

County of Sutter

Emergency Operations Plan



Sutter Operational Area

Annex 5

Floods and Dam Failure

February 2015

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Section 1 – INTRODUCTION

General

This annex addresses three distinct types of flooding that the Sutter County Operational Area may experience. The first type is localized flooding due to flash flooding, severe weather, or an unusual amount of rain fall. The second is slow rise flooding, the rising of the rivers caused by heavy and continued rains occurring 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. 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 the Emergency Operations Team during a flooding disaster/emergency. Additionally, this annex identifies operational concepts focused on the potential large-scale disasters, which can generate unique situations requiring unusual emergency responses and which 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 Sutter County.
- (2) Identifies the policies, responsibilities and procedures required to protect the health and safety of Sutter County communities, 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.

Emergency Plan Management and Updates

The Office of Emergency Management will be responsible for updates and maintenance of this plan.

Authority Citations

The authority for Emergency Operations and Disaster Preparedness used in development of this annex of the Sutter County Operational Area EOP can be found in the **Sutter County OA EOP, Basic Plan, Chapter A, Section 6.**

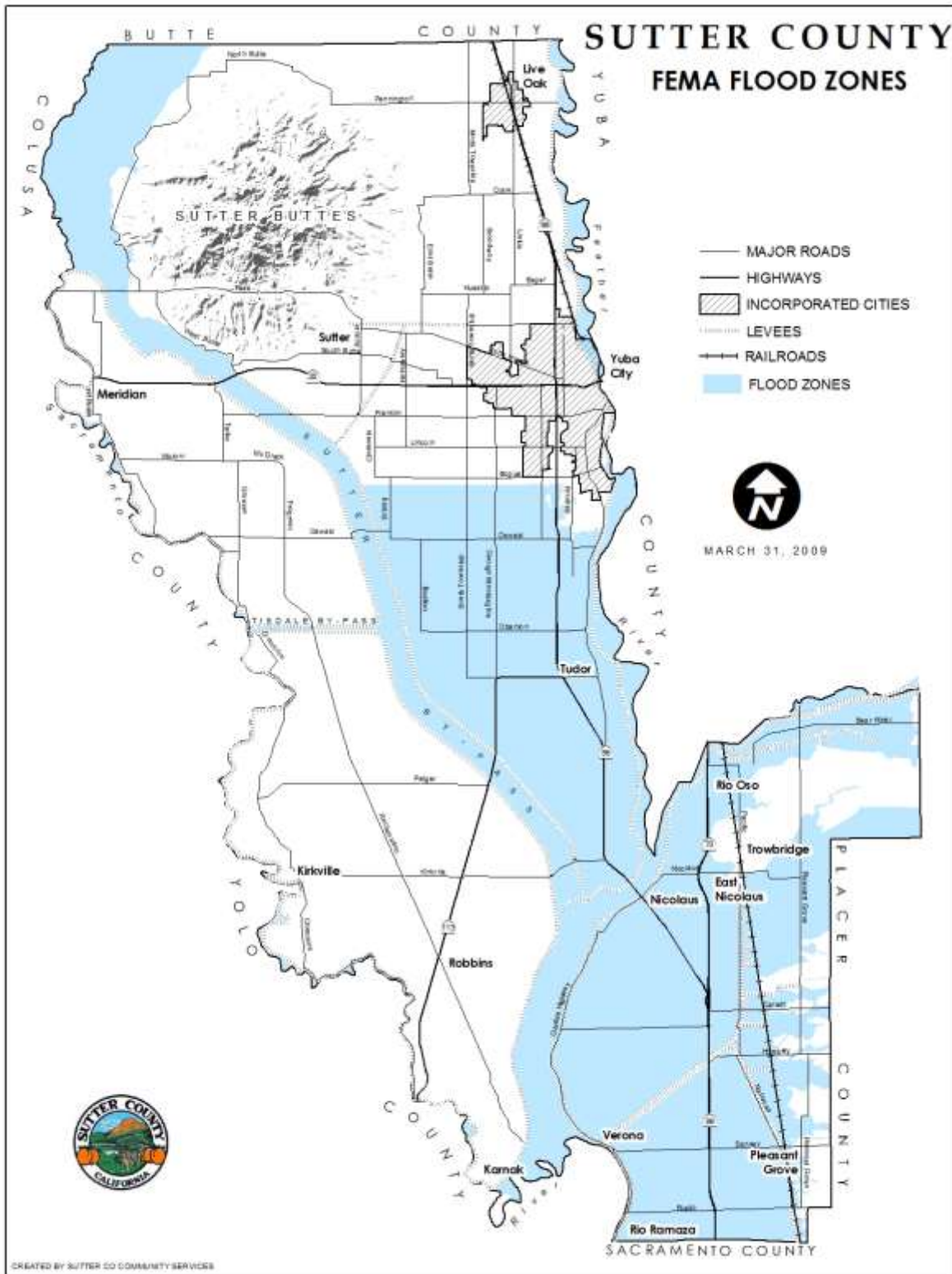
This plan augments the Sutter County Operational Area Emergency Operations Plan.

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, or annually, Sutter County Office of Emergency Management will ensure the accuracy of the maps used and update accordingly.

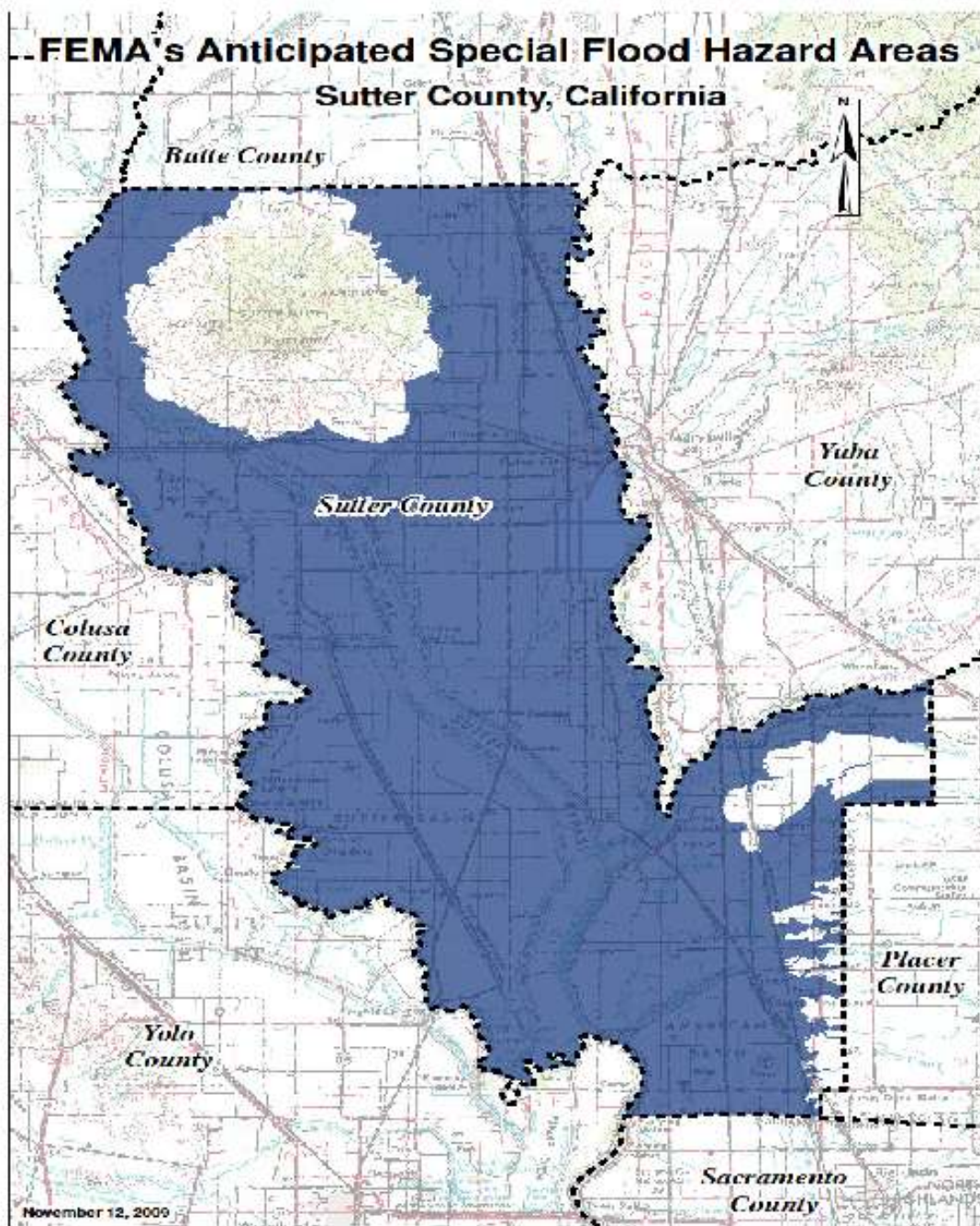
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Sutter County Flood Zones



This map shows the Flood Zones for Sutter County for informational purposes only.

The following is an illustration of the Flood Hazards in the County upon completion of the FEMA remapping. This anticipated map is current as of 7/6/2010.



Section 2 – PLAN OVERVIEW

Concept of Operations

This plan or the applicable portions of this plan will be implemented as directed by the County Administrative Officer (CAO), Sheriff, County Fire Chief, or Incident Commander as appropriate.

Guidance for implementation is in the **EOP Basic Plan Chapter D, Response Phase - Initial Response**, in **ANNEX 1 - Emergency Support Functions Handbook and Checklists, Section 3, General Response Checklists**, and in **ANNEX 2 – Emergency Operations Center Handbook and Position Checklists**.

When a flood emergency arises, the county will activate the Sutter County Operational Area Emergency Operational Center (EOC) and call in the appropriate EOC team. The extent of this call-up will vary according to the extent and pace of the crisis, as identified in **ANNEX 2 – Emergency Operations Center Handbook and Position Checklists**. The Emergency Operations Team has been pre-designated for 12-hour shifts, both day and night.

During a flood disaster or emergency, this annex will be implemented in accordance with the Standardized Emergency Management System (SEMS).

Personnel assigned to the organizational levels of SEMS will follow checklists/SOPs established by the EOP or the appropriate annex to the EOP. Coordination of public or media information releases will be through the PIO. The Management function of SEMS will determine what information is to be released and when the appropriate timeframe for such a release will occur.

For more information on SEMS/ICS refer to the **Sutter County OA EOP Basic Plan, Chapter A, Section 3**.

The federal Department of Homeland Security has established that the National Incident Management System (NIMS) will be used during an emergency/disaster. The State of California, through Executive Order S-2-05, has established that the implementation of SEMS/ICS substantially meets the requirements of NIMS.

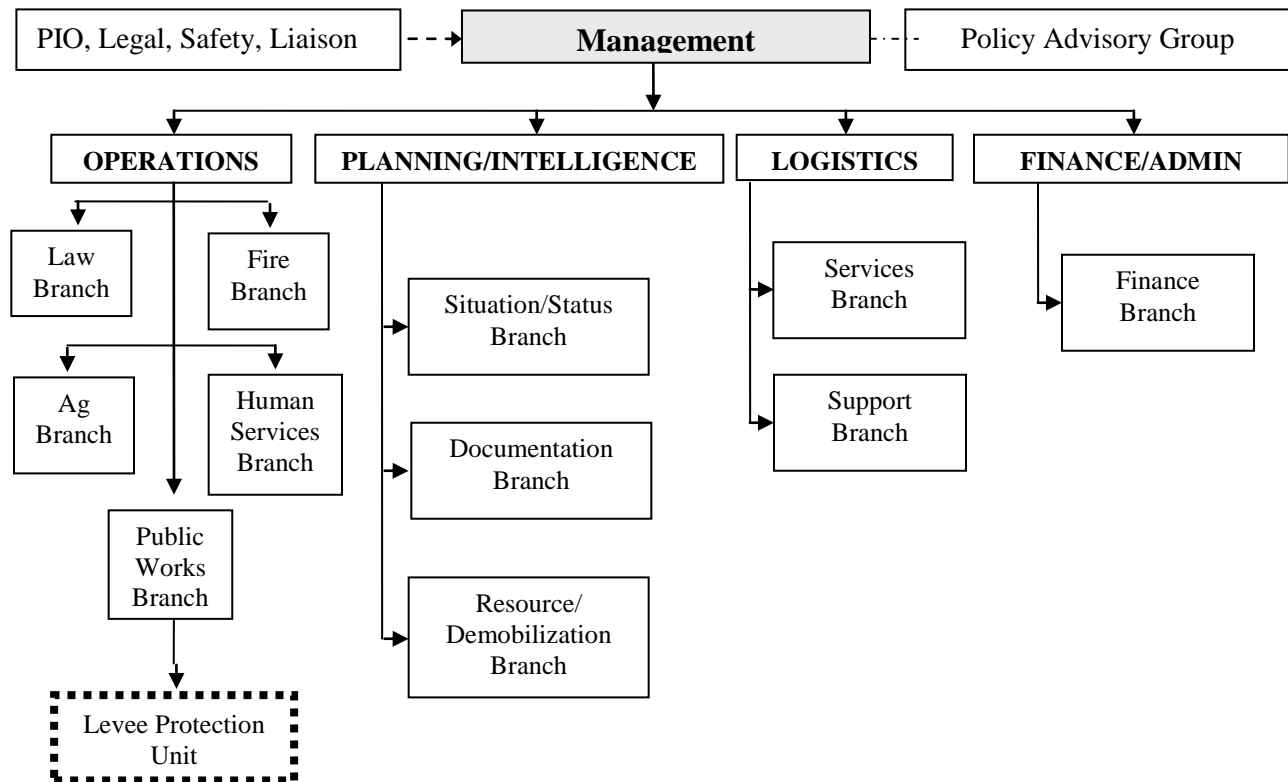
For more information on NIMS refer to the **Sutter County OA EOP Basic Plan, Chapter A, Section 3**.

Emergency Organizational Structure

As stated above, the Emergency Organization operates under SEMS, with the Emergency Operations Director providing leadership to the Management Function. The Management Function provides Command and Control to the Emergency Operations Team and consists of the Sheriff, the County Fire Chief, Public Health Officer, Public Works Director, and the Emergency Operations Manager. This membership may change based on the nature of the emergency. However, for a flood disaster/emergency this will be the general membership. Additionally, during a flood disaster/emergency there will be a Local Flood Protection Liaison Unit under the Operations Section consisting of the Levee and Reclamation Districts affected by the flooding.

The following chart is representative of a Level 3 Activation of the Emergency Operation Center (EOC) for a large scale event. A full description of the “Levee Protection Unit” can be found in Attachment E.

Emergency Organization Chart



Operations –

Law Branch:

Field Ops, Detention, and Dispatch

Fire Branch:

Fire, HazMat Response, and Rescue

Ag Branch:

Biologists and Animal Control

Human Services Branch:

Care & Shelter, Red Cross, and Medical Transport
Environmental Health, Mental Health, and Public Health

Public Works Branch:

Reconnaissance, Engineering Support, and Heavy Equipment Support

Levee Protection Unit:

Levee District 1

Levee District 9

Reclamation District 70/1660

Reclamation District 1000

Reclamation District 1001

Reclamation District 1500

Planning & Intelligence –

Situation/Status Branch:

Planning & Forecasting, Field Observation, and Info Collection/Display

Documentation Branch:

Written and Visual/Graphic

Resource and Demobilization Branch:

Personnel, Equipment, and Material

Logistics –

Services Branch:

Communications
County Employees and Volunteers
Information Systems Technicians

Support Branch:

Supplies, Equipment, Transportation, and Facilities
(EOC, Off-Site Work Areas, and R&R Areas)

Finance & Administration –

Finance Branch:

Invoice Processing and Payroll Tracking

Section 3 - HAZARD ANALYSIS FOR FLOODING

General

Floodwaters are a common occurrence for communities adjacent to and in the lowlands of rivers in Sutter County. Normally, wintertime storm floodwaters are kept within defined limits by levees, dykes, and open lowlands and cause no damage. Dams located outside Sutter County boundaries such as Oroville, Bullards Bar, and Shasta also help control floodwaters. But, occasionally, a combination of frequent storms, extended heavy rain, and melting snow results in floodwaters exceeding normal high-water boundaries and causing damage.

Presented in the following table is a record of peak water levels at several key monitoring stations throughout Sutter County, as well as a listing for Englebright Dam Located in Yuba County.

Sutter County River/Stream Historic Levels

River/Stream	Forecast Point	MONITORING STATION	Top of Levee Elevation	Peak Level of Record
Feather River	Yuba City	Feather River @ 5th Street Bridge (YUB)	83.5'	82.4' 12/24/1955
Feather River	Nicolaus	Feather River @ Nicolaus (NIC)	60.3'	51.6' 12/23/1955
Sacramento River	Colusa Weir	Sacramento River @ Colusa Weir (CLW)	74.8'	70.6' 3/1/1940
Sacramento River	Colusa	Sacramento River @ Colusa Bridge (COL)	73.0'	69.2' 2/8/1942
Sacramento River	Tisdale Weir (Robbins Basin)	Sacramento River @ Tisdale Weir (TIS)	57.0'	53.3' 3/1/1940
Sacramento River	Knight's Landing (Robbins Basin)	Sacramento River @ Knights Landing (KNL)	47.5'	41.8' 2/8/1942
Sacramento River	Below Wilkins Slough (SE County Basin)	Sacramento River @ Wilkins Slough	56.1'	52.8' 3/1/1940
Sacramento River	Fremont Weir (SE County Basin)	Sacramento River @ Fremont Weir	45.4'	39.7' 12/23/1955
Sacramento River	Verona (SE County Basin)	Sacramento River @ Verona	46.0'	41.2' 3/1/1940
Sutter By-Pass	Meridian Basin	Sutter By-Pass @ Long Bridge (LNB)	61.8'	57.7' 3/1/1940
Yuba River	Englebright Dam		527.0'*	546.1' 12/22/1964

All elevations are USED (See Attachment C of this Annex for definition).

*Spillway crest elevation.

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. This concerted effort usually results in property damage only with no loss of life. However, as happened in 1955, loss of human and animal lives and extensive property damage sometimes does occur.

Because of past experience and ongoing emergency management planning efforts, local, state, and federal agencies located in Sutter County are well-prepared to assist Sutter County residents during flood events. Inundation areas are generally well-defined, evacuation destinations and routes are identified, and short-term support plans and contingencies for the care of evacuated persons and animals are in place. Long-term assistance contingencies will be coordinated with out-of-the-area state and federal agencies as needed.

The following is a short synopsis of past flooding disasters in the Sutter County Operational Area:

1955 Flooding

This was the most devastating of all the floods to this area. A break in Levee south of Yuba City occurred at about midnight on December 23rd. The initial of surge water spread westerly through Gilsizer Slough to the Sutter Bypass and northerly into Yuba City. Within less than 24 hours, the heart of Sutter County was flooded from the Feather River on the east and south to the Bypass on the west and southwest. To the north, the water spread north of Colusa Avenue (Highway 20) in several areas, including some west of Walton Avenue.

Nearly 100,000 acres was flooded and resulted in 38 deaths, injuries to 3,200 people, and nearly \$40 million in property damage. The bridge over the Feather River at 5th Street was washed out and telephone service was lost south of Colusa Avenue.

1986 Flooding

While the most severe flooding occurred in neighboring Yuba County, Sutter County did experienced flooding. The most serious problems were located in the southern area of the county which is sparsely populated. We were fortunate not to have a break in the levee but did experience slumping in the Robbins area. In the southeast area of the county surface flow from Placer County led to extensive ponding. This coupled with two failures of minor levees, flooded numerous rural residences and agricultural facilities.

1995 Flooding

The 1995 floods were caused by two direct downpours which created major surface drainage back-ups at numerous locations throughout the county. Most of the water simply was on the wrong side of the levees. The storms were accompanied by high winds which also contributed significantly to the damage. The two separate events occurred in January and March and resulted in more than \$850,000 in damage to county facilities.

1997 Flooding

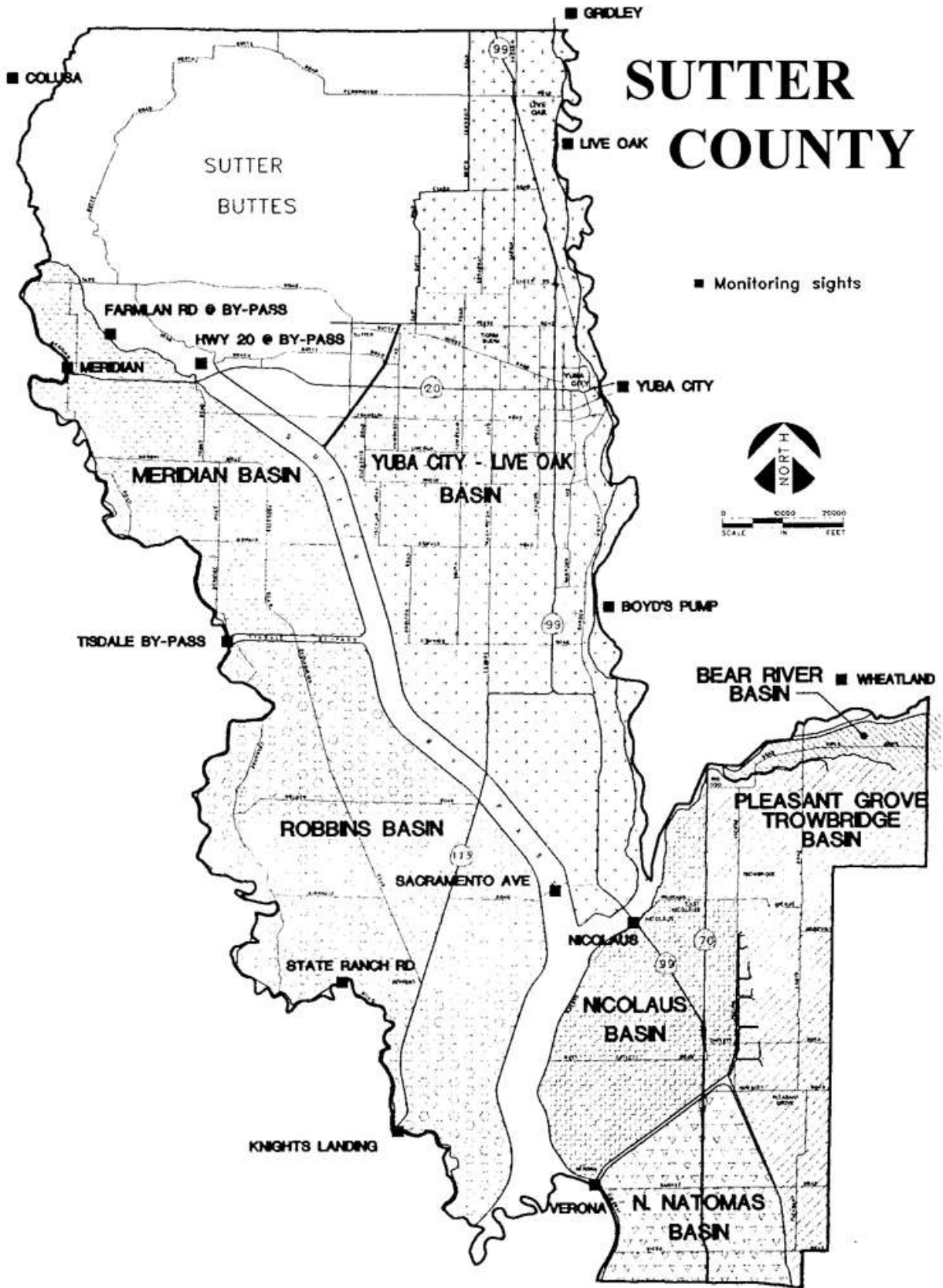
A series of storms and the “Pineapple Express” dumped warm, heavy rains onto a nearly double than average snow pack in the Sierra Nevada Mountains in late December. Runoff was filling the Shasta, Oroville, and New Bullards Bar Dams. Sutter County was notified by Oroville Dam that uncontrolled releases of huge proportions within the next 24 hours were possible. Sutter County declared an emergency on New Years Day at 11 a.m. and advised residents of voluntary evacuation. As the river continued to rise, the Sutter County Board of Supervisors directed a mandatory evacuation of the Nicolaus area and of all areas east of the Sutter Bypass and south of Pease Road. A break in the levee occurred at Arboga in Yuba County and it brought inundation to southwestern Yuba County. The mandatory evacuation was extended to Pleasant Grove and Robbins was added to the list the on January 4th due to dangerous levee conditions evolving on the south side of Tisdale Weir. The mandatory evacuation was lifted when the conditions stabilized and residents were allowed to return to the Yuba City area but the levee experienced a massive break in the Sutter Bypass. The town of Meridian was under a mandatory evacuation order and over the next three days earthen berms were constructed on the east and south sides of town which successfully protected it from being flooded. Meridian was the hardest hit area of Sutter County with approximately 50 square miles under water. Virtually every facility in the basin was destroyed or damaged including nearly 100 homes and a school standing in 4 feet of water. A second break in the levee was made at the south end of the basin to allow the waters to return to the Bypass. The mandatory evacuation order was lifted on January 22nd and the basin was not dry until June. Even though Sutter County did not experience loss of lives with this flood, the estimated financial losses to individuals and businesses were about \$18 million and agricultural losses exceeded \$5 million, not including long term damage to orchard trees. Losses sustained by public agencies within the county amounted to about \$10 million.

Sutter County Basins

Sutter County is divided into four basin areas to assist in identifying locations of and responding to a flood event/emergency. One or more river/stream level gauging stations are located in these basin areas. As you will see in **Section 5 of this Annex**, these gauges are critical in providing decision-making information to the Emergency Operations Team before and during an event/emergency. From these gauges, data is received to provide an assessment of which stage of emergency activation we need and how/when to respond to the event/emergency. **Section 5 of this Annex** provides an in-depth look at the Emergency activation stages for each of the four basins.

On the following page is a map of the Sutter County basins; **Yuba City/Live Oak Basin, Meridian Basin, Robbins Basin, and the Southeast Sutter County Basin** (consisting of the Nicolaus, Bear River, Pleasant Grove/Trowbridge, and North Natomas Basins).

Sutter County Basins



Hazard Analysis and Assessment

General

Floods can occur at any time, but weather patterns have a strong influence on when and where floods happen. Cyclones, or storms that bring moisture inland from the ocean, can cause floods in the winter and early spring in the western United States. Thunderstorms are relatively small but intense storms that can cause flash floods in smaller streams in late summer and fall. Floods are the most common and widespread of all natural disasters—except fire. Most communities in the United States can experience some kind of flooding after spring rains, heavy thunderstorms, or winter snow thaws. Floods can be slow, or fast rising, but generally develop over a period of days.

Localized 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 and other debris from residences or businesses may not drain correctly and causes localized flooding during/after a heavy downpour.

Slow Rise Flooding

The primary, large-scale threat to Sutter County is slow rise flooding. Sutter County is located in the east-central part of the Sacramento Valley. The Sacramento Valley forms the northern half of the Central Valley, which is surrounded by mountains, creating a “bathtub” effect, with the Sacramento Valley, San Joaquin Delta, and San Francisco Bay forming the drain to the ocean. The lowest areas of the Central Valley are the bottom of the bathtub and receive the brunt of any flooding.

Flooding is a well-established and potentially a large-scale threat to the area. Occasionally, the flooding is catastrophic as occurred in 1955 and there was significant loss of life and property in all areas of the Sacramento Valley.

Sutter County’s topography is a relatively flat alluvial plain with the exception of the Sutter Buttes and the surrounding rolling terrain. The eastern part of the County is an alluvial terrace with elevations of 35 to 80 feet. This terrace generally drains to the southwest into the lower Sutter and American Basins, which are at 10 to 40 feet elevation.

The Sacramento, Feather, and Bear Rivers, flowing along the boundaries of Sutter County are subject to heavy runoff from the mountains and have flooded frequently throughout the past.

Precipitation occurs primarily between November and April when 88 percent of the annual rainfall is received. The heaviest rainfall months are normally December, January, and February.

Annual averages vary for the County from 17 to 21 inches, with the rain year calculated from July to June.

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 injury, loss of life, and significant downstream property damage. ***NOTE: All area dams have performed well during past disasters and are expected to exceed their design limits during future events.***

The collapse and structural failure of a dam may be caused by 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.

Portions of Sutter County would be affected by the failure of one or more of four dams, all of which are located outside the County. These dams, the affected rivers, and the amount of water impounded behind them with a full reservoir are as follows:

Dam Name	River	Storage Capacity in Acre-Feet
Shasta	Sacramento	4,552,000
Oroville	Feather	3,538,000
Bullards Bar	Yuba	966,103
Camp Far West	Bear	104,000

Warning time from dam failure until the resulting floodwaters reach a significant area of the County will be approximately 1 hour from the Bullards Bar and the Camp Far West Dams, 9 hours from the Oroville Dam, and 100 hours from the Shasta Dam. The number of people to be alerted and evacuated can vary tremendously. Another factor that must be considered is the initial flow in the river when the failure occurs. This initial flow is normally very low on all the rivers during the period May through October. During winter months, the initial flow is much higher and, at times, may even be equal to or greater than flood stage. This wide variation in initial flow has a significant impact on the areas that must be evacuated, particularly in the deltas.

A catastrophic failure of any of the dams would have a significant impact on Sutter County. Complete devastation could occur in and along the river bottoms to up their banks several hundred feet above normal river levels at a point from the dams themselves down river to near the ocean where the rivers widen. Water levels could be many times higher than those recorded in the worst floods.

According to the “Threat Matrix” (**Refer to Sutter County OA EOP Basic Plan Chapter B Section 2**), flooding is an infrequent hazard with low to high severity to the county and dam failure is an infrequent hazard with high severity to the county.

Section 4 – GENERAL PLAN RESPONSIBILITIES

Emergency Operations Center

Emergency Operations Center activation and staffing levels are found in ANNEX 2 – Emergency Operations Center Handbook and Position Checklists.

The following is a general guide of the responsibilities for the Emergency Organization:

Management

Management assignments are reflected in *Attachment A, Emergency Support Functions - Flooding and Dam Failure*.

Operational Structure

The County of Sutter will activate the appropriate SEMS functions based upon the level of the flood event/emergency.

Coordination of Disciplines

Sutter County will use multi-agency, multi-discipline coordination in its response to a flooding disaster or emergency.

Inclusion of Non-Profit Agencies/Organizations

Non-profit organizations, such as the American Red Cross will be involved in flood response planning. Sutter County will contact the appropriate non-profit organizations in the event of a potential threat or actual event.

Public Information

The Public Information Officer (PIO) will be activated as soon as practical during an emergency. The PIO will coordinate with media for news releases.

News release procedures will be agreed upon, and established for the Sutter County EOC, the Unified Command, and other interested parties.

Safety and Security

During a potential threat or actual event, employee safety and operational security will be key concerns for Sutter County.

During actual emergency operations, heightened safety and security procedures will be in force and will be followed by county personnel. Security and safety procedures will also be implemented for all command posts and other operational sites. The Sheriff's Department will serve as lead for security functions.

Information Sharing and Dissemination

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.

The notification of an event (Hazardous Situation Developing) or an emergency/disaster (Failure of Dam is Eminent or has occurred) and any subsequent updates will be made verbally through the most secure form of landline available. Written confirmations of notification and updates will be used. Emergency response personnel will observe communication security procedures. Sensitive information will not be communicated by cell phone or radio.

Sutter County will have 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.

Sheriff's Office

The Sheriff, or designee, will determine and establish SOPs required for the operation and deployment of law enforcement assets controlled by his Department and as authorized by Local, State, and Federal Statutes/Regulations.

Within the EOC, the Sheriff's Office (SO) will assume the security function.

The Sheriff Office will be the lead for perimeter security, access control, traffic/crowd control, evacuations, and notifications. The Sheriff Office will also coordinate coroner issues and assist with damage assessment and fatalities management.

The Sheriff Office will request law enforcement mutual aid if needed to accomplish these functions.

Fire Services

The County Fire Chief, or designee, will determine and establish SOPs required for the operation and deployment of OA Fire assets controlled by the Division and as authorized by Local, State, and Federal Statutes/Regulations.

Fire Services will be the lead for fire response, hazardous materials events, and medical/rescue operations. Fire Services will provide support as necessary to the Sheriff's Office for evacuation activities. Existing procedures will be modified as necessary depending on the situation. Fire Services will assist with:

- perimeter and access control
- evacuation operations
- notifications
- damage assessment
- fatalities management
- addressing environmental needs

- fire and rescue mutual aid
- support to hazardous materials operations
- coordination with EMS and hospitals
- personnel protection issues
- coordination with public works and utilities

Fire Services will request fire and rescue mutual aid if needed to accomplish these functions.

Operations

The Incident Commander (IC) may be the CAO, the Sheriff (or representative) or the Fire Chief (or representative) depending on the nature of the situation and availability of staff.

Public Works will serve as lead for damage assessment and will be the representative for utilities concerns. Potential public works activities include:

- reconnaissance of public infrastructure (roads, bridges, facilities, and utilities)
- alternate route identification
- building access
- utility access re-routing
- temporary repairs

Public Works will assist with access and crowd control and fatalities management. The Director of Public Works will request public works mutual aid if needed. They will coordinate with the Sheriff Office on security issues if needed.

Planning/Intelligence *Attachment A, Emergency Support Functions - Flooding and Dam Failure.*

Includes standard situation, documentation, demobilization, and resources units.

Logistics Support Requirements *Attachment A, Emergency Support Functions - Flooding and Dam Failure.*

The Logistics Branch will be responsible for identifying and procuring supplies, services, equipment, and facilities that will be required for Emergency Operation activities.

During emergency operations, particular emphasis will be placed on maintaining OA capabilities of computer systems, telecommunications, including land line and radio.

Finance *Attachment A, Emergency Support Functions - Flooding and Dam Failure.*

It will be necessary to track costs associated with an event or potential event. Within Finance/Administration Branch there may be a separate Cost Unit to track the costs of the event.

Continuity of Operations

It will be necessary to ensure continuity of day-to-day operations during a potential threat or actual event. This includes payroll processing, contracts management, personnel actions, and file security.

Training and Exercises

Training will be coordinated as necessary to ensure safe, secure, and effective operations of equipment and procedures. The Office of Emergency Management will notify departments, jurisdictions, and agencies of training opportunities as they are available. Any Operational Area grant funds identified to be expended for exercise/training will be coordinated with the Office of Emergency Management 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.

Section 5 – SLOW RISE RIVER FLOODING PLAN AND RESPONSE

General

The following information is provided as guidelines for the Emergency Operations Team to be used within the procedural structure of SEMS and ICS and not intended to be a substitute for the decisions of the Emergency Operations 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.

Slow Rise Flooding River Stages and Typical Activities

Sutter County utilizes three emergency activation stages in its flood warning system. These stages are tied to river levels at one or more gauging stations in the various basins in the county. These four basins and the applicable river levels for each stage are summarized in the following table.

**SLOW RISE FLOOD THREAT
SUMMARY OF EMERGENCY ACTIVATION STAGES**

BASIN	MONITORING STATION	Stage 1	Stage 2	Stage 3
		Planning & Preparation Phase	Ready for Action Phase	Emergency Phase
(A) Yuba City & Live Oak Basin	Feather River @ 5th Street Bridge (YUB)	< 70.0'	≥ 70.0'	> 77.0'
(B) Meridian Basin	Sutter By-Pass @ Long Bridge (LNB)	< 50.5'	≥ 50.5'	> 56.6'
(B) Meridian Basin	Sacramento River @ Colusa Bridge (COL)	< 66.5'	≥ 66.5'	> 70.0'
(C) Robbins Basin	Sacramento River @ Tisdale Weir (TIS)	< 51.0'	≥ 51.0'	> 54.0'
(C) Robbins Basin	Sacramento River @ Knights Landing (KNL)	< 40.0'	≥ 40.0'	> 43.5'
(D) Southeast County Basins	Feather River @ Nicolaus (NIC)	< 42.6'	≥ 42.6'	> 46.4

All elevations are USED (See Attachment C of this Annex for definition).

On the following pages are guidelines based on the stages listed in the above table.

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(A) Yuba City/Live Oak Urban Basin – Feather River at Yuba City

River stages are intended to be guides for declaring the response stages, which are also influenced by weather forecasts, dam releases and levee conditions.

When the Feather River is measured, at the 5th Street Bridge in Yuba City, to be 60 feet the Emergency Management Team will enter into the Planning and Preparation Phase. This typically will begin with Stage 1. However, as stated above, the Emergency Management Team will take all factors into consideration when deciding to put this plan into effect. *The following Stages are intended to be guidelines for the Emergency Management Team and not intended to be a substitute for the decisions of the Emergency Operations Director.*

Stage 1 Planning and Preparation Phase (Water Level Below 70')

60' and Forecast to Rise

Emergency Operations Manager notifies members of the Management Team

Identification of On-Call Duty Officer for Emergency Operations

Level 1 activation of the EOC, at 1130 Civic Center Blvd. during working hours

Emergency Operations staff closely monitors river forecasts and river levels

Human Services notifies licensed facilities

Emergency Operations Manager notifies REOC of plan activation and status (Duty Officer and/or Level 1 Activation of the EOC)

65' and Forecast to Rise

Level 2 activation of the EOC, if deemed necessary, location determined by Emergency Operations Director

Emergency Operations notifies REOC of plan activation and status (Duty Officer and/or Level 2 Activation of the EOC)

Begin written log.

Human Services Director initiates preliminary planning for mass care centers.

Notification of key personnel involved in emergency organization.

Management Team meets as soon as practical. Assess conditions for Advisory Evacuation and evacuation of medical facilities, rest homes, and other special needs populations.

County Health Officer requests DHHS assistance with planning for persons with medical needs.

Assess need to fully activate (Level 3) the EOC, and to request DWR and National Guard Liaison.

Request Incident Management Team from CalOES if the developing situation is predicted to reach Stage 3.

PIO begins to make regular press releases.

Assess need for disaster declaration.

Vital records identified and tagged.

Essential vehicles moved to pre-designated staging areas. Non-emergency equipment and vehicles are made ready for move out of danger area.

All Levee Districts and Reclamation Districts contacted every 24 hours (or more often) for situation update.

Consider evacuation of schools in threatened areas

EOC facility in Sutter set up (not activated).

Emergency personnel ensure safety of families and prepare to return to duty.

Incident Action Plan developed.

Alert Beale AFB Command Post or Disaster Preparedness Office

Stage 2 Ready for Action Phase (Water Level Greater than/equal to 70')

70' and Forecast to Rise

Activate Level 3 EOC, and relocate personnel, if not done previously.

CAO (Emergency Operations Director), Emergency Operations Manager, and PIO coordinate notification of change of status to all agencies and emergency organizations.

Incident Action Plan developed for each operational period.

Management Team meets every 12 hours.

Assessment of conditions for advisory or mandatory evacuation.

Request Incident Management Team from CalOES if the developing situation is predicted to reach Stage 3.

75' and Forecast to Rise

Assessment of conditions for advisory or mandatory evacuation.

If all local resources are anticipated to be exhausted, CAO and/or BoS Chair, in cooperation with the City Administrator and Mayor of Yuba City and/or Live Oak, may proclaim the existence of a disaster and request the Governor to declare the county a disaster area.

CDF Incident Management Team requested if not already done.

Stage 3 Emergency Phase (Water Level is greater than 77')

77' and Forecast to Rise

Management Team meets every 12 hours or more often as necessary.

Assess need for mandatory evacuation.

Request Sheriff to coordinate with Yuba City Police to secure evacuated areas from possible looting.

Refer to the Basic EOP and Annex 2 for additional information regarding EOC operations, recovery and mitigation operations/procedures, and/or disaster assistance.

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(B) Meridian Basin – Sacramento River at Long Bridge and at Colusa Bridge

River stages are intended to be guides for declaring the response stages, which are also influenced by weather forecasts, dam releases and levee conditions.

When the Sacramento River is measured, at both the Long Bridge and the Colusa Bridge, to be 46.5 and 62.5 feet (respectively) the Emergency Management Team will enter into the Planning and Preparation Phase. This typically will begin with Stage 1. However, as stated above, the Emergency Management Team will take all factors into consideration when deciding to put this plan into effect. *The following Stages are intended to be guidelines for the Emergency Management Team and not intended to be a substitute for the decisions of the Emergency Operations Director.*

Stage 1 Planning and Preparation Phase (Water Level Below 50.5' Long Bridge/66.5' Colusa Bridge)

46.5' Long Bridge/62.5' Colusa Bridge and Forecast to Rise

Emergency Operations Manager notifies members of the Management Team.

Identification of On-Call Duty Officer for Emergency Operations

Level 1 activation of the EOC, at 1130 Civic Center Blvd. during working hours

Emergency Operations staff closely monitors river forecasts and river levels

Emergency Operations Manager notifies REOC of plan activation and status (Duty Officer and/or Level 1 Activation of the EOC)

47' Long Bridge/63' Colusa Bridge and Forecast to Rise

Level 2 activation of the EOC, if deemed necessary, location determined by Emergency Operations Director

Emergency Operations notifies REOC of plan activation and status (Duty Officer and/or Level 2 Activation of the EOC)

Begin written log.

Human Services Director initiates preliminary planning for mass care centers.

Notification of key personnel involved in emergency organization.

Management Team meets as soon as practical. Assess conditions for Advisory Evacuation and evacuation of medical facilities, rest homes, and other special needs populations.

County Health Officer requests DHHS assistance with planning for persons with medical needs.

Assess need to fully activate (Level 3) the EOC, and to request DWR and National Guard Liaison.

Request Incident Management Team from CalOES if the developing situation is predicted to reach Stage 3.

PIO begins to make regular press releases.

Assess need for disaster declaration.

Vital records identified and tagged.

Essential vehicles moved to predesignated staging areas. Non-emergency equipment and vehicles made ready for move out of danger area.

All Levee Districts and Reclamation Districts contacted every 24 hours (or more often) for situation update.

Consider evacuation of schools in threatened areas

EOC facility in Sutter set up (not activated).

Emergency personnel ensure safety of families and prepare to return to duty.

Incident Action Plan developed.

Alert Beale AFB Command Post or Disaster Preparedness Office

Stage 2 Ready for Action Phase (Water Level Greater than/equal to 50.5' Long Bridge/ 66.5' Colusa Bridge)

50.5' Long Bridge/66.5' Colusa Bridge and Forecast to Rise

Activate Level 3 EOC, and relocate personnel, if not done previously.

CAO (Emergency Operations Director), Emergency Operations Manager, and PIO coordinate notification of change of status to all agencies and emergency organizations.

Incident Action Plan developed for each operational period.

Management Team meets every 12 hours.

Assessment of conditions for advisory or mandatory evacuation.

Request Incident Management Team from CalOES, if the developing situation is predicted to reach Stage 3.

54.6' Long Bridge/68' Colusa Bridge and Forecast to Rise

Assessment of conditions for advisory or mandatory evacuation.

If all local resources are anticipated to be exhausted, CAO and/or BoS Chair, in cooperation with the City Administrator and Mayor of Yuba City and/or Live Oak, may proclaim the existence of a disaster and request the Governor to declare the county a disaster area.

CDF Incident Management Team requested if not already done.

Stage 3 Emergency Phase (Water Level is greater than 56.6' Long Bridge/70' Colusa Bridge)

56.6' Long Bridge/70' Colusa Bridge and Forecast to Rise

Management Team meets every 12 hours or more often as necessary.

Assess need for mandatory evacuation.

Request Sheriff to coordinate with Yuba City Police to secure evacuated areas from possible looting.

Refer to the Basic EOP and Annex 2 for additional information regarding EOC operations, recovery and mitigation operations/procedures, and/or disaster assistance.

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(C) Robbins Basin – Sacramento River at Tisdale Weir and Knight’s Landing

River stages are intended to be guides for declaring the response stages, which are also influenced by weather forecasts, dam releases and levee conditions.

When the Sacramento River is measured, at both the Tisdale Weir and Knight’s Landing, to be 45 and 36 feet (respectively) the Emergency Management Team will enter into the Planning and Preparation Phase. This typically will begin with Stage 1. However, as stated above, the Emergency Management Team will take all factors into consideration when deciding to put this plan into effect. *The following Stages are intended to be guidelines for the Emergency Management Team and not intended to be a substitute for the decisions of the Emergency Operations Director.*

Stage 1 Planning and Preparation Phase (Water Level Below 51’ Tisdale Weir/40’ Knight’s Landing)

45’ Tisdale Weir/36’ Knight’s Landing and Forecast to Rise

Emergency Operations Manager notifies members of the Management Team.

Identification of On-Call Duty Officer for Emergency Operations

Level 1 activation of the EOC, at 1130 Civic Center Blvd. during working hours

Emergency Operations staff closely monitors river forecasts and river levels

Emergency Operations Manager notifies REOC of plan activation and status (Duty Officer and/or Level 1 Activation of the EOC)

45.5’ Tisdale Weir/37’ Knight’s Landing and Forecast to Rise

Level 2 activation of the EOC, if deemed necessary, location determined by Emergency Operations Director

Emergency Operations notifies REOC of plan activation and status (Duty Officer and/or Level 2 Activation of the EOC)

Begin written log.

Human Services Director initiates preliminary planning for mass care centers.

Notification of key personnel involved in emergency organization.

Management Team meets as soon as practical. Assess conditions for Advisory Evacuation and evacuation of medical facilities, rest homes, and other special needs populations.

County Health Officer requests DHHS assistance with planning for persons with medical needs.

Assess need to fully activate (Level 3) the EOC, and to request DWR and National Guard Liaison.

Request Incident Management Team from CalOES if the developing situation is predicted to reach Stage 3.

PIO begins to make regular press releases.

Assess need for disaster declaration.

Vital records identified and tagged.

Essential vehicles moved to pre-designated staging areas. Non-emergency equipment and vehicles made ready for move out of danger area.

All Levee Districts and Reclamation Districts contacted every 24 hours (or more often) for situation update.

Consider evacuation of schools in threatened areas

EOC facility in Sutter set up (not activated).

Emergency personnel ensure safety of families and prepare to return to duty.

Incident Action Plan developed.

Alert Beale AFB Command Post or Disaster Preparedness Office

Stage 2 Ready for Action Phase (Water Level Greater than/equal to 51' Tisdale Weir/40' Knight's Landing)

51' Tisdale Weir/40' Knight's Landing and Forecast to Rise

Activate Level 3 EOC, and relocate personnel, if not done previously.

CAO (Emergency Operations Director), Emergency Operations Manager, and PIO coordinate notification of change of status to all agencies and emergency organizations.

Incident Action Plan developed for each operational period.

Management Team meets every 12 hours.

Assessment of conditions for advisory or mandatory evacuation.

Request Incident Management Team from CalOES if the developing situation is predicted to reach Stage 3.

53' Tisdale Weir/42.5' Knight's Landing and Forecast to Rise

Assessment of conditions for advisory or mandatory evacuation.

If all local resources are anticipated to be exhausted, CAO and/or BoS Chair, in cooperation with the City Administrator and Mayor of Yuba City and/or Live Oak, may proclaim the existence of a disaster and request the Governor to declare the county a disaster area.

CDF Incident Management Team requested if not already done.

Stage 3 Emergency Phase (Water Level is greater than 54' Tisdale Weir/43.5' Knight's Landing)

54' Tisdale Weir/43.5' Knight's Landing and Forecast to Rise

Management Team meets every 12 hours or more often as necessary.

Assess need for mandatory evacuation.

Request Sheriff to coordinate with Yuba City Police to secure evacuated areas from possible looting.

Refer to the Basic EOP and Annex 2 for additional information regarding EOC operations, recovery and mitigation operations/procedures, and/or disaster assistance.

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(D) Southeast Sutter County Basin – Feather River at Nicolaus

River stages are intended to be guides for declaring the response stages, which are also influenced by weather forecasts, dam releases and levee conditions.

When the Feather River is measured, at Nicolaus to be 39.5 feet the Emergency Management Team will enter into the Planning and Preparation Phase. This typically will begin with Stage 1. However, as stated above, the Emergency Management Team will take all factors into consideration when deciding to put this plan into effect. *The following Stages are intended to be guidelines for the Emergency Management Team and not intended to be a substitute for the decisions of the Emergency Operations Director.*

Stage 1 Planning and Preparation Phase (Water Level Below 42.6')

39.5' and Forecast to Rise

Emergency Operations Manager notifies members of the Management Team.

Identification of On-Call Duty Officer for Emergency Operations

Level 1 activation of the EOC, at 1130 Civic Center Blvd. during working hours

Emergency Operations staff closely monitors river forecasts and river levels

Emergency Operations Manager notifies REOC of plan activation and status (Duty Officer and/or Level 1 Activation of the EOC)

40' and Forecast to Rise

Level 2 activation of the EOC, if deemed necessary, location determined by Emergency Operations Director

Emergency Operations notifies REOC of plan activation and status (Duty Officer and/or Level 2 Activation of the EOC)

Begin written log.

Human Services Director initiates preliminary planning for mass care centers.

Notification of key personnel involved in emergency organization.

Management Team meets as soon as practical. Assess conditions for Advisory Evacuation and evacuation of medical facilities, rest homes, and other special needs populations.

County Health Officer requests DHHS assistance with planning for persons with medical needs.

Assess need to fully activate (Level 3) the EOC, and to request DWR and National Guard Liaison.

Request Incident Management Team from CalOES if the developing situation is predicted to reach Stage 3.

PIO begins to make regular press releases.

Assess need for disaster declaration.

Vital records identified and tagged.

Essential vehicles moved to pre-designated staging areas. Non-emergency equipment and vehicles made ready for move out of danger area.

All Levee Districts and Reclamation Districts contacted every 24 hours (or more often) for situation update.

Consider evacuation of schools in threatened areas

EOC facility in Sutter set up (not activated).

Emergency personnel ensure safety of families and prepare to return to duty.

Incident Action Plan developed.

Alert Beale AFB Command Post or Disaster Preparedness Office

Stage 2 Ready for Action Phase (Water Level Greater than/equal to 42.6')

42.6' and Forecast to Rise

Activate Level 3 EOC, and relocate personnel, if not done previously.

CAO (Emergency Operations Director), Emergency Operations Manager, and PIO coordinate notification of change of status to all agencies and emergency organizations.

Incident Action Plan developed for each operational period.

Management Team meets every 12 hours.

Assessment of conditions for advisory or mandatory evacuation.

Request Incident Management Team from CalOES if the developing situation is predicted to reach Stage 3.

44' and Forecast to Rise

Assessment of conditions for advisory or mandatory evacuation.

If all local resources are anticipated to be exhausted, CAO and/or BoS Chair, in cooperation with the City Administrator and Mayor of Yuba City and/or Live Oak, may proclaim the existence of a disaster and request the Governor to declare the county a disaster area.

CDF Incident Management Team requested if not already done.

Stage 3 Emergency Phase (Water Level is greater than 46.4')

46.4' and Forecast to Rise

Management Team meets every 12 hours or more often as necessary.

Assess need for mandatory evacuation.

Request Sheriff to coordinate with Yuba City Police to secure evacuated areas from possible looting.

Refer to the Basic EOP and Annex 2 for additional information regarding EOC operations, recovery and mitigation operations/procedures, and/or disaster assistance.

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Section 6 – DAM FAILURE PLAN AND RESPONSE

General

The following information is provided as guidelines for the Emergency Operations Team to be used within the procedural structure of SEMS and ICS and not intended to be a substitute for the decisions of the Emergency Operations 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.

Dam Failures and Typical Activities

Sutter County utilizes Emergency Action Plans provided by the operating agencies for each of the dams that would have an effect on the community. The following pages will identify the Area Dams and provide guidance for actions to take in case of a hazardous event/partial failure or complete failure of a dam.

Area Dams Surrounding Sutter County

Dam	Type	River/Stream	Owner	Location	Storage (AF)	EAP on File
(A) Oroville	Earth Fill	Feather	DWR	Butte County	3,537,600	Yes
(A) Thermalito Diversion	Concrete	Feather	DWR	Butte County	13,300	Yes
(A) Thermalito Forebay	Earth Fill	Feather	DWR	Butte County	11,768	Yes
(A) Thermalito Afterbay	Earth Fill	Feather	DWR	Butte County	57,500	Yes
(A) Lake Almanor	Concrete	Feather	PG&E	Plumas County	1,142,964	No
(B) New Bullards Bar	Concrete	Yuba	YCWA	Yuba County	966,103	Yes
(B) Englebright	Concrete	Yuba	YCWA	Yuba County	70,000	Yes
(C) Shasta	Concrete	Sacramento	USBR	Shasta County	4,552,000	Yes
(C) Keswick	Concrete	Sacramento	USBR	Shasta County	23,800	Yes
(C) Spring Creek	Earth Fill	Sacramento	USBR	Shasta County	5,015	Yes
(C) Whiskeytown	Earth Fill	Sacramento	USBR	Shasta County	241,100	Yes
(D) Camp Far West	Earth Fill	Bear	SSWD	Placer County	104,000	Yes

Notes:

DWR – Department of Water Resources

PG&E – Pacific Gas & Electric

SSWD – South Sutter Water District, 2464 Pacific Ave., Trowbridge, CA 95659, (530) 656-2242

USBR – US Bureau of Reclamation, Mid-Pacific Regional Office, 2800 Cottage Way, Sacramento, CA 95825, (916) 978-5228

YCWA – Yuba County Water Agency, 1402 D Street, Marysville, CA 95901, (530) 741-6278

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(A) Oroville Dam Failure

The following pages address actions which would be taken to respond to a failure of the Oroville Dam and associated facilities. The information provided comes from the Emergency Action Plan (EAP) on file for the Oroville Dam Facilities. This includes Thermalito Diversion, Forebay, Afterbay and Lake Almanor Dams. Failures of Thermalito Diversion and Forebay Dams individually would have negligible effects due to the low amounts of storage capacity. Thermalito Diversion Dam failure would cause increased flows to the convergence of Honcut Creek and Feather Rivers. The flow would then continue through the leveed portions of the Feather River. Thermalito Forebay Dam Failure would be channeled into the Sutter Bypass and Feather River. Thermalito Afterbay Dam Failure would also be channeled into the Sutter Bypass and Feather River. However a breach in the southern side of the dam would result in waters channeling through the Butte Basin before terminating, which would result in flooding of Live Oak and Tierra Buena. A failure of the Lake Almanor Dam would possibly cause a failure at the Oroville Dam, causing the Emergency Operations Team to follow the EAP for the Oroville Dam and to take actions as listed below.

Estimated Flood Arrival Times for Oroville Dam Failure (reported by DWR):

Location	Main Channel Flood Wave	Total Inundation Time
City of Live Oak	4.3 hours	11.3 hours
City of Yuba City	8.6 hours	24.8 hours
Town of Meridian	8.9 hours	28.0 hours
Town of Nicolaus	13.2 hours	34.0 hours

Areas Affected:

County, City of Live Oak, Town of Meridian, Town of Sutter, City of Yuba City, Town of Robbins, Town of Nicolaus

Estimated Flood Arrival Times for Thermalito Afterbay Dam Failure (reported by DWR):

Location	Main Channel Flood Wave	Total Inundation Time
City of Live Oak	12.4 hours	15.5 hours
Tierra Buena	20.6 hours	25.7 hours

Areas Affected:

County, City of Live Oak, Tierra Buena

1) Failure of Oroville Dam or Associated Facilities is Eminent or has Occurred

Event + ≤ 1.5 hours:

Emergency Operations Manager Confirms Report with Operating Agency or Flood Center

Emergency Operations Manager notifies members of the Management Team

Level 2 activation of the EOC, location determined by Emergency Operations Director

Begin written log and notify key personnel involved in emergency organization

Notification made to REOC of plan activation

Management Team meets as soon as practical. Assess conditions for Advisory/Mandatory Evacuation and evacuation of medical facilities and rest homes

Human Services notifies licensed facilities

PIO prepares press release and responds to media inquiries

Event + 1.5 hours:

Contact City of Live Oak and request Liaison for coordination of planning

Contact City of Yuba City and request Liaison for coordination of planning

Human Services Director initiates preliminary planning for mass care centers

County Health Officer requests DHHS assistance with planning for persons with medical needs

Consult with Superintendent of Schools. Consider closing/evacuation of schools in threatened areas

Assess needs to fully activate (Level 3) the EOC, and to request DWR and National Guard Liaison. EOC facility in Sutter set up (not activated)

Request Incident Management Team from CalOES if necessary

Assess need for disaster declaration

Incident Action Plan developed

Assess need and plan for advisory or mandatory evacuation of threatened areas. Consider evacuation of schools in threatened areas

PIO prepares press release and coordinates news conference if needed

All Levee Districts and Reclamation Districts contacted as needed for situation update

Event + 2.5 hours:

Essential vehicles moved to pre-designated staging areas. Non-emergency equipment and vehicles made ready for move out of danger area

Alert Beale AFB Command Post and Disaster Preparedness Office

Vital records identified and tagged

Activate Level 3 EOC, and relocate personnel, if not done previously

Based on assessment of event/emergency, order Advisory or Mandatory Evacuation

PIO prepares press release and coordinates news conference if needed

Event + 3.5 hours:

CAO (Emergency Operations Director), Emergency Operations Manager, and PIO coordinate notification of change of status to all agencies and emergency organizations.

Incident Action Plan developed for each operational period.

Management Team meets every 2 hours or as needed.

Based on assessment of event/emergency, order Advisory or Mandatory Evacuation, if not already done. If evacuations are in progress, monitor and coordinate needs.

Request Incident Management Team from CalOES if necessary

If all local resources are anticipated to be exhausted, CAO and/or BoS Chair, in cooperation with the City Administrator and Mayor of Yuba City and/or Live Oak, may proclaim the existence of a disaster and request the Governor to declare the county a disaster area.

Request Sheriff to coordinate with Yuba City Police to secure evacuated areas from possible looting.

Event + 4 hours (*Main channel flood wave arrives City of Live Oak*):

Continue evacuation and coordinate assistance as needed.

Provide Situation Report to REOC and request further equipment/assistance as needed.

PIO prepares press release and coordinates news conference if needed.

Event + 5.5 hours:

Management Team meets every 2 hours or more often as necessary.

Event + 8 hours (*Main channel flood wave arrives City of Yuba City*):

Continue evacuation and coordinate assistance as needed.

Provide Situation Report to REOC and request further equipment/assistance as needed.

Evacuation of North Sutter County should be complete, request Sheriff to secure evacuated areas from possible looting.

PIO prepares press release and coordinates news conference if needed.

Event + 11 hours (*Inundation of City of Live Oak and North County*):

Continue evacuation and coordinate assistance as needed.

Provide Situation Report to REOC and request further equipment/assistance as needed.

PIO prepares press release and coordinates news conference if needed.

Event + 15 hours:

Management Team meets every 12 hours or more often as necessary.

Recovery Plans are developed and Situation Report is provided to REOC

Situation is monitored and responded to as needed.

At this point emergency operations will continue, using established checklists and procedures. Refer to the Basic EOP and Annex 2 for additional information regarding EOC operations, recovery and mitigation operations/procedures, and/or disaster assistance.

2) Hazardous Situation Developing at Oroville Dam or Associated Facilities

Emergency Operations Manager Confirms Report with Operating Agency or Flood Center.

Emergency Operations Manager notifies members of the Management Team.

Activate Level 1 EOC at 1130 Civic Center Blvd, start 24 hour operations if needed.

Emergency Operations staff closely monitors situation and river levels.

Human Services notifies licensed facilities.

PIO prepares press release and responds to media inquiries.

If the situation escalates, refer to **1** above (**Failure of Oroville Dam or Associated Facilities is Eminent or has Occurred**)

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(B) New Bullards Bar Dam Failure

The following pages address actions which would be taken to respond to a failure of the New Bullards Bar Dam. The information provided comes from the Emergency Action Plan (EAP) on file for the New Bullards Bar Dam. This includes Englebright Dam. Failure of New Bullards Bar Dam would result in the failure of Englebright Dam causing failure/overtopping of all levees downstream. The only levees not overtopped would be the left levee of the Sutter Bypass and the north levee of the Natomas Cross Canal. Flooding would extend south to the Fremont Weir.

An individual failure of the Englebright Dam would most likely stay within the boundaries of the Feather River Levees causing minimal impact on Sutter County.

Estimated Flood Arrival Times for New Bullards Bar Dam Failure (reported by YCWA):

Location	Main Channel Flood Wave	Total Inundation Time
City of Yuba City	1 hour 15 minutes	2 hour 40 minutes
East Nicolaus	2 hours 30 minutes	4 hours
Town of Pleasant Grove	3 hours	4 hours 30 minutes

Areas Affected:

County, City of Yuba City, Town of East Nicolaus, Town of Pleasant Grove

Estimated Flood Arrival Times for Englebright Dam Failure (reported by YCWA):

Location	Main Channel Flood Wave	Total Inundation Time
City of Yuba City	1 hour	N/A
East Nicolaus	2 hours 15 minutes	N/A

Areas Affected:

County, City of Yuba City, East Nicolaus

1) Failure of New Bullards Bar Dam is Eminent or has Occurred

Event + ≤ 1 hour:

Emergency Operations Manager Confirms Report with Operating Agency or Flood Center.

Emergency Operations Manager notifies members of the Management Team.

Management Team meets.

Activate Level 3 EOC, and relocate personnel, if not done previously.

Based on assessment of event/emergency, order Mandatory Evacuation, if not already done. If evacuations are in progress, monitor and coordinate needs.

PIO prepares press release and responds to media inquiries.

Request Sheriff to coordinate with Yuba City Police to secure evacuated areas from possible looting.

Event + 1.5 hours:

Continue evacuation and coordinate assistance as needed.

Provide Situation Report to REOC and request further equipment/assistance as needed.

PIO prepares press release and coordinates news conference if needed.

Event + 2.5 hours:

Management Team meets every 2 hours or more often as necessary.

Continue evacuation and coordinate assistance as needed.

Provide Situation Report to REOC and request further equipment/assistance as needed.

PIO prepares press release and coordinates news conference if needed.

Event + 4 hours:

Provide Situation Report to REOC and request further equipment/assistance as needed.

PIO prepares press release and coordinates news conference if needed.

Recovery Plans are developed and Situation Report is provided to REOC

Situation is monitored and responded to as needed.

At this point emergency operations will continue, using established checklists and procedures. Refer to the Basic EOP and Annex 2 for additional information regarding EOC operations, recovery and mitigation operations/procedures, and/or disaster assistance.

2) Hazardous Situation Developing at New Bullards Bar Dam or Associated Facilities

Event + ≤ 1.5 hours:

Emergency Operations Manager Confirms Report with Operating Agency or Flood Center.

Emergency Operations Manager notifies members of the Management Team.

Activate Level 1 EOC at 1130 Civic Center Blvd, start 24 hour operations if needed.

Emergency Operations staff closely monitors situation and river levels.

Management Team meets as soon as possible. Assess need for Advisory/Mandatory Evacuation and evacuation of medical facilities and rest homes.

Contact City of Yuba City and request Liaison for coordination of planning/evacuation

Human Services notifies licensed facilities.

PIO prepares press release and responds to media inquiries.

Event + 2.5 hours and situation unstable/escalating:

Level 2 activation of the EOC, location determined by Emergency Operations Director

Begin written log and notify key personnel involved in emergency organization.

Management Team meets and Incident Action Plan developed.

Notification made to REOC of plan activation.

Human Services notifies licensed facilities.

Human Services Director initiates preliminary planning for mass care centers.

County Health Officer requests DHHS assistance with planning for persons with medical needs.

Consult with Superintendent of Schools. Consider closing/evacuation of schools in threatened areas

Assess needs to fully activate (Level 3) the EOC, and to request DWR and National Guard Liaison. EOC facility in Sutter set up (not activated).

Request Mutual Aid resources (personnel, equipment), if needed.

Assess need for disaster declaration.

Assess need and plan for advisory or mandatory evacuation of threatened areas. Consider evacuation of schools in threatened areas

PIO prepares press release and coordinates news conference if needed.

All Levee Districts and Reclamation Districts contacted as needed for situation update.

Event + 3.5 hours and situation unstable/escalating:

CAO (Emergency Operations Director), Emergency Operations Manager, and PIO coordinate notification of change of status to all agencies and emergency organizations.

Essential vehicles moved to pre-designated staging areas. Non-emergency equipment and vehicles made ready for move out of danger area.

Alert Beale AFB Disaster Preparedness Office.

Vital records identified and tagged.

Consider activating Level 3 EOC, and relocate personnel, if not done previously.

Based on assessment of event/emergency, order Advisory or Mandatory Evacuation

PIO prepares press release and coordinates news conference if needed.

Event + 4 hours and situation is continuing to escalate:

Consider activating Level 3 EOC, and relocate personnel, if not done previously.

Incident Action Plan developed for each operational period.

Management Team meets every 2 hours or as needed.

Based on assessment of event/emergency, order Advisory or Mandatory Evacuation, if not already done. If evacuations are in progress, monitor and coordinate needs.

Request Incident Management Team from CalOES if necessary

If all local resources are anticipated to be exhausted, CAO and/or BoS Chair, in cooperation with the City Administrator and Mayor of Yuba City and/or Live Oak, may

proclaim the existence of a disaster and request the Governor to declare the county a disaster area.

Request Sheriff to coordinate with Yuba City Police to secure evacuated areas from possible looting.

If the situation continues to escalate, refer to **1** above (**Failure of New Bullards Bar Dam is Eminent or has Occurred**)

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(C) Shasta Dam Failure

The following pages address actions which would be taken to respond to a failure of the Shasta Dam and associated facilities. The information provided comes from the Emergency Action Plan (EAP) on file for the Shasta Dam. This includes Keswick and Spring Creek Dams. *Due to the distances involved, these arrival times are extrapolated from inundation scenarios and maps provided by USBR.*

Estimated Flood Arrival Times for Shasta Dam Failure (reported by USBR):

Location	Main Channel Flood Wave	Total Inundation Time
City of Yuba City	N/A	Approximately 134 hours
Town of Meridian	Approximately 100 hours	Approximately 115 hours
Town of Robbins	N/A	Approximately 147 hours

Areas Affected:

County, City of Yuba City, Town of Meridian, Town of Robbins

Due to the distances involved, response times listed below in the checklists for the Emergency Operations Team are taken from the Shasta Dam checklists listed above for the purposes of establishing an order of precedence. The Emergency Operations Director will establish actual timeframes upon the notification of an emergency, and as the situation unfolds.

1) Failure of Shasta Dam or Associated Facilities is Eminent or has Occurred

Event + \leq 2.5 hours:

Emergency Operations Manager Confirms Report with Operating Agency or Flood Center

Emergency Operations Manager notifies members of the Management Team

Level 2 activation of the EOC, location determined by Emergency Operations Director

Begin written log and notify key personnel involved in emergency organization

Notification made to REOC of plan activation

Management Team meets as soon as practical. Assess conditions for Advisory/Mandatory Evacuation and evacuation of medical facilities and rest homes

Human Services notifies licensed facilities

PIO prepares press release and responds to media inquiries

Event + 3.5 hours:

Contact City of Yuba City and request Liaison for coordination of planning

Human Services Director initiates preliminary planning for mass care centers

County Health Officer requests DHHS assistance with planning for persons with medical needs

Assess needs to fully activate (Level 3) the EOC, and to request DWR and National Guard Liaison. EOC facility in Sutter set up (not activated)

Request Incident Management Team from CalOES if necessary

Assess need for disaster declaration

Incident Action Plan developed

Assess need and plan for advisory or mandatory evacuation of threatened areas.

Consult with Superintendent of Schools. Consider closing/evacuation of schools in threatened areas

PIO prepares press release and coordinates news conference if needed

All Levee Districts and Reclamation Districts contacted as needed for situation update

Event + 5.5 hours:

Essential vehicles moved to pre-designated staging areas. Non-emergency equipment and vehicles made ready for move out of danger area

Alert Beale AFB Command Post and Disaster Preparedness Office

Vital records identified and tagged

Activate Level 3 EOC, and relocate personnel, if not done previously

Based on assessment of event/emergency, order Advisory or Mandatory Evacuation

PIO prepares press release and coordinates news conference if needed

Event + 8.5 hours:

CAO (Emergency Operations Director), Emergency Operations Manager, and PIO coordinate notification of change of status to all agencies and emergency organizations.

Incident Action Plan developed for each operational period.

Management Team meets every 12 hours or as needed.

Based on assessment of event/emergency, order Advisory or Mandatory Evacuation, if not already done. If evacuations are in progress, monitor and coordinate needs.

Incident Management Team requested from Cal EMA if not already done.

If all local resources are anticipated to be exhausted, CAO and/or BoS Chair, in cooperation with the City Administrator and Mayor of Yuba City and/or Live Oak, may proclaim the existence of a disaster and request the Governor to declare the county a disaster area.

Request Sheriff to coordinate with Yuba City Police to secure evacuated areas from possible looting.

Event + 12 hours:

Based on assessment of event/emergency, order Advisory or Mandatory Evacuation, if not already done. If evacuations are in progress, monitor and coordinate needs.

Provide Situation Report to REOC and request further equipment/assistance as needed.

PIO prepares press release and coordinates news conference if needed.

Event + 15 hours:

Based on assessment of event/emergency, order Advisory or Mandatory Evacuation, if not already done. If evacuations are in progress, monitor and coordinate needs.

Management Team meets as necessary.

Event + 18 hours:

Based on assessment of event/emergency, order Advisory or Mandatory Evacuation, if not already done. If evacuations are in progress, monitor and coordinate needs.

Provide Situation Report to REOC and request further equipment/assistance as needed.

Evacuation of North Sutter County should be complete, request Sheriff to secure evacuated areas from possible looting.

PIO prepares press release and coordinates news conference if needed.

Event + 24 hours:

Based on assessment of event/emergency, order Advisory or Mandatory Evacuation, if not already done. If evacuations are in progress, monitor and coordinate needs.

Continue evacuation and coordinate assistance as needed.

Provide Situation Report to REOC and request further equipment/assistance as needed.

PIO prepares press release and coordinates news conference if needed.

Event + 36 hours:

Based on assessment of event/emergency, order Advisory or Mandatory Evacuation, if not already done. If evacuations are in progress, monitor and coordinate needs.

Management Team meets every 12 hours or more often as necessary.

Situation is monitored and responded to as needed.

Event + 48 hours:

Based on assessment of event/emergency, order Advisory or Mandatory Evacuation, if not already done. If evacuations are in progress, monitor and coordinate needs.

Management Team meets every 12 hours or more often as necessary.

Recovery Plans are developed and Situation Report is provided to REOC

Situation is monitored and responded to as needed.

Event + 85 hours (Initial wave reaches North County line):

Based on assessment of event/emergency, order Advisory or Mandatory Evacuation, if not already done. If evacuations are in progress, monitor and coordinate needs.

Management Team meets every 12 hours or more often as necessary.

Recovery Plans are developed and Situation Report is provided to REOC

Situation is monitored and responded to as needed.

Event + 110 hours (Initial wave reaches Meridian):

Based on assessment of event/emergency, order Advisory or Mandatory Evacuation, if not already done. If evacuations are in progress, monitor and coordinate needs.

Management Team meets every 12 hours or more often as necessary.

Recovery Plans are developed and Situation Report is provided to REOC

Situation is monitored and responded to as needed.

Event + 130 hours (Initial wave reaches Yuba City):

Based on assessment of event/emergency, order Advisory or Mandatory Evacuation, if not already done. If evacuations are in progress, monitor and coordinate needs.

Management Team meets every 12 hours or more often as necessary.

Recovery Plans are developed and Situation Report is provided to REOC

Situation is monitored and responded to as needed.

Event + 140 hours (Initial wave reaches Robbins):

Based on assessment of event/emergency, order Advisory or Mandatory Evacuation, if not already done. If evacuations are in progress, monitor and coordinate needs.

Management Team meets every 12 hours or more often as necessary.

Recovery Plans are developed and Situation Report is provided to REOC

Situation is monitored and responded to as needed.

At this point emergency operations will continue, using established checklists and procedures. Refer to the Basic EOP and Annex 2 for additional information regarding EOC operations, recovery and mitigation operations/procedures, and/or disaster assistance.

2) Hazardous Situation Developing at Shasta Dam or Associated Facilities

Emergency Operations Manager Confirms Report with Operating Agency or Flood Center.

Emergency Operations Manager notifies members of the Management Team.

Activate Level 1 EOC at 1130 Civic Center Blvd, start 24 hour operations if needed.

Emergency Operations staff closely monitors situation and river levels.

Human Services notifies licensed facilities.

PIO prepares press release and responds to media inquiries.

If the situation escalates, refer to **1** above (**Failure of Shasta Dam or Associated Facilities is Eminent or has Occurred**)

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(D) Camp Far West Dam Failure

The following pages address actions which would be taken to respond to a failure of the Camp Far West Dam. The information provided comes from the Emergency Action Plan (EAP) on file for the Camp Far West Dam. This includes Rollins and Combie Dams located upstream. Failure of Rollins Dam would result in the failure of both the Combie and Camp Far West Dam, and flooding east of the Feather River levees downstream.

An independent failure of the Combie Dam is not expected to result in a failure of the Camp Far West Dam

Estimated Flood Arrival Times for New Bullards Bar Dam Failure (reported by SSWD):

Location	Main Channel Flood Wave	Total Inundation Time
East Nicolaus (SSWD Office)	1 hour 30 minutes	2 hours
Town of Nicolaus	2 hours 10 minutes	2 hours 45 minutes
Town of Pleasant Grove	2 hours 45 minutes	3 hours 30 minutes

Areas Affected:

County, East Nicolaus, Town of Nicolaus, Town of Pleasant Grove

1) Failure of Camp Far West Dam is Eminent or has Occurred

Event + ≤ 1 hour:

Emergency Operations Manager Confirms Report with Operating Agency or Flood Center.

Emergency Operations Manager notifies members of the Management Team.

Management Team meets.

Activate Level 3 EOC, and relocate personnel, if not done previously.

Based on assessment of event/emergency, order Mandatory Evacuation, if not already done. If evacuations are in progress, monitor and coordinate needs.

PIO prepares press release and responds to media inquiries.

Request Sheriff to coordinate with Yuba City Police to secure evacuated areas from possible looting.

Event + 1.5 hours:

Continue evacuation and coordinate assistance as needed.

Provide Situation Report to REOC and request further equipment/assistance as needed.

PIO prepares press release and coordinates news conference if needed.

Event + 2.5 hours:

Management Team meets every 2 hours or more often as necessary.

Continue evacuation and coordinate assistance as needed.

Provide Situation Report to REOC and request further equipment/assistance as needed.

PIO prepares press release and coordinates news conference if needed.

Event + 4 hours:

Provide Situation Report to REOC and request further equipment/assistance as needed.

PIO prepares press release and coordinates news conference if needed.

Recovery Plans are developed and Situation Report is provided to REOC

Situation is monitored and responded to as needed.

At this point emergency operations will continue, using established checklists and procedures. Refer to the Basic EOP and Annex 2 for additional information regarding EOC operations, recovery and mitigation operations/procedures, and/or disaster assistance.

2) Hazardous Situation Developing at Camp Far West Dam or Associated Facilities

Event + ≤ 1.5 hours:

Emergency Operations Manager Confirms Report with Operating Agency or Flood Center.

Emergency Operations Manager notifies members of the Management Team.

Activate Level 1 EOC at 1130 Civic Center Blvd, start 24 hour operations if needed.

Emergency Operations staff closely monitors situation and river levels.

Management Team meets as soon as possible. Assess need for Advisory/Mandatory Evacuation and evacuation of medical facilities and rest homes.

Human Services notifies licensed facilities.

PIO prepares press release and responds to media inquiries.

Event + 1.5 hours and situation unstable/escalating:

Level 2 activation of the EOC, location determined by Emergency Operations Director

Begin written log and notify key personnel involved in emergency organization.

Management Team meets and Incident Action Plan developed.

Notification made to REOC of plan activation.

Human Services notifies licensed facilities.

Human Services Director initiates preliminary planning for mass care centers.

County Health Officer requests DHHS assistance with planning for persons with medical needs.

Consult with Superintendent of Schools. Consider closing/evacuation of schools in threatened areas

Assess needs to fully activate (Level 3) the EOC, and to request DWR and National Guard Liaison. EOC facility in Sutter set up (not activated).

Request Incident Management Team from CalOES if necessary

Assess need for disaster declaration.

Assess need and plan for advisory or mandatory evacuation of threatened areas. Consider evacuation of schools in threatened areas

PIO prepares press release and coordinates news conference if needed.

All Levee Districts and Reclamation Districts contacted as needed for situation update.

Event + 2.5 hours and situation unstable/escalating:

CAO (Emergency Operations Director), Emergency Operations Manager, and PIO coordinate notification of change of status to all agencies and emergency organizations.

Essential vehicles moved to pre-designated staging areas. Non-emergency equipment and vehicles made ready for move out of danger area.

Alert Beale AFB Disaster Preparedness Office.

Vital records identified and tagged.

Consider activating Level 3 EOC, and relocate personnel, if not done previously.

Based on assessment of event/emergency, order Advisory or Mandatory Evacuation

PIO prepares press release and coordinates news conference if needed.

Event + 4 hours and situation is continuing to escalate:

Consider activating Level 3 EOC, and relocate personnel, if not done previously.

Incident Action Plan developed for each operational period.

Management Team meets every 2 hours or as needed.

Based on assessment of event/emergency, order Advisory or Mandatory Evacuation, if not already done. If evacuations are in progress, monitor and coordinate needs.

Request Incident Management Team from CalOES if necessary

If all local resources are anticipated to be exhausted, CAO, and/or BoS Chair, may proclaim the existence of a disaster and request the Governor to declare the county a disaster area.

Request Sheriff to coordinate mutual aid to secure evacuated areas from possible looting.

If the situation continues to escalate, refer to **1** above (**Failure of Camp Far West Dam is Eminent or has Occurred**)

Attachment A
Emergency Support Functions - Flooding and Dam Failure

Emergency Support Functions	Management	Operations	Plan/Intel	Logistics	Fin/Admin
ESF-1 Transportation	EO Director, Agency Reps	PW/SO	Resource Tracking And Demobilization	Procurement Branch	
ESF-2 Communication and Information Technology	EO Director, Agency Reps	SO Dispatch	Situation Analysis	Info Tech & Communications Branch	
ESF-3 Public Works and Engineering	OA Public Works Branch Chief	PW/Agency Reps	Situation Analysis		
ESF-4 Firefighting	OA Fire Coordinator	Fire Branch	Situation Analysis	Procurement Branch	
ESF-5 Emergency Management	EO Director/Incident Commander	OPS Chief	P&I Chief	Logistics Chief	Admin Chief
ESF-6 Mass Care, Housing, and Human Services	OA Mass Care and Shelter Branch Chief	OA Human Services	Situation Analysis	Procurement Branch	
ESF-7 Resource Support	OA Logistics Branch Chief		Resource Tracking	Procurement Branch	Finance
ESF-8 Public Health and Medical Services	OA Health Branch Chief	Health Unit Leader	Situation Analysis	Procurement Branch	
ESF-9 Urban Search and Rescue	SCSO	SCSO/Fire	Situation Analysis	Procurement Branch	
ESF-10 Oil and HazMat Response	OA HazMat Coordinator	Fire Branch	Situation Analysis		
ESF-11 Agriculture and Natural Resources	Ag Commissioner	AG	Situation Analysis		
ESF-12 Energy	EO Director, Agency Reps	PW	Situation Analysis		
ESF-13 Public Safety and Security	OA Law Coordinator	SCSO	Situation Analysis		
ESF-14 Long Term Community Recovery	EO Director		Documentation and Demobilization	Personnel Branch	Finance
ESF-15 External Affairs	EO Director/PIO		P&I Chief		

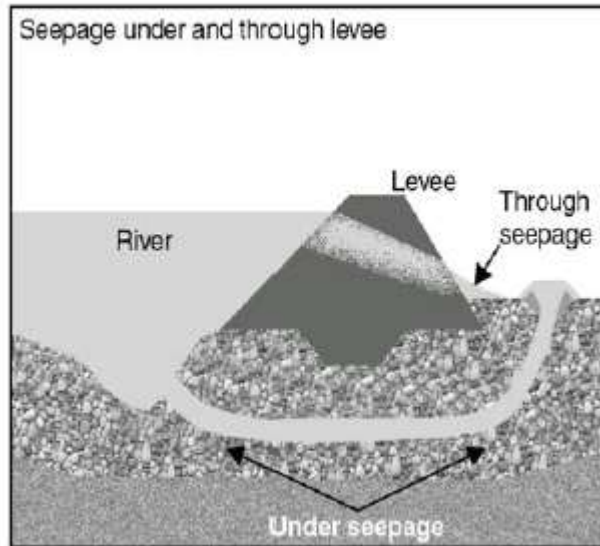
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Attachment B

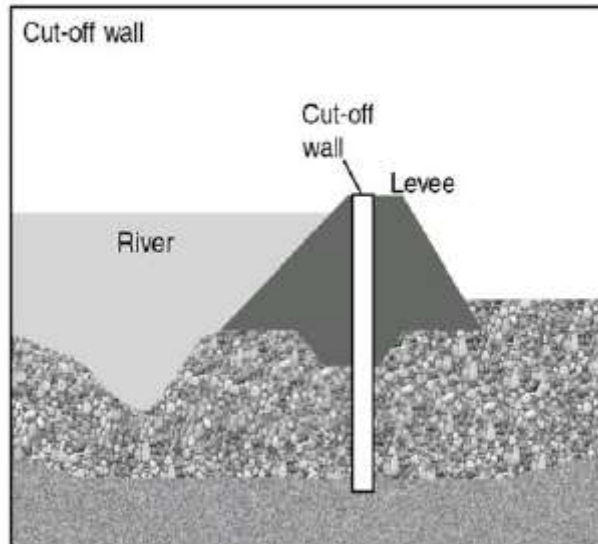
Why Levees Fail

The following diagrams are examples of why a levee might fail and how to improve a levee.

Reasons that levees fail



Levee improvement to prevent seepage



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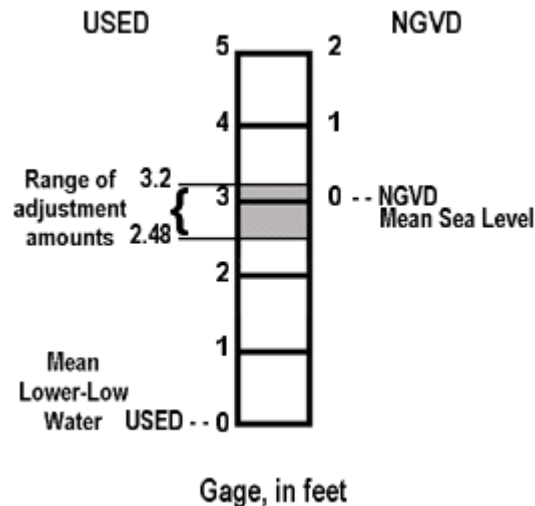
Attachment C

USED and NGVD Datum

The following definitions are necessary to understand reports released by various agencies during a flood event/emergency. Some agencies, such as the US Army Corps of Engineers, will use the USED and others, such as the California Department of Water Resources (DWR) will use NGVD dependent upon the equipment used to measure/monitor water levels on the rivers and streams.

The Zero datum for each gauge listed is referenced to either National Geodetic Vertical Datum (NGVD)* or to the United States Engineering Datum (USED)**.

In the Sacramento and San Joaquin River Basins, the adjustment from USED to NGVD varies from gauging station to gauging station within a range of 2.48 feet to 3.2 feet. The commonly used adjustment, when not otherwise known, is 3.0 feet.



Sutter County employs the USED scale when calculating the height of river levels against the levee. All heights identified in this annex for river levels are USED.

Notes:

* Previous shown as U.S. Coast and Geodetic Survey Mean Sea Level Datum (US.C.&GS)

** Previous shown as U.S. Army Corps of Engineers' Datum (C. of E.)

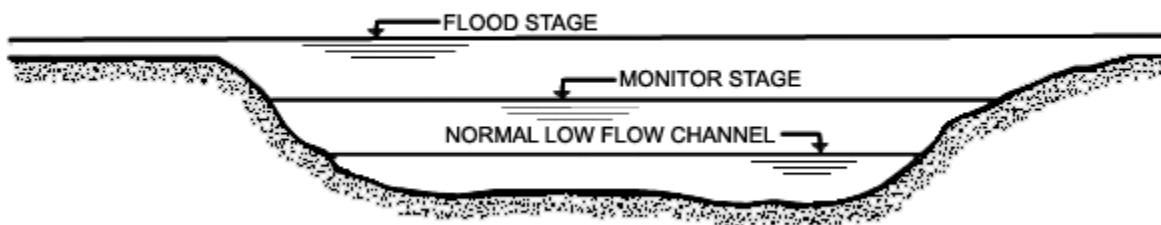
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Attachment D

River Stage Definitions

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

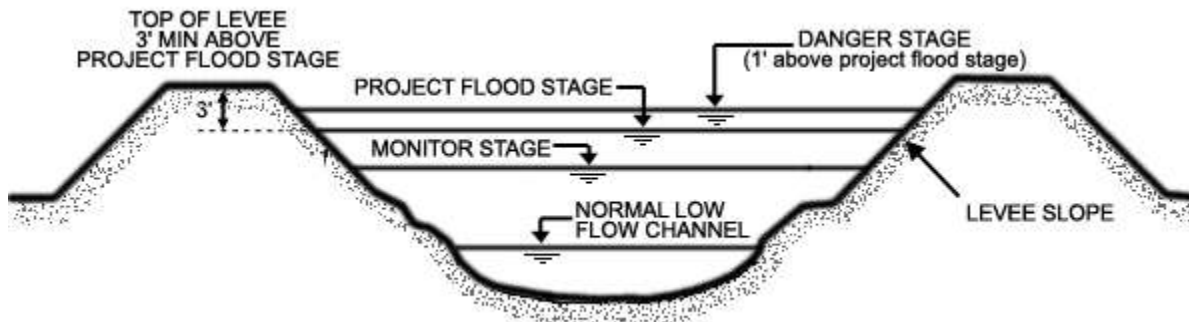
MONITOR - FLOOD - DANGER STAGES



CROSS SECTION - TYPICAL NON-LEVEED STREAM

MONITOR STAGE - The Stage at which initial action must be taken by concerned interests (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.



CROSS SECTION-TYPICAL LEVEED STREAM

MONITOR STAGE - The Stage at which patrol of flood control project levees by the responsible levee maintaining agency 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 levees.

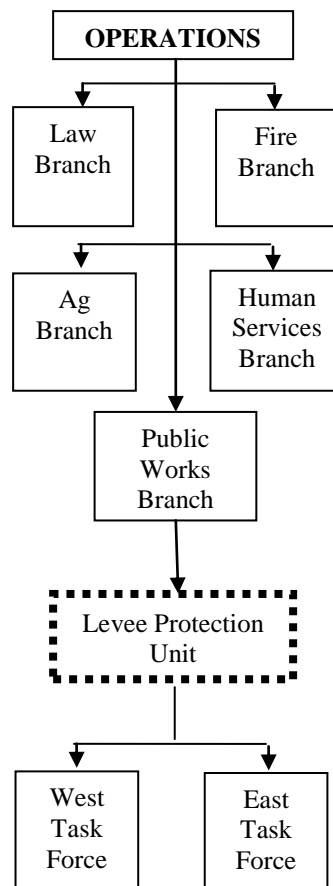
DANGER STAGE - The Stage at which the flow in a flood control project is greater than maximum design capacity and where there is extreme danger with threat of significant hazard to life and property in the event of levee failure. This is generally 1 foot above project flood stage.

Attachment E

Levee Protection Unit Description

After the 1997 floods, Sutter County established a Levee Protection Liaison Unit under the Public Works Operations Branch. In 2013, the California Department of Water Resources (DWR) provided a grant to Levee Maintaining Agencies (LMA) to develop flood emergency response plans and associated maps, equipment, and communications. During late 2014 and early 2015, discussion turned to how to integrate the LMA with the Operation Area (OA) Emergency Operations Center (EOC)/

The Emergency Operations Manager renamed the Levee Protection Liaison Unit to Levee Protection Unit (LPU). The LPU reports to the Public Works Operations Branch Coordinator and consists of two Task Forces. The following diagram shows the LPU in relation to other units in the Public Works Operations Branch in the EOC Operations Section.



The East and West Task Forces are established based on geographic considerations of past flood fight operations. Historically, floods and high-water events occur east or west of the Sutter Bypass on the Feather or Sacramento Rivers. It was decided to establish two Task Forces based on this commonality. Each task force will consist of a Sutter County EOC Representative as Task Force Leader and the LMA/Special District east or west of the Sutter Bypass. The Task

Force Leader will report to the LPU Leader who will report to the Public Works Operations Branch Coordinator. The following is a breakout of the two task forces:

LPU East Task Force

- Sutter County EOC Representative as Task Force Leader
- Other Sutter County Representatives as needed
- DWR Maintenance Areas East of the Sutter Bypass
- Gilsizer Drainage District
- Levee District One
- Levee District Nine
- Reclamation District 1000
- Reclamation District 1001
- Meridian Fire Protection District*
- Robbins Fire Protection*

LPU West Task Force

- Sutter County EOC Representative as Task Force Leader
- Other Sutter County Representatives as needed
- DWR Maintenance Areas West of the Sutter Bypass
- Reclamation District 70
- Reclamation District 1500
- Reclamation District 1660
- Nicolaus Fire Protection District*
- Pleasant Grove Fire Protection District*

* These districts will coordinate with the Sutter County Fire Mutual Aid Coordinator as needed/required.

The Task Forces primary objectives during a flood emergency will be to coordinate flood fighting capabilities and resources. The Task Force Leader will be responsible for gathering information and providing situational updates to the Operations and Plans/Intelligence Sections to ensure support to most critical needs.

The LPU and the two Task Forces will refine their duties and responsibilities through plan reviews, trainings, and exercises, as well as real events. Updates to the above responsibilities will be made as needed.