18	10	2	85	45	0	0	0	15	31	0	0	1	1	16	
17	Merced	42	10	9	154	114	0	0	0	23	36	1	0	1	8	32	
18	Mojave	17	2	3	27	50	2	1,198	0	0	17	33	0	0	1	3	13
19	Mokelumne/Amador/Calaveras	4	11	0	25	17	0	0	1	3	12	23	1	0	1	1	1
20	Monterey Peninsula, Carmel Bay, South Monterey Bay	16	1	3	14	9	2	1,736	0	0	39	21	0	0	3	2	11
21	North Coast	54	35	13	463	355	0	0	4	5,748	203	117	1	0	11	7	35
22	North Sacramento Valley Group	136	25	17	763	380	1	3,844	2	587	75	66	2	1	10	7	116
23	Pajaro River Watershed	46	10	3	122	93	0	0	0	29	35	0	0	4	4	38	
24	Poso Creek	9	1	1	70	70	0	0	0	15	22	0	0	1	1	7	
26	San Diego	71	40	12	318	143	8	911	3	141	104	79	1	0	4	7	59
27	San Francisco Bay Area	466	303	58	1,023	710	8	2,914	0	0	170	111	10	2	29	39	386
28	San Luis Obispo	29	7	10	173	86	1	7	0	0	104	66	1	1	4	1	22
29	Santa Ana Watershed Project Authority	663	333	30	862	777	6	1,733	1	442	105	99	23	0	17	24	599
30	Santa Barbara Countywide	32	1	8	152	67	1	763	0	0	40	46	0	0	3	3	26
31	Santa Cruz County	20	9	5	47	29	0	0	0	0	39	30	0	0	3	7	10
32	South Orange County Watershed Management Area	12	2	0	28	21	0	0	0	0	23	27	0	0	1	1	10
33	Southern Sierra	1	6	0	21	5	3	9,813	1	4	41	44	0	0	0	0	1
34	Tahoe – Sierra	0	2	1	21	25	0	0	0	0	16	20	0	0	0	0	0
35	Tule	10	1	0	62	58	1	115	0	0	12	19	0	0	0	1	9
36	Tuolumne – Stanislaus	5	16	0	11	6	0	0	0	35	44	1	0	2	0	2	
37	Upper Feather River Watershed	10	15	0	56	40	0	0	1	409	42	20	1	0	3	1	5
38	Upper Kings Basin Water Forum	120	30	10	290	180	1	238	0	0	23	30	3	1	6	8	102
39	Upper Pit River Watershed	14	33	0	70	45	0	0	2	1,441	49	42	1	0	4	2	7
40	Upper Sacramento – McCloud	2	0	1	16	31	0	0	0	0	13	35	0	0	1	0	1
41	Upper Santa Clara River	4	3	3	43	32	0	0	0	0	16	32	0	0	0	0	4
42	Upper Santa Margarita	5	0	2	19	7	0	0	1	4	14	27	0	0	1	0	4
43	Watersheds Coalition of Ventura County	81	18	12	189	198	2	1,892	0	0	29	50	1	0	2	9	69
44	Westside – San Joaquin	32	5	0	105	130	1	3,321	0	0	28	43	1	0	5	5	21
45	Westside (Yolo, Solano, Napa, Lake, Colusa)	65	11	5	213	222	1	25	3	347	72	61	3	0	14	2	46
46	Yuba County	34	4	1	65	84	1	293	0	0	7	14	1	0	3	3	27
47	East Stanislaus	4	1	1	35	21	0	0	0	0	16	32	0	0	0	1	3
48	Fremont Basin	0	0	0	6	16	0	0	0	0	7	20	0	0	0	0	0
49	Lahontan Basins	3	5	1	48	57	1	56,674	1	9	42	32	0	0	1	0	2
	Statewide Totals	3,762	1,840	344	8,395	6,780							103	9	180	234	3,236

Notes:

- (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
- (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

Table F-H-2. Analysis of Exposure to Flood Hazard – IRWM Regions, 500-year Floodplain

Analysis Region Number	Analysis Region Name	High Potential Loss Facilities		Lifeline Utilities						Transportation Facilities Details								
		Dams	Hazardous Material Sites	Wastewater Facilities	Potable Water Facilities	Oil Facilities	Natural Gas Facilities	Electric Power Facilities	Communications Facilities	Runways	Railway Bridges	Rail Facilities	Port Facilities	Light Rail Facilities	Highway Bridges	Ferry Facilities	Bus Facilities	Airport Facilities
1	American River Basin	19	36	3	0	0	0	3	17	7	10	1	1	29	402	0	2	4
2	Antelope Valley	2	0	0	0	0	0	0	3	0	1	0	0	1	33	0	1	0
3	Anza Borrego Desert	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
4	Yosemite – Mariposa	4	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0
5	Coachella Valley	2	3	4	1	0	0	3	9	2	0	0	0	0	86	0	1	1
6	Consumnes American Bear Yuba	13	0	0	1	0	0	0	0	0	0	0	0	0	35	0	0	0
7	East Contra Costa County	0	2	0	0	0	0	0	0	0	1	1	4	0	27	3	0	0
8	Eastern San Joaquin	9	53	2	2	0	0	3	9	3	13	15	5	2	338	2	2	2
9	Gateway Region	0	253	2	1	9	0	5	2	0	23	2	27	4	346	3	0	0
10	Greater Los Angeles County	6	435	3	1	15	0	8	5	1	35	12	129	8	646	6	1	1
11	Greater Monterey County	2	5	3	0	0	0	0	1	3	3	1	0	0	110	0	3	1
12	Imperial	0	9	0	0	0	0	5	0	0	0	0	0	0	44	0	0	0
13	Inyo – Mono	6	0	0	0	0	0	1	1	3	0	0	0	0	22	0	0	1
14	Kaweah River Basin	0	13	2	0	0	0	0	4	2	4	0	0	0	178	0	1	2
15	Kern County	4	14	1	1	1	0	1	1	3	6	1	0	0	120	0	0	3
16	Madera	5	5	0	0	0	0	1	1	0	0	0	0	0	85	0	0	0
17	Merced	1	9	2	0	0	0	1	6	1	0	1	0	0	149	0	2	1
18	Mojave	0	2	1	0	0	1	0	1	0	1	1	0	0	25	0	0	0
19	Mokelumne/Amador/Calaveras	11	0	0	0	0	0	0	0	0	0	0	0	0	25	0	0	0
20	Monterey Peninsula, Carmel Bay, South Monterey Bay	1	0	1	0	0	0	0	2	0	0	0	0	0	14	0	0	0
21	North Coast	18	17	6	0	0	0	2	5	2	2	0	11	0	444	0	2	2
22	North Sacramento Valley Group	18	7	6	0	0	0	2	9	4	3	1	0	0	750	0	2	3
23	Pajaro River Watershed	4	6	1	0	0	0	0	2	0	0	0	0	2	119	0	1	0
24	Poso Creek	0	1	0	0	0	0	1	0	1	2	1	0	0	65	0	0	1
26	San Diego	4	36	2	0	0	1	2	7	1	0	2	14	11	286	0	3	1
27	San Francisco Bay Area	19	284	21	6	4	0	10	17	8	31	5	30	48	888	4	4	5
28	San Luis Obispo	4	3	6	1	0	0	1	2	0	2	1	0	0	164	0	6	0
29	Santa Ana Watershed Project Authority	22	311	7	4	1	0	6	12	6	22	5	0	7	805	3	10	4
30	Santa Barbara Countywide	1	0	3	0	0	0	1	4	4	2	1	0	0	140	0	3	2
31	Santa Cruz County	2	7	2	0	0	0	0	3	0	2	0	0	0	43	0	2	0
32	South Orange County Watershed Management Area	2	0	0	0	0	0	0	0	0	0	1	0	2	24	0	1	0
33	Southern Sierra	6	0	0	0	0	0	0	0	0	0	0	0	0	21	0	0	0
34	Tahoe – Sierra	2	0	1	0	0	0	0	0	1	0	0	0	0	19	0	0	1
35	Tule	0	1	0	0	0	0	0	0	0	0	0	0	0	62	0	0	0
36	Tuolumne – Stanislaus	16	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0
37	Upper Feather River Watershed	1	14	0	0	0	0	0	0	2	0	0	0	0	51	0	1	2
38	Upper Kings Basin Water Forum	8	22	3	0	0	0	0	7	2	4	1	0	0	280	0	2	1
39	Upper Pit River Watershed	33	0	0	0	0	0	0	0	0	1	0	0	0	68	0	1	0
40	Upper Sacramento – McCloud	0	0	1	0	0	0	0	0	0	0	1	0	0	15	0	0	0
41	Upper Santa Clara River	3	0	1	0	1	0	1	0	1	0	1	0	1	39	0	0	1
42	Upper Santa Margarita	0	0	1	1	0	0	0	0	0	0	0	0	0	19	0	0	0
43	Watersheds Coalition of Ventura County	1	17	3	1	1	2	2	3	2	0	3	12	2	167	0	1	2
44	Westside – San Joaquin	1	4	0	0	0	0	0	0	1	0	0	0	0	103	0	0	1
45	Westside (Yolo, Solano, Napa, Lake, Colusa)	3	8	1	0	0	0	1	3	1	1	3	9	0	194	2	2	1
46	Yuba County	2	2	1	0	0	0	0	0	2	8	0	0	0	53	0	1	1
47	East Stanislaus	1	0	1	0	0	0	0	0	1	1	0	0	0	33	0	0	0
48	Fremont Basin	0	0	0	0	0	0	0	0	0	1	0	0	0	5	0	0	0
49	Lahontan Basins	5	0	0	0	0	0	0	1	1	0	0	0	0	45	0	1	1
	Statewide Totals	261	1,579	91	20	32	4	60	137	66	179	61	242	117	7,605	23	56	46

Notes:
 (1) Many Department of Defense (DoD) facilities and Native American Tribal land areas have very large geographic footprints that may overlap more than one analysis region. As a result, a single DoD facility or Native American Tribal land area could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (2) Many Sensitive Species have multiple occurrences throughout the state and some have very large geographic footprints that may overlap more than one analysis region. As a result, a single Sensitive Species could be counted in more than one analysis region. Because of this the reported statewide totals will be less than the sum of the individual analyses regions.
 (3) The numbers in these tables are listed to provide the greatest level of detail possible in the appendix. The numbers listed in the body of the document have been rounded.

APPENDIX H: ANALYSIS OF EXPOSURE TO FLOOD HAZARD, BY IRWM REGION

Table F-H-2. Analysis of Exposure to Flood Hazard – IRWM Regions, 500-year Floodplain

Analysis Region Number	Analysis Region Name	Transportation Segments Details			Sensitive Species							
		Railway Segments (Miles)	Light Rail Segments (Miles)	Highway Segments (Miles)	CA State Listing Endangered Plants ⁽²⁾	CA State Listing Endangered Animals ⁽²⁾	CA State Listing Threatened Plants ⁽²⁾	CA State Listing Threatened Animals ⁽²⁾	Federal Listing Endangered Plants ⁽²⁾	Federal Listing Endangered Animals ⁽²⁾	Federal Listing Threatened Plants ⁽²⁾	Federal Listing Threatened Animals ⁽²⁾
1	American River Basin	80	16	299	1	2	0	5	0	1	0	4
2	Antelope Valley	32	2	119	1	1	0	3	1	4	0	2
3	Anza Borrego Desert	0	0	0	1	2	0	2	0	3	1	0
4	Yosemite – Mariposa	0	0	14	1	2	1	4	0	0	1	2
5	Coachella Valley	27	0	141	0	5	0	4	2	7	0	3
6	Consumnes American Bear Yuba	0	0	13	2	3	0	5	2	0	0	3
7	East Contra Costa County	17	0	15	4	4	0	6	5	6	0	6
8	Eastern San Joaquin	100	7	231	3	3	0	4	2	3	1	5
9	Gateway Region	55	16	234	2	4	0	1	2	2	0	2
10	Greater Los Angeles County	124	29	441	9	5	2	2	10	10	3	5
11	Greater Monterey County	30	0	107	3	5	1	3	4	8	2	6
12	Imperial	60	0	15	2	3	0	5	0	4	1	1
13	Inyo – Mono	2	0	81	2	9	0	7	3	5	2	2
14	Kaweah River Basin	45	0	95	2	2	1	3	1	4	3	3
15	Kern County	67	0	140	5	7	0	6	4	7	1	5
16	Madera	10	0	35	4	5	1	4	3	3	3	4
17	Merced	48	0	67	5	2	0	4	2	5	4	4
18	Mojave	22	0	28	0	4	0	2	0	5	0	2
19	Mokelumne/Amador/Calaveras	3	0	13	1	2	0	1	1	0	1	4
20	Monterey Peninsula, Carmel Bay, South Monterey Bay	1	0	8	5	0	1	2	7	1	2	5
21	North Coast	137	0	218	18	9	3	10	19	9	1	8
22	North Sacramento Valley Group	92	0	288	7	3	1	9	5	3	3	5
23	Pajaro River Watershed	28	5	59	1	3	0	3	3	4	3	5
24	Poso Creek	26	0	44	2	2	0	3	3	3	1	1
26	San Diego	29	21	93	12	6	0	3	10	11	5	3
27	San Francisco Bay Area	216	60	434	18	8	5	6	30	16	3	11
28	San Luis Obispo	16	0	70	5	9	4	6	11	12	3	6
29	Santa Ana Watershed Project Authority	153	47	577	11	8	2	5	15	13	6	6
30	Santa Barbara Countywide	15	0	52	4	8	3	5	7	11	0	4
31	Santa Cruz County	7	0	22	5	3	0	2	6	6	2	3
32	South Orange County Watershed Management Area	6	5	10	1	2	2	0	0	4	3	1
33	Southern Sierra	0	0	5	3	3	2	5	1	4	2	4
34	Tahoe – Sierra	6	0	19	1	2	0	3	0	0	0	1
35	Tule	26	0	32	2	2	1	3	1	3	1	3
36	Tuolumne – Stanislaus	0	0	6	2	3	1	2	0	0	3	3
37	Upper Feather River Watershed	17	0	23	1	2	0	5	0	0	1	0
38	Upper Kings Basin Water Forum	45	0	136	5	3	0	4	3	4	4	4
39	Upper Pit River Watershed	18	0	27	2	4	0	6	1	2	1	0
40	Upper Sacramento – McCloud	25	0	6	0	3	0	4	0	0	0	1
41	Upper Santa Clara River	7	5	20	4	4	0	0	3	5	0	3
42	Upper Santa Margarita	0	0	7	1	1	0	1	2	3	0	1
43	Watersheds Coalition of Ventura County	38	18	142	3	7	0	2	3	7	2	5
44	Westside – San Joaquin	42	0	88	3	5	0	6	3	8	0	3
45	Westside (Yolo, Solano, Napa, Lake, Colusa)	52	0	170	8	6	2	5	8	6	1	8
46	Yuba County	40	0	44	1	2	0	4	1	1	0	3
47	East Stanislaus	3	0	18	4	4	0	2	2	6	2	3
48	Fremont Basin	8	0	8	1	0	0	2	0	0	0	2
49	Lahontan Basins	14	0	43	0	1	0	5	0	1	0	0
	Statewide Totals	1,789	231	4,760								

Notes:

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Appendix I: Glossary

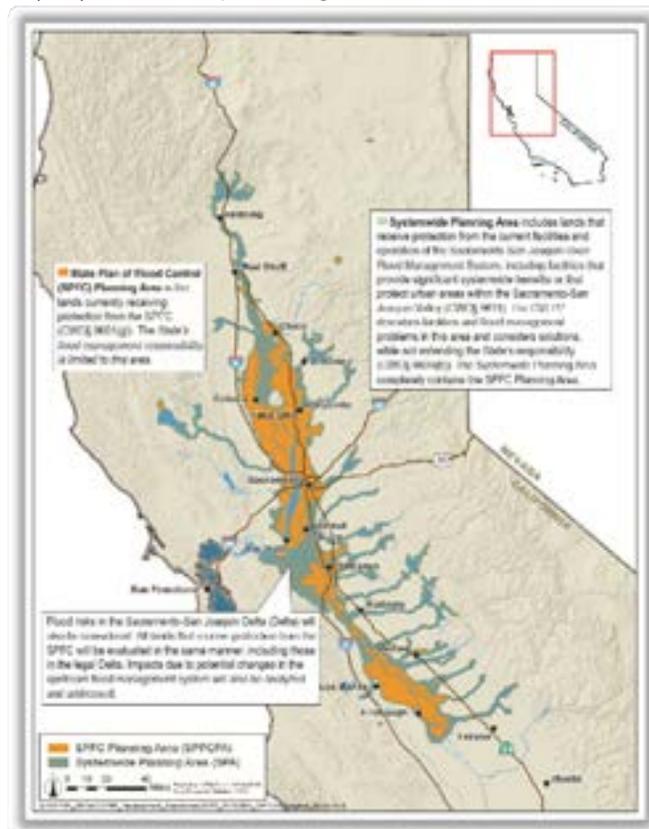
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Appendix I: Glossary

2-year event	50 percent chance of exceedance in a given year
20-year event	5 percent chance of exceedance in a given year
50-year event	2 percent chance of exceedance in a given year
100-year event	(also known as a base flood) 1 percent chance of exceedance in a given year
200-year event	0.5 percent chance of exceedance in a given year
500-year event	0.2 percent chance of exceedance in a given year
A-Zone	The A-zone is an area of special flood hazard without water surface elevations determined. Flood insurance is mandatory in areas with a 1 percent annual chance of flooding.
Actions	Informed by tools and guided by plans, actions include activities that fund, manage, and oversee implementation of the projects. Actions also include fostering innovation and developing agency alignment to improve flood management policies, planning, governance, and investments. Actions based on IWM principles and thorough planning efforts will provide the most benefit to Californians.
Alluvial Fan Flooding	Flows of shallow depth and high velocity, with sediment transport, along uncertain flow paths on the surface and at the toe of alluvial fans. Typically caused by localized rainstorms, often with snowmelt.
Atmospheric River	A weather pattern that forms a narrow corridor of concentrated moisture in the atmosphere that drops torrential rains as it passes over land.
Base Flood Elevation	The elevation of surface water resulting from a flood that has a 1 percent chance of equaling or exceeding that level in any given year. The base flood elevation is shown on Flood Insurance Rate Maps for zones AE, AH, A1-A30, AR, AR/A, AR/AE, AR/A1–A30, AR/AH, AR/AO, V1–V30, and VE.
Benefit-to-Cost (B/C) Analysis	The B/C analysis is a formalized procedure for estimating the benefits that a project is expected to generate and the costs necessary to produce the project, and then comparing project alternatives. When planning for flood protection, there will be construction and implementation costs, as well as flood risk reduction benefits.
California Data Exchange Center (CDEC)	The CDEC provides a centralized location to store and process real-time hydrologic information gathered from different contributors statewide.
California Water Plan (CWP)	The CWP provides a collaborative planning framework for elected officials, agencies, tribes, water and resource managers, businesses, academia, stakeholders, and the public to develop findings and recommendations and make informed decisions for California's water future. The plan, updated every 5 years, presents the status and trends of California's water-dependent natural resources; water supplies; and agricultural, urban, and environmental water demands for a range of plausible future scenarios. The CWP also evaluates different combinations of regional and statewide resource management strategies to reduce water demand, increase water supply, reduce flood risk, improve water quality, and enhance environmental and resource stewardship.

APPENDIX I: GLOSSARY

Capacity Exceedance	Capacity exceedance implies exceedance of the capacity of a water conveyance, storage facility, or damage-reduction measure. This includes levee or reservoir capacity exceeded before overtopping, channel capacity exceedance, or rise of water above the level of raised structures.
Central Valley Flood Management Planning (CVFMP) Program	CVFMP is one program within FloodSAFE California, a multi-year initiative led and managed by the California Department of Water Resources. Primary products of the CVFMP Program are the State Plan of Flood Control Descriptive Document, the State Plan of Flood Control History Document, the Flood Control System Status Report, and the Central Valley Flood Protection Plan.
Central Valley Flood Protection Plan (CVFPP)	The CVFPP is a State plan that will describe the challenges, opportunities, and a vision for improving flood management in the context of Integrated Water Management in the Central Valley. The CVFPP will document the current and future risks associated with flooding and recommend improvements to the Federal-State flood protection system to reduce the occurrence of major flooding and the consequence of flood damage that could result. The plan was submitted to the Central Valley Flood Protection Board in January 2012 for adoption by July and will be updated every 5 years. The planning area for the CVFPP is shown below.



Central Valley Flood Protection Plan (CVFPP) Floodplain	The floodplains used for the SFMP risk characterization within portions the Central Valley are the CVFPP No Action depth grid floodplains with the addition of the flood bypasses. SFMP received the draft CVFPP floodplains on October 4, 2011. The CVFPP floodplains were based on the floodplains of the <i>Sacramento and San Joaquin River Basins Comprehensive Study</i> (USACE, 2002) and modified by the CVFPP to reflect current hydrologic, hydraulic, and geotechnical information. For the SFMP analysis, the Yolo, East Side, Upper Sacramento, Mariposa, Sutter, and Tisdale bypasses were added to the CVFPP floodplains.
Coastal Flooding	Inundation at locations normally above the level of high tide. Often caused by storm surges occurring with high tides. Impacts include property damage and beach erosion.
Community	A political entity that has the authority to adopt and enforce floodplain ordinances for the area under its jurisdiction.
Consequences	Consequences are the quantitative measures of loss, such as direct tangible monetary loss or number of lives lost, when water inundates the people and property exposed.
Critical Facilities	Essential, high potential loss, lifeline, and transportation facilities, as defined by HAZUS-point shapefiles
Debris Flow Flooding	Flows made up of water, liquefied mud, and debris. Can form and accelerate quickly, reach high velocities, and travel great distances. Commonly caused by heavy localized rainfall on hillsides denuded of vegetation.
Economic Risk	Economic risk is the likelihood of flood damage to an identified area under a given climate and land use condition.
Engineered Structure Failure Flooding	Flooding as a result of dam failure or levee failure presents the potential of catastrophic impact, depending on amount of water impounded and location of populated areas downstream.
Essential Facilities	Care facilities, emergency centers, fire stations, police stations, and schools, as defined by HAZUS-point shapefiles.
Expected Annual Damage (EAD)	EAD is the value that measures the severity of flood loss in any given year. EAD does not mean that this amount of damage will occur in any particular year, but rather that over a long period, the average damages will tend to approach that amount.
Exposure	Exposure is a description of who or what is in harm's way.
Fetch	The distance along open water or land over which the wind blows, or the distance waves can traverse unobstructed.
Flash Flooding	Quickly forming floods with high-velocity flows. Often caused by stationary or slow-moving storms. Typically occurs on steep slopes and impermeable surfaces, and in areas adjacent to local streams and creeks.

Flood Emergency Response Information System (FERIS)	FERIS is a geospatial information system that allows for integration of existing California Data Exchange Center (CDEC) systems with real-time data collection and data exchange.
Flood Hazard	The Federal Emergency Management Agency defines a flood hazard as any flood event or condition with the potential to cause fatalities, injuries, property damage, infrastructure damage, agricultural loss, environmental damage, business interruption, or other loss.
Flood Insurance Rate Map (FIRM)	A FIRM is the official map of a community on which the Federal Emergency Management Agency has delineated the Special Flood Hazard Areas, the Base Flood Elevations, and the risk premium zones applicable to the community.
Flood Management	See <i>flood risk management</i> . Generally, the terms <i>flood management</i> and <i>flood risk management</i> are used interchangeably throughout the Flood Future Report.
Flood Risk	<p>Flood risk is the likelihood of consequence of inundation within an identified area, given a specified climate condition, land use condition, and flood management system (existing or planned) in place. The consequence may be direct or indirect economic cost, loss of life, environmental impact, or other specified measure of flood effect. Flood risk is a function of the following components:</p> <ul style="list-style-type: none"> • Loading, which is the frequency and magnitude of flooding • Performance of flood management measures • Exposure and vulnerability, which are the relationship between the flood hazard (rising or flowing water) and its effect on life loss, property, and/or environmental resources • Consequence <p>Therefore, flood management actions may reduce risk by changing loading, performance, exposure, vulnerability, or consequence.</p>
Flood Risk Management	<p>Flood risk management seeks to reduce flood risks by managing the floodwaters to reduce the probability of flooding (including by levees and dams) and by managing the floodplains to reduce the consequences of flooding. Flood risk management requires integrating and synchronizing programs at various levels of government designed to reduce flood risk.</p> <p>Source: USACE, Institute for Water Resources, a dynamic resource at http://nfrmp.us/frm_terminology.cfm#def17 (accessed March 11, 2013).</p>
Floodplain	The extent of the flood hazard for a 100-year (1 percent chance of exceedance in a given year) or 500-year (0.2 percent chance of exceedance in a given year) event, as determined by CVFPP, FEMA, or USACE.

FloodSAFE California	FloodSAFE California refers to the California Department of Water Resources multi-faceted initiative launched in 2006 to improve public safety through flood management in the context of Integrated Water Management and to reduce potential flood damages in areas of the state with the highest risk. Although led at the State level and initially funded by bond money from Propositions 1E and 84, FloodSAFE implementation relies on the cooperation and assistance of Federal partners, Tribal entities, local sponsors, and other stakeholders. The FloodSAFE vision is a sustainable system of flood management with an IWM approach and emergency response throughout California that improves public safety, protects and enhances environmental and cultural resources, and supports economic growth by reducing the probability of destructive floods, promoting beneficial floodplain processes, and lowering the damages caused by flooding.
Hazard Mitigation Plan (HMP)	A community's long-term strategy to reduce disaster losses and break the cycle of disaster damage, reconstruction, and repeated damage is described in an HMP. Results are accomplished through hazard mitigation, which is any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards.
Hazards United States (HAZUS) – Federal Emergency Management Agency (FEMA)	FEMA has developed this Geographic Information System-based U.S. multihazard assessment software, which contains a Flood Loss Estimation Model with flood hazard analysis and flood loss estimation modules for riverine and coastal analyses. The flood hazard analysis module uses characteristics such as frequency, discharge, and ground elevation to estimate flood depth, flood elevation, and flow velocity.
High Potential Loss Facility	Facilities such as dams and hazardous material sites, as defined by HAZUS-point shapefiles.
Hydrologic Engineering Center-Flood Damage Analysis (HEC-FDA)	The U.S. Army Corps of Engineers, Hydrologic Engineering Center (HEC) Flood Damage Analysis (FDA) model is designed to perform risk analysis as part of a flood risk study. The approach explicitly incorporates descriptions of uncertainty of key parameters and functions into project benefit and performance analyses.
Hydrologic Unit Code 8 (HUC8)	A Hydrologic Unit Code 8 is a watershed address consisting of a name and a number (for example, Lower James watershed, 02080206). The 8-digit number is a Hydrologic Unit Code or HUC. The Hydrologic Unit system is a standardized watershed classification system developed by the U.S. Geological Survey in the mid-1970s. Hydrologic units are watershed boundaries organized in a nested hierarchy by size. They range in size from regions to the smaller cataloging units, which are roughly equivalent to local watersheds.
Impact Area	Impact area is a term used for convenience to describe a geographic area for which risk is assessed.
Improvement Project	A Project that will improve or add facilities to the State Plan of Flood Control to increase levels of flood protection for urban areas. Funding for improvement projects is authorized by California Public Resources Code § 5096.821(b).

Integrated Regional Water Management (IRWM)	IRWM promotes the coordinated development and management of water, land, and related resources to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.
Integrated Water Management (IWM)	IWM is a strategic approach to planning and implementation that combines specific flood management, water supply, and ecosystem actions to deliver multiple benefits. IWM relies on blending knowledge from a variety of disciplines, including engineering, economics, environmental sciences, public policy, and public information. This approach also promotes system flexibility and resiliency to accommodate changing conditions such as regional preferences, ecosystem needs, climate change, flood or drought events, and financing capabilities.
Life-Safety Risk	Life-safety risk represents the number of lives in jeopardy in an identified portion of the state, considering a given climate and land use condition, with a specified plan of flood management in place.
Loading	In the context of flood risk, loading describes the likelihood of occurrence of conditions that lead to loss of life or damage to property if the conditions are not controlled or the consequence is not managed. Loading commonly is described with a discharge-frequency function, which identifies the probability that discharge at a specified location will exceed a specified value.
Local Maintaining Agency (LMA)	LMAs include reclamation districts, State maintaining agencies, improvement districts, and individual districts like American River Flood Control District or Lower San Joaquin Levee District.
Long-Term Average (or Expected) Annual Inundation Damage	See Expected Annual Damage (EAD).
Maintenance and Inspection	Actions required for the proper care and efficient operation of various project elements. These actions may be combined or separated, as best suits the particular project. The guidance for proper maintenance and inspection are contained in ER 1130-2-303. Adaptations needed to satisfy conditions not covered in the ER are encouraged. Outlines of the maintenance and inspection records are to be maintained and available for Government inspection. Government inspections will be performed in consultation with the project’s sponsor. (Source: ER 1110-2-401)
Management Action	A management action is a specific structural or nonstructural strategy, action, or tactic that contributes to stated goals and addresses identified problems. Management actions could range from potential policy or institutional changes to operational and physical changes to the flood management system. Management actions are broad (not location-specific), and they vary in their level of detail.

Modification	Project modifications include changes in project operation, changes in real estate interests, the physical change of a project feature, addition of project features, or changes in the purposes of a project. (Source ER 1165-2-119)
National Flood Insurance Program (NFIP)	The NFIP is a Federal program created by the U.S. Congress to mitigate future flood losses nationwide. The NFIP requires local communities to enforce building and zoning ordinances in exchange for access to affordable, Federally backed, flood insurance protection for property owners.
Operation	Actions that are necessary for the safe and efficient functioning of a project to produce the benefits set forth in the project authorization. The operational requirements for nonreservoir projects are to be presented as operation plans covering essentially the who, what, where, when, and how of the various project operations. An outline of operation records is to be maintained and available for inspection. The operation of reservoirs, covered in water control manuals shall be separate from this operation and maintenance manual. (Source: ER 1110-2-401)
Operation, Maintenance, Repair, Rehabilitation, and Replacement (OMRR&R)	For Federally funded projects the definition of operation and maintenance (O&M) includes the local entity's financial obligation to operate, maintain, repair, rehabilitate, and replace (OMRR&R) the implemented project. OMRR&R is a non-Federal responsibility when local, regional and/or State entities partner on a Federal project. References to O&M provided in the Flood Future Report include OMRR&R responsibilities when the project is a Federal/non-Federal partnership.
Performance	Performance refers to the effectiveness of flood or floodplain management measures.
Plans	Plans utilize information provided by tools, as well as input from stakeholders to guide the development of the flood management strategies. Plans take into account near- and long-term actions, as well as any additional considerations, such as multiple benefits, environmental concerns, overall water management, and climate change, to formulate long-lasting resilient strategies. Plans include identifying and evaluating possible multibenefit projects and the most effective means of implementing projects using an integrated, collaborative approach.
Project Management Plan	A project management plan defines how a project is executed, monitored, and controlled. It is used to define the approach, scope, and delivery of a project.
Public Resources Code Section 75003.5	The people of California further find and declare that the growth in population of the State and the impacts of climate change pose significant challenges. These challenges must be addressed through careful planning and through improvements in land use and water management that both reduce contributions to global warming and improve the adaptability of our water and flood control systems. Improvements include better integration of water supply, water quality, flood control and ecosystem protection, as well greater water use efficiency and conservation to reduce energy consumption.

Public Resources Code Section 75032(a)	Public Resources Code Section 75032(a) provides funds for: The inspection and evaluation of the integrity and capability of existing flood control project facilities and the development of an economically viable flood control rehabilitation plan.
Reconstruction	Reconstruction consists of addressing the major performance deficiencies caused by a long-term degradation of the foundation, construction materials, and engineering systems that have exceeded their expected service lives and the resulting inability of the project to perform its authorized project functions. (Source: USACE, Program Guidance Letter on Reconstruction, August 16, 2005, http://planning.usace.army.mil/toolbox/library/MemosandLetters/reconstruction.pdf)
Rehabilitation	Rehabilitation refers to a set of activities necessary to bring a deteriorated project back to its original condition. (Source: ER 1110-2-401)
Repair	Repair refers to those activities of a routine nature that maintain the project in a well kept condition. (Source: ER 1110-2-401)
Replacement	Replacement covers those activities taken when a worn-out element or portion of a project is replaced. (Source: ER 1110-2-401)
Residual Risk	Residual risk is the likelihood of damage or other adverse consequence remaining after flood management actions are taken.
Results	Robust tools, thorough planning, and integrated actions deliver results that provide value to California’s residents, environment, and economy. Results are tracked using performance measures and sustainability indicators that help improve investment performance and increase flood management benefits.
Severe Repetitive Loss (SRL)	Any NFIP-insured residential property that has met at least one of the following paid flood loss criteria since 1978, regardless of ownership: <ul style="list-style-type: none"> • Four or more separate claim payments of more than \$5,000 each (including building and contents payments) • Two or more separate claim payments (building payments only) where the total of the payments exceeds the current value of the property <p>In either case, two of the claim payments must have occurred within 10 years of each other. Multiple losses at the same location within 10 days of each other are counted as one loss, with the payment amounts added together. The loss history includes all ownership of the property since 1978 or since the building’s construction if built after 1978.</p>
Slow Rise Flooding	Slow rise flooding occurs as a gradual inundation as waterways or lakes overflow their banks. Most often caused by heavy precipitation, especially with heavy snowmelt. Includes riverine flooding in deep floodplains and ponding of water in low-lying urban areas, as well as gradual flooding in areas adjacent to local streams and creeks.
Special Flood Hazard Area (SFHA)	SFHAs are areas subject to inundation from a flood that has a 1 percent chance of being equaled or exceeded in a given year.

State Plan of Flood Control (SPFC)	Collectively, the facilities, lands, programs, conditions, and mode of operation and maintenance for the State-Federal flood protection system in the Central Valley. This area is shown in the figure provided under CVFPP definition.
Tools	Tools include data, models, and assessments needed for decision making in all aspects of flood management. DWR continues enhancing and sharing technical resources (tools) across all programs and projects. This includes flood, environmental, and water management data gathering, modeling, and the technical aspects of flood readiness and emergency response. Technical and modeling information help inform thorough and thoughtful planning, along with accurate design of flood management facilities.
Transportation Facility	Runways, railway bridges, rail facilities, port facilities, light-rail facilities, highway bridges, ferry facilities, bus facilities, and airport facilities, as defined by HAZUS-point shapefiles.
Tsunami Flooding	Tsunami flooding occurs as a result of high-speed ocean waves triggered by mass movement that displaces a large volume of water. Causes include earthquakes and underwater landslides. Impact on land depends on wave height and inundation area.
Utilities	Wastewater, potable water, oil, natural gas, electric power, and communications facilities, as defined by HAZUS-point shapefiles.
V-Zone	The V-zone is an area inundated by 1 percent annual chance (100-year) flooding with velocity hazard (wave action); no base flood elevations have been determined.
Vulnerability	Vulnerability is the susceptibility to loss or damage of people and property exposed to the flood hazard.
Water Data Library (WDL)	The WDL is a searchable Geographic Information System (GIS) interface on the Internet. WDL allows users to access information about monitoring gauges, groundwater data, and water quality.

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The complete report, *California's Flood Future: Recommendations for Managing the State's Flood Risk*, including technical attachments and other supporting information is available for review at:

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