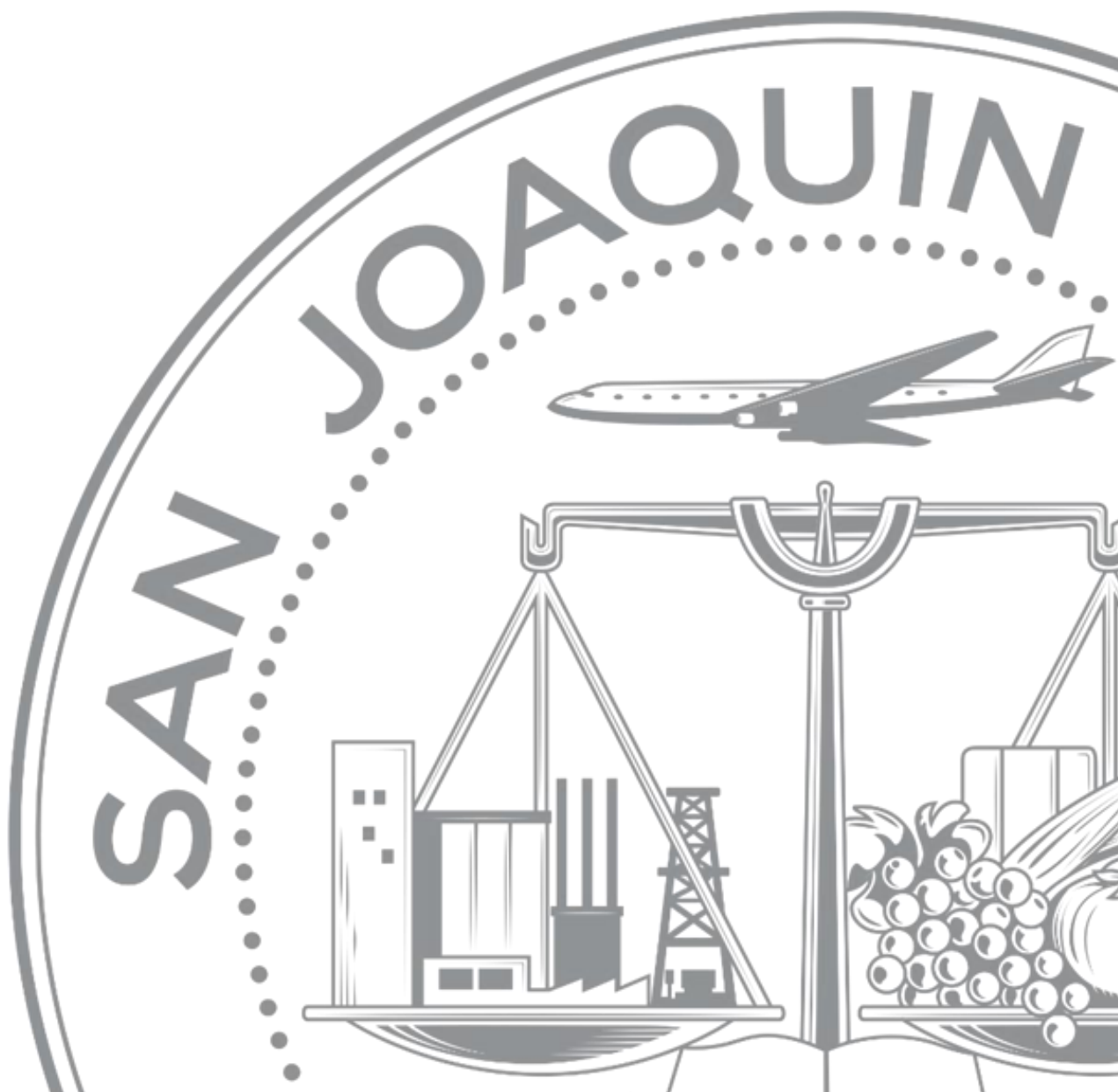


Flood and Dam Failure Hazard Annex

April 2023



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Letter of Promulgation

This Flood and Dam Failure Annex addresses San Joaquin County's planned response to extraordinary emergency situations associated with flood or dam issues and is an extension of the San Joaquin County Emergency Operation Plan. This plan assigns tasks and responsibilities to county departments and various agencies and organizations specifying their roles in an event caused by floods and dam emergencies.

To execute this plan effectively and mobilize available resources, all implementing personnel must have knowledge of the procedures set forth in this plan and be trained in its use. Departments and agencies having roles and responsibilities established by this plan are expected to develop Standard Operating Guidelines and Procedures based on the provisions of this plan.

This plan was developed using generally accepted emergency management principles and practices. Incorporated are planning elements derived from Federal Emergency Management Agency and California's emergency planning documents. Modifications to this plan may be made under the direction of the Director of Emergency Operations. Changes to this plan will be relayed digitally to all members of the distribution list. Adoption will occur following the established maintenance schedule; however, the plan may be modified in the interim without prior approval and formal adoption. This plan will be updated and reviewed at least every three years or following a major event.

This plan has been developed pursuant to the California Emergency Services Act and conforms to the Standardized Emergency Management System (SEMS). This plan replaces previous annexes of the same title.

This annex will be formally promulgated by the chairperson of the Disaster Council of San Joaquin County at the next regularly scheduled meeting. The Disaster Council is empowered by County Ordinance to review and approve emergency and mutual aid plans.



Robert Rickman
Chair, San Joaquin County Disaster Council
Director of Emergency Services


Date

Plan Administration

San Joaquin County Office of Emergency Services Director of Emergency Operations will coordinate review, revise, and re-promulgate this annex at least once every three years or when key changes occur, such as lessons learned from exercises or real events. Changes may be made by the San Joaquin County Director of Emergency Operations without formal Disaster Council’s approval. This document supersedes all previous flood and dam failure appendices and annexes for the Operational Area.

Record of Changes

All updates and revisions to this annex will be tracked and recorded in the following table. This process will ensure that the most recent version of the plan is disseminated and implemented by emergency response personnel.

Date	Change No.	Change made by (name/title)	Summary of Changes

Plan Distribution

San Joaquin County Office of Emergency Services maintains the San Joaquin County Emergency Operations Plan in the San Joaquin County Emergency Operations Center Library. This document, upon signature, will become an annex to the Emergency Operations Plan. The primary method of the Plan distribution is electronic, with a copy available in the Advanced File Library of the San Joaquin County web based information sharing database, WebEOC, and the Office of Emergency Services web page.

Information about Maps

The maps displayed in this plan are from state and local sources. These maps are provided for general information only. In the event of an event/emergency, San Joaquin County Office of Emergency Services will ensure the accuracy of the maps used and will update the plan accordingly.

TABLE OF CONTENTS

1 Introduction7
 1.1 Introduction 7
 1.2 Purpose 7
 1.3 Scope 7
 2 Situation Overview9
 2.1 Hazard Analysis..... 9
 2.2 Planning Assumptions11
 2.3 Flood Zones.....12
 2.4 Local Maintaining Agencies / Reclamation Districts12
 3 Concept of Operations15
 3.1 Command and Coordination15
 3.2 Notifications:15
 3.3 Roles and Responsibilities16
 3.4 Organizational Responsibilities17
 3.5 Situational Awareness19
 3.6 Capabilities20
 4 Slow Rise River Flooding21
 4.1 Slow Rise Flooding River Stages and Typical Activities21
 5 Dam Failure22
 5.1 Dam Failures and Typical Activities22
 6 Training and Exercises23
 7 Acronyms/Definitions24
 8 Authorities/References.....26
 Attachment A: Flood Incident Planning and ESF Response Matrix27
 Attachment B: Position Checklists.....32
 Attachment C: Local Maintaining Agencies33
 Attachment D: Maps34
 Attachment E: River Stage Definitions44

List of Figures

Figure 1 San Joaquin River Basin (San Joaquin County in Red).....10
 Figure 2 Reclamation District Map13
 Figure 3 SJAFCA Flood Protection District Boundaries.....14
 Figure 4 Special Flood Hazard Areas.....35
 Figure 5 Potential Dam Inundation36
 Figure 6 Reclamation Districts37
 Figure 7 Northwest County Reclamation Districts38
 Figure 8 West-Central County Reclamation Districts.....39
 Figure 9 Southwestern County Reclamation Districts.....40
 Figure 10 SJAFCA Flood Control District map41
 Figure 11 San Joaquin Valley Flood Control System.....42
 Figure 12 Flood Control Projects and Agencies43

List of Tables

Table 1 Responsibilities by Emergency Support Function18
 Table 2 Information Resources19
 Table 3 San Joaquin County Rivers and Streams21
 Table 4 Dams with potential to affect San Joaquin County22

1 INTRODUCTION

1.1 INTRODUCTION

This annex addresses four distinct types of flooding events that San Joaquin County (County) may experience. The first type is localized or flash flooding due to heavy rains. The second is slow rise flooding, which is the rising of the rivers, caused by heavy and continued rains. The rain occurs at a rate, which results in maximum outflows from upstream dams and heavy inflow from tributary streams, increasing stress on the integrity of the levee system. The third is the failure of one or more levees in the county, which can be caused by overtopping, breach or erosion. Finally, this annex will address flooding caused by catastrophic failure of one or more dams in the region.

This annex provides information and guidance for emergency operations during a flood disaster or emergency. Additionally, this annex identifies operational concepts focused on potential large-scale disasters, which can generate unique situations requiring unusual emergency responses that pose a major threat to life and property.

This plan accomplishes the following:

- (1) Identifies the emergency management organization required to mitigate any significant flood emergency or disaster affecting County.
- (2) Identifies the policies, responsibilities and procedures required to protect the health and safety of the communities in the County, as well as public and private property.
- (3) Establishes the operational concepts and procedures associated with field response to emergencies, the County Emergency Operations Center (EOC) activities and the recovery process.

This annex will be activated when the San Joaquin County Office of Emergency Services (OES) receives reports of potential flooding or failure of one or more dams affecting the Operational Area (OA).

1.2 PURPOSE

This annex is intended as a guide for the coordination of agencies and organizations during incidents of flooding or dam failure within the County. Floods or dam failures can threaten lives and property requiring coordination between response organizations for effective operations. General emergency management principles should be applied to any flood or dam failure incident. This annex provides additional information specific to these types of incidents. The annex is designed as a guide for coordinated community-wide process to facilitate mitigation, preparedness, response, and recovery to flooding. This annex is available for use by County departments and agencies, cities, businesses, non-governmental organizations and residents.

1.3 SCOPE

An emergency response to flooding or a dam failure may require the resources of the entire Operational Area, Region, State of California and Federal government. In order to meet the response objectives of this annex, both public and private agencies are assigned specific tasks.

The Federal Emergency Management Agency (FEMA), defines a flood as a general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties from:

- Overflow of inland or tidal waters; or
- Unusual and rapid accumulation or run-off of surface waters from any source; or
- Mudflow or;

- Collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that results in a flood as defined above.

General assignments are as follows:

- County support of Flooding Events within incorporated city limits will be based on the principle of self-help. Cities will be responsible for utilizing all available local resources along with initiating mutual aid and cooperative assistance agreements before requesting assistance from the County.
- The Office of Emergency Services (OES) is responsible for general support of the county's response and will ensure proper notifications are made upon activation of this annex. OES will activate the EOC to support operations, planning, logistics, and finance as the situation dictates. Further information on EOC activation is covered in the Emergency Support Function (ESF)-05 Management Annex.
- County departments and other community organizations identified in the annex are responsible for checking the welfare and/or providing services to those members of the vulnerable population that fall under their programs.

Community Based Organizations (CBOs) and private non-profits (PNPs) organized in the Central Valley Regional Volunteer Organizations Active in Disaster (VOAD) may be requested to assist in response operations.

2 SITUATION OVERVIEW

2.1 HAZARD ANALYSIS

Historically, in San Joaquin County, floods (e.g., urban, small stream, and riverine) have been the most frequent and damaging events. The County has a very low inland elevation and a very flat drainage basin for the San Joaquin River and its numerous tributaries. Valley flooding can be detrimental to urban communities, as well as the agricultural industry and economy in the County. In addition, 34% of the County is threatened by flooding from both high-water events due to heavy precipitation and/or upstream reservoir releases, as well as tidally influenced events.

In the late 1800s to mid-1960s, flood management agencies, (reclamation districts, flood control districts, and US Army Corps of Engineers) built a network of levees to direct water away from people and property. Since 1914, these “project levees” have been regulated by the Central Valley Flood Protection Board (CVFPB). The Division of Flood Management works with CVFPB and Local Maintaining Agencies (LMA) to prevent loss of life, reduce property damage caused by floods and to assist in recovery efforts following any natural disaster.

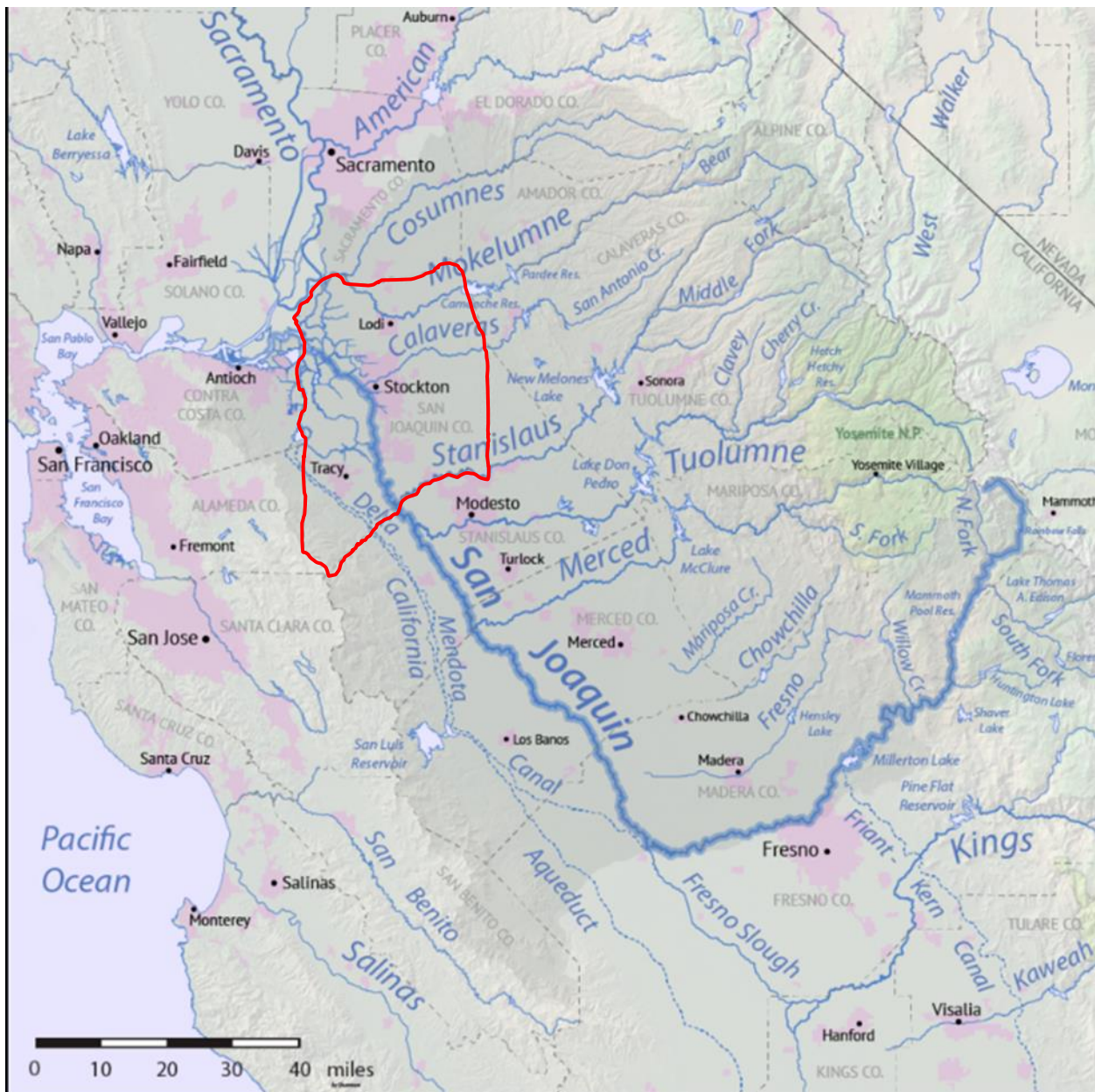
The Delta is fed fresh water in the north, through the Sacramento, American, Mokelumne, and Consumes rivers; from the east through the Calaveras River; from the south through the Stanislaus, Tuolumne, Merced and San Joaquin rivers. Figure 1 shows the intricate river and tributary system that bring water from the mountainous counties east of San Joaquin, ultimately to the ocean.

The San Joaquin River is the main route for seagoing vessels moving container and bulk items to and from the inland Port of Stockton, which lies on the west side of the downtown area of Stockton.

The amount of water flowing through the hydraulic system in the Delta, as well as the County is determined by environmental conditions, natural events, and manmade infrastructure. An extensive system of dams, levees, pumping plants, and flood bypass channels, have been established to protect the Delta regions from flooding. These facilities control floodwaters by regulating the amount of water passing through a particular area. Additionally, much of the water flowing through the county is a major water supply for the San Francisco Bay area and farming and agriculture communities to the south, making the delta a critical resource.

Floodwater levels are closely monitored by local, state, and federal agencies. Historic flooding events have generally defined the area limits of water intrusion into the countryside. As water levels approach those limits, a coordinated warning system assists local agencies and the public in general to prepare for evacuation and begin flood fighting efforts, to preserve lives and limit property damage.

Figure 1 San Joaquin River Basin (San Joaquin County in Red)



Localized or Riverine Flooding

Floods can be local, short-lived events that happen suddenly, sometimes with little or no warning. Localized flooding is caused by intense storms that produce more runoff than an area can store or a stream can carry within its normal channel. Small streams are subject to flash floods (very rapid increases in runoff), which may last from a few minutes to a few hours. On larger streams, floods usually last from several hours to a few days. A series of storms might keep a river above flood stage (the water level at which a river overflows its banks) for several weeks. In urban and developed areas, street drains clogged with leaves or other debris may not drain correctly and cause localized flooding from a heavy downpour. Additionally power outages associated with intense storms, can shut down drainage pumps, allowing water to back up and potentially flood neighborhoods.

Dam Failure

Dam failure is the collapse or failure of an impoundment that causes significant downstream flooding. Flooding of the area below the dam may occur as the result of structural failure of the dam, overtopping, or a seiche (oscillations of the water body). The principle consequences of dam failure are loss of life, injury, and significant downstream property damage.

The collapse or structural failure of a dam may be caused by either natural or human events such as an explosion, a severe storm, earthquake, or internal erosion (piping caused by embankment and foundation leakage). Seismic activity may also cause inundation by the action of a seismically-induced wave that overtops the dam without causing failure of the dam, but significant flooding downstream. Landslides flowing into the reservoir may also cause dams to fail or overtop.

There are several dams which directly or indirectly have the potential to cause flooding in the County either individually or combined. Dams located outside County boundaries such as Camanche, Pardee, Farmington, New Hogan, Don Pedro, Friant, San Luis, New Exchequer, and New Melones that help to control floodwaters. However, occasionally a combination of frequent storms, extended heavy rain, and melting snow can result in floodwaters that may exceed normal high-water boundaries and cause damage. These scenarios require a coordinated effort on behalf of the reservoirs to manage releases. It's important to note that the Reservoir Operators/Owners maintain Emergency Action Plans (EAP) that are reviewed on an annual basis with partner agencies that may be impacted by a dam failure. Copies of these plans are also maintained by OES for planning and response purposes.

A catastrophic failure of any these dams could have a significant impact on the County. Complete devastation could occur in and along the river bottoms along with river levels rising several feet above normal. The potential for elevated river levels is from the dam to a point where the river widens near the ocean. River levels could be greater than those during the worst recorded floods.

Levee failure:

In the early 1900s, many natural wetlands in the San Joaquin Valley were drained for agricultural use. A system of levees was introduced to prevent water from flooding the natural wetlands. Levees can be damaged by water saturation (boils), overtopping and erosion, land subsidence, earthquake, burrowing animals, general lack of maintenance or damages caused by large vessels using the waterways.

Weather impacts:

The County precipitation season is October through April annually, when 94 percent of the annual rainfall is received. The heaviest months for rainfall are typically December, January, February and March. The average rainfall is 17.85 inches. Although snow does not generally fall in the County, it does accumulate in the Sierra Nevada Mountain Range to the east, where run-off as a result of rapid snowmelt can cause river levels to rise and stress the levee system beyond its capabilities. This can result in a slow-rise flooding event. [Section 5](#) provides guidelines on slow-rise river flooding response.

2.2 PLANNING ASSUMPTIONS

The following provides a general list of assumptions taken during the development of this annex.

- All incidents are local.
- Flash flooding and dam failures may occur without warning.
- Flooding emergencies, dam related or not, may occur due to heavy rains, melting snow, or weakened levee infrastructure or spring run-off.

- Flood emergencies or disasters may pose a serious threat to public health, property, the environment, and the local economy.
- Flood warning is provided through a variety of means, including National Weather Service (NWS) announcements, National Oceanic & Atmospheric Administration (NOAA) radio, standard radio and television Emergency Alert System (EAS) bulletins, and directly from the dam operators.
- Major flood emergencies may require a multi-jurisdictional response with cities within the County and California Governor's Office of Emergency Services (Cal OES).
- In flood emergencies, Standardized Emergency Management System (SEMS) and National Incident Management System (NIMS) will be implemented by all responding agencies.
- The County is primarily responsible for emergency operations in the unincorporated areas and will commit appropriate available resources to save lives, minimize injury to persons and the environment, and minimize property damage.
- In the event of a major flood that requires the extensive commitment of county personnel and resources, ongoing efforts shall be made to provide for the continuation of essential county services.
- Heavy use of telephones by the public may impact the ability of public safety agencies to communicate and to warn the public.
- The County's planning strategies will incorporate access and functional needs populations.

2.3 FLOOD ZONES

To determine the impact of flooding, planners use a risk-based approach utilizing the FEMA Federal Insurance Rate Maps (FIRM) for both 100 and 500-year flood plains. A 100-year flood event is a flood that has a one percent chance of occurring in any given year, while a 500-year flood has a 0.2 percent chance of occurring in a given year.

The County has more than 6,600 properties that are located within flood plains identified by FEMA as high risk for flooding. These properties are identified in the Special Flood Hazard Area (SFHA) on FEMA maps. There are nearly 50,000 citizens living in areas of SFHA. These maps may be viewed online at <http://www.sjmap.org/nhd/>.

There are also several key transportation corridors listed in the SFHA including three interstates (I-5, I-205 and I-580), seven highways (Highway's 4, 12, 26, 88, 99, 120, and 132) and several highly used county roadways.

The Office of Emergency Services maintains a comprehensive assortment of electronic and hard copies of maps that show district boundaries, levees, supply depots, locations of previous levee breaches, and areas of historic seepage or erosion, and characteristics of waterways controlled by district levees. Maps that do not contain sensitive information may be accessed on line from at <http://www.sjmap.org/nhd/>.

It is important to note that areas outside of these pre-identified flood zones may also be susceptible to flooding events.

2.4 LOCAL MAINTAINING AGENCIES / RECLAMATION DISTRICTS

Many levees in the County are monitored and maintained by 52 Reclamation Districts (RD) or Local Maintaining Agencies (LMA). LMAs or RDs have the primary day-to-day responsibility for the integrity, improvement, operations, and maintenance of their flood control infrastructure, such as levels and water supply facilities in the County. These districts have elected officials who ensure the levees are patrolled to maintain their safety and upkeep. A map of these districts is

represented in figure 2 below. This map may also be viewed on [San Joaquin County GIS Map Server \(sjimap.org\)](http://www.sjimap.org). A table of LMAs is listed in Appendix B. A copy of each LMA's Emergency Operations Plan may be viewed from the OES plan webpage, at <http://www.sjimap.org/oesfcm/>.

LMAs have identified trigger actions that will be taken by District personnel, as conditions affecting the levees and drainage system warrant such action in their EOP. In the field, the LMA will fill the role of Incident Commander for a flood fight within their jurisdiction. As the levee event progresses to a level where it poses a threat to life and property, the LMA Incident Commander will contact the appropriate law enforcement agency and emergency manager at the local level (City or County) for support.

The San Joaquin Area Flood Control Agency (SJAFCA) is a Joint Powers Authority that was created in 1995 between the City of Stockton, San Joaquin County, and the San Joaquin County Flood Control and Water Conservation District for the purpose of addressing flood protection for the City of Stockton and surrounding County area (see figure 3).

Figure 2 Reclamation District Map

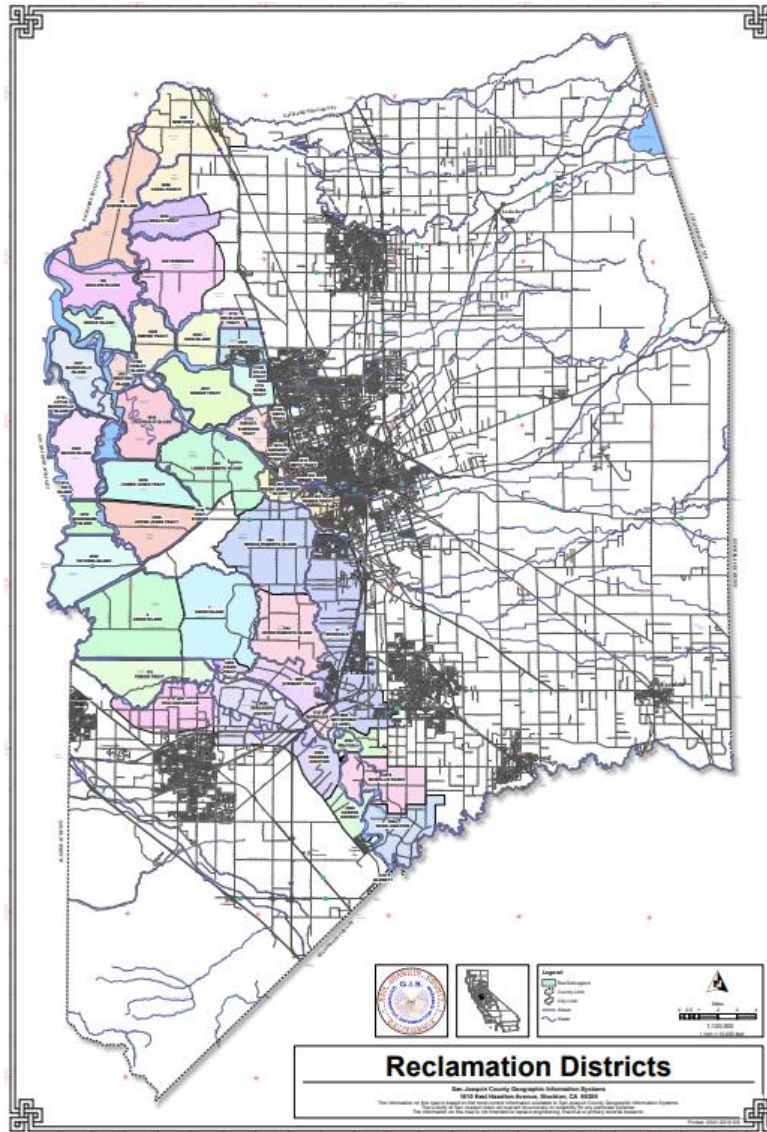
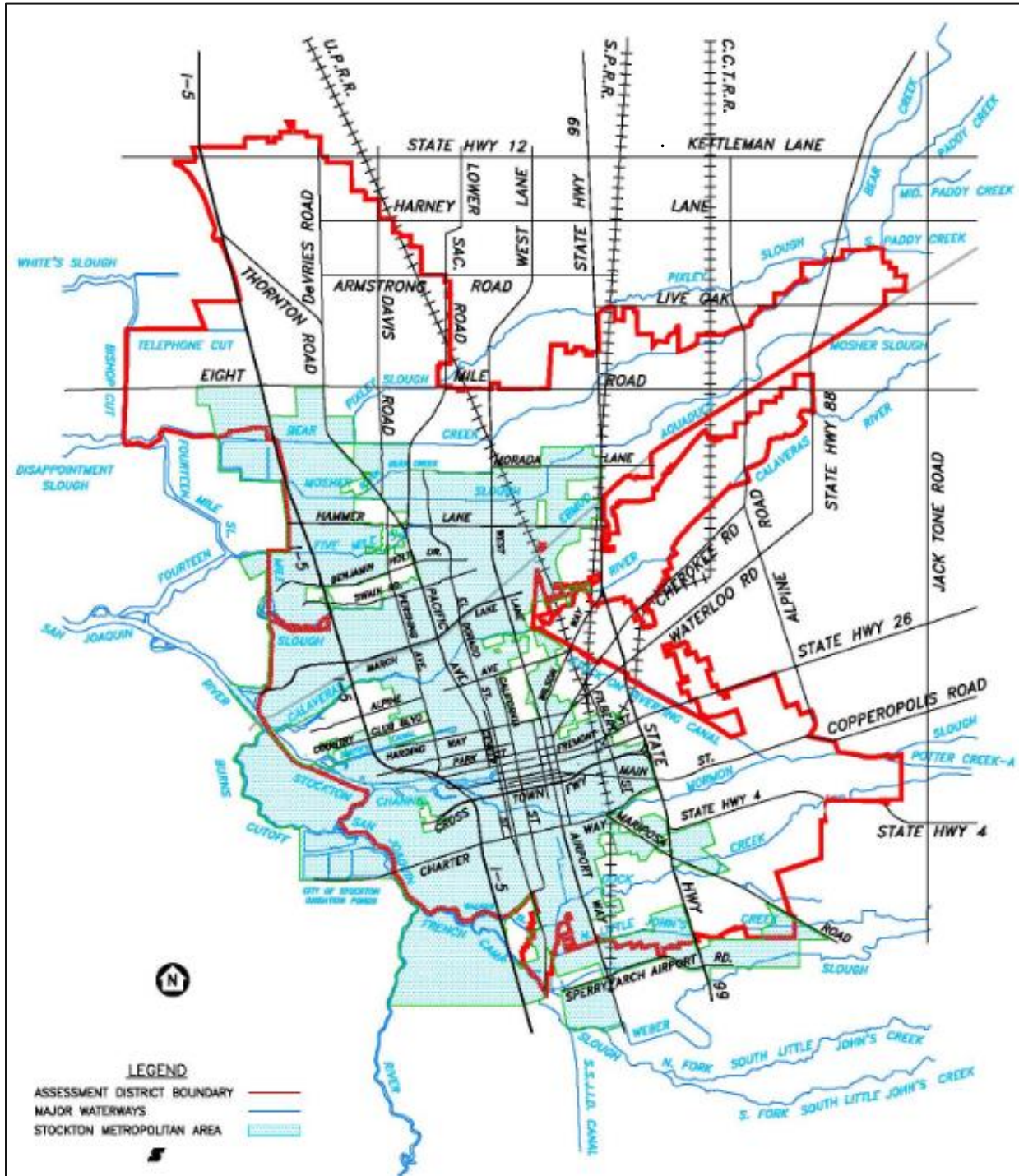


Figure 3 SJAFCA Flood Protection District Boundaries



3 CONCEPT OF OPERATIONS

As required by SEMS and NIMS, all mutual aid resources will be coordinated through the Operational Area EOC with the exception of law enforcement, medical, and fire mutual aid. These mutual aid systems will use the established protocol as specified in the San Joaquin County Operational Area Emergency Operations Plan. The following will provide support to the County and Operational Area as per standard operating procedures and agreements and as provided in other emergencies.

- County and OA Emergency Operations Centers (OA EOC) will activate to support major incidents involving dam or reservoir failure.
- County Department Operations Centers will activate and operate according to their emergency plans and procedures.
- Mutual Aid operates according to the Operational Area Agreement, the State Master Mutual Aid Agreement and the specific terms of each sector specific agreement.

3.1 COMMAND AND COORDINATION

Levee Incidents: LMAs have identified trigger actions that will be taken by District personnel, as conditions affecting the levees and drainage system warrant such action in their EOP. In the field, the LMA will fill the role of Incident Commander for a flood fight in their jurisdiction. As the levee event progresses to a level where it poses a threat to life and property, the LMA Incident Commander will reach out to the appropriate law enforcement agency and emergency manager at the local level (City or County) for support.

Coordination of public or media information releases will be through the Public Information Officer or Joint Information System. The management function of SEMS will determine the information to be released and the appropriate timeframe for such releases. See also the [ESF-15 Public Information Annex](#). The Alert and Warning Annex contains more details on how public alert and warning of general public is conducted during any emergency or threatened emergency.

3.2 NOTIFICATIONS:

Advanced notifications of high-water events with the potential of effecting the hydraulic systems throughout the County are shared via email as weather alerts by NWS. These include the following:

Flood Watch: issued when conditions are favorable for flooding. It does not mean flooding will occur, but it is possible.

Flood Advisory: Be Aware - A Flood Advisory is issued when flooding is not expected to be bad enough to issue a warning. However, it may cause significant inconvenience, and if caution is not exercised, it could lead to situations that may threaten life and/or property.

Flood Warning: issued when flooding is imminent or occurring.

Flash Flood Watch: issued when conditions are favorable for flash flooding. It does not mean that flash flooding will occur, but it is *possible*.

Flash Flood Warning: issued when a flash flood is imminent or occurring. If you are in a flood prone area move immediately to high ground. A flash flood is a sudden violent flood that can take from minutes to hours to develop. It is even possible to experience a flash flood in areas not immediately receiving rain.

3.2.1 Public Alerting and Warning:

The County uses SJReady Alerts, through Everbridge, to send messages via FEMA's Integrated Public Alerting and Warning System (IPAWS). OES will process the alert at the direction of the Sheriff's Department or law enforcement entity with jurisdiction. The Alert and Warning Annex outlines the processes in more detail.

The Joint Information System (JIS) will be activated as soon as practical during an emergency. The Public Information Officer (PIO) will coordinate with activated PIOs within the OA for public information releases. News release procedures will be agreed upon, and established for the OA, the Unified Command, and other interested parties prior to any public release of information. The need to activate a Joint Information Center (JIC) to assist in public information coordination will be determined by the EOC Director and PIO. More information is located in the ESF-15 Public Information Annex.

3.3 ROLES AND RESPONSIBILITIES

All responses in the County are managed in accordance with the SEMS. The field level consists of LMAs and first responders and is the incident level where emergency response begins. Local government includes the LMA's or the cities. The County is charged with the lead role as the OA and is the primary point of contact for the Region and the State. The EOP further outlines the SEMS organization levels.

When streams are forecast to rise above certain pre-determined stages (water surface elevations), or flow rates, Flood Operations Center (FOC) personnel make high water notification calls to appropriate local flood system LMAs or RDs. During these elevated threat periods, Local Maintaining Agency plans dictate they are required to patrol their levees on a 24-hour basis, as long as the water level is at or above monitor stage and until no threat remains to the levees. LMA's are responsible for organizing levee patrols and may have caches of material and equipment available for a flood-fight.

The LMA has Incident Command authority for their jurisdiction during a flood response. The LMA is responsible for having established communication protocols for informing OES of and potential, threatened, or actual flood emergencies. In the event that local resources are, or expected to be, exhausted, the jurisdiction, or LMA, shall request assistance through the Operational Area. See [Appendix B](#) for a list of LMAs and RDs.

Agencies with law enforcement authority, (i.e., Sheriff's Department, for the unincorporated areas of the county or local police department of the city having jurisdiction), are responsible for public safety and will assist in coordinating immediate rescue activities, evacuations, and provide for general security for impacted areas. They are also responsible for identifying and relating evacuation routes and conducting door-to-door notifications to residents that may not have electronic means for receiving alerts. Areas within the Delta have pre-established evacuation and staging planning maps that are maintained on a password protected web-based server. Public Neighborhood Evacuations Maps can be found at [San Joaquin County GIS Map Server \(sjmap.org\)](https://www.sjmap.org).

The DWR¹ monitors operations through their Flood Operations Center (FOC). OES will coordinate with DWR FOC, on behalf of the affected area, and request flood-fight assistance or technical assistance when needed. DWR also operates California Data Exchange Center (CDEC), which

¹ For more detailed information on DWR's role in flood preparedness and technical assistance, their webpage is: <https://water.ca.gov/What-We-Do/Flood-Preparedness>

monitors rainfall, stream flow, river stages, and reservoir stages and releases across the State. The information is available to the public at <http://cdec.water.ca.gov/>.

Federal agencies work to support emergency incident responses and provide aid in disasters on a larger scale. In a flood event, the US Army Corps of Engineers and US Bureau of Reclamation have responsibilities for federal activities in California. The USACE is responsible for overseeing reservoir releases and supporting the State's efforts in maintaining levees and structures associated with the State Plan of Flood Control. USACE can support emergency work as requested by the State under Public Law 84-99 and the Stafford Act, which includes levee flood fighting. All management activities, mutual aid, and resource allocations will be within the framework of NIMS.

Non-Profit or Volunteer Organizations

Non-profit organizations will be involved in flood response planning and response, particularly when shelter services are necessary. The Central Valley Regional Voluntary Organizations Active in Disasters (VOAD), which include nonprofit and faith-based volunteer organizations, will work through the EOC to identify and respond to community needs. A Volunteer Coordinator may be appointed within the EOC that will coordinate with volunteer organizations of anticipated needs prior to the event to allow for preparation time. The [ESF-17 Volunteer and Donations Management Annex](#) describes this process.

Private Sector Entities

Private sector coordination generally occurs through the ESF plans within the County EOC. For example, ESF-8 is the liaison with hospitals and nursing homes concerning problems caused by flooding; and ESF-12 coordinates with power, natural gas, and gasoline companies concerning outage reporting and restoration estimates. An OA level liaison is typically appointed into the EOC to coordinate information between these organizations.

3.4 ORGANIZATIONAL RESPONSIBILITIES

The EOC may be activated in support of operations in the unincorporated area of the County or at the request of a local Jurisdiction (City or Special District) as outlined in the County EOP. The following responsibilities and organizational charts depict the standard activation levels and responsibilities of staff in the EOC in a flood incident or emergency.

3.4.1 Organization and Assignment of Responsibilities

The County EOC will activate the appropriate Emergency Support Functions (ESF's), based on the threat or actual event. A flood or dam failure event will require multi-jurisdiction, multi-agency and multi-discipline coordination at all levels, including first responders.

Areas of special concern will be:

- Protection of life, property and the environment
- Alerting and warning the public, including people with disabilities and those with access and/or functional needs.
- Evacuation of the impacted population, including people with disabilities and those with access and/or functional needs.
- Identification of applicable Dam EAP and distribute to UC and EOC staff.
- Determination of impacts to critical infrastructure downstream.
- Providing care and shelter of large numbers of people.
- Coordination of search and rescue operations, including water rescues.

- Monitoring and evaluation of environmental and public health concerns.
- Debris removal.
- Animal care issues, including care, shelter and possible public health concerns.
- Behavioral health operations and support.
- Record keeping and monitoring.

3.4.2 Emergency Support Functions

All responses in the County are managed in accordance with the SEMS. The field level consists of LMAs and first responders and is the incident level where emergency response begins. Local government includes the cities. The County is charged with the lead role as the OA and is the primary point of contact for the Region and the State. The EOP further outlines the SEMS organization levels.

Table 1 Responsibilities by Emergency Support Function

ESF	Lead Agency	Specific Responsibilities
#1- Transportation		Transportation of people and materials into and out of affected areas
#2- Communications	ISD	Monitor Communications equipment and backup generation
#3- Public Works and Engineering	Public Works	Restoration of roadways, debris management, and localized flooding response within the unincorporated areas of San Joaquin County. Assists Reclamation Districts for Flood Fight in local levee system areas when available)
#4 Firefighting	San Joaquin County Fire Districts	Assist with distribution of public Information, prepares for possible response assets within unincorporated areas, including water and swift-water rescues.
#5- Emergency Management	OES	Coordination, communication, and emergency management
#6- Mass Care and Shelter	HSA /SO /BHS	Care and shelter coordination with volunteers, non-profit organizations, and vulnerable populations' representatives (works with partners for pet/animal mass care issues). Outreach to homeless and unsheltered population
#7- Logistics	OES/ Purchasing	Locates and processes resource requests, tracks resources, and provides logistical support for response
#8- Public Health and Medical	HCS/ EHD	Public health emergency preparedness and response and monitoring of the Emergency Medical System influx. Support for water contamination issues.
#12- Energy	OES/PG&E	Coordination of gas and electrical restoration throughout the unincorporated areas
#13- Law Enforcement	SO	Assist in closing roadways, evacuations, and rescues as available. Provide information sharing and reverse 911 services.
#15- External Affairs	OES/CAO	Public information coordination with all involved departments, agencies, PIOs and 2-1-1 on public messages through postings, press releases, contact with the media and emergency notification

#17- Volunteer and Donation Management	VOAD	Assist ESF #6 with shelter operations and needs of the evacuated populations.
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3.5 SITUATIONAL AWARENESS

The following table lists key information needed and possible sources when preparing for and conducting operations during flood and dam failure events.

Table 2 Information Resources

Information Type	Source
Weather Forecasts / Warnings	National Weather Service, Sacramento https://www.weather.gov/
River/Stream Levels and forecasted levels	National Weather Service, Sacramento https://water.weather.gov/ahps California Data Exchange Center https://cdec.water.ca.gov/index.html California Department of Water Resources https://water.ca.gov/
Pre-recorded River and Reservoir Conditions 800-942-5530 (24-hour toll-free) 916-574-0954 (24-hour) Main Menu – Press 4 for recorded conditions menu, then press 3 for San Joaquin River Basin	Flood Emergency Response Information Exchange http://ferix.water.ca.gov/webapp/home.jsp Reservoir Levels http://cdec.water.ca.gov/reservoir_map.html
Local Conditions / Observations	National Weather Service, Sacramento https://www.weather.gov/ Street and Road Departments (CalTrans) http://quickmap.dot.ca.gov/ Law Enforcement (CHP) http://cad.chp.ca.gov/
Dam Conditions	Dam Owner/Operator Private Engineers
Dam Inundation Areas	Dam Emergency Action Plan Dam Owner/Operator GIS Specialists

Dam owners/operators maintain a current Emergency Action Plan (EAP) and will promptly make necessary notifications. A current hard copy binder of each EAP is stored in the EOC Dam EAP library. During an actual emergency or disaster, the release of information raises significant issues

regarding information sharing and dissemination. Security and confidentiality concerns must be weighed against operational needs and public interest.

OES will host scheduled briefings for EOC staff and other emergency response personnel and will coordinate briefing times, reporting approaches, and news releases as much as possible with other SEMS levels.

3.5.1 WebEOC

The OA EOC will utilize WebEOC for recording incident information from the initial onset of an event. This will be to record activity logs, situational assessments, information sharing, development of Incident Action Plans, documenting LMA Board Status, Road Closures, and resource requesting and deployment tracking. EOC Standard Operations Plans detail these processes.

3.6 CAPABILITIES

The OA has seven (7) flood-fight containers pre-staged throughout the Delta areas. Each heavy-duty container has enough supplies to provide up to one-mile of wave wash protection or to assist with mitigating damaged levee areas. These supplies include sandbags, stakes, hand tools, twine, plastic sheeting and other materials. In accordance with SEMS, when the jurisdiction of authority depletes their available resources, they may request from the next level available mutual aid resources to assist with the event. The DWR also has similar containers and supplies available at its Weber Avenue warehouse in Stockton. Upon request, DWR will also provide technical staff to assist with flood-fight efforts by reviewing and evaluating projects prior to the start of work. These items are available from DWR through standard Mutual Aid resource requesting processes through the Logistics Section at the OA EOC.

The California Conservation Corps may also be requested through a Memorandum of Understanding for flood-fighting as needed at the request of the jurisdiction with responsibility. This is an assistance-by-hire agency, and as such, requires proper requests by the jurisdiction responsible for payment.

4 SLOW RISE RIVER FLOODING

The following information is provided as a guideline for Emergency Operations to be used within the procedural structure of SEMS and ICS and not intended to be a substitute for the decisions of the EOC Director. The information presented here is based on information provided by Local, State, and Federal Agencies as well as experiences and lessons learned from previous events/emergencies.

4.1 SLOW RISE FLOODING RIVER STAGES AND TYPICAL ACTIVITIES

Table 3 summarizes the rivers/streams and their applicable river levels for each stage. In addition, the historical high water levels are also listed with reference to the key monitoring stations that can potentially impact the County. Attachment D provides additional information on river stages and definitions for leveed and non-leveed streams.

Table 3 San Joaquin County Rivers and Streams

<u>River/Stream</u>	<u>Forecast Point</u>	<u>Top of Levee Elevation (From Sea Level)</u>	<u>Water Level Stages of Impact</u>			<u>Historical High Level (Unimpeded)</u>
			<u>Monitor</u>	<u>Flood</u>	<u>Danger</u>	
Cosumnes River	Michigan Bar	168 ft.	7 ft.	12 ft.	N/A	18.54 ft.
Cosumnes River	McConnell	5 ft.	40 ft.	46 ft.	N/A	48.5 ft.
Mokelumne River	Benson’s Ferry	16 ft.	12 ft.	17 ft.	N/A	21.69 ft.
Calaveras River	Mormon Slough @ Bellotta	130 ft.	16 ft.	22 ft.	23 ft.	18.48 ft.
Stanislaus River	Orange Blossom Bridge	117 ft.	13 ft.	16 ft.	N/A	13.95 ft.
Tuolumne River	Modesto	90 ft.	50.5 ft.	55 ft.	N/A	69.19 ft.
Merced River	Pohono Bridge near Yosemite	3,862 ft.	N/A	10 ft.	N/A	23.43 ft.
Merced River	Near Stevinson	82 ft.	67 ft.	71 ft.	N/A	73.81 ft.
San Joaquin River	Near Newman	90 ft.	63 ft.	69.4 ft.	70.4 ft.	66.26 ft.
San Joaquin River	Near Patterson	97 ft.	48 ft.	54.7 ft.	55.7 ft.	51.71 ft.
San Joaquin River	Vernalis	35 ft.	24.5 ft.	29 ft.	29.5 ft.	34.88 ft.
San Joaquin River	Mossdale Bridge	32 ft.	19.5 ft.	28.5 ft.	29.5 ft.	24.40 (+2.38) ft.
Bear Creek	McKee Road	187 ft.	17 ft.	23 ft.	N/A	24.65 ft.
Sacramento River	Rio Vista Bridge	0	7.4 ft.	11.9 ft.	12.9 ft.	11.5 ft.

Note: N/A=data not available for given data point. This information derived from the California Nevada River Forecast Center provided by the National Oceanic and Atmospheric Administration webpage and is provided for planning purposes only. (<https://www.cnrfc.noaa.gov/qpf.php>) Updated information should always be referenced during events.

5 DAM FAILURE

The following information is provided as a guideline for Emergency Operations to be used within the procedural structure of SEMS and ICS and not intended to be a substitute for the decisions of the EOC Director. The information presented here is based on information provided by Local, State, and Federal Agencies as well as experiences and lessons learned from previous events/emergencies.

5.1 DAM FAILURES AND TYPICAL ACTIVITIES

OES utilizes EAPs provided by the operating agencies for each of the dams that would affect the County. The following section identifies the area dams in case of a hazardous event/partial failure or complete failure of a dam.

The information provided below outlines the name of the dam and its river tributary. In some cases, multiple dams fall along a specific waterway. Inundation maps and water travel times are updated periodically by the dam operator. Updated maps and specific travel time for water in the event of a disaster can be found in the EOC Dam EAP library. To ensure the response information is accurate and current, responders should immediately consult the appropriate EAP.

Table 4 Dams with potential to affect San Joaquin County

Dam	Impacted River(s)/Stream(s)	Capacity (Acre Feet)
Beardsley	Middle Fork Stanislaus River	97,800
Camanche	Mokelumne River	417,120
Don Pedro	Tuolumne River / San Joaquin River	2,030,000
Farmington	Littlejohn Creek	52,000
Friant/Millerton	San Joaquin River	520,500
Jackson Creek	Jackson Creek / Dry Creek	22,000
McClure Lake	Merced River	1,024,600
Merced Falls	Merced River	620
Modesto Reservoir	Tuolumne River / San Joaquin River	29,000
New Exchequer	Merced River / San Joaquin River	1,024,600
New Hogan	Calaveras River	317,000
New Melones	Stanislaus River / San Joaquin River	2,400,000
New Woodbridge Diversion	Mokelumne River	2,462
Pardee	Mokelumne River	203,795
San Luis	Delta-Mendota Canal	2,041,000
Tulloch Reservoir	Stanislaus River / San Joaquin River	67,000
Turlock Lake	Tuolumne River / San Joaquin River	45,600
Salt Spring Valley Reservoir	Cashman Creek	141,900

*Reservoir information from California Data Exchange Center on Department of Water Resource's website (<http://cdec4gov.water.ca.gov/misc/resinfo.html>)

6 TRAINING AND EXERCISES

Training will be coordinated as necessary to ensure safe, secure, and effective operations of equipment and procedures. Training requirements of staff involved in all phases of response will be expected to have completed training as identified in the Basic Emergency Operations Plan. OES will notify departments, jurisdictions, and agencies of training opportunities as they are available. Any OA grant funds identified to be expended for exercise/training should be coordinated with OES to ensure proper allocation/tracking of the funds before expenditure occurs.

Exercises are important for the successful response of personnel during an emergency or disaster. If an exercise interferes or otherwise hampers normal operations the exercise will be terminated and not resumed until such time as the problem is corrected.

7 ACRONYMS/DEFINITIONS

Cal OES	California Governor's Office of Emergency Services
CAO	County Administration Office (San Joaquin)
CBO	Community Based Organizations
CDEC	California Data Exchange Center
CVFPB	Central Valley Flood Protection Board
DRC	Disaster Relief Coalition
DWR	Department of Water Resources
EAP	Emergency Action Plan
EAS	Emergency Alert System
EOC	Emergency Operations Center
EOP	Emergency Operations Plan
ESF	Emergency Support Function
FEMA	Federal Emergency Management Agency
FIRM	Federal Insurance Rate Maps
FOC	Flood Operations Center
ICS	Incident Command System
IPAWS	Integrated Public Alert and Warning System
JIC	Joint Information Center
JIS	Joint Information System
LMA	Local Maintaining Agency
NFIP	National Flood Insurance Program
NIMS	National Incident Management System
NOAA	National Oceanic & Atmospheric Administration
NWS	National Weather Service
OA	Operational Area
OES	Office of Emergency Services
PIO	Public Information Officer
PNP	Private Non-Profits
RD	Reclamation District
REOC	Regional Emergency Operations Center
SEMS	Standardized Emergency Management System
SFHA	Special Flood Hazard Area

SJ MAC	San Joaquin Multi-Agency Coordination Group
SOC	State Operations Center
SOP	Standard Operation Procedure
USACE	United States Army Corps of Engineers
VOAD	Voluntary Organizations Active in Disasters
WebEOC	WebEOC: Web based information sharing database

8 AUTHORITIES/REFERENCES

In addition to the documents cited in the San Joaquin County Emergency Operational Plan, the following documents were referenced during the drafting of this document.

- California Department of Water Resources, Flood Emergency Response Program, **Flood Threat Mitigation Process**, January 2018
- **Guidelines for Coordinating Flood Emergency Operations**, CalOES, Governors Executive Order W-156-97
- **State-Federal Flood Operations Center Informational Sheet**, March 2018, Flood Operations Branch, available through California Department of Water Resources, Flood Emergency Response Program.

LMA and RD Emergency Operations Plans are maintained digitally under each specific agency and may be accessed via OES webpage at: <http://www.sjmap.org/oesfcm/> .

ATTACHMENT A: FLOOD INCIDENT PLANNING AND ESF RESPONSE MATRIX

Listed by Emergency Support Function (ESF)

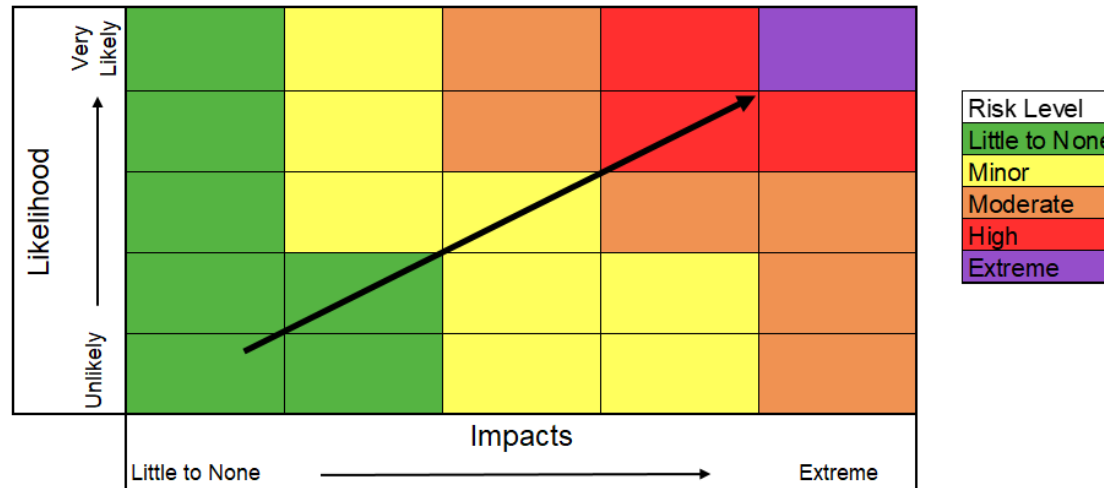
ESF	None-Little No flood expected	Minor Potential flooding but no imminent threat	Moderate Flooding that is an inconvenience but not an imminent threat	High Flooding is imminent or occurring	Extreme A sudden violent flood taking minutes to hours to develop
#1 Transportation	Actively monitor current conditions	Continue previous activities -Cleaning and checking storm drains	Continue previous activities -Monitor roadway conditions -Close roads and post signage - Report the status of, or damage, to transportation system & infrastructure	Continue previous activities - Response as needed	Continue previous activities - Identifying temporary alternative transportation solutions
#2 Communications	Actively monitor current conditions	Continue previous activities -Preparatory actions to ensure all available communications equipment is prepared for deployment	Continue previous activities -Monitor communications infrastructure and provide information updates to EOC	Continue previous activities - Identify and possibly deploy communications resources to support requesting operational response	Continue previous activities - Managing & coordinating communications equipment within EOC - Maintain vital records and systems
#3 Construction/ Engineering	Actively monitor current conditions	Continue previous activities -Monitor water flows	Continue previous activities - Support message sharing - Monitor Water Quality - Coordinate with major Public utilities -Be prepared to respond to resource requests	Continue previous activities - Identify all Drinking Water & Wastewater in the potentially impacted area - Coordinate debris management activities	Continue previous activities - Assessments of public works & infrastructure - Execute emergency contract support for life-saving & life-sustaining services
#4 Fire and Rescue	Actively monitor current conditions	Continue previous activities -Share Weather Alerts and Notifications	Continue previous activities - Provide assistance and response when directed - Assist with evacuations as needed	Continue previous activities - Perform specialized rescues	Continue previous activities -Provide support to the EOC and other ESF partners

ESF	None-Little No flood expected	Minor Potential flooding but no imminent threat	Moderate Flooding that is an inconvenience but not an imminent threat	High Flooding is imminent or occurring	Extreme A sudden violent flood taking minutes to hours to develop
#5 Emergency Management	Actively monitor current conditions	Continue previous activities - Determine need for EOC activation - Share alerts or warnings from NWS	Continue previous activities - Review and evaluate Damage Reports - Coordinate Resource Requests - Notify ESFs to increase response planning - Create Incident in WebEOC - Participate in OA, State Agency, and NWS Conference Calls - Publish Awareness Statement to all County Employees, and all emergency management agencies	Continue previous activities - Notify necessary Staff to report to the EOC - Send out alert and warning messaging - Provide coordination of resources and emergency communications at the request of the on-scene Incident Commanders	Continue previous activities - Maintain contact with neighboring jurisdictions - Request department representatives to report to EOC - Ensure accurate record keeping.
#6 Care and Shelter	Actively monitor current conditions	Continue previous activities - Maintain communication with the EOC	Continue previous activities - Coordinate support with other County departments, relief agencies, and volunteer groups	Continue previous activities - Coordinate with VOAD to open shelters - Identifying & coordinate emergency feeding sites - Provide emergency counseling for victims & response personnel	Continue previous activities - Develop reunification plans including possible sites and resources needs - Coordinate special care requirements for service animals or pets
#7 Resources	Actively monitor current conditions	Continue previous activities	Continue previous activities - Provide support as needed	Continue previous activities - Activate purchasing and contracting portion - Consider alerting or contacting local vendors for rapid response	Continue previous activities - Provide support to logistics and tactical operations

ESF	None-Little No flood expected	Minor Potential flooding but no imminent threat	Moderate Flooding that is an inconvenience but not an imminent threat	High Flooding is imminent or occurring	Extreme A sudden violent flood taking minutes to hours to develop
#8 Public Health and Medical	Actively monitor current conditions	Continue previous activities	Continue previous activities - Coordinate public health surveillance - Provide emergency medical care and transport	Continue previous activities - Coordinate with Inpatient & emergency care providers for evacuations if needed - Manage exposure to hazardous materials/wastes - Assurance of food safety - Assurance of drinking water safety	Continue previous activities - Coordination of the establishment of temporary field treatment sites - Coordinate mass fatality operations with funeral directors to provide identification and disposal of deceased
#10 Hazardous Materials	Actively monitor current conditions	Continue monitoring	Continue monitoring	Continue monitoring - Identify potential threats in the affected areas - Assess the potential health effects of a hazardous materials release	Continue previous activities - Respond to hazardous materials releases - Manage environmental containment, mitigation, short- & long-term cleanup/disposal.
#11 Food and Agriculture	Actively monitor current conditions	Continue monitoring -Disseminate information to Ag Industry	Continue previous activities -Work with ESF 12 partners to ensure electric and infrastructure needs are met	Continue previous activities - Work with industry to evaluate need for Declaration -Coordinate mitigation & disposal of deceased animals - Coordinate animal/vet response	Continue previous activities - Capture escaped or displaced animals - Provide technical assistance to natural & agricultural properties during damages assessment

ESF	None-Little No flood expected	Minor Potential flooding but no imminent threat	Moderate Flooding that is an inconvenience but not an imminent threat	High Flooding is imminent or occurring	Extreme A sudden violent flood taking minutes to hours to develop
#12 Utilities	Actively monitor current conditions	Continue previous activities - Maintain communication with primary agencies and support agencies and companies	Continue previous activities - Coordinate with critical infrastructure owners and operators to determine the number of citizens without electrical service, extent of time, etc.	Continue previous activities - Coordinate with local utilities to ensure temporary emergency power to support critical facilities - Coordinate with wastewater treatment plants to ensure functioning	Continue previous activities
#13 Law Enforcement	Actively monitor current conditions	Continue previous activities -Share NWS messages with public - Monitor field conditions and report any issues to Public Works or EOC - Encourage and assisting with early evacuations for those needing assistance	Continue previous activities - Coordinate road and waterway closures with Public Works and EOC -Maintain communications between partner agencies -Provide damage and reconnaissance reporting - Call for, and assist with, early evacuation -Coordinate with EOC on alert and warning notifications	Continue previous activities - Protect life and property, preserve order - Initiate evacuations as necessary - Coordinate animal sheltering support needs	Continue previous activities - Notify critical personnel to prepare for extended shifts and emergency responses
#14 Recovery	Actively monitor current conditions	Continue previous activities	Continue previous activities	Continue previous activities - Participate with stakeholders to conduct damage estimates, identify and facilitate availability	Continue previous activities - Ensure accurate documentation of the response and recovery efforts to secure federal funds

ESF	None-Little No flood expected	Minor Potential flooding but no imminent threat	Moderate Flooding that is an inconvenience but not an imminent threat	High Flooding is imminent or occurring	Extreme A sudden violent flood taking minutes to hours to develop
#15 Public Information	Actively monitor current conditions	Continue previous activities	Continue Previous -Coordinate with NWS, EOC Leadership on messaging - Provide talking points for local partners. - Update SJReady with enhanced risk, addition of appropriate map and links to NWS products	Continue Previous - Provide news releases and respond to media requests accordingly -Assist with Alert and Warning messaging - Coordinate with JIS	Continue previous activities
#17 Volunteer & Donations Management	Actively monitor current conditions	Continue previous activities	Continue previous activities - Share NWS, City, or County Information	Continue previous activities -Coordinate with ESF-6 as needed to open shelters - Identifying and coordinate emergency feeding sites	Continue previous activities - Provide guidance coordinate the management of donations, unsolicited goods, and volunteers



ATTACHMENT B: POSITION CHECKLISTS

Available upon request and printed copies on file in the EOC.

ATTACHMENT C: LOCAL MAINTAINING AGENCIES

Local Maintaining Agencies within San Joaquin County

District ID #	District Name	District ID #	District Name
1	Union Island East	2042	Bishop Tract
2	Union Island West	2044	King Island
17	Mossdale	2058	Pescadero District
38	Staten Island	2062	Stewart Tract
348	New Hope Landing	2064	River Junction
403	Rough & Ready	2072	Woodward Island
404	Boggs Tract	2074	Sargent-Barnhart Tract
524	Middle Roberts Island	2075	McMullin Ranch
544	Upper Roberts Island	2085	Kasson District
548	Terminus	2086	Canal Ranch
684	Lower Roberts Island	2089	Stark Tract
756	Bouldin Island	2094	Walthall
773	Fabian Tract	2095	Paradise Junction
828	Weber Tract	2096	Wetherbee Lake
1007	Pico & Naglee	2101	Blewett
1608	Smith Tract	2107	Mossdale
1614	Smith Canal	2108	Tinsley Island
2023	Venice Island	2113	Fay Island
2027	Mandeville Island	2114	Rio Blanco Tract
2028	Bacon Island	2115	Shima Tract
2029	Empire Tract	2116	Holt Station
2030	McDonald Island	2118	Little Mandeville Island
2033	Brack Tract	2119	Wright-Elmwood Tract
2037	Rindge Tract	2126	Atlas Tract
2038	Lower Jones Tract	Zone 9	County Channel Maintenance
2039	Upper Jones Tract	Zone 10	County Channel Maintenance
2040	Victoria Island	SJAFCA	SJ Area Flood Control Agency
2041	Medford Island		

ATTACHMENT D: MAPS

These maps are for reference and planning purposes only. In the event of a real incident, OES will reference the latest versions of maps and/or request updated maps to be developed based upon the incident.

List of maps:

Figure 4: Special Flood Hazard Areas: Identifies areas within San Joaquin that have been identified by FEMA as Special Flood Hazard Areas.

Figure 5: Potential Dam Inundation: Identifies areas within San Joaquin that are subject to flooding due to a dam failure event.

Figure 6: Reclamation Districts: Identifies the boundaries for Reclamation Districts within San Joaquin County.

Figure 7: Northwest County Reclamation Districts: Zoomed version of the Reclamation District map.

Figure 8: West Central County Reclamation Districts: Zoomed version of the Reclamation District map.

Figure 9: Southwestern County Reclamation Districts: Zoomed version of the Reclamation District map.

Figure 10: SJAFCA Flood Control District Map: Identifies the boundaries of the SJAFCA Flood Control District.

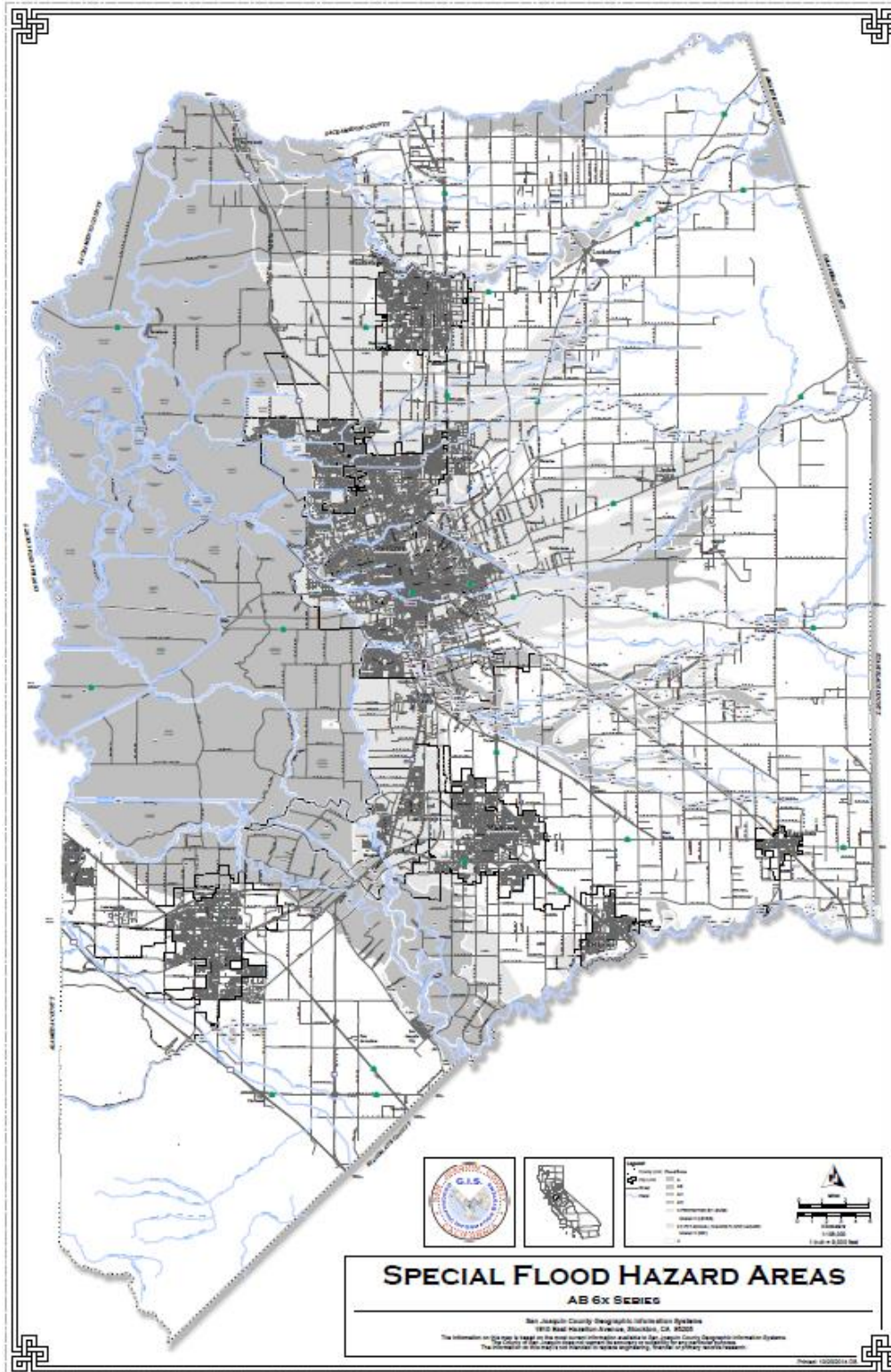
Figure 11: San Joaquin Valley Flood Control System: Outlines project levees and channel capacity.

Figure 12: Flood Control Projects and Agencies: Outlines Reclamation Districts, Project levees, and drainage districts.

Map Special Flood Hazard Areas:

http://www.sjmap.org/nhd/pdfs/SJCGIS_AB6XSeries_SpecialFloodHazardAreas.pdf

Figure 4 Special Flood Hazard Areas



Map Areas subject to flooding due to a dam failure:

http://www.sjmap.org/nhd/pdfs/SJCGIS_AB6XSeries_PotentialDamInundation.pdf

Figure 5 Potential Dam Inundation

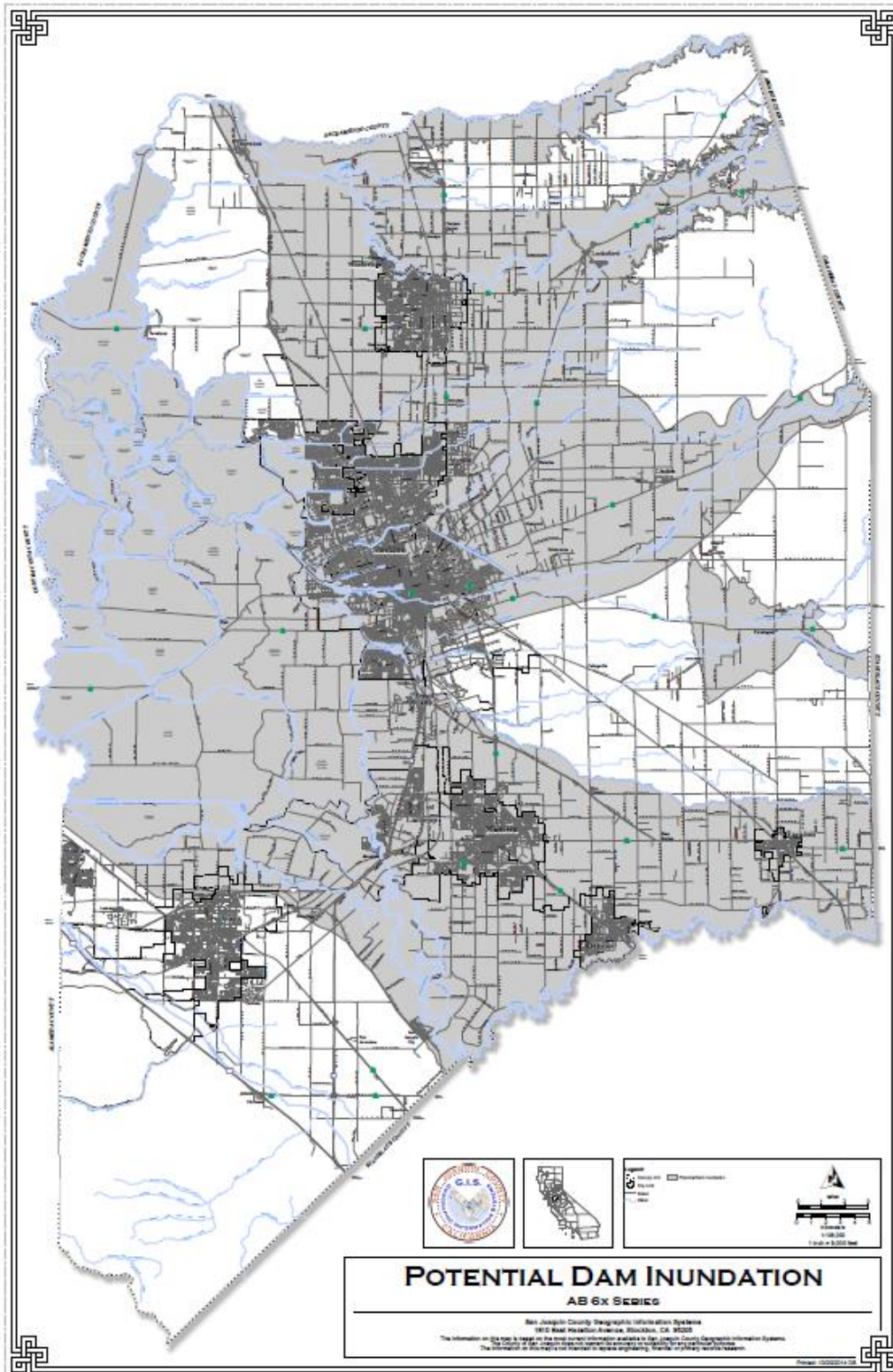


Figure 8 West-Central County Reclamation Districts

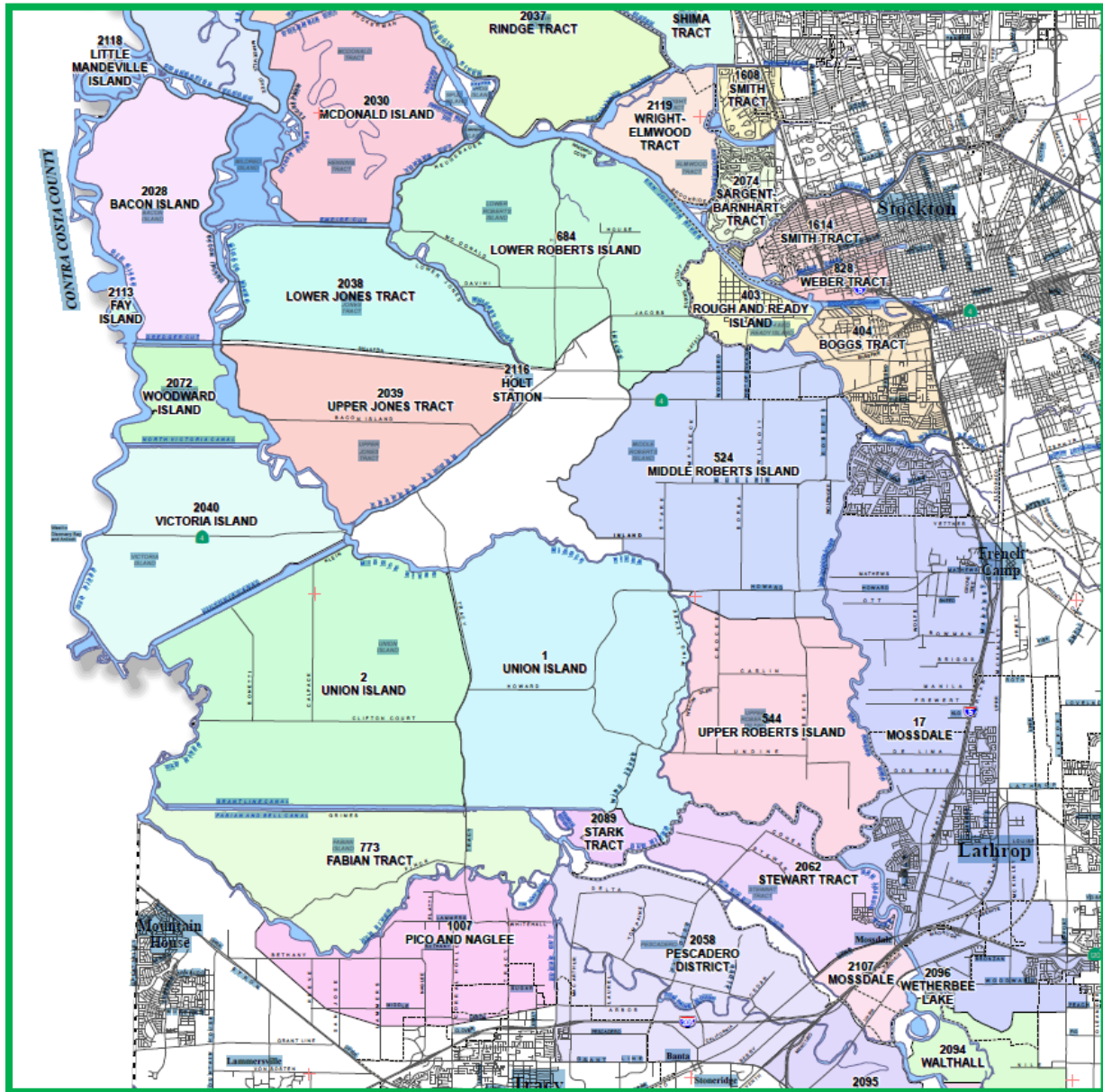


Figure 9 Southwestern County Reclamation Districts

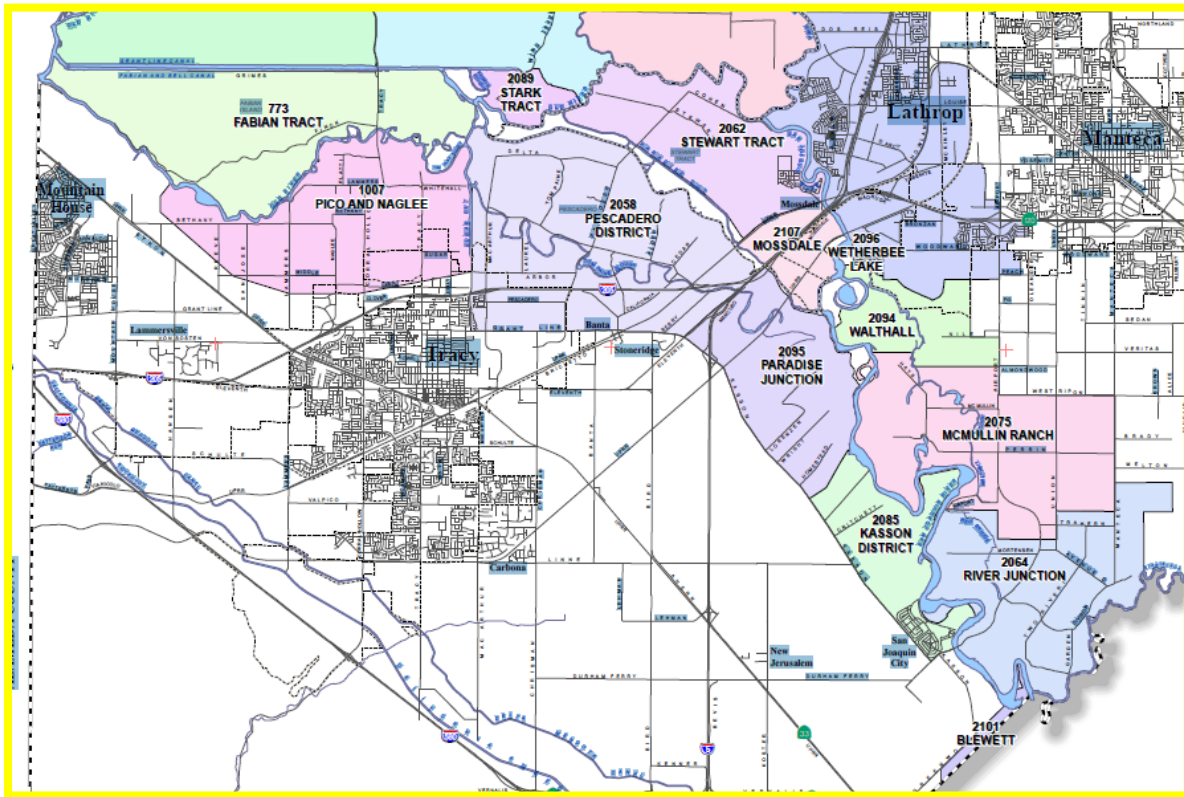


Figure 10 SJAFCFA Flood Control District map

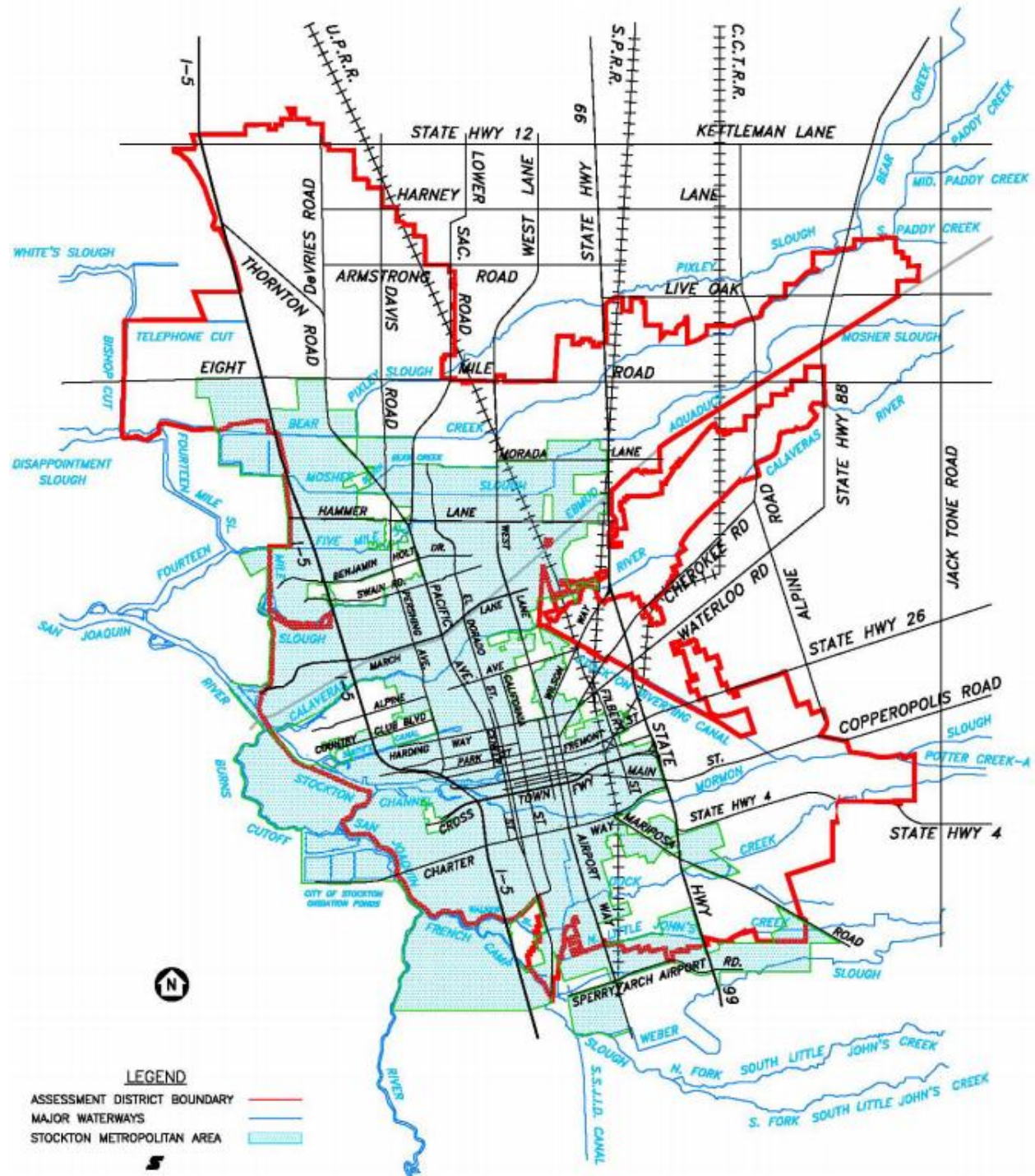


Figure 11 San Joaquin Valley Flood Control System

Delta and San Joaquin Valley Flood Control System

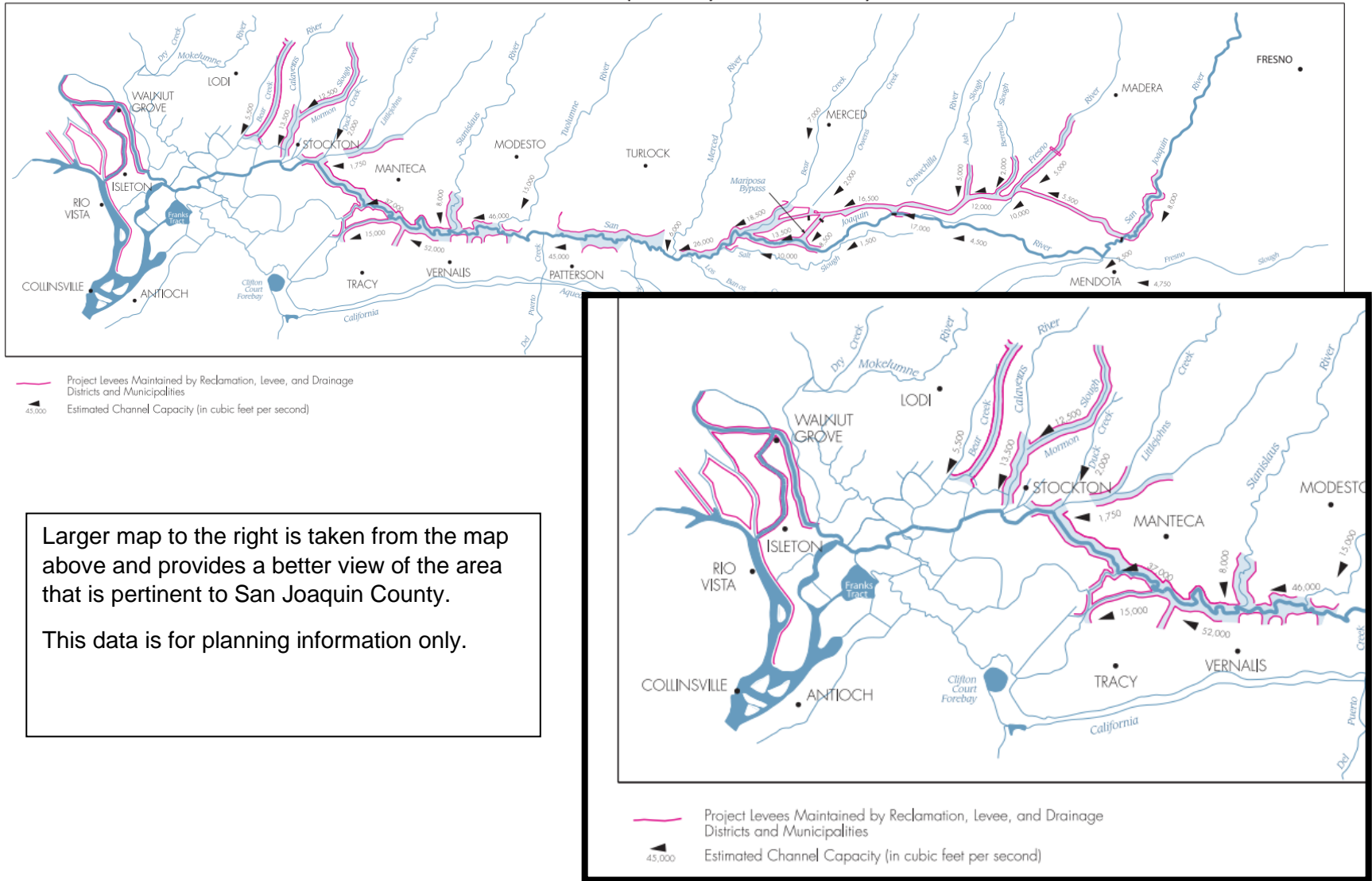
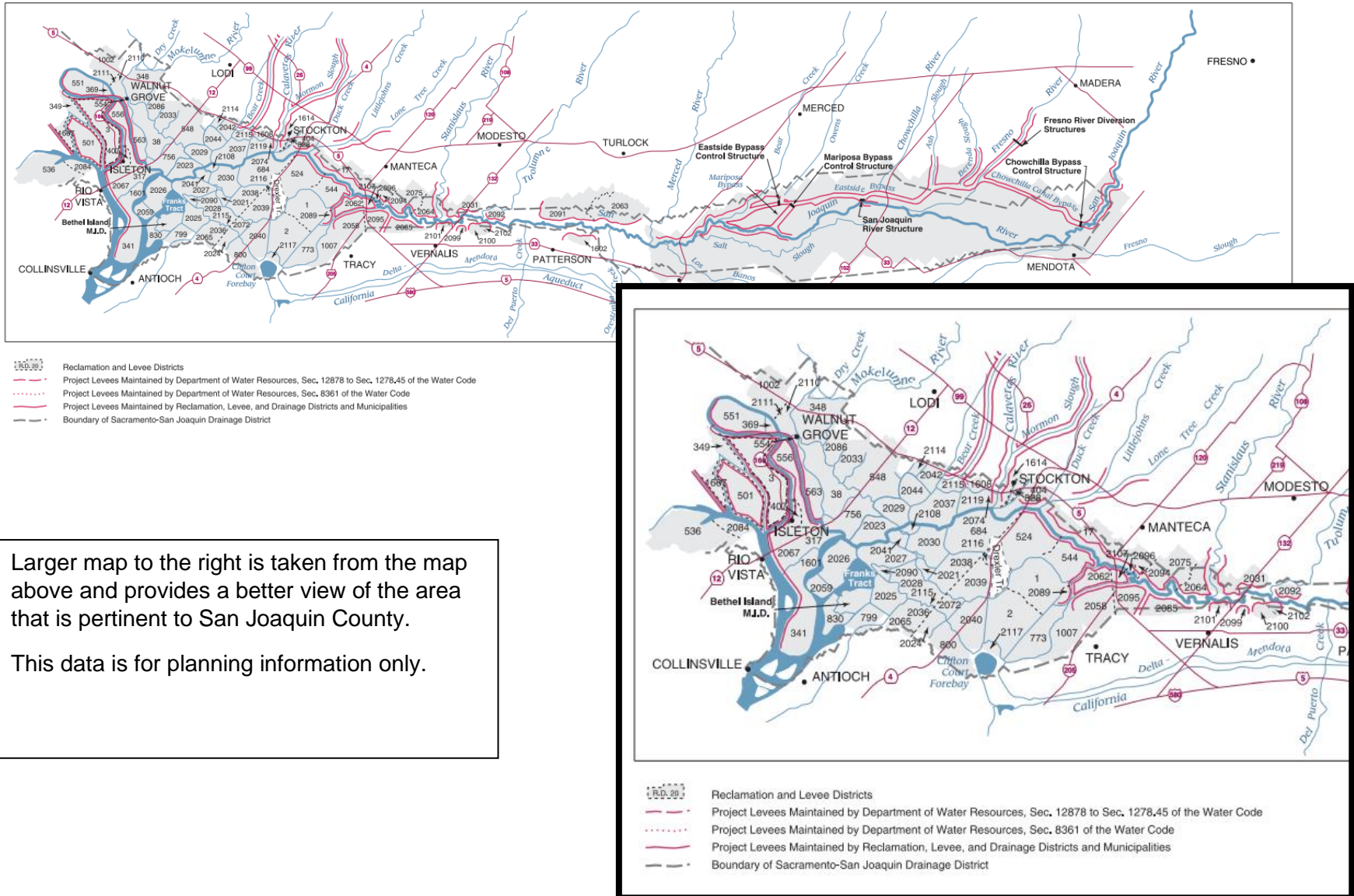


Figure 12 Flood Control Projects and Agencies



Larger map to the right is taken from the map above and provides a better view of the area that is pertinent to San Joaquin County.

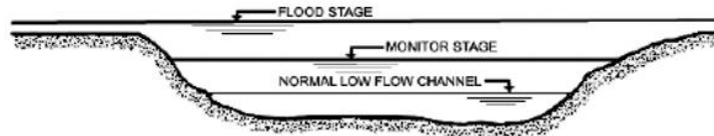
This data is for planning information only.

ATTACHMENT E: RIVER STAGE DEFINITIONS

These definitions are used by the California Department of Water Resources (DWR) Flood Operations Center in Sacramento in correspondence and alerts provided to local governments are posted on the California Data Exchange Center (CDEC) and National Oceanic and Atmospheric Administration (NOAA) Webpages.

NON-LEVEED STREAM

Non-leveed Stream - Monitor and Flood Stages



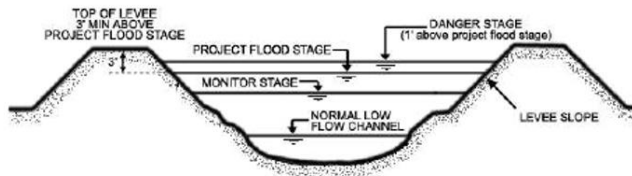
CROSS SECTION - TYPICAL NON-LEVEED STREAM

Monitor Stage: The Stage at which initial action must be taken by concerned interests (i.e., livestock warning, removal of equipment from lowest overflow areas, or simply general surveillance of the situation). This level may produce over-bank flows sufficient to cause minor flooding of low-lying lands and local roads.

Flood Stage: The Stage at which over-bank flows are of sufficient magnitude to cause considerable inundation of land and roads and/or threat of significant hazard to life and property.

LEVEED STREAM

Leveed Stream - Monitor, Project Flood and Danger Stages



CROSS SECTION-TYPICAL LEVEED STREAM

Monitor Stage: The Stage at which patrol of flood control project levees by the responsible Levee Maintaining Agency (LMA) becomes mandatory, or the Stage at which flow occurs into bypass areas from project overflow weirs.

Project Flood Stage: The Stage at which the flow in a flood control project is at maximum design capacity (U.S. Corps of Engineers, "Project Flood Plane"). At this level there is a minimum freeboard of 3 feet to the top of the levees.

Danger Stage: The Stage at which the flow in a flood control project is greater than maximum design capacity and where there is extreme danger with threat of significant hazard to life and property in the event of levee failure. This is generally one foot above project flood stage.