Emergency Action Plan

KINGS RIVER CONSERVATION DISTRICT

KINGS RIVER CHANNEL IMPROVEMENT PROJECT

Riverdale Field Office

21098 South Valentine Avenue

Riverdale, California 93656

December 22, 2021

APPROVED BY: _____

Charlotte Gallock
Chief Engineer

DATE ISSUED: _12/21/2022_____

Control Copy Record

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1	Kings River Conservation District	Flood Maintenance Supervisor
2	Kings River Conservation District	Manager of Flood Maintenance
3	Kings River Conservation District	Riverdale Office
4	Kings River Conservation District	Chief Engineer
5	Kings River Conservation District	General Manager
6	Kings River Water Association	Watermaster
7	Kings River Conservation District	Deputy GM / CFO
8	Kings County Sheriff	Dispatch
9	Fresno County Sheriff	Dispatch

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1.0 INTRODUCTION

1.1 Statement of Purpose

The purpose of this plan is to reduce the risk of loss of human life and injury and to minimize property damage in the event of an actual or potential emergency associated with the Kings River Flood Project. This document is meant to provide a general overview of the protocol and contact information in the event of an emergency. A detailed plan for emergency response is contained in the Kings River Flood Safety Response plan which is attached to this document. It is recommended that everyone familiarize themselves with this plan and its protocols.

KRCD management is responsible for implementation, training, and maintenance of all response plans.

1.2 State-Federal Flood Operations Center

This plan leverages the State-Federal Flood Operations Center when responding to emergencies. The State-Federal Flood Operations Center in Sacramento coordinates flood response activities and disseminates flood forecasts and warnings to the public. Staff is also available year-round to track incidents with potential flood impacts. When activated during flood emergencies, flood incidents, or other high-water events, depending on the scale of the event, one or both centers are staffed in compliance with the Standardized Emergency Management System (SEMS) with additional personnel from other branches within the California Department of Water Resources. A number of federal, state, and local agencies cooperate with the Flood Operations Center including the U.S. Army Corps of Engineers, Federal Emergency Management Agency, and other local levee maintain agencies. An informational sheet on the State-federal Flood Operations Center is provided at:

https://water.ca.gov/What-We-Do/Emergency-Response

2.0 THE FOUR STEP PROCESS FOR DETERMINATION

2.1 STEP 1 – DETECTION

Step 1 involves emergency detection, evaluation, and incident classification. Regular surveillance at the site will be the normal method of detecting emergency situations. For conditions beyond the normal range of operations, contact the U.S. Army Corps of Engineers (USACE) for assistance with evaluations of the conditions.

Each event or situation will be placed in one of the following classifications:

i. **Emergency Level 1 – Unusual Event or Slowly Developing Situations**

This classification indicates a situation is developing; however, the levee is not in danger of failing. Spillway related flooding is possible or expected. Downstream residents need to be notified if flooding threatens life or property.

ii. **Emergency Level 2 – Potential Failure**

This classification indicates that a situation is developing that could cause the levee to fail. A reasonable amount of time is available for analysis before deciding on evacuation of residents. Emergency responders in affected areas shall be alerted that an unsafe situation is developing.

iii. **Emergency Level 3 – Imminent Failure**

This classification indicates levee failure is imminent or flooding threatens life and property. When it is determined that there is no longer time available to implement corrective measures to prevent failure, and order for evacuation of residents in potential inundation areas shall be issued.

2.2 STEP 2 – NOTIFICATION FLOWCHARTS

Notification flowcharts have been prepared to assist personnel during an emergency for the various levels. The charts in Reference 1A, identify who is responsible for notifying representatives and/or emergency management officials; what is the prioritized order in which individuals are to be notified; and who is to be notified. The contacts within the notification flowcharts will be reviewed annually.

2.3 STEP 3 – PREVENTATIVE ACTIONS

The next step is for the Flood Project Operator to assess the situation and determine possible actions to prevent a levee failure or to mitigate the effects of the failure if f1ailure is imminent or occurring. This will likely require additional contact to responders and potential technical, equipment, and material resources.

2.4 STEP 4 – TERMINATION & FOLLOW-UP

Step 4 involves event termination and follow-up activities. Once conditions indicate that there is no longer an emergency within the flood project, the EAP operations must eventually be terminated and follow-up procedures completed.

The Incident Commander is responsible for terminating the emergency event and relaying this decision. It is then the responsibility of each person to notify the same group of contacts that were notified during the original event to inform those people that the event has been terminated.

Prior to the termination of an Emergency Level 3 event that has not caused actual levee failure; the Operator will inspect the levee to determine whether any damage has occurred that could potentially result in loss of life, injury, or property damage. If it is determined that conditions do not pose a threat to people or property, then the Incident Commander will terminate EAP operations as described above.

The Flood Project Operator shall assure that a Levee Emergency Situation Report is completed to document the emergency event and all actions that were taken.

3.0 Roles and Responsibilities

3.1 Project Operator's Representative

The Project Operator's Representative includes both the on-site maintenance personnel and administrative members.

As soon as an emergency event is observed or reported, immediately determine the emergency level:

i. Emergency Level 1: Unusual event, slowly developing

ii. Emergency Level 2: Potential levee failure situation, rapidly developing

iii. Emergency Level 3: Levee failure appears imminent or is on progress

iv. Immediately notify the personnel in the order shown on the notification chart for the appropriate level.

v. Provide updates of the situation to the police/sheriff dispatcher to assist them in making timely and accurate decisions regarding warnings and evacuations.

vi. Provide leadership to ensure the EAP is reviewed and updated annually and copies of the revised EAP are distributed to all who received copies of the original EAP.

3.2 Incident Commander (Kings County Sherriff, Fresno County Sherriff)

The command function consists of establishing the Incident Command Post, protecting life and property, controlling personnel and equipment resources, maintaining accountability for responder and public safety, and establishing and maintaining an effective liaison with outside agencies and organizations. Duties include the following:

i. Establishing command.

ii. Ensuring responder safety.

iii. Assessing incident priorities.

iv. Determining operational objectives

v. Developing and implementing the Incident Action Plan.

vi. Developing an appropriate organizational structure.

vii. Maintaining a manageable span of control.

viii. Managing incident resources.

ix. Coordinating overall emergency activities.

x. Coordinating the activities of outside agencies.

xi. Authorizing the release of information to the media.

xii. Terminating the emergency.

xiii. Participating in an annual review and update of the EAP.

3.3 State-Federal Flood Operations Center (FOC)

The State-Federal Flood Operations Center is the focal point for the gathering, analysis, and dissemination of flood and water-relate information. During emergency situations, the FOC provides a facility from which the California Department of Water Resources can centrally coordinate emergency response state-wide. The FOC will provide coordination with Cal EMA during an emergency.

3.4 U.S. Army Corps of Engineers (USACE)

In the event of an emergency within the flood project, the USACE may do the following:

- Advise the flood project operator of the emergency level determination.

- Advise the flood project operator of remedial actions to take.
- Inspect the levee during the emergency.

4.0 EAP Maintenance

4.1 Training & Exercises

All people involved in the EAP shall be trained to ensure that they are thoroughly familiar with the elements of the plan, their responsibilities and duties in the plan, and if applicable, types and availability of equipment. Personnel should be trained in problem detection and evaluation, and appropriate corrective measures. This training is essential for proper evaluation of developing situations at all levels of responsibility.

The EAP should also be exercised in the form of at least a Tabletop Exercise on a periodic basis.

4.2 Annual Review

This plan shall be reviewed and updated at least once a year by the Flood Project Operator. The EAP annual review will include the following:

i. Calling all contacts on the notification charts in the EAP to verify that the phone numbers and persons in the specified positions are current. The EAP will be revised if any of the contacts have changed.

ii. Contacting the local law enforcement agency to verify the phone numbers and persons in the specified positions. In addition, the agency representative will be asked if they know where the EAP is kept and if the responsibilities described in the EAP are understood.

iii. Calling the locally available resources to verify that the phone numbers, addresses, and services are current.

4.3 Revisions

The Flood Project Operator is responsible for updating the EAP document. The EAP document held by the Flood Project Operator is the master document. When revisions occur, the Flood Project Operator will provide the revised pages and a revised revision summary page to all the EAP document holders. The document holders are responsible for revising outdated copy of the respective document(s) whenever revisions are received. Outdated pages shall be immediately discarded to avoid any confusion with the revisions. A list of revisions can be found in the preface of this document.

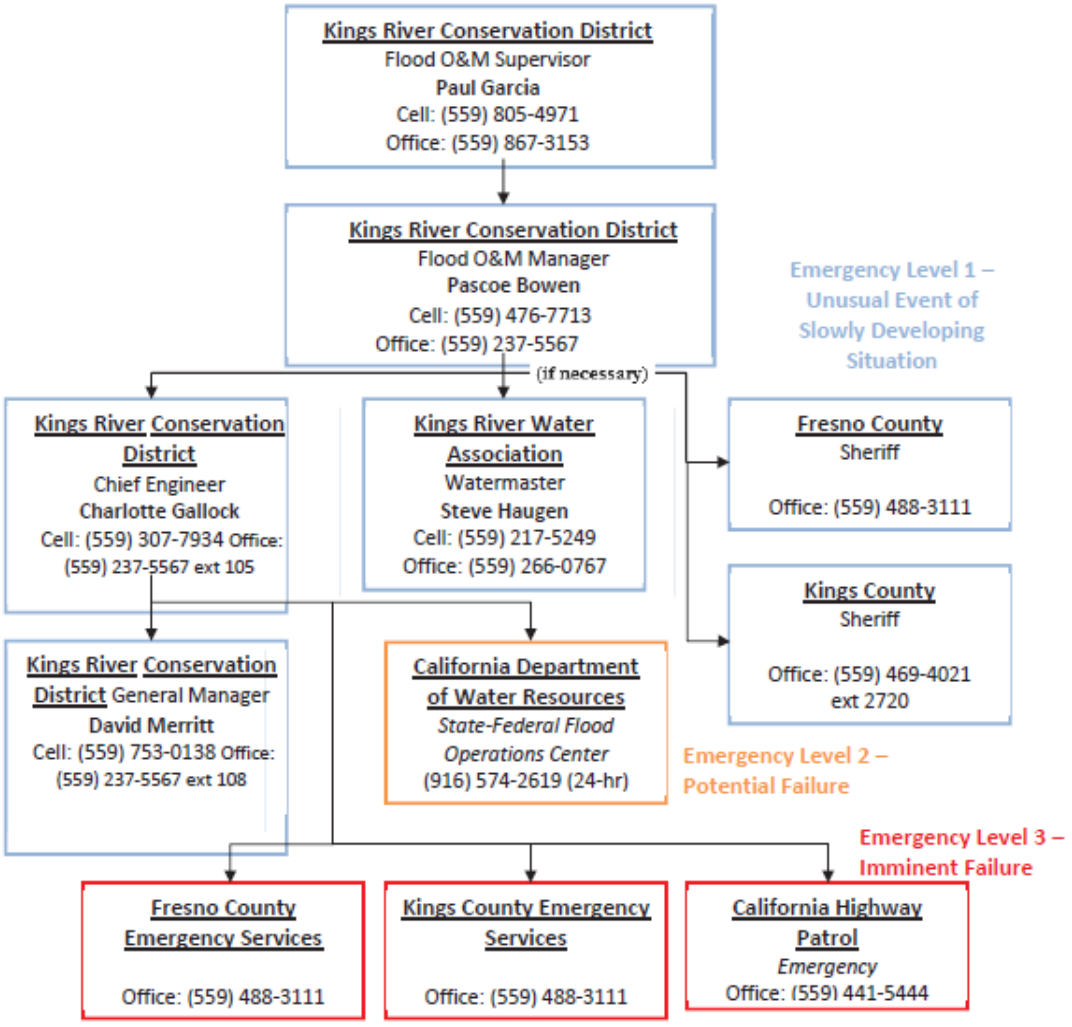
4.4 Distribution

Control copies of this Emergency Action Plan have been provided to all individuals of groups who are involved in the plan. The holders of the control copies of this EAP can be found in the preface of this document.

Reference 1A – Notification Flowchart for Emergencies

Emergency Call-Down Tree

The following flowchart indicates which personnel should be notified in the event of an emergency and at which level of emergency.



REVISION LOG

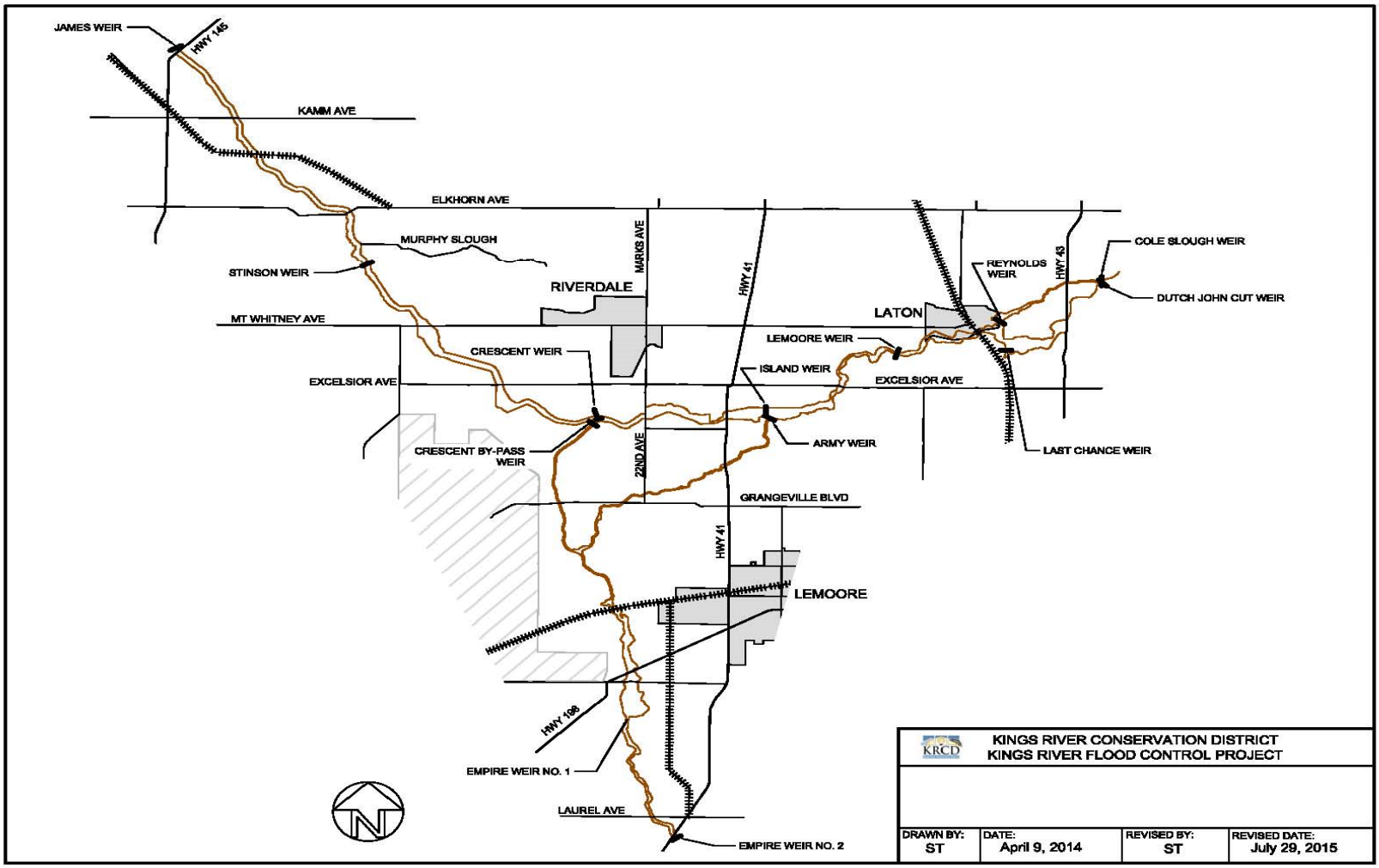
The revision history for this EAP

Effective Date	Version Number	Revised By:	Revision History
1/1/2012	1	Steve Stadler	Initial plan creation
9/1/2015	2	David Merritt	Updated flow charts and errata changes
1/25/2016	3	David Merritt	Updated flow charts
1/25/2020	4	Pascoe Bowen	Updated contact information
12/22/2022	5	Pascoe Bowen	Updated flow chart and contact information

APPENDIX A-1

Kings River Conservation District

Flood Control Project Overview Map


JAMES WEIR
HWY 145
KAMM AVE
ELKHORN AVE
MURPHY SLOUGH
STINSON WEIR
MARKS AVE
RIVERDALE
HWY 41
MT WHITNEY AVE
CRESCENT WEIR
EXCELSIOR AVE
CRESCENT BY-PASS WEIR
22ND AVE
GRANGEVILLE BLVD
HWY 41
LEMOORE
HWY 198
EMPIRE WEIR NO. 1
LAUREL AVE
EMPIRE WEIR NO. 2
REYNOLDS WEIR
HWY 43
COLE SLOUGH WEIR
DUTCH JOHN CUT WEIR
LATON
LEMOORE WEIR
ISLAND WEIR
EXCELSIOR AVE
ARMY WEIR
LAST CHANCE WEIR
KINGS RIVER CONSERVATION DISTRICT
KINGS RIVER FLOOD CONTROL PROJECT
DRAWN BY: ST
DATE: April 9, 2014
REVISED BY: ST
REVISED DATE: July 29, 2015

Kings River Conservation District

Kings River Flood Safety Response Plan

Fresno and Kings Counties, CA

Kings River Conservation District

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Abbreviations and Acronyms

AB	Assembly Bill
Cal OES	California Office of Emergency Services
CCC	California Conservation Corps
CDEC	California Data Exchange Center
CEQA	California Environmental Quality Act
CNG	California National Guard
CPSCS	Consolidated Public Safety Communications System
DWR	California Department of Water Resources
EAS	Emergency Alert System
EAP	Emergency Action Plan
EDIS	Emergency Digital Information Service
EOC	Emergency Operations Center
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FOC	Flood Operations Center
FSRP	Flood Safety Response Plan
GPS	Global Positioning System
IC	Incident Commander
KRCD	Kings River Conservation District
KRWA	Kings River Water Association
NWS	National Weather Service
OA	Operational Area (County)
OEM	Kings County Office of Emergency Management
OES	Fresno County Office of Emergency Services
O&M	operation and maintenance
PIO	Public Information Officer
RACES	Radio Amateurs Civil Emergency Services
REOC	Cal OES's Regional Emergency Operations Center
SEMS	Standardized Emergency Management System
SOC	Cal OES's State Operations Center
USACE	U.S. Army Corps of Engineers
USBR	U.S. Bureau of Reclamation

1 Plan Introduction

1.1 Purpose

This Flood Safety Response Plan (FSRP) outlines the Kings River Conservation District's (KRCD) planned response to flood emergencies along portions of the Kings River in Fresno and Kings Counties, California. This plan satisfies the requirements of the California Water Code Section 9650, as amended by State Assembly Bill (AB) 156 (2007).

The purpose of the plan is to provide information, policies, and procedures that will guide and assist KRCD in efficiently dealing with flood emergencies. The plan addresses flood preparedness, levee patrol, flood fighting, evacuation procedures, floodwater removal, and other related subjects. This plan also follows the California Standardized Emergency Management System (SEMS). When used in conjunction with other State and local emergency plans, it will facilitate multi-agency and multi-jurisdictional coordination, particularly among Kings River Conservation District and local governments, special districts, and State agencies in flood emergency operations.

Although this is a public document, some materials include sensitive material, such as personal contact information and emergency procedures. Therefore, this plan is not a public document in its complete form and is subject to restricted-use handling procedures. Edited copies of this plan without restricted information may be obtained from Kings River Conservation District.

1.2 Scope

The KRCD Flood Safety Response Plan:

- Establishes the emergency management organization to respond to a flood emergency affecting the KRCD levee system along the Kings River.
- Identifies policies, responsibilities, and procedures required to protect the health and safety of local communities from the effects of flood emergencies.
- Establishes operational concepts and procedures associated with field response to flood emergencies and the recovery process.
- Identifies policies for follow-on activities.

The outline and content of this plan are based on the *Sample Flood Safety Plan* published by the California Department of Water Resources in June 2011.

KRCD maintains responsibility for levee inspection, maintenance, flood fighting, and notification of other agencies of flood situations. Several other agencies assist in other flood response actions including public notification, evacuation, and logistics. Since KRCD does not provide all of the services discussed in this plan, some general information is also provided on the roles and responsibilities of other local, State, and Federal agencies.

1.3 Area Covered by Flood Response Plan

The Kings River begins high in the Sierra Nevada Mountains, is impounded in the foothills at Pine Flat Dam, and then flows through the San Joaquin Valley. The River bisects into the North Fork and South Fork of the Kings River. The South Fork terminates at the Tulare Lakebed, and the North Fork terminates at its confluence with the San Joaquin River. This Plan discusses potential flooding and the emergency response for the leveed portion of the Kings River under KRCD jurisdiction, which begins just south of Kingsburg and extends to State Route 41 (South Fork) and State Route 145/McMullin Grade (North Fork), as shown on **Figure 1**. Levees are also found on the Kings River downstream of State Route 145; these are under the jurisdiction of Reclamation District 1606 and are not addressed in this Plan. Similarly, the upstream un-leveed portions of the River are not addressed in this Plan.

KRCD is responsible for seven levee systems made up of 18 levee units summarized in **Table 1** and displayed on **Figure 1**. The total length of all seven levee systems is approximately 140 miles. These levees begin below Kingsburg near 8½ Avenue in Kings County to Highway 41 near Stratford on the South Fork, and to McMullin Grade (Highway 145) on the North Fork of the Kings River. Refer to **Appendix F** for detailed maps of the levee system.

Table 1: Kings River Conservation District Levee Systems

River Section	Bank	Length (miles)	Unit
Cole Slough	Right	3.8	14
Cole Slough	Left	3.7	15
Dutch John Cut	Right	2.5	16
Dutch John Cut	Right	2.1	17
Kings River	Right	5.8	1
Kings River	Left	6.1	2
Kings River	Right	4.0	13
Kings River	Left	6.6	18
Kings River North Fork	Right	6.0	3
Kings River North Fork	Left	5.4	4
Kings River North Fork	Right	19.3	5
Kings River North Fork	Left	20.1	6
Crescent Bypass	Right	5.4	9
Crescent Bypass	Left	5.3	10
Clarks Fork	Right	8.6	7
Clarks Fork	Left	8.5	8
Kings River South Fork	Right	11.4	11
Kings River South Fork	Left	12.5	12

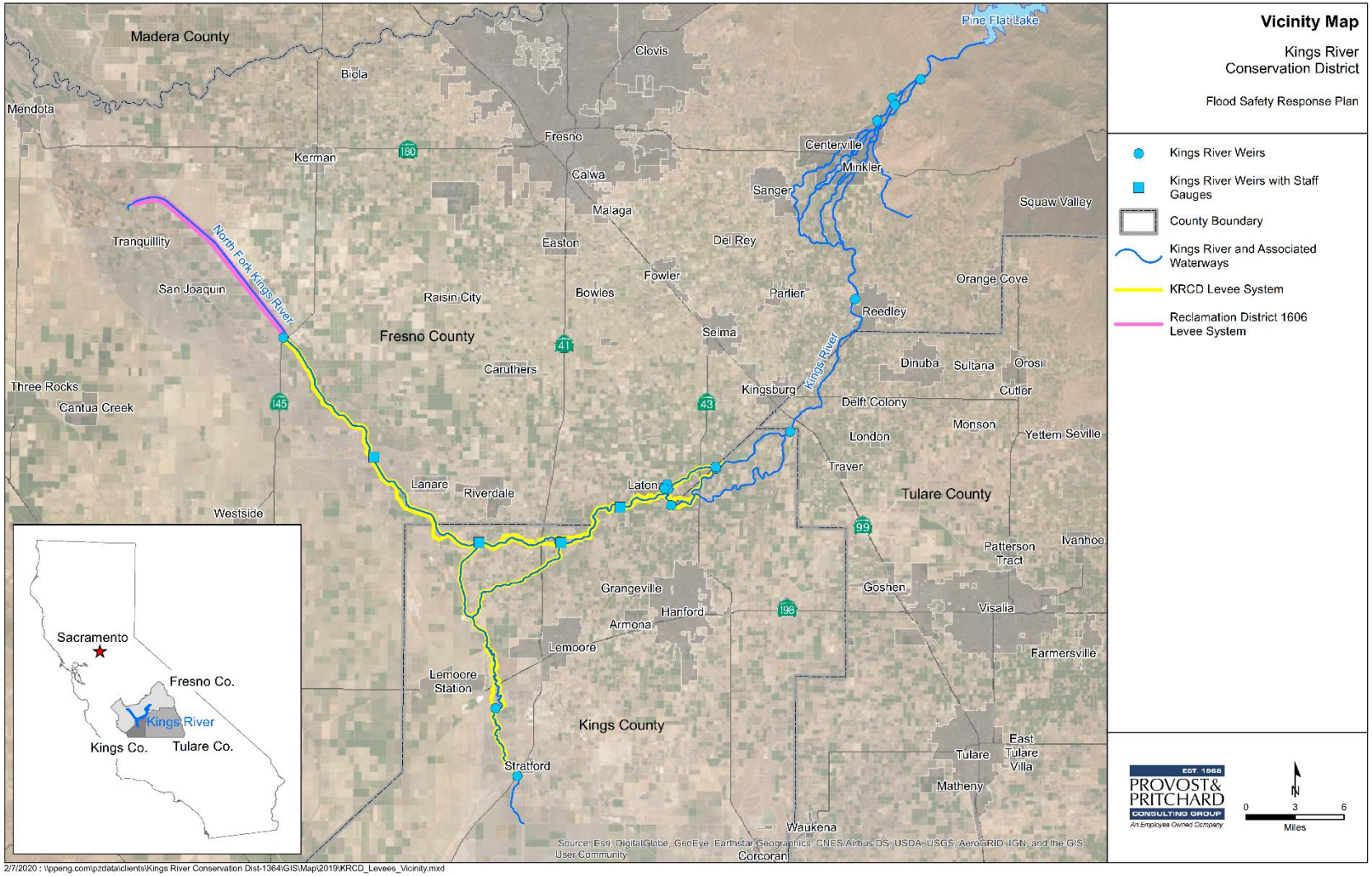


Figure 1. Kings River, Levees, and Jurisdiction

2 Concept of Operations

This chapter provides background information on the Kings River Conservation District (KRCD), KRCD responsibilities, the Kings River levee system, levee monitoring, initial response actions, public notifications, and flood stages.

2.1 Situation Overview

The Kings River levee system has provided some level of flood protection along specific reaches of the Kings River; however, the flood events of 1986, 1995, 1997, and 1998 demonstrated that there is still a significant flood threat in the valley. Flooding caused by levee failure or overtopping remains a significant threat to certain areas. Following are information on KRCD, the Kings River, levee maintenance and expected levee performance.

2.1.1 Kings River Conservation District Background

KRCD is located in the Kings River region of the San Joaquin Valley and was formed in 1951. KRCD is a leading resource management agency for the Kings River region and covers 1.2 million acres spanning portions of Fresno, Kings, and Tulare counties. KRCD has several responsibilities as a public agency, including managing levee systems along the Kings River in Fresno and Kings Counties. KRCD also participates in water resources management, water conservation, hydropower generation, and fisheries management in the Kings River region.

When KRCD was established, they took over operation and maintenance of Kings River levees within their service area from the U.S. Army Corps of Engineers (USACE). KRCD is now responsible for seven levee systems containing multiple units for a total of about 140 miles of levees (see **Appendix F**). KRCD performs various maintenance activities, such as repair of animal burrows, trimming trees, mowing levee slopes, etc. on the levees throughout the year. USACE performed a thorough inspection of the Kings River levees in 2012 and identified a variety of improvements and repairs needed; KRCD has been making the suggested repairs to improve the overall stability and reliability of the levee system (KRCD, February 2020).

Design documentation for many levee systems within KRCD either does not exist or is outdated. Kings River flood project levees were designed in the 1950's and 1960's and documentation that does exist has not been updated (Kings River Conservation District, 2020). Furthermore, design features deemed acceptable for irrigation and agricultural uses were incorporated when flood protection standards were not as stringent and are now considered unacceptable. Lastly, numerous encroachments on the levee system at the time of project construction were not properly documented. The design storm for the levees is not precisely known, although it is documented that they were designed for less than the 100-year storm (US Army Corps of Engineers, 1998).

2.1.2 Background Information on the Kings River

The Kings River originates high in the Sierra Nevada Mountains near the Inyo County line and flows southwest through the central part of Fresno County and into Tulare County at Reedley. It has a large drainage basin, which includes most of Kings Canyon National Park and most of the area between Shaver and Florence lakes in the north to the Fresno/Tulare County border in the south. North of Hanford, the river branches, and the South Fork flows southward to the Tulare Lakebed. The North Fork joins Fresno Slough, which conveys flows north to the San Joaquin River at Mendota Pool. Several sloughs and canals branch off the river and are used for water storage and to convey irrigation water.

The Kings River flows are regulated by Pine Flat Dam, completed in 1954 for flood control purposes. Pine Flat Dam is located 16 miles northeast of Sanger on the Kings River in the east central part of Fresno County. Pine Flat Reservoir has a storage capacity of approximately one million acre-feet. The flood control functions of the facility are managed by the Corps while the releases for irrigation diversion are managed by the Kings River Water Association. There are additional reservoirs upstream of Pine Flat that are owned and operated by Pacific Gas and Electric for the purpose of hydroelectric power generation. These facilities have a combined storage capacity of about 252,000 acre-feet. Two uncontrolled creeks, Hughes Creek and Mill Creek, flow into the Kings River below Pine Flat Dam. Pine Flat Reservoir has adequate storage capacity to avoid emergency releases in most storm events, but these downstream creeks can add significant flow to the river.

There are 12 weirs along the Kings River in the area under the jurisdiction of KRCD. The weirs are used by 37 different water agencies for diverting Kings River water. The weirs are also used by KRCD for measuring water levels and flowrates.

In practice, the flow of the Kings River is carefully managed using analysis of anticipated weather, upstream flows, and ability of downstream users to receive the water. Significant adjustment may be necessary, and a variety of operations options are considered, including storing or routing water through alternate sloughs or requesting users to accept additional water. Flow is diverted to the South Fork only in very wet years. These operations help to reduce the risk of flooding and levee failures.

The area along the Kings River is largely rural and used for farming, although there are some urban areas within a few miles of the River. Levee failures or overtopping would flood adjacent land and could flood some critical facilities, such as schools. Refer to **Appendix G** for a table and maps of critical facilities that could be potentially inundated.

2.1.3 Levee Maintenance and Expected Performance

The Kings River levee system has operated successfully in a majority of flood events. Flows within the Kings River flood project are typically regulated by Pine Flat Dam, so levee overtopping is uncommon. However, certain reaches commonly reach their full capacity during high flows.

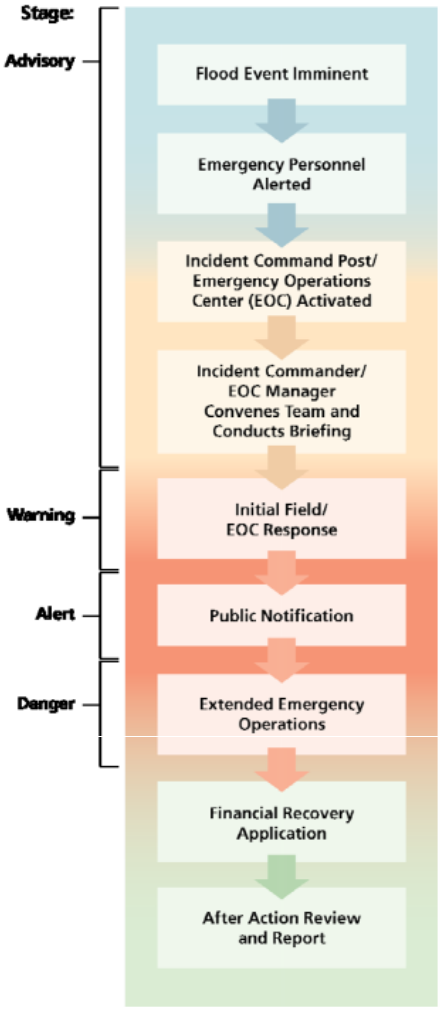
Most of the levees on the Kings River are low (less than 8 feet) and levee failure would generally include shallow inundation and potential property damage, with limited potential for loss of life, as indicated by recently developed inundation Maps (**Appendix G**), and the local terrain and topography surrounding the levees. A levee failure would primarily cause flooding of farmland. This could result in damage to crops, farm buildings, single-family farm residences and local roads. Some major highways, such as Highways 41, 43, 145 and 198, could also flood. However, many roads and highways are elevated and generally act as a barrier to inundation.

Communities near the levees include Laton, Riverdale, Lanare, Helm, Burrel, Lemoore, Mendota, Stratford and the City of San Joaquin. Several of these have the potential for shallow flooding or flooding just outside of their boundaries.

Due to the length of the levees (140 miles), some level of erosion or seepage occurs somewhere almost every year, but are normally rectified quickly as the levees are actively maintained by KRCD. The levee system has withstood large floods in the past including in 1983, 1995, 1997, 1998, 2006, 2011, 2017 and 2019. A levee breach occurred in 1995 along a 150-foot section on the right bank of the North Fork. The breach was repaired within a 24-hour period and as flood waters subsided that year, the levee was reconstructed. A levee breach also occurred in 2017 on the right bank of the South Fork below the confluence of Crescent Bypass and Clarks Fork; the breach was repaired in six hours and the levee was reconstructed in 2019.

KRCD has continued to mitigate and address the issues discussed above by developing and following a Systemwide Improvement Framework and Interim Risk Reduction Measures Plan (Kings River Conservation District, 2020).

2.2 General Approach to Seasonal Flood Operations



The average flooding season in Kings County occurs from November through June with the rainy season occurring between November and April, and snowmelt in the nearby mountainous area occurring from April to June. However, the levees could potentially be full, and a breach could potentially occur, any time of year.

In general, flooding on the Kings River can be predicted since most flows originate from controlled releases from Pine Flat Lake. Therefore, most high flows occur when snow melt is increased by increasing temperatures or from rain events in the Sierra Nevada Mountains. Since Pine Flat Dam is operated primarily for flood control purposes, flows in the River are usually known in advance. However, when a large rain event occurs, high flows may result in a foothill stream, Mill Creek, that empties directly into the Kings River below Pine Flat. Flow from Mill Creek is uncontrolled and has reached up to 7,000 cfs in rare occasions; however, weather forecasting will provide insight to potential flood flows. Both situations would generally be slowly developing flood situations giving KRCD time to monitor, prepare, and react. Flooding could also occur from a dam failure or mechanical malfunction at Pine Flat Dam. This Plan does not address a catastrophic failure of Pine Flat Dam and is limited to scenarios including breaching and overtopping of Kings River levees.

Flood response levels for KRCD are based on river flows just downstream of Crescent Weir. Continuous monitoring begins when flows past Crescent Weir in the North Fork exceed 3,500 cfs, or when flows past Army Weir in the South Fork exceed 2,000 cfs. **Figure 2** shows in general how resources are mobilized, and various actions initiated as a function of river stage or other criteria.

2.2.1 Monitoring

KRCD's flood stage monitoring is comprised of observing the readings from specific real-time, telemetered stream gages that report the conditions on water courses that affect potential flooding in the jurisdiction.

Instrumentation consists primarily of manual staff gauges at numerous locations along the River. The Army and Crescent Weir are equipped with telemetry and is accessible to view real-time stream flow elevations data through the California Data Exchange Center (CDEC, cdec.water.ca.gov) website. Mill Creek and Pine Flat Dam outflow data are also accessible on the USACE website.

In addition, there is a stream gage that reads stage data for Mill Creek, which converges with the Kings River just below Pine Flat Reservoir. The stage in this creek may provide an indication of potential flood conditions. The CDEC stream gages that will be monitored for river stage are listed below:

1. Mill Creek Near Piedra (PDR)
2. Kings River Below Army Weir (AMW)
3. Kings River Below Crescent Weir (CSW)

KRCD has staff gauges that can be used for monitoring water levels as well and are found downstream of the Lemoore Weir, Army Weir, Crescent Weir, and Stinson Weir. In addition, KRCD coordinates with Kings River Water Association (KRWA) who also monitor some stream flows. The staff gauge below the Lemoore Weir will provide the first indication of high water levels during flood releases. The location of KRCD staff gauges is shown on **Figure 1**. Each year KRWA develops stage-flow relationships for the staff gauges at weirs.

Inspection and monitoring of levees are based on standard procedures followed by KRCD, and documented procedures in the Kings River O&M Manual (USACE, 1998). Inspection and monitoring is performed year-round and as summarized in the O&M Manual:

> *"Periodic inspections…shall be made immediately prior to the beginning of the flood season, immediately following each major high water period, and otherwise at intervals not exceeding 90 days and such intermediate times as may be necessary to insure the best possible care of the levee." (pg 9)*

Refer to **Appendix B** for more information on levee patrols and levee inspections.

2.2.2 Analysis and Initial Response

After compiling monitoring and surveillance information, KRCD decides if it is necessary to begin flood operations or direct flood fight resources to specific areas. KRCD emergency personnel monitor the flood stage information and are in constant communication with flood control staff throughout the storm episode.

In the event of a flood incident, KRCD has an approved Emergency Action Plan (KRCD, 2016) that provides for: (a) notification of the appropriate agencies to address evacuation, traffic control, and public infrastructure issues; and (b) response to the incident to protect life and property, and to reduce damage to the flood project facilities.

This FSRP consists of four basic steps to address flooding problems as shown in **Figure 3**.

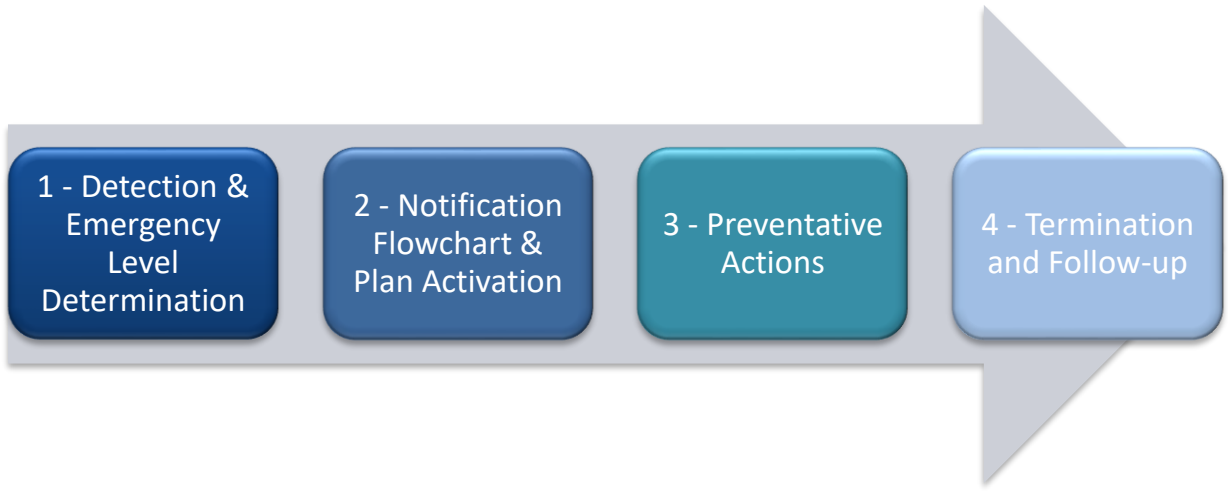


Figure 3. Flood Response Process

The four process are described below:

Step 1 – Detection & Emergency Level Determination
KRCD regularly monitors staff gages on the Kings River and remains in communication with the USACE and DWR regarding dam releases, therefore it is typically known in advance when flood water is released. As water levels rise, portions of this FSRP may be initiated, such as 24-hour levee patrols. If the situation continues to worsen, an emergency level may be determined by the Flood O&M Manager or Flood O&M Supervisor at KRCD. The KRCD Emergency Action Plan refers to three levels of emergency:

- Level 1 - Unusual Event or Slowly Developing Situation
- Level 2 - Potential Failure
- Level 3 - Imminent Failure

These three levels are discussed in more detail in Section 2.5.5.

Step 2 - Notification Flowcharts and Plan Activation
Once an emergency level has been determined, the appropriate personnel should be notified according to the flow chart in **Appendix A – Communications Support** and as updated in the Kings River Conservation District Emergency Action Plan. The County Emergency Operations Center (EOC) and DWR may provide resources such as equipment and personnel for use in an emergency situation.

Step 3 - Preventative Actions
Depending on the severity of the situation, preventative actions such as levee patrol, flood fighting, evacuation, and flood water removal might occur. These actions are planned out and the chain of command is further discussed in **Appendices B, C, D, and E,** respectively.

Step 4 - Termination and Follow-up
Termination of the plan occurs after an emergency situation has subsided. Clean up and restocking of supplies begins.

2.2.2.1 Patrol Trigger

KRCD follows three different levee patrol triggers:

1. Occasional daylight monitoring occurs when flows in the North Fork at Crescent weir exceed 2,500 cfs, or flows in the South Fork at Army Weir exceed 1,000 cfs.

2. Daytime and possible nighttime monitoring occurs when flows at Crescent Weir exceed 3,000 cfs or flows at Army Weir exceed 1,300 cfs

3. Twenty-four-hour patrols begin when flows at Crescent Weir exceed 3,500 cfs or flows at Army Weir exceed 2,000 cfs

Refer to **Appendix F** for the location of Crescent Weir, and **Appendix B** for more specific information on levee patrols.

If conditions exceed their capabilities on any of the levee systems, KRCD may contact DWR for technical assistance, and KRCD may contact Fresno or Kings County for mutual aid resources. The DWR Flood Operations Center (FOC) may request support from the USACE under Public Law 84-99 (PL 84-99).

2.2.3 Alerting and Activation

Levee patrols regularly keep KRCD managers updated during flood incidents. As the threat of a flood increases, various portions of the FSRP will be activated and County EOCs will be notified as appropriate. Depending on the flooding situation, the EOC will be activated and staff will respond to the EOC to coordinate operational area response to the disaster with other agencies. The DWR FOC may also be made operational. County EOCs remain operational until the threat from flooding is contained and controlled.

2.3 Public Notification for Flood Threats

KRCD generally does not provide public notifications of flood threats, but rather conveys information to local and State authorities who provide notifications. However, KRCD will provide urgent notice of an imminent flood hazards to local landowners if KRCD are on the site during the event.

The residents protected by the levees are generally aware of the potential flood risks associated with living near the river. Efforts have been, and will continue to be made, to educate the residents of specific risks associated with the system-wide deficiencies. The USACE and the KRCD had a joint press release to inform the public about the results of the 2012 Periodic Inspection.

KRCD also encourages communities to explore FEMA programs, including the Community Rating System, which can improve flood protection while reducing flood insurance rates.

KRCD has communicated levee risks to county officials and will continue this communication on an on-going basis as a part of interagency collaboration. If specific locations pose a significant risk to landowners or residents, targeted communications to potentially affected individuals will be coordinated with appropriate county officials. The targeted communications will identify the specific risk and the timeframe.

2.3.1 Initial Notifications

Four different types of flood notifications are described below:

A flash flood watch means it is possible that rain may cause flash flooding in specified areas.

A flash flood warning means flash flooding is highly likely, imminent, or is occurring.

A flood watch means long-term flooding is possible in specified areas.

A flood warning means long-term flooding is either imminent or is occurring.

Initial notification is often limited in detail. For example, a flash flood warning may be issued by the National Weather Service (NWS) for a general area or location where there is a threat to the public. Some emergency actions might be needed, but not enough to warrant local EOC activation. A follow-up call from the local EOC to the notifying party or agency can be made to obtain further detail.

The local Emergency Office or EOC may receive direct warning from KRCD, DWR, NWS, or the California Office of Emergency Services (Cal OES). The USACE will advise of dam incidents, significant releases, or significant changes in releases. The County is responsible for warnings in unincorporated areas. Various incorporated areas have responsibility for evacuation notification of the public within their boundaries. They are also responsible for activating their own emergency response plans for the flooding threat.

2.4 Stage Definitions for Floods

The relationships between river stage and river flows varies each year due to changes in riverbed morphology. Consequently, staff gage height versus flowrate at several weirs are recalibrated each year by the Kings River Water Association. The river flow downstream of Crescent Weir is generally used for assessing the flood situation along the North Fork, and flows at Army Weir are used for assessing flooding in the South Fork. **Table 2** illustrates the different flood stages used by KRCD.

Table 2: Flood Stages Based on River Flow at Crescent Weir and Army Weir

Monitoring Phase	North Fork (based on flows at Crescent Weir)	South Fork (based on flows at Army Weir)	Monitoring Frequency
Initial Monitoring	2,500 – 3,000 cfs	1,000 – 1,300 cfs	Occasional daylight monitoring
Increased Readiness	3,000 – 3,500 cfs	1,300 – 2,000 cfs	Daytime and possible nighttime monitoring
Full Monitoring	3,500 – 4,750 cfs	2,000 – 2,400 cfs	24-hour patrols

The stages in **Table 2** are preceded by normal flow conditions, called Normal Preparedness. After a Phase IV Emergency the district will implement a Recovery Phase. These phases are described in more detail in the section below.

2.5 Flood/Threat Operations

Some floods will be preceded by a buildup period, providing advance warning to those who might be affected. Others occur without advance warning, requiring mobilization and commitment of the emergency organization after the onset of the emergency situation. KRCD must be prepared to respond promptly and efficiently. In all flood situations, this plan will be implemented in several phases based on severity.

This plan may leverage the State-Federal FOC when responding to emergencies. The State-Federal FOC in Sacramento coordinates flood response activities and disseminates flood forecasts and warnings to the public. Staff is also available year-round to track incidents with potential flood impacts. When activated during flood emergencies, flood incidents, or other high water-events, depending on the scale of the event, one or both centers are staffed in compliance with the SEMS with additional personnel from other branches within the DWR. A number of federal, state, and local agencies cooperate with the Flood Operations Center including the USACE, FEMA, and other local levee maintain agencies.

2.5.1 Normal Preparedness

The Normal Preparedness Phase is an ongoing state of being prepared for an emergency, and occurs whenever flows at Crescent Weir are below 2,500 cfs. This phase includes on-going maintenance, annual reviews of the FSRP, flood fight training for KRCD staff, and pre-season coordination with the County of Fresno Office of Emergency Services (OES) and County of Kings Office of Emergency Management (OEM), from hereon collectively called OES/OEM.

During this phase, KRCD performs an annual review of roles and responsibilities as described in A.2; the Emergency Action Plan will be updated annually. KRCD also reviews their inventory of flood fighting supplies at the beginning of each year and after each flood event.

2.5.2 Phase I: Initial Monitoring

Phase I - Initial Monitoring occurs when flows past Crescent Weir are 2,500 to 3,000 cfs in the North Fork, and at flows from 1,000 cfs to 1,300 cfs past Army Weir in the South Fork. Occasional daytime levee patrols occur in this phase. The flood threat is relatively low in this phase, but levee patrols are still necessary to monitor levee performance, and flows need to be monitored in case they increase and trigger a higher stage.

2.5.3 Phase II: Increased Readiness

Phase II – Increased Readiness, occurs when flows past Crescent Weir range from 3,000 to 3,500 cfs, or flows past Army Weir range from 1,300 cfs to 2,000 cfs. This phase includes monitoring during most or all of the daytime shift, and sometimes during the night time. During this phase, the flows have exceeded the capacity of the River and begin to touch the levees.

2.5.4 Phase III: Full Monitoring

Phase III – Full Monitoring begins with initiation of the 24-hour levee patrol plan. This phase occurs when flows past Crescent Weir range from 3,500 to 4,750 cfs or range from 2,000 to 2,400 past Army Weir. In this phase, emergency response plans are put on standby or into limited operation. This includes alerting key personnel, ensuring readiness of essential resources, and preparing to move resources to the threatened areas when required.

The KRCD Flood O&M Manager at KRCD monitors communications, receives information on field situations, weather, river, and reservoir stages, and directs response to the levee patrol crew. KRCD remains in communication with USACE to stay updated on anticipated dam releases in a large runoff event. If it is determined that the situation may continue to worsen, coordination with adjacent and local agencies and arrangement for State, federal, and volunteer resources may begin.

2.5.5 Phase IV: Emergency

The river flood stage starts when the Kings River reaches >4,750 cfs downstream of the Crescent Weir, which is the maximum flow capacity of the river levees. Emergency situations occur in the South Fork when flows exceed 2,400 cfs past the Army Weir. This phase may also occur due to a levee breach or failure detected by levee patrol, even if at a lower flowrate.

Luiz, Joseph. (2017, June 1). *Hanford*

The KRCD Flood Maintenance Supervisor handles the day to day supervision of levee patrols, and is typically the first to hear about a breach and be on the scene. The Flood O&M Manager is then contacted and emergency operations are initiated.

Appendix G includes a list critical facilities (schools, water treatment plants, medical facilities, etc.) that could be potentially flooded from a levee breach. **Appendix G** also includes several inundation maps showing the extent of potential inundation and the locations of the critical facilities.

According to KRCD's Emergency Action Plan (EAP) (Kings River Conservation District, 2016), there are three levels of emergency with varying degrees of consequences. Each event or situation will be placed in one of the following classifications:

i. **Emergency Level 1 – Unusual of Slowly Developing Situations**

   This classification indicates a situation is developing; however, the levee is not in danger of failing. Spillway related flooding from Pine Flat Dam is possible or expected. Downstream residents need to be notified if flooding threatens life or property.

ii. **Emergency Level 2 – Potential Failure**

   This classification indicates a situation is developing that could cause a levee failure. A reasonable amount of time is available for analysis before deciding on evacuation of residents. Emergency responders in affected areas will be alerted that an unsafe situation is developing.

iii. **Emergency Level 3 – Imminent Failure**

   This classification indicates levee failure is imminent or flooding threatens life and property. If it is determined there is no longer time to implement corrective measures to prevent failure, an order for evacuation of residents in potential inundation areas will be issued.

The Flood O&M Supervisor or Flood O&M Manager will immediately put emergency plans into operation starting with notification of the proper personnel and establishment of necessary communication lines. The County EOCs should be notified and kept informed of the severity of the flood situation. Each EOC typically monitors communications, receives information on field situations, directs response under their jurisdiction,

coordinates with adjacent and local agencies, provides and coordinates resources and assets, provides information, arranges for State, federal, and volunteer resources, activates mutual aid from adjacent agencies if necessary, and plans, organizes, controls, and documents actions during the flood event.

DWR FOC monitors flooding situations on a daily operational schedule. If Kings or Fresno County EOCs encounter extensive problems, the FOC extends hours to 24-hour operations and increases coordination efforts for State support of flood fight operations. Typically, the Cal OES State Operations Center (SOC) and the Cal OES Regional Operations Center (REOC) for the Inland Region, the FOC, and the Dam Management Center operated by USACE are all activated to some degree as flood threats increase. Adjacent counties and cities decide when and at what level they will activate their EOCs.

The primary responsibilities of KRCD and the Counties during an emergency situation are listed below:

KRCD Responsibilities

- Mobilize, allocate, and position personnel and materials for patrolling and flood fighting
- Establish staging areas for personnel, supplies, and equipment
- Contact the OES/OEM to give available information on the kind of threat, its imminence, potential severity, area affected, and associated problems. Reports will include action being planned or taken, as well as possible deficiencies in critical emergency resources.
- Where resources appear insufficient, prepare to apply for and receive mutual aid

County OES/OEM Responsibilities will typically include:

- Ensure that alerted agencies are promptly notified of the emergency condition
- Establish Evacuation Centers to aid in managing the movement of people from the area
- Produce and disseminate emergency information and advice to other EOCs when a Joint Information Center is not operational
- Restore or activate essential facilities and systems

2.5.6 Post Flood Recovery

Termination of emergency response and follow-up will occur once conditions indicate that there is no longer an emergency within the flood project. The Incident Commander is responsible for terminating the emergency event and relaying the decision.

This stage has three major objectives:

- Reinstatement of family autonomy and the provision of essential public services
- Permanent restoration of public property and reinstatement of public services
- Perform research to uncover residual hazards, advance knowledge of flooding phenomena, and to provide information to improve future flood operations

Prior to the termination of an Emergency Level 3 event that has not caused actual levee failure, KRCD will inspect the levee. If it is determined that conditions do not pose a threat to people or property, then the Incident Commander will terminate emergency operations as described above. The Flood O&M Manager will help to ensure that a Levee Emergency Situation Report is completed.

Kings River Conservation District will address levee maintenance needs, including:

- Debris removal
- Permanent repair of any damaged levees

Governmental assistance could be required for an extended period. Recovery activities from the County and local governments could include:

- Demolition of unsafe structures
- Re-establishment of public services and utilities
- Provision of care and welfare for the affected population including temporary housing for displaced persons
- Care of animals and disposal of carcasses

2.5.7 Federal and State Emergency and Disaster Assistance

State/Federal Support during Emergency Phase

Kings River Conservation District will consider requesting Cal OES and DWR support during the Emergency Phase. California Mutual Aid and USACE assistance are available when resources beyond local capability are needed for flood fight operations.

Post-Flooding Support

Post flooding requests for assistance or funding should consider the following:

- If the County declares a disaster, the Governor may support it by proclaiming a State of Emergency and then requesting the President make a National Disaster declaration for the affected area.

- If the President declares the area a national disaster, assistance from the Federal Emergency Management Agency (FEMA) will be requested.

- If residential flooding occurs, regardless of the declaration, USACE could potentially provide federal funds for recovery operations for up to 30 days following the incident.

- USACE assistance can also be requested to repair eroded and damaged levees following high flows. Request for this authority must be made in a timely manner (30 days). In 2017, the USACE repaired a levee breaches at no cost to KRCD.

3 Organization and Assignment of Responsibilities

This chapter discusses the general organizational roles and responsibilities of agencies with jurisdiction in the Kings River area. Generally, the emergency management structure starts with the local governmental agency and its resources. When the emergency situation magnifies and resources are depleted, progressively larger governmental agencies step in for support.

3.1 General Organization and Responsibilities

3.1.1 KRCD Levee Flood Control Operations and Responsibilities

KRCD has responsibility for levees within its jurisdiction, found within portions of the County of Kings and County of Fresno. Accordingly, KRCD has expertise on levees and flooding, and can serve in a technical advisory role providing support to Counties and other agencies.

In a flood emergency, KRCD staff is responsible for:

- Maintaining a line of communication with USACE and DWR regarding flood water releases and monitoring weather forecasts
- Levee patrols
- Coordinating with the County EOCs and providing technical assistance and advice
- Gathering supplies and equipment at staging areas and responding to levee issues
- Coordinating levee patrols and engaging in flood fight activities
- Requesting mutual aid from and coordinating with Fresno and Kings Counties during flooding episodes
- Permanent repair of any levee damage

KRCD is not responsible for other aspects of flood management and emergency response that fall under other local agencies, such as floodplain management, zoning, building ordinances, law enforcement, public notification, and evacuation. However, KRCD may provide coordination and limited support to other agencies with these responsibilities.

3.1.2 Operational Area Flood Control Responsibilities

KRCD works with local County emergency response agencies when responding to flood incidents. KRCD's jurisdictional area for levee management covers Fresno County (northern portion of Kings River) and Kings County (southern portion of Kings River). The Counties have their own emergency response plans, which also cover dam and levee failures. These documents include:

County of Fresno County

- Fresno County Multi-Jurisdictional Hazard Mitigation Plan (Amec Foster Wheeler, May 2018)
- Master Emergency Services Plan (County of Fresno, October 2017)

County of Kings

- Kings County Multi-jurisdictional Local Hazard Mitigation Plan (County of Kings, December 2012)

- Emergency Operations Plan (County of Kings Office of Emergency Management, November 2015)

Refer to these documents for more information on the Counties' roles during flooding incidents, including communications, incident management, public notification, and evacuation.

When KRCD's resources are depleted or reasonably committed, mutual aid is requested and coordinated. For example, KRCD may require additional people for sand bagging, emergency debris clearance, and similar activities and this assistance may come from Kings County or Fresno County crews.

The Kings County and Fresno County flood response teams are coordinated through their respective County Emergency Operations Centers (EOCs), which ensures proper communication and coordination among all entities responding to floods. County responsibilities typically include:

- Assisting local levee maintaining agencies (KRCD) with flood fight activities when requested
- Ensure that relevant agencies are promptly notified of possible or expected emergency developments or changes in conditions
- Assessing the level of, declaring, and termination of an emergency
- Public notification as is required by the nature of the threat, carried out by the County OES/OEM
- Establishment of evacuation centers and evacuation routes
- Carrying out the evacuation of buildings and areas in danger of flooding, typically led by the County Sheriff
- Should the emergency exceed the capability of the EOC, it is responsible for contacting and requesting mutual aid from the Regional EOC.

3.1.3 Mutual Aid Regions and Regional Support

Mutual Aid requests go to the regional office of the Cal OES State Operations Center. For the Kings River this would be the Cal OES Inland Region EOC. These requests are passed to other counties in the region. The Regional EOC may then request resources from the Cal OES State Operations Center, DWR, and USACE.

3.1.4 State Flood Control Operations

DWR is responsible for State flood control operations through its Flood Operations Center (FOC), Division of Flood Management, other divisions, and their flood management and flood fight technical experts. DWR's river forecasting team coordinates with NOAA, the National Weather Service, to provide forecasts of reservoir inflows, river flows, and water levels. DWR also operates CDEC, which monitors rainfall, stream flow, river stages, and reservoir releases across the State.

The California DWR provides direct assistance when feasible and necessary. Their Incident Command Team is trained and prepared to respond to flood response emergencies and is ready to deploy on short notice to emergency sites for flood fighting assistance. DWR FOC can provide technical assistance in the form of engineers, hydrologists, and other professionals to advise local agencies. Furthermore, DWR has material storage locations in Sanger and Visalia with supplies such as sandbags, plastic sheeting, wooden stakes, twine, and anchors for emergency use. If federal assistance is necessary, DWR is the only agency that may request support from USACE and other Federal agencies. DWR will also work with other State agencies as needed during flood emergencies.

The DWR FOC does not declare emergencies, order evacuations, or permanently repair levees. This is the responsibility of County and local governments.

The California Conservation Corps (CCC), California Department of Corrections, and Department of Juvenile Justice may provide personnel for flood fight crews and levee patrols during emergencies.

3.1.5 Federal Flood Control Operations

Pine Flat Dam is owned and operated by the USACE. Reservoir Operations and releases are based on various criteria related to flood control, fisheries management, and downstream water demands. KRCD works closely with USACE on managing the river, and frequently communicates with them during flood incidents regarding reservoir levels and river releases.

4 Direction, Control, and Coordination

This chapter discusses the roles of managers and supervisors, the Standardized Emergency Management System (SEMS), public notification, disaster intelligence and essential services.

4.1 Chief Executive

The Board of Directors of the Kings River Conservation District establishes overall policies and priorities, providing direction for local flood response. The hierarchy for establishing flood response policies is the Board of Directors, General Manager, Chief Engineer, Flood O&M Manager and then Flood O&M Supervisor.

Responsibility for managing emergency response within the County jurisdiction is delegated to the EOC Manager and, on scene, to the Incident Commander. If a significant emergency occurred, then KRCD and the Counties would likely establish a Unified Command Center to coordinate emergency services.

4.2 Incident Commander

The Incident Commander (IC) at the flood fight scene is in charge of relevant emergency services and coordinating with other agencies. The KRCD Flood O&M Supervisor is generally the first one aware of an emergency and the first on one site. They typically take over as the IC until the KRCD Flood O&M Manager arrives. The IC's responsibilities include the following:

1. Control personnel and equipment resources
2. Oversee levee maintenance, levee repair, flood sighting and floodwater removal efforts
3. Assess priorities
4. Coordinate with other agencies (Cities, Counties, etc.)
5. Request aid or assistance from other agencies, or the State and Federal government
6. Terminating the emergency

4.3 Support Personnel

Support personnel include KRCD full time flood crews, other KRCD staff, and staff hired on a short-term basis to assist with flood incidents including California Conservation Corps, contractors, and temporary agency workers. Local agencies may also volunteer staff or provide them on request to provide KRCD support.

4.4 Plan Activation

The KRCD Flood O&M Manager has authority to activate this plan based on the previously identified stages. In his absence it is activated by the KRCD Flood O&M Supervisor or the KRCD Chief Engineer.

4.5 Standardized Emergency Management System

The Standardized Emergency Management System (SEMS) is a structure for coordination between the government and local emergency response organizations. It includes consistent terminology and positions to help facilitate better communication, as well as an organization structure to help ensure all relevant topics are addressed. SEMS is required for managing multi-agency and multi-jurisdictional responses to emergencies in the state. The system unifies all elements of California's emergency management community by incorporating the Incident Command System, California Disaster and Civil Defense Master Mutual Aid Agreement, the Operational Area (OA) concept, and multiagency or inter-agency coordination.

The SEMS structure works better for larger organizations with numerous staff and multiple departments. Due to the size of the KRCD flood operations staff, the Flood O&M Manager fills numerous roles in the organization structure, and the Flood Operations Department plays roles that are often the responsibility of separate department in other organizations. Nevertheless, KRCD understands and follows SEMS, and recognizes its importance since the Counties, State and Federal governments also follow it.

4.5.1 SEMS Organizational Levels

There are five SEMS organizational levels as illustrated in **Figure 4**.

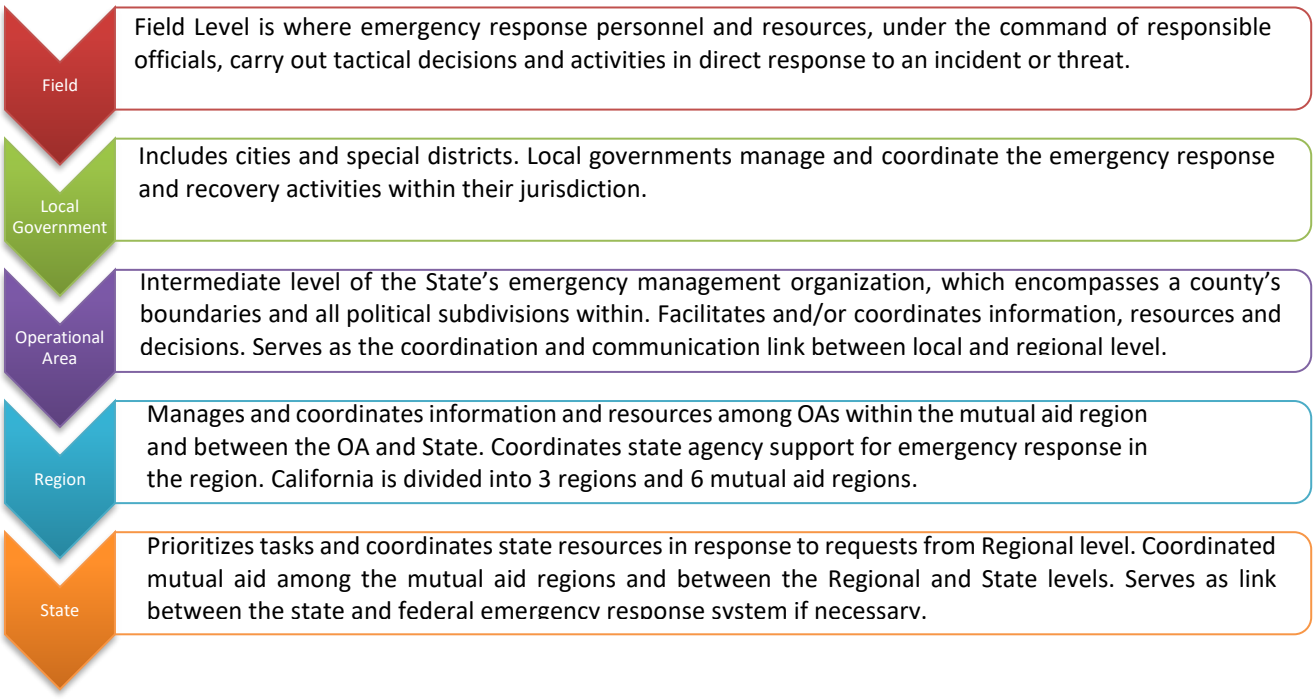


Figure 4. SEMS Organization Levels

Under SEMS, common organizational structure and terminology combine to ensure smoother communication and better coordination of interjurisdiction and interagency response to flood emergencies. There are five main divisions of emergency response that have uniform responsibilities throughout California whether the governmental level is a special district, city, county, or the State. The five main sections are as follows:

- Command Staff
- Operations
- Planning and Intelligence
- Logistics
- Finance and Administration

In a flood emergency, KRCD and the affected County coordinate and work together to maintain levees and protect public safety. The roles of the respective agencies do not overlap much, rather they both fill crucial positions in responding to flood events. For more information on operations designations specific to the County refer to the Emergency Operations Center Annex of the County of Kings Emergency Operations Plan (County of Kings , 2015) and the Fresno County Master Emergency Services Plan (Fresno County Operational Area, 2017). KRCD will react to flood threat situations within their jurisdiction using their own resources and personnel. Should an emergency become larger, the Operational Area EOC will be activated and coordination amongst the agency and the EOC will be necessary.

4.6 Public Notification

Public notification and awareness is extremely important during an emergency. KRCD keeps other agencies apprised of flood conditions so they can notify the public. However, when there is imminent flooding, KRCD may provide door-to-door notification to local residents at risk. In general, it is the responsibility of the County EOC to provide notification to the public of potential emergencies. The extent of notification will depend on the level of emergency. In the case of a potential flood, the public must be kept informed of:

- Flood water release from Pine Flat
- Water levels and their implications for a flood event
- Levee conditions
- Short- and long-term weather forecasts
- Any other flood related threat that might exist

In an incident, such as a levee failure, early alert and notification is crucial to allow the public as much warning time as possible so they can evacuate or avoid the area. KRCD is committed to notifying other public agencies on the conditions of area levees, rivers, and tributaries that threaten flooding so that the Incident Commander may begin evacuation due to a threat, rather than waiting until flooding has commenced.

Within KRCD's jurisdiction, there are few populated urban areas near the river. In most cases, if a flooding emergency were to occur then agricultural lands, farm houses and farm buildings would be inundated. There are many ways to inform the public of a developing flood situation along the Kings River which include:

- Emergency Alert System (EAS)
- Fire and Police Vehicle Loudspeakers
- Neighborhood Watch and other community support programs
- Door-to-door notification by neighborhood groups and associations
- Local radio and television stations
- County-to-resident emergency alerts by text and email
- NOAA Weather Radio

In general, KRCD does not use these systems, but rather notifies other local agencies who use them.

4.6.1 Notification Protocols

As mentioned, public notification will be carried out by the County in which the emergency is occurring. Public information requirements will be determined by the severity of the disaster or emergency as determined by the respective County's EOC. The Public Notification System is appropriately activated by staff at the Fresno or King's County EOC to provide information, as necessary. Each County maintains staff to act as Public Information Officers (PIOs) that stay up to date on all emergency situations. The PIO is the primary point of contact between the EOC, the media and the public. The PIO prepares information releases, briefs media representatives, provides for press conferences, and oversees rumor control activities.

For more information on notification protocols including roles and responsibilities of coordinating agencies, refer to the Emergency Public Information Annex of the County of Kings Emergency Operations Plan (2015) and the Fresno County Master Emergency Services Plan (2017). Sample public notices are contained in **Appendix A - Communications Support.**

4.7 Resources

4.7.1 Staffing

KRCD employs full time staff specifically for flood control that function as emergency responders for communications, levee patrol and repair, flood fighting, and flood water removal. The Flood O&M Manager is the chief of emergency operations within KRCD and directs staff as needed. If necessary, additional flood emergency response staffing comes from other KRCD staff, construction contractors, temporary staffing agencies, or the California Conservation Corps. If KRCD staffing is not sufficient for an emergency situation, mutual aid may be requested from the County for trained emergency response personnel.

4.7.2 Integration with Law Enforcement and Fire Responders

Law enforcement and fire responders will participate if evacuations are necessary, or there are fires, crimes or hazardous waste spills impacting flooded areas. These agencies are generally contacted by and work with County emergency offices. However, KRCD may contact them if immediate assistance is needed.

4.7.3 Cal OES and DWR Assistance

During emergency response to flooding or storms, KRCD may require assistance in performing sand bagging, emergency debris clearance, and similar activities to save lives and protect public safety. These activities often require the use of trained crews to augment local personnel. In accordance with SEMS, once local resources are depleted or reasonably committed, mutual aid is accessed and coordinated within the Operational Area (OA). If Fresno and Kings County OA resources are not sufficient or timely, then the request is forwarded to the REOC. The REOC evaluates and fills requests by coordinating mutual aid from unaffected OAs, tasking a State agency, or accessing federal assistance. Due to the nature of the need and the resource, requests for crews are usually tasked to a State agency. Details for acquiring additional resources are covered in **Appendix C**.

4.8 Disaster Intelligence

Disaster intelligence refers to the tools and techniques KRCD uses to identify, collect, analyze, and disseminate information on the current and future extent and consequences of flooding.

4.8.1.1 Weather Forecast

The advent of satellite imagery and sophisticated computer models has significantly improved the ability to forecast times and intensities of rainfall. KRCD monitors weather forecasts from the National Weather Service, which provides daily briefings on upcoming weather as part of its role in the DWR Flood Operations Center.

4.8.1.2 River Forecast

In addition to precipitation forecasts, the emergency manager also must know how resulting runoff will affect reservoir storage, releases from dams, and ultimately the amount of water flowing in the river. Hydrologists for DWR work with the National Weather Service in the California-Nevada River Forecast Center to provide twice daily forecasts of river height at various points. These forecasts are issued as "River Bulletins" and KRCD subscribes to DWR's email distribution system. Communication with USACE allows KRCD to know when flood releases might occur and in what volumes. In addition, KRCD regularly reviews the website of the CDEC, which provides data on reservoirs, rivers, and rainfall. (http://cdec.water.ca.gov/)

More specifically, CDEC provides information on precipitation, river forecasts, river stages, snowfall, and reservoir storage. The information is presented as tables but is also available in graphical format that compares current conditions to historical data.

4.8.1.3 Flood-Related Events, such as Levee Slumps or Boils

Flood patrol crews monitor levees during flood incidents and inspect for slumps, boils, etc. The intensity of patrols varies with the flood risk and can include up to 24 hour patrols with multiple levee patrol crews. Any problems are communicated immediately to the Flood O&M Manager, who will notify other agencies if deemed appropriate. Refer to **Appendix B** for more details on levee patrols.

4.8.1.4 Traffic Information

KRCD maintains regular contact with Law Enforcement, County Departments of Transportation, Caltrans, and others to ensure situational awareness of traffic issues. Traffic issues can become a problem if roads are flooded, and unpaved roads can become muddy and difficult to traverse without 4x4 vehicles. Historically, some street flooding has occurred where Excelsior and Elgin Ave's cross the North Fork of the Kings River. Numerous other areas could also flood if there was a levee breach or levee over-topping.

4.8.1.5 Maps of Staging Areas and Stockpiles

KRCD has numerous staging areas throughout their service area for storing equipment, materials, and supplies. KRCD also has maps of these areas and detailed inventory lists. Refer to Section 6.4 and **Appendix H** for more details.

4.9 Essential Services

KRCD is the Local Maintaining Agency over the Flood Project. As part of this, KRCD reviews encroachment permits for proposed facilities or modifications on the levees and in the floodplains. If an encroachment permit is approved, KRCD provides necessary conditions for approval. KRCD also reviews permits for right-of-entry into the river channel, and provides conditions for approval. The County of Fresno and County of Kings both have floodplain ordinances with certain restrictions and requirements for development in floodplains, including special consideration for essential services and essential buildings (schools, police, medical facilities, etc.).

Appendix G includes a list of potentially flooded essential services, as well as inundation maps that show the locations of these essential services.

5 Communications

This section provides an overview of available communications systems. KRCD primarily uses cellular phones for communications both internally and with other agencies regarding levee patrols, levee repairs, flood fighting and flood water removal. Other agencies, primarily County governments and Sherriff Departments use a variety of communications systems to disseminate public warnings and information. The multiple communication methods provides redundancy in case one system is out. KRCD provides information to these agencies to assist their communication efforts. For more specific information regarding the County communication systems see the Emergency Public Information Annex of the Kings County Emergency Operations Plan (2015) and the Fresno County Master Emergency Services Plan (2017). In addition, supporting communications resources are listed in **Appendix A**.

5.1 Communications Organization

Communications organization for KRCD consists of a Public Information Office (PIO) and messengers (if needed). The General Manager, Deputy General Manager or Director of Public Relations serve as the agency's PIO, and relays relevant information to the PIOs at the County Emergency Operation Centers (EOC). Public Alerting Systems

5.1.1 Emergency Alert System (EAS)

The EAS is a network of public and private broadcast stations and interconnecting facilities. The system is authorized by the Federal Communications Commission (FCC) to operate in a controlled manner during a state of public peril or disaster, or other national emergency. KRCD does not use this system, but the Counties and local Sherriff's office do use it. It is also be used for local, state, and other national programming for public information on situations posing a threat to life and/or property. Access to EAS is coordinated through the Kings County Office of Emergency Management and/or the Fresno County Office of Emergency Services (Please refer to **Appendix D - Evacuation**). Should a disaster occur within the jurisdiction of KRCD, the Fresno or Kings County Operational Area should be notified of KRCD involvement and responsibilities regarding the disaster.

5.1.2 Emergency Digital Information Service (EDIS)

EDIS is California's state-of-the-art method for emergency public information: alerting, informing, and reassuring the public. KRCD does not use EDIS but some local agencies use the service. Messages are distributed to the public by television or radio, and can be text, image, or sound. EDIS is an advanced tool that enables local, State, federal, and allied agencies to distribute public information instantly to the public and the media. EDIS is a service of Cal OES in partnership with private, local, State, and federal organizations. For access to EDIS, contact Fresno County OES at (559) 600-4065 or Kings County OEM at (559) 852-2883.

The purpose of EDIS is to alert, inform, and reassure the public about current or foreseen threats to public safety. Any bulletin that serves those purposes is appropriate for distribution on EDIS, provided that it is clear, concise, timely, accurate, correctly prioritized, and targeted to the affected geographic area.

5.2 Local Communication Systems

The following local communications systems are used in the Kings River area. The type of communication method largely depends on the magnitude of the emergency situation.

Consolidated Public Safety Communications System (CPSCS)

The Fresno and Kings County function as the primary 9-1-1 Public Safety Answering Point for all unincorporated areas of the counties and for most of the cities. In addition, the Counties operates the CPSCS, which provides 24-hour-a-day dispatch services to County agencies and most law enforcement, fire, and other emergency management agencies.

Radio Amateur Civil Emergency Services (RACES)

The RACES network operates on amateur radio frequencies by authority of the FCC in support of emergency communications operations. RACES can augment existing public radio systems, substitute for damaged or inoperable systems, and establish communications links with otherwise inaccessible areas.

Telephone

Common carrier phone service is available throughout the area to support all emergency systems. A directory of emergency contacts is found in **Appendix A**. Most KRCD field staff have cell phones, and KRCD has six extra cell phones in their Riverdale Yard for emergencies. The Flood O&M Manager is responsible for coordinating and authorizing the distribution of these resources.

5.3 Protocols for Contacting Levee Patrols

Initial contact with the Levee Patrol Team(s) shall be in accordance with the Activation Tree (**Appendix A**). Generally, communications with Levee Patrol Teams will be through the KRCD Flood O&M Manager.

5.4 Integration and Interoperability

Interoperability is essential to effective emergency management during flood response. At the most basic level, interoperability allows two or more parties to exchange information directly. First responders at the scene can instantly connect and communicate with each other, make the contacts needed to bring in additional resources, coordinate rescue missions, and provide other forms of response to threats and emergencies.

KRCD has chosen to meet interoperability needs by using cell phones as the main source of communication. This allows KRCD to communicate directly with other local agency staff.

5.5 Media Interface

Fresno or Kings County are responsible for media interface. Both agencies will designate a PIO during an incident. A PIO is a spokesperson responsible for developing and releasing information about the incident to the news media, to incident personnel, and to other agencies and organizations. Only one PIO will be assigned for each incident, including incidents operating under Unified Command and multi-jurisdiction incidents. However, the PIO may have Assistant PIOs, as necessary.

6 Administration, Finance, and Logistics

This section discusses aid from the State of California, tracking of supplies and equipment, material stockpiles and staging areas, and evacuation centers.

6.1 Master Mutual Aid Agreement

The foundation of California's emergency planning and response is a statewide mutual aid system. Mutual aid is designed to ensure that adequate resources, facilities, and other support are provided to jurisdictions whenever their own resources prove inadequate to cope with a situation. The basis for the system is the California Disaster and Civil Defense Master Mutual Aid Agreement, as provided for in the California Emergency Services Act. It created a formal structure, within which each jurisdiction retains control of its own personnel and facilities but can give and receive help whenever it is needed. State government, on the other hand, is obligated to provide available resources to assist local jurisdictions in emergencies. This Flood Safety Response Plan is designed to apply local resources in meeting local flood response requirements, and request aid if the flood response efforts exceed the capabilities of KRCD.

6.2 Record Keeping

KRCD tracks and records flood response personnel time. KRCD also collects and maintains documentation on emergency information that would be needed for reimbursement by Cal OES or FEMA. KRCD is aware of the requirement to retain these records for audit purposes for three years after receiving final close-out letters when FEMA aid is distributed.

6.3 Resource Tracking

The KRCD Flood O&M Manager is responsible for monitoring and tracking resources, including equipment, supplies and materials used for levee patrol, levee maintenance and repair, and flood fighting. These supplies are replenished at the beginning of each flood year, and, as needed, at the end of each flood incident. Supplies are also tracked during a flood incident to determine if they need short-term replenishment.

6.4 Stockpiles and Staging Areas – Location and Access

Stockpiles of materials (concrete blocks, sandbags, etc.) have been placed at strategic locations along the river to help ensure rapid response if they are needed. The stockpiles are needed in case materials are not available on short notice, or during non-business hours. Materials can also potentially be available from other agencies along the river corridor, such as James Irrigation District, Laguna Irrigation District, or the County Public Works Department. Additionally, DWR has locations in Sanger and Visalia where emergency materials are stockpiled for flooding situations. KRCD also has agreements with landowners to use space as a staging area if necessary. Staging areas are used as a working location for levee maintenance, levee repair, and flood fighting. Materials, equipment, and staff are sent to the staging area to conduct flood fight activities. Furthermore, if needed, KRCD has the ability to secure emergency contracts for labor or equipment. Stockpiles of revetment and flood fighting materials will be reviewed periodically and, if warranted, additional materials will be procured, or existing

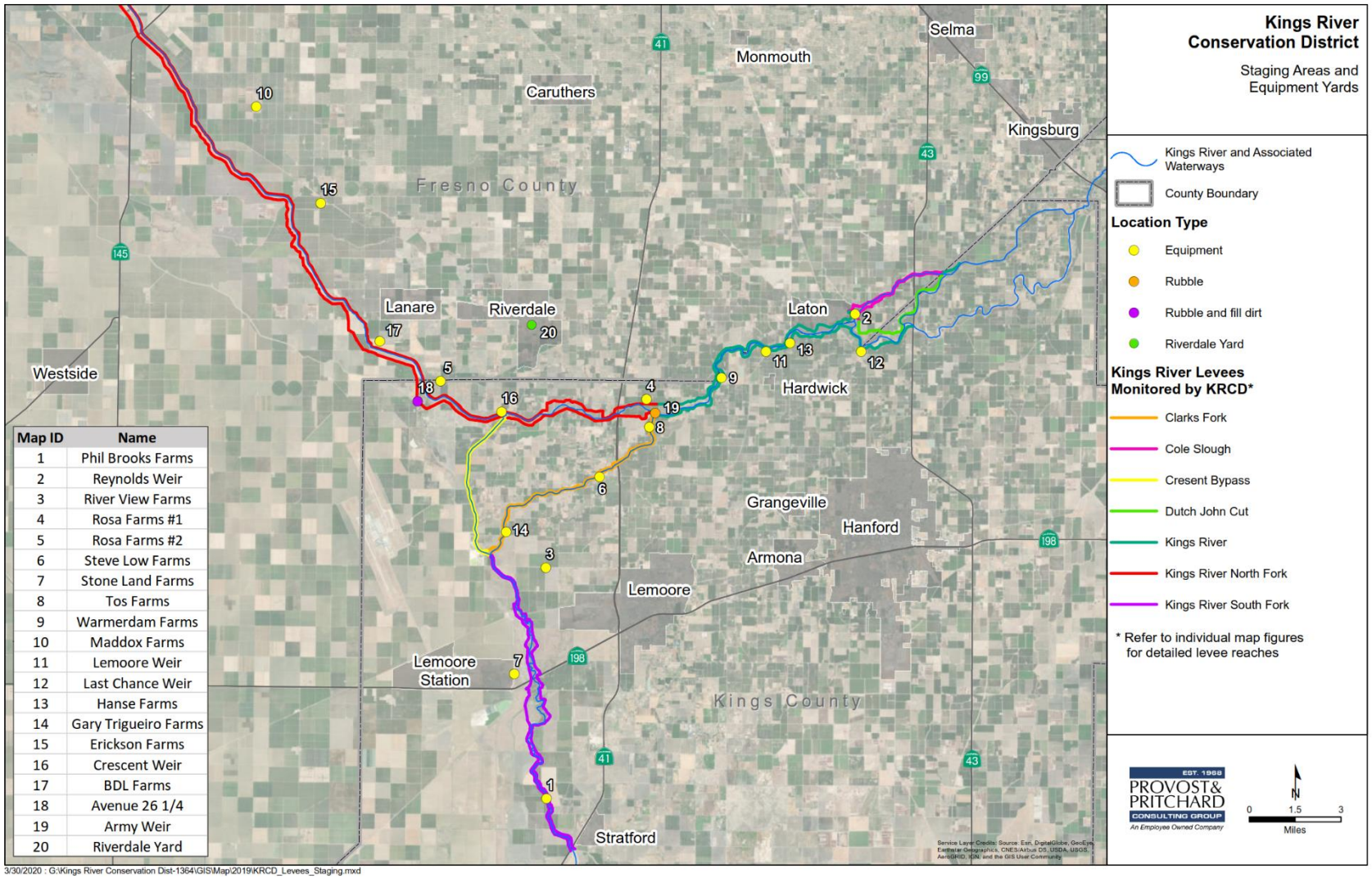
materials will be relocated. The main stockpile for KRCD is located at the Riverdale Yard, 21098 S. Valentine Road, Riverdale CA.

KRCD maintains staging areas that are used for temporary storage of heavy equipment, materials and supplies, and other areas that maintain long-term supplies of rubble and fill dirt (see Table 3). The staging locations are also displayed on a map in **Figure 5** however, stagging locations are subject to change based on conditions on the ground. If in doubt contact the Flood O&M Manager or Supervisor. **Appendix H** includes individual aerial photographs showing the location of each staging area.

Table 3. List of Stockpile Locations and Contacts to Access

	Location	River Unit	Type	Nearby Cross Streets[1,2]
1	Phil Brooks Farms	Unit 11 South Fork	Staging Area	NE of 22nd Ave & Lansing Ave
2	Reynolds Weir	Unit 14 Main River	Staging Area	N of De Woody St & E Riverdale Ave
3	River View Farms	Unit 12 South Fork	Staging Area	SE of 22nd Ave & Hanford Armona Rd
4	Rosa Farms #1	Unit 1 Main River	Staging Area	SE of 19th Ave & Everett Ave
5	Rosa Farms #2	Unit 5 North Fork	Staging Area	SE of S Bryan Ave & W Excelsior Ave
6	Steve Low Farms	Unit 8 Clarks Fork	Staging Area	SW of 20th Ave & Fargo Ave
7	Stone Land Farms	Unit 11 South Fork	Staging Area	NE of Avenal Cutoff Rd & Hwy 198
8	Tos Farms	Unit 7 Clarks Fork	Staging Area	SE of 18 ¾ Ave & Elgin Ave
9	Warmerdam Farms	Unit 2 Main River	Staging Area	NW of 16th Ave & Excelsior Ave
10	Maddox Farms	Unit 5 North Fork	Staging Area	SE of S Bishop Ave & W Kamm Ave
11	Lemoore Weir	Unit 2 Main River	Staging Area	S of S Minnewawa Ave & Kings River
12	Last Chance Weir	Unit 18 Main River	Staging Area	NE of Dover Ave & 12th Ave
13	Hanse Farms	Unit 18 Main River	Staging Area	NW of 13 ¼ Ave & Dover Ave
14	Gary Trigueiro Farms	Unit 8 Clarks Fork	Staging Area	NW of 23rd Ave & Lacey Blvd
15	Erickson Farms	Unit 5 North Fork	Staging Area	SE of W Elkhorn Ave & S Dower Ave
16	Crescent Weir	Unit 5 North Fork	Staging Area	SE of Elder Ave & 23 ½ Ave
17	BDL Farms	Unit 5 North Fork	Staging Area	SE of W Mt Whitney Ave & S Monroe Ave
18	Avenue 26 ¼	Unit 6 North Fork	Rubble / fill dirt	NE of Elder Ave & 26 ¼ Ave
19	Army Weir	Unit 4 North Fork	Rubble	NE of 18 ¾ Ave & Elgin Ave

Notes:
1 - Aerial photographs of each staging area are provided in **Appendix H**.
2 – Most staging areas are in remote rural areas without clear cross streets. The cross streets provided are nearby streets, and the staging area is not always located at the intersection of the two streets



Map ID	Name
1	Phil Brooks Farms
2	Reynolds Weir
3	River View Farms
4	Rosa Farms #1
5	Rosa Farms #2
6	Steve Low Farms
7	Stone Land Farms
8	Tos Farms
9	Warmerdam Farms
10	Maddox Farms
11	Lemoore Weir
12	Last Chance Weir
13	Hanse Farms
14	Gary Trigueiro Farms
15	Erickson Farms
16	Crescent Weir
17	BDL Farms
18	Avenue 26 1/4
19	Army Weir
20	Riverdale Yard

Figure 5. Staging Area Locations

6.4.1 Equipment

The Riverdale Yard (21098 S. Valentine, Riverdale) is centrally located along the Kings River levees and includes a variety of stockpiled equipment and materials. The stockpile generally includes safety equipment, tools and materials used for levee patrols, levee repairs, floodwater removal and floodfighting.

6.5 Evacuation Centers

Evacuation is undertaken and directed by the County Incident Commanders or the County Sheriffs. In the area covered by this plan, schools and churches often serve as evacuation centers. KRCD assists evacuation efforts by providing information on flood conditions and levee integrity to the local agencies.

7 Plan Development and Maintenance

This chapter discusses the process for maintaining, reviewing, and updating this Flood Safety Response Plan, and describes a practical training program so staff are ready to implement the Plan.

7.1 Plan Development

The KRCD Flood O&M Manager has primary responsibility for developing, reviewing, and updating this Flood Safety Response Plan on a regular basis. **Figure 6** shows the KRCD Plan Maintenance cycle.

Figure 6: Plan Maintenance Cycle

7.2 Plan Review and Maintenance

In addition, this plan may be reviewed and modified after a significant flood incident. The process for updating the Plan includes the following:

- Proposed changes shall be submitted in writing to the KRCD Flood O&M Manager
- Changes shall be published and distributed to jurisdictions and agencies holding this plan

Every five years, this plan will be audited, and if deemed necessary, updated, republished, and redistributed. This plan also may be modified whenever responsibilities, procedures, laws, rules, or regulations pertaining to emergency management and operations change.

7.3 Training and Exercises

KRCD provides practical training on levee patrols, levee maintenance, and flood fighting. The training topics are listed below.

All Flood Workers

- Wearing a safety harness
- Pulling weir boards safely using hooked poles
- Driver safety on levees.
- How to spot: boils, seepage, overtopping, flows moving sediment, sluffing, erosion.
- Proper way to fill sandbags, create a sand bag ring to contain a boil
- Correct use of flood marking nomenclature
- Safe operation of tractors and tractor maintenance
- How to operate the pull behind mower
- Rodent control including how to spot rodent holes in the levee, mounds, and burrows. Matching the appropriate rodent bait with the right rodent. How to scatter grain baits; worm baits, and use smoke bombs.
- Rodent hole removal
- Repairing and resolving other issues once found in the field

Advanced Flood Workers

- Safely apply herbicides
- Operate a side mower attachment
- Operate a backhoe
- Operate a motor grader
- Operate a dump truck
- Operate a water truck

KRCD full-time staff also attend annual DWR sponsored Flood Fight Training.

7.4 Evaluation

The KRCD Flood O&M Manager will coordinate and facilitate post-incident analyses following emergencies and major flood incidents. When warranted, a Post-Incident Report and Implementation Plan will be prepared by Flood O&M Manager and distributed to KRCD staff and other agencies, if relevant to them.

8 Authorities and References

8.1 Federal

Federal Civil Defense Act of 1950 (Public Law 920, as amended)

Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (Public Law 93-288, as amended)

8.2 State

California Emergency Services Act (Chapter 7, Division 1 of Title 2 of the Government Code)

Standardized Emergency Management System (SEMS) Regulations (Chapter 1 of Division 2 of Title 19 of the California Code of Regulations) and (California Government Code §8607 et sec)

California Department of Water Resources Flood Control (California Water Code §128)

California Department of Water Resources, *Emergency Flood Fighting Methods,* August 2012.

8.3 Local

Amec Foster Wheeler, *Fresno County Multi-Jurisdictional Hazard Mitigation Plan*, May 2018.

County of Fresno*, Master Emergency Services Plan,* October 2017.

County of Kings, City of Avenal, City Corcoran, City of Hanford and City of Lemoore, *Kings County Multi-jurisdictional Local Hazard Mitigation Plan*, December 2012.

County of Kings Office of Emergency Management, *Emergency Operations Plan*, November 2015.

Kings River Conservation District, *Emergency Action Plan – Kings River Channel Improvement Project,* 2016.

Kings River Conservation District, *Systemwide Improvement Framework for the Kings River Flood Control Project,* February 2020.

Kings River Conservation District and Kings and Kings River Water Association, *The Kings River Handbook,* September 2009.

US Army Corps of Engineers, *Operation and Maintenance Manual for Kings River Channel Improvement - Pine Flat Dam and Kings River Project, Fresno and Kings County, California,* 1998 – reprinted with amendments.

Kings River Flood Safety Response Plan

APPENDICES

Table of Contents

ATTACHMENT

B-1: Sample Levee Patrol Schedule
B-2: Staff Gauge Reading Form

Appendix A - Communications Support

This appendix describes supplementary communications support, primarily through the California Office of Emergency Services (Cal OES), lists emergency contact information, and provides several sample press releases for a variety of flooding situations.

A.1 Communications Support

The following are sources of communications support available to local emergency operations with support being dependent upon the type and magnitude of the emergency. Communication systems are used for coordination of emergency operations between agencies, as well as alerting and warning the government and the public of emergency situations. KRCD primarily uses cell phones to communicate during emergencies. The following communications systems would be operated by other agencies, such as County governments or law enforcement.

The California Office of Emergency Services (Cal OES)
Cal OES maintains several communications support capabilities available for use by local governments during major emergencies. All requests for Cal OES communications support will be directed to the Kings County Operational Area Emergency Operations Center (EOC) and the Fresno County Operational Area EOC (or County Office of Emergency Services[OES] if the EOC is not activated) for processing. Technical advice is also available by contacting the Cal OES Warning Center at (916) 845-8911.

Mobile Satellite Communications Units
Cal OES maintains and operates several mobile satellite communications units that can be driven, transported by trailer, or airlifted to any location in the state to provide dedicated voice and data satellite transmission capability. These mobile units are positioned throughout the state and may be sent into local jurisdictions to support emergency communication needs. The mobile satellite communications units are part of the statewide Operational Area Satellite Information System (OASIS) network.

Operational Area Satellite Information System
OASIS is a system that consists of a communications satellite, multiple remote sites, and two hubs. The satellite is in a stationary or geo-synchronous orbit above the earth's equator. A high frequency radio system and a satellite communications network were constructed to link all 58 California counties with Cal OES and other state agencies for communicating during a disaster as well as day-to-day communications. The system, which uses technology similar to cellular telephones, has more than 800 phone lines statewide. There are independent OASIS locations through the EOC, allowing for rapid, reliable communications with Regional/State and Operational Area Command Centers.

Mobile Command & Communication Facilities

Cal OES maintains two mobile command facilities available for use during major emergencies. These mobile command complexes consist of integrated communications and command vans and appropriate support vehicles and equipment.

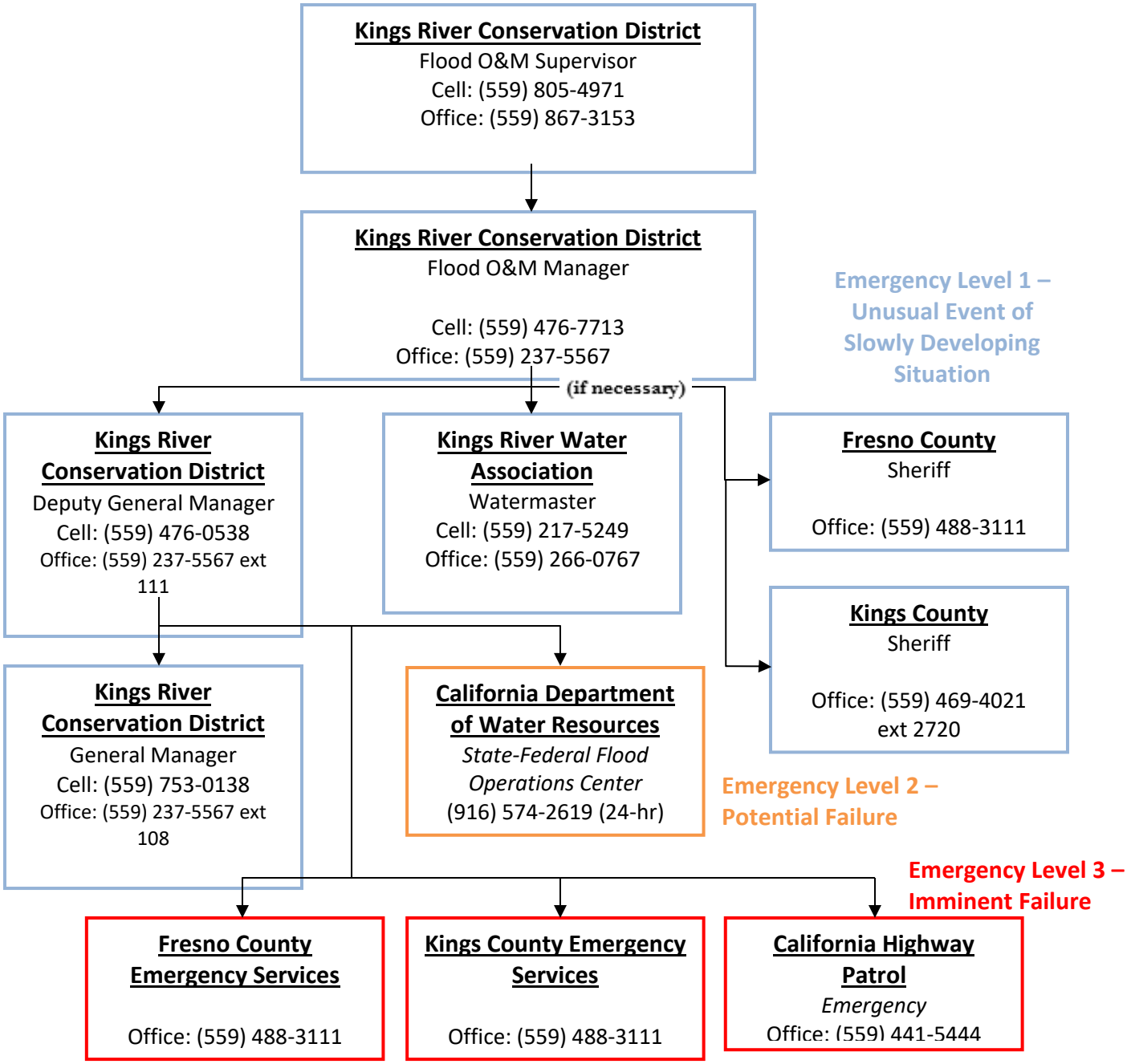
The primary purpose of these mobile command units is to provide initial field communications information until more sophisticated communications are established and/or restored. Each of the complexes is equipped for operations on each of the major state radio systems, the OASIS, mutual aid radio systems, and amateur radio (RACES) frequencies. Radio operators must be provided by the respective agency.

Portable Radio Caches

Cal OES also maintains caches of portable radios capable of operating on selected statewide law enforcement and fire and rescue mutual aid frequencies. These radios are available to local governments upon request.

A.2 Emergency Call-Down Tree

The following flowchart indicates which personnel should be notified in the event of an emergency and at which level of emergency.



A.3 Sample Press Releases

Following are sample press releases for various flood situations including: 1) flood preparedness, 2) possible flooding, 3) probable flooding, 4) imminent or occurring flooding, and 5) re-entry to previously evacuated areas. Areas that need to be filled in with specific information are highlighted yellow. The County is responsible for warnings in unincorporated areas. Various incorporated areas have responsibility for notification of the public within their boundaries. They are also responsible for activating their own emergency response plans for the flooding threat.

Example News Release –Preparedness

NEWS RELEASE: Winter Storm Awareness Week and Family Preparedness Planning

(Name) has issued a proclamation designating Winter Storm Awareness Week (Dates) in (Agency/Jurisdiction). The week is designed to focus attention on the flood threat and to increase public awareness. People in potentially vulnerable areas should consider actions they would need to take if a flood threatened (Agency/Jurisdiction) directly. The public, especially people in low-lying areas, should monitor the local news media. People in potentially vulnerable areas should:

- **Review evacuation plans:** Residents living in vulnerable areas and those living in mobile homes that might be flooded should make plans now to be prepared if an evacuation becomes necessary. Become familiar with evacuation routes. Housing options include: a hotel, motel, or friend's home that is outside the vulnerable area or an American Red Cross shelter. Hotels and motels fill up quickly and out-of-county evacuations take time. The earlier you leave a potentially flooded area, the less time you will spend on the road.
- **Fuel cars, keep supplies in vehicles, and secure important documents:** Individuals and families should fill up their cars with gas. Road maps, nonperishable snack foods, a first-aid kit that includes a supply of your family's prescription medications, and convenience items such as diapers should be available in the car. Secure important documents in waterproof packaging.
- **Obtain supplies to protect the home:** If residents are ordered to evacuate, there will be little time to protect their homes from a flood.
- **Consider the safety of pets:** Pets may not be allowed in some shelters. Individuals and families should plan to board pets with veterinarians, kennels, or other facilities in non-vulnerable areas. Identification and rabies tags should be attached to the pets' collars.
- **Register for special medical care:** Residents with special medical needs who may require transportation or medical care should contact their local emergency management office if they have not already done so. Special medical needs shelters require advance registration.

Example News Release – Possible Flooding

NEWS RELEASE: Agency/Jurisdiction Monitors Storm; Citizens Should Review Plans

The (Agency/Jurisdiction) is paying close attention to forecasted winter storms. As a result of the storms' projected precipitation, key agencies have been notified to be ready to respond if the need arises. The (Agency/Jurisdiction) Emergency Operations Center was staffed (Day) from (Time) to (Time). Personnel representing key response agencies were notified and are on call if they are needed.

People in potentially vulnerable areas should review their plans and consider actions they will need to take if the flooding occurs. The public, especially people in low-lying areas, should monitor local news media.

People in potentially vulnerable areas should:

- **Review evacuation plans:** Residents living in vulnerable areas and those living in mobile homes must make plans now to be prepared if an evacuation becomes necessary. Become familiar with evacuation routes and select a possible destination. Housing options include: a hotel, motel, or friend's home that is outside the vulnerable area or an American Red Cross shelter. Hotels and motels fill up quickly and out-of-county evacuations take time. The earlier you leave, the less time you will spend on the road.
- **Fuel cars, keep supplies in vehicles, and secure important documents:** Individuals and families should fill up their cars with gas. Road maps, nonperishable snack foods, a first-aid kit that includes a supply of your family's prescription medications, and convenience items such as diapers should be available in the car. Secure important documents in waterproof packaging.
- **Consider the safety of pets:** Pets may not be allowed in some shelters. Individuals and families should plan to board pets with veterinarians, kennels, or other facilities in non-vulnerable areas. Identification and rabies tags should be attached to the pets' collars.
- **Register for special medical care:** Residents with special medical needs who may require transportation or medical care should contact their local emergency management office if they have not already done so.

Example News Release – Probable Flooding

NEWS RELEASE: Citizens Should Prepare for Flooding

The public, especially people in low-lying areas, should monitor local news media. Now is the time for people to prepare their homes, gather supplies, review their plans, and prepare for possible evacuation. Forecasters currently show the storm on a track that could cause heavy rainfall. As a precautionary measure in anticipation of probable flooding, KRCD has instituted levee patrols and other proactive measures. The (Agency/Jurisdiction) Emergency Operations Center is activated and key response agencies are on call if needed.

If you live in a highly vulnerable area you should be prepared to leave immediately.

- **Prepare to evacuate if ordered to do so:** Residents living in vulnerable areas and those living in mobile homes must plan their evacuation now. Select a destination, such as a hotel, motel, or friend's home that is outside the vulnerable area or an American Red Cross shelter. Hotels and motels fill up quickly and out-of-county evacuations take time.
- **Fuel cars, keep supplies in vehicles, and secure important documents:** Individuals and families should fill up their cars with gas. Road maps, nonperishable snack foods, a first-aid kit that includes a supply of your family's prescription medications, and convenience items such as diapers should be available in the car. Secure important documents in waterproof packaging.
- **Consider the safety of pets:** Pets may not be allowed in Red Cross shelters. Individuals and families should plan to board pets with veterinarians, kennels, or other facilities in non-vulnerable areas. Identification and rabies tags should be attached to the pets' collars.
- **Register for special medical care:** Residents with special medical needs who may require transportation or medical care should contact their local emergency management office if they have not already done so. Special medical needs shelters require advance registration.

Example News Releases – Imminent or Occurring Flooding

EMERGENCY ALERT SYSTEM MESSAGE: Voluntary Evacuation

Chief Executive (Name) is requesting that tourists, visitors, and residents in (describe affected areas by landmarks when possible) voluntarily leave in response to potential flooding. This is a very dangerous situation that is capable of severe damage. Chief Executive (Name) is strongly recommending voluntary evacuation to safeguard human life in the area.

The Chief Executive (Name) said that if the situation remains the same, he will call for a mandatory evacuation of low-lying areas or along rivers and streams.

American Red Cross shelters will be open (Location) (Day) (Time).

There are (#) law enforcement officers on duty to help with the evacuation. In addition, these officers will secure the property of residents who evacuate and will enforce the law in evacuation zones. In inland counties, anyone living in mobile homes or vulnerable structures should consider relocating to more substantial locations.

EAS MESSAGE: Mandatory Evacuation

The (Agency/Jurisdiction) is requesting activation of the Emergency Alert System at the direction of Chief Executive (Name). The Chief Executive (Name) has ordered a mandatory evacuation of all persons located in (describe affected areas by landmarks when possible.)

Law enforcement personnel may be posted along evacuation routes to help people move as safely and quickly as possible. The Chief Executive (Name) has ordered the mandatory evacuation in order to safeguard human life in (Agency/Jurisdiction).

Example News Releases – Re-Entry

Chief Executive (Name) lifted the mandatory evacuation order for (describe affected areas), allowing residents to return to the counties at the discretion of their local officials.

All Red Cross Shelters were closed at (Time). The shelters housed (#) people and provided (#) meals. Schools that are closed include: (List closings)

NEWS RELEASE: Exercise Precautions When Returning Home

Chief Executive (Name) rescinded the mandatory evacuation order for (describe affected areas), clearing the way for residents to return home. Residents should keep the following precautions in mind.

- Do not return home until local authorities say it is okay to do so. The health and safety of you and your family should be your first concern after a disaster.
- Be on the lookout for new hazards created by the flood, such as washed out roads, contaminated buildings, contaminated water, gas leaks, broken glass, downed power lines or damaged wiring, and slippery floors.
- Be aware of exhaustion. Resist the tendency to do too much at once. Set your priorities and pace yourself. Create a manageable schedule.
- Watch for signs of stress and fatigue. Talk about the situation with others to release tensions. Encourage others to talk about their concerns. Get professional crisis counseling if necessary.
- Encourage children to talk about their feelings. Explain how you plan to deal with the situation. Involve them in cleanup activities. Being part of the recovery process will help them cope. Keep the family together.
- Drink plenty of clean water. Try to eat well and get enough rest.
- Wear sturdy work boots and gloves and wash your hands thoroughly with soap and clean water often when working in debris.
- Inform local authorities about health and safety hazards, including downed power lines, washed out roads, smoldering insulation, or dead animals.

When returning to a damaged home:

- Keep a battery-powered radio with you so you can listen for emergency updates.
- Wear sturdy work boots and gloves.
- Before going inside, walk carefully around the outside of your home and check for loose power lines, gas leaks, and structural damage. Do not enter if flood water remains around the building. If you have doubts about safety, have your home inspected by a professional before entering.

- Use a battery-powered flashlight for light. DO NOT use oil, gas lanterns, candles, or torches. Leaking gas or other flammable materials may be present. Do not smoke. Do not turn on the lights until you are sure they're safe to use.
- Watch out for animals, especially poisonous snakes. Use a stick to poke through debris.
- Enter the building carefully and check for damage.
- Check for gas leaks, starting at the hot water heater. If you smell gas or hear a hissing or blowing sound, open a window and leave immediately. Turn off the main gas valve from the outside, if you can. Call the gas company from a neighbor's house. If you shut off the gas supply at the main valve, you will need a professional to turn it back on.
- Check the electrical system. If you see sparks, broken or frayed wires, or if you smell hot insulation, turn off the electricity at the main fuse box or circuit breaker if you are not wet and can do so without standing in water. If you have any doubts about your ability to turn off the electricity safely, leave the house and call a professional.
- Check appliances. If appliances are wet, turn off the electricity at the main fuse box or circuit breaker. Then unplug appliances and let them dry out. Have appliances checked by a professional before using them again.
- Check the water and sewage systems. If pipes are damaged, turn off the main water valve.
- Clean up spilled medicines, bleaches, and gasoline. Open cabinets carefully. Be aware of objects that may fall.
- Look for valuable items, such as jewelry and family heirlooms, and protect them.
- Try to protect your home from further damage. Open windows and doors to get air moving through. Patch holes.
- Clean and disinfect everything that got wet. The mud left behind by floodwaters can contain sewage and chemicals.
- Check with local authorities before using any water; it could be contaminated. Wells should be pumped out and the water tested before drinking.
- Throw out fresh food that has come into contact with flood waters. Check refrigerated food for spoilage. Throw out flooded cosmetics and medicines.
- Call your insurance agent. Take pictures of damages. Keep good records of repair and cleaning costs.
- Tune in to local radio and television stations and read local newspapers for information regarding financial assistance, emergency housing, food, first aid, and clothing.

Appendix B - Levee Patrol

This section discusses the purpose of levee patrols, agency responsibilities, and the specific elements of KRCD's levee patrol program.

B.1 Purpose

KRCD maintains experienced levee patrol crews who are available during emergencies. The overall goals of the levee patrol crews include:

- Identifying existing and potential problems including seepage, boils, erosion, sloughing, and other instabilities
- Marking problem areas with stakes and flagging and on appropriate forms
- Documenting river stage, high watermarks, and river flowrates
- Ensuring materials, equipment, and supplies are available for levee patrols and are maintained in a serviceable condition
- Keeping the KRCD Flood Operations Manager apprised of their findings
- Engaging in flood fighting when necessary
- Coordinating as needed with other local agencies

B.2 Agency Responsibility for Levee Patrol

KRCD is responsible for patrols along 140-miles of levees within their jurisdiction. These levees are illustrated in **Appendix F – Levee System Maps**. The majority of the levee units are under the jurisdiction of KRCD. This plan only covers the levees maintained by KRCD.

KRCD has full-time staff that work as the flood maintenance crew and serve as Levee Patrol during flood season. KRCD full-time staff is augmented in flood season with other KRCD staff, hired contractors, and those hired from temporary staffing agencies or the California Conservation Corps.

B.3 Program Elements

The levee patrol program consists of three basic components: 1) Training, 2) Equipment Procurement and Maintenance, and 3) Levee Patrols.

B.3.1 Training

KRCD provides their staff the following training specifically related to levee patrols:

- Wearing of safety harnesses

- Safely operating vehicles on levees
- Spotting boils, seepage, overtopping, flows moving sediment, sluffing, and erosion
- Marking of areas of concern using wooden stakes, ribbons, and markers

Other training is also provided related to flood fighting and levee maintenance. Additionally, KRCD staff participate in DWR flood flight training on an annual basis. During flood emergency conditions, inexperienced temporary staff will generally be partnered with experienced patrol personnel, who will help to instruct them.

B.3.2 Equipment Procurement and Maintenance

The Riverdale Yard (21098 S. Valentine, Riverdale) is centrally located along the Kings River levees and includes a variety of stockpiled equipment and materials. The stockpile generally includes safety equipment, tools and materials used for levee patrols, levee repairs, floodwater removal and floodfighting. The supplies are generally replenished at the beginning of each flood season and after a major flood event.

Appendix H includes a map showing the location of the Riverdale Yard, as well as the locations for large equipment, sand, dirt and rubble, which generally play the most important role during flood conditions.

B.3.3 Levee Patrols

Levee Patrol Process

Levee patrols follow the process described below:

- The Flood O&M Manager assigns routes that ensure complete coverage and, wherever possible, overlapping coverage. An example levee patrol schedule is provided as **Attachment B-1.**
- Levee patrol crews receive a safety briefing prior to commencing patrols and use safety gear provided.
- The levee patrols monitor and record staff gauge heights to assist in estimating flows and available freeboard (see Staff Gauge Form in **Attachment B-2**).
- The levee patrols look for signs of seepage, boils, erosion, sloughing, or other indicators of levee instability. Problem areas are marked with stakes and flags.

Potential Levee Failure Modes

Potential levee failure modes are illustrated below followed by brief descriptions:

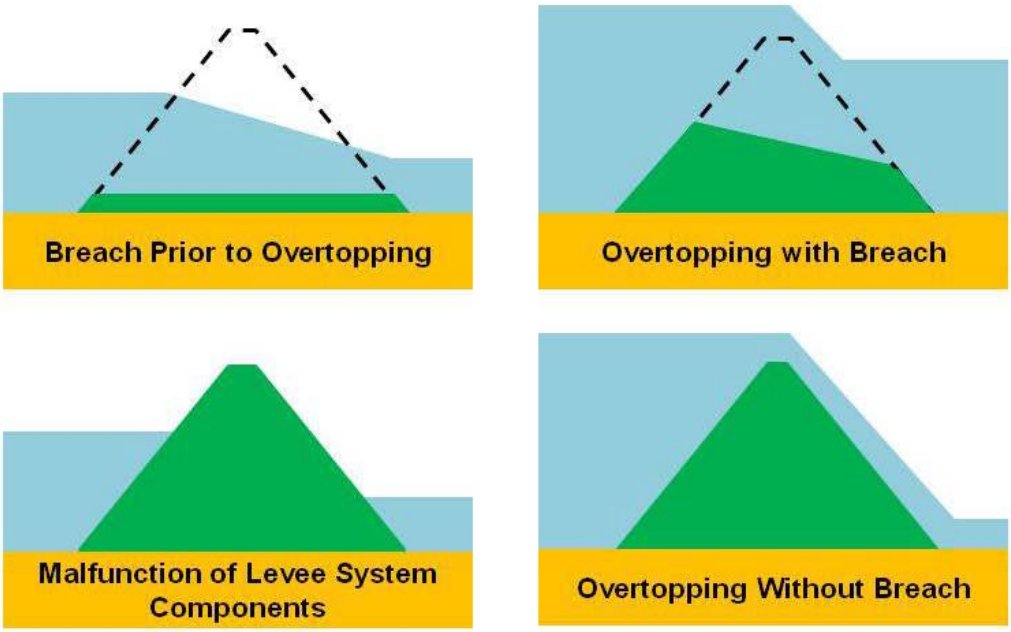


Figure B-1 - Potential Levee Failure Modes

Breach Prior to Overtopping. Breaching prior to overtopping is the most likely of the four failure modes. A breach could occur due to piping, boils, undermining, or erosion. An earthquake could also cause a failure from liquefaction, ground settlement, or cracking. However, the risk of a levee failure from this mode is still considered low due to on-going maintenance, inspection, and monitoring efforts.

Overtopping with Breach. Overtopping with breaching is not a likely failure mode. River releases are controlled at Pine Flat Dam to prevent overtopping, whenever feasible. In addition, river flows can be reduced at numerous locations through diversions to recharge facilities and irrigation canals. In a very large flood, water releases could exceed channel capacity and overtop the levees. If this occurred, the levees would likely fail and breach since they are not designed to withstand overtopping.

Malfunction of Levee System Components. Malfunctioning of levee system components is an unlikely failure mode. The levee system does not include components such as floodwalls, closures, I-walls, or pumping stations.

Overtopping Without Breach. Overtopping without breaching is considered an unlikely scenario. The levees were likely not designed to withstand overtopping; however, that cannot be confirmed since most of the original design drawings and calculations are not available. The levees can probably only accommodate a few inches of overtopping since erosion protection consists of gravel

on levee crests. Lastly, flood flows in the Kings River are regulated by Pine Flat Dam and, when feasible, are controlled to prevent levee overtopping.

Motor Patrols

Levee are generally patrolled with pick-up trucks due to their length (140 miles). The three general phases of levee patrols are based on the following flowrates at Crescent Weir:

Table B-1: Flood Stages Based on River Flow at Crescent Weir and Army Wier

Monitoring Phase	North Fork (based on flows at Crescent Weir)	South Fork (based on flows at Army Weir)	Monitoring Frequency
Initial Monitoring	2,500 – 3,000 cfs	1,000 – 1,300 cfs	Occasional daylight monitoring
Increased Readiness	3,000 – 3,500 cfs	1,300 – 2,000 cfs	Daytime and possible nighttime monitoring
Full Monitoring	3,500 – 4,750 cfs	2,000 – 2,400 cfs	24-hour patrols

During levee patrols, problem areas are staked and flagged for focused monitoring or repairs. Levees are monitored occasionally during lower flows (Initial Monitoring Phase) and frequently during moderate flows (Increased Readiness Phase). During flood releases from Pine Flat Dam (River flows at Crescent Weir in excess of 3,500 cfs), the flood control maintenance crew maintains 24-hour patrols (Full Monitoring Phase) while monitoring the levee banks for sloughing, erosion, and boils. Also, during high water, the staff assists other irrigation districts in removing debris from the various weirs and structures along the river.

The levee motor patrol consists of the following:

- Four-wheel drive vehicles
- Two trained and currently qualified observers per vehicle
- Patrol areas (generally divided into two sections: 1) Army Weir to HW 145, and 2) South Fork of the Kings River)
- Patrol crews (rotated on a 12-hour frequency)

Walking Patrol

Levees are generally not patrolled by foot due to their length. However, levees are inspected on foot if a problem is identified during a motor patrol, or there is a known area of concern. Problem areas are staked and flagged.

High Water Staking Procedures

During flood events, high water staking will sometimes be performed. This includes placing markers (stakes) periodically as the event progresses. When feasible, the highwater marks will be referenced with suitable surveying or GPS units.

B.4 Augmenting Staff

KRCD typically has 6 to 7 full-time staff for flood operations. During flood events, the crews are augmented with other KRCD staff, hired contractors, hired temporary workers, and California Conservation Corps staff. KRCD can also request help from other local agencies, typically the public works department and emergency management offices of Fresno and Kings County. In addition, when local personnel resources are depleted or reasonably committed, mutual aid can be requested from the Cal OES Regional Emergency Operations Center (REOC). The REOC evaluates and fills requests with staff from unaffected areas, tasking a State agency, or accessing federal assistance.

ATTACHMENT B-1: SAMPLE LEVEE PATROL SCHEDULE

FLOOD PATROL SCHEDULE 2019

	May 26, Sunday	May 27, Monday	May 28, Tuesday	May 29, Wednesday	May 30, Thursday	May 31, Friday	June 1, Saturday
Day Shift							
Patrolee	Day 0600-1800	Day 0600-1800	Day 0600-1800	Day 0600-1800	Day 0600-1800	Day 0600-1800	Off
Patrolee	Off	Off	Off	Off	Off	Day 0600-1800	Day 0600-1800
Patrolee	Off	Off	Off	Off	Off	Day 0600-1800	Day 0600-1800
Night Shift							
Patrolee	Off	Holiday	Day 0700-1430	Day 0700-1430	Off	Night 1800-0600	Night 1800-0600
Patrolee	Off	Holiday	Day 0700-1430	Day 0700-1430	Off	Night 1800-0600	Night 1800-0600
Patrolee	Off	Holiday	Day 0700-1430	Day 0700-1430	Off	Night 1800-0600	Night 1800-0600
Patrolee	Off	Holiday	Day 0700-1430	Day 0700-1430	Off	Night 1800-0600	Night 1800-0600

FLOOD PATROL SCHEDULE 2019

	June 2, Sunday	June 3, Monday	June 4, Tuesday	June 5, Wednesday	June 6, Thursday	June 7, Friday	June 8, Saturday
Day Shift							
Patrolee	Day 0600-1800	Day 0600-1800	Day 0600-1800	Day 0600-1800	Day 0600-1800	Off	Off
Patrolee	Off	Day 0600-1800	Day 0600-1800	Day 0600-1800	Day 0600-1800	Day 0600-1800	Day 0600-1800
Patrolee	Day 0600-1800	Day 0600-1800	Day 0600-1800	Day 0600-1800	Off	Off	Day 0600-1800
Patrolee	Day 0600-1800	Day 0600-1800	Off	Off	Day 0600-1800	Day 0600-1800	Day 0600-1800
Patrolee	Off	Main Office	Day 0600-1800	Day 0600-1800	Main Office	Main Office	Off
Patrolee	Off	Main Office	Main Office	Main Office	Day 0600-1800	Day 0600-1800	Off
Night Shift							
Patrolee	Night 1800-0600	Night 1800-0600	Night 1800-0600	Off	Off	Night 1800-0600	Night 1800-0600
Patrolee	Night 1800-0600	Night 1800-0600	Night 1800-0600	Night 1800-0600	Off	Off	Night 1800-0600
Patrolee	Night 1800-0600	Night 1800-0600	Off	Off	Night 1800-0600	Night 1800-0600	Night 1800-0600
Patrolee	Off	Off	Night 1800-0600	Night 1800-0600	Night 1800-0600	Night 1800-0600	Night 1800-0600
Patrolee	Off	Night 1800-0600	Night 1800-0600	Night 1800-0600	Night 1800-0600	Off	Off
Patrolee	Off	Off	Off	Night 1800-0600	Night 1800-0600	Night 1800-0600	Night 1800-0600

FLOOD PATROL SCHEDULE 2019

	June 9, Sunday	June 10, Monday	June 11, Tuesday	June 12, Wednesday	June 13, Thursday	June 14, Friday	June 15, Saturday
Day Shift							
Patrolee	Day 0600-1800	Day 0600-1800	Day 0600-1800	Day 0600-1800	Day 0600-1800	Off	Off
Patrolee	Off	Off	Day 0600-1800	Day 0600-1800	Day 0600-1800	Day 0600-1800	Day 0600-1800
Patrolee	Day 0600-1800	Day 0600-1800	Day 0600-1800	Day 0600-1800	Off	Off	Day 0600-1800
Patrolee	Day 0600-1800	Day 0600-1800	Off	Off	Day 0600-1800	Day 0600-1800	Day 0600-1800
Patrolee	Off	Main Office	Day 0600-1800	Day 0600-1800	Main Office	Main Office	Off
Patrolee	Off	Main Office	Main Office	Main Office	Day 0600-1800	Day 0600-1800	Off
Night Shift							
Patrolee	Night 1800-0600	Night 1800-0600	Night 1800-0600	Off	Off	Night 1800-0600	Night 1800-0600
Patrolee	Night 1800-0600	Night 1800-0600	Night 1800-0600	Night 1800-0600	Off	Off	Night 1800-0600
Patrolee	Night 1800-0600	Night 1800-0600	Off	Off	Night 1800-0600	Night 1800-0600	Night 1800-0600
Patrolee	Off	Off	Night 1800-0600	Night 1800-0600	Night 1800-0600	Night 1800-0600	Night 1800-0600
Patrolee	Night 1800-0600	Night 1800-0600	Night 1800-0600	Night 1800-0600	Night 1800-0600	Off	Off
Patrolee	Off	Off	Off	Night 1800-0600	Night 1800-0600	Night 1800-0600	Night 1800-0600

ATTACHMENT B-2: STAFF GAUGE READING FORM

FLOOD PATROL STAFF GAUGE READINGS
NORTH FORK ISLAND WEIR TO MTWHITNEY AVENUE

Estimated flow past Crescent Weir: _____ Date: _____
Beginning of shift day or night: _____ Employee: _____

Island Weir

Time	Gauge height

Staff Gauge @ Sump # 1

Time	Gauge height

Crescent Weir

Time	Gauge height

Staff Gauge @ Bird House

Time	Gauge height

Staff Gauge upstream Excelsior Ave.

Time	Gauge height

Staff Gauge downstream Excelsior Ave.

Time	Gauge height

Staff Gauge downstream MtWhit. Ave.

Time	Gauge height

Paul Garcia: 805-4971

Pascoe Bowen: 559-476-7713

Phone #1: 281-7576 _____
Phone #2: 246-8434 _____
Phone #5: 217-8863 _____
Phone #6: 805-4973 _____

Patrol Items Noted: _____

_____

_____

_____

Corrective Action Taken: _____

_____

_____

_____

Appendix C - Flood Fighting

The goal of flood fighting is to delay or contain the spread of flood waters after a levee breach or overtopping. Specific actions can include levee relief cuts, sandbagging, plugging culverts, temporary levees, using elevated areas such as roadways as a second line of defense, diverting waters, control of boils, wavewash protection, emergency spillways, and structure protection. DWR's *Emergency Flood Fighting Methods* (2012) provides guidance on these methods. This section discusses triggers for implementing flood fighting, prioritization of efforts, personnel (KRCD and supporting agencies), flood fighting materials, and training.

C.1 Triggers

Flood fighting crews will be mobilized if a levee breach or overtopping occurs or if flows reach the Emergency Phase, which includes 4,750 cfs or greater at Crescent Weir in the North Fork of the Kings River. Generally, flood fighting crews and equipment will be organized at earlier flowrates if forecasts predict an increase in Kings River discharge. Table B1 in **Appendix B** lists flowrates that trigger different stages of levee patrols.

C.2 Prioritization

Based on input from levee patrols and other informed observers, KRCD in conjunction with Fresno and Kings County will establish priorities for flood fight operations. All Incident Commanders and the KRCD Manager of Flood Operations will conduct an initial meeting to discuss the following:

- Setting jurisdictional limitations, concerns, and restrictions
- Establishing and agreeing on acceptable priorities
- Adopting the overall flood fighting strategy
- Designating the most qualified and acceptable Operations Section Chief (The Operations Section Chief will normally be from the jurisdiction or agency that has the greatest involvement in the incident, although that is not essential.)
- Agreeing on resource needed and cost-sharing
- Agreeing on informational matters and designating one official to act as the Unified Command spokesperson

Members attending the meeting must be authorized to decide and act on behalf of the jurisdiction or agency they represent. Such decisions/actions may include ordering of additional resources, possible loaning or sharing of resources to other jurisdictions, and agreeing to financial cost-sharing arrangements with participating agencies.

C.3 Activation and Dispatch

The KRCD Manager of Flood Operation or designee has the authority to activate flood fighting crews. Dispatch of flood fight crews will occur when flooding begins or flooding is considered to be imminent.

C.4 Personnel

KRCD maintains staff trained in levee patrols and flood fighting techniques. During flooding, KRCD supplements their staff with outside hired labor. Additional flood emergency response staffing could also come from County employees. In accordance with SEMS, when local resources are depleted or reasonably committed, mutual aid is requested and coordinated within Kings or Fresno Counties. If local resources are not sufficient or timely, the request is then forwarded to the REOC. The REOC evaluates and fills requests by coordinating mutual aid from unaffected areas, tasking a State agency, or accessing federal assistance. Due to the nature of the need and the resource, requests for hand crews are usually tasked to a State agency.

C.4.1 Resource Agencies

The California Conservation Corps (CCC) has trained civilian crews that can help with flood fighting. KRCD regularly uses CCC crews during high water and flooding incidents. Other options include the California Department of Forestry and Fire Protection (Cal Fire) and California National Guard (CNG). Cal Fire supervises crews from the California Department of Corrections and California Youth Authority. The CNG also has personnel available. Both CCC and Cal Fire have contract services for various types of projects. CNG is only available through State tasking. In addition to crews, CNG and Cal Fire have mobile kitchens and similar support resources available.

C.4.2 CAL OES Mission Tasking

Cal OES controls missions and mission assignments for State resources and coordinates requests for federal resources. If Cal OES receives a request for crews that meets the criteria for State agency tasking and if an agency has the capability, Cal OES will issue a mission number authorizing the agency to respond. Once tasked, that agency will work directly with the requesting agency.

Tasking Criteria

For all missions, there must be (a) actual or imminent danger to life or public safety and (b) locally available resources, including private sector contracting, must be inadequate or untimely. Maintenance or recovery activities should be dealt with by contract and will not be authorized by Cal OES.

Costs/Reimbursement

State agencies tasked under a Cal OES mission number respond free of charge. Crews may require feeding and sheltering; transport vehicles may require gas and maintenance. These

services are usually paid for or provided by the requesting agency unless otherwise agreed to at the time of the request.

Request Procedures

Following coordination within Kings or Fresno Counties, the EOC will forward unfilled requests to the Inland REOC Operations Section. The REOC will follow up with the Kings or Fresno County EOC to resolve any questions and to monitor resource delivery.

C.5 Hazardous Materials Locations

Due to the large area potentially flooded, a list of hazardous materials locations is not provided here. Hazard materials could be found in numerous locations, including commercial and industrial buildings, farms, dairies, and government buildings. Local fire departments maintain both general and detailed maps showing locations of registered hazardous materials. KRCD will coordinate with local fire departments if areas are flooded to identify and protect hazardous materials and notify the public of potential risks.

C.6 Materials and Supplies

Stockpiling emergency materials in strategic locations is necessary since the levees extend for 140 miles. Placing stockpiles in various locations helps to reduce the response time. In addition, procuring emergency materials on short notice or outside of business hours may be difficult or impossible.

Kings River Conservation District

KRCD has a series of staging areas spread out along the river where they store heavy equipment, have stockpiles of fill dirt and rubble, and store supplies for levee maintenance, levee repair, and flood fighting. Refer to **Appendix H** for a list and map of the staging areas and equipment yards and a list of materials, equipment, and supplies stored in each area.

Department of Water Resources

DWR has stockpile locations that are available to local agencies for emergency use, including a storage container in Sanger and a material warehouse near Visalia. Materials taken from the stockpile would need to be replaced or paid for by the requesting agency. The DWR Flood Control Center in Fresno also has materials that can be used in a flood emergency.

Other

In an emergency situation, KRCD can also request materials or equipment from the Fresno and Kings County Department of Public Works or from local irrigation and water districts. These agreements often require that supplies used will be replaced.

C.7 Public Supplies

KRCD does not provide supplies to the general public during flood incidents. However, Fresno County does supply a limited number of sandbags to residents living in unincorporated County areas. The sandbags are typically available at County Road yards. These locations are shown in the table below.

Table C-1: Fresno County Public Sandbag Sites

Location	Address	Contact Phone
Fresno - Clovis area, Area 7 Road Yard	9400 N Matus	559-600-4240
Biola area, Area 4 Road Yard	12855 West "G" Street	559-600-4240
Sanger area, Area 8 Road Yard	9525 East Olive 559-600-4240	559-600-4240

Kings County also offers sandbags to residents at various municipal and county public works yards-self fill sites. Residents must bring their own shovels to fill their bags and each does it according to their operating hours (during serious events they may extend). The County utilizes 211, local media, and word of mouth to get the information out.

C.8 Logistics Procedures

The KRCD Manager of Flood Operations manages the supplies, equipment, and logistics. As equipment, supplies, and earth materials are used, they are tracked to determine when supplies will be depleted. KRCD will re-evaluate all supplies at the end of each year and after a flood event. During a flood event, they can replenish supplies through direct purchase or ask DWR, local County governments, irrigation districts, or water districts for assistance.

C.9 Training in Flood Fight Procedures and Techniques

KRCD provide staff the following training related to flood fighting:

<u>All Flood Workers:</u>

- Wearing a safety harness
- Pulling weir boards safely using hooked poles
- Driver safety on levees
- Spotting boils, seepage, overtopping, flows moving sediment, sluffing, and erosion
- Properly filling sand bags and creating a sand bag ring to contain a boil
- Correct use of flood marking nomenclature
- Safe operation of tractors and tractor maintenance
- Rodent hole removal

- Repairing and resolving other issues once found in the field

Advanced Flood Workers:

- Operating a backhoe
- Operating a motor grader
- Operating a cat front loader
- Operating a dump truck
- Operating a water truck
- Operating a side mower

Personnel from KRCD also participate in annual DWR Flood Fight training. DWR's Emergency Flood Fighting Methods Manual outlines numerous techniques: https://water.ca.gov/LegacyFiles/floodmgmt/docs/flood_fight_methods.pdf

C.10 Utilities

Utilities will be contacted if levee maintenance or flood fighting activities could impact utility infrastructure. If an area will be inundated, the utilities will be notified by County staff. When floodwater laps a bridge, KRCD contacts the responsible party (i.e., CALTRANS, Fresno/Kings County Public works) for assistance, usually to remove debris or reroute traffic.

Appendix D – Evacuation

This section discusses considerations, operations, public notification, and facilities for evacuations. KRCD is not responsible for evacuations during flood events. Those responsibilities generally fall on the County governments and law enforcement. However, KRCD provides information and coordination on flooding conditions to assist evacuation efforts. Below is an overview of evacuation plans along the Kings River. Refer to the Fresno and Kings County emergency plans for more specific information on their evacuation plans.

D.1 Considerations

The Kings River levees are located in areas with relatively flat to gently sloping farmlands with low population densities. Most of the levees on the Kings River are low (less than 8 feet) and levee failure would generally include shallow inundation and property damage with limited potential for loss of life, as indicated by inundation maps and the local terrain and topography surrounding the levees. A levee failure would primarily cause flooding of farmland. This could result in damage to crops, farm buildings, single-family farm residences, and local roads. In addition, slow rise flooding would be the most common scenario in most inundated areas, giving time for notification and evacuation.

Communities near the levees include Laton, Riverdale, Lanare, Helm, Burrel, Lemoore, Stratford, and the City of San Joaquin. Of these communities, several could experience some flooding from a levee failure. The other population centers would not be subject to flooding but may have residents living outside of the community and closer to the river that could be impacted.

Appendix F includes maps of areas potentially flooded from a levee failure. The maps also show critical facilities (schools, police, etc.) that could potentially flood. Most of the flooding is shallow with water depths in most areas of only a few feet or less. Access can be limited when areas are flooded, even in areas with less than 1-foot of water due to muddy conditions.

D.2 Operations

Local County Emergency Management Agencies, fire departments, police departments, and sheriff departments perform evacuations during flood conditions. In general, the local sheriff's department takes the lead effort in evacuations. KRCD will provide information on water levels, flowrates, levee integrity, and current flooding to assist in evacuation procedures

D.3 Public Notification

If flooding is localized and minimal, KRCD staff may go door-to-door to inform affected residents of the situation in advance or will coordinate with other agencies to notify landowners. KRCD may also go door-to-door if there is rapid or imminent flooding and KRCD staff are currently in the area. However, public notification of evacuations is the responsibility of local County governments. The decision to evacuate large areas rests with the Fresno or Kings County EOC; the instructions to be given to the public are the responsibility of the Public Information Officer (PIO), the County Sheriff, and the EOC.

Public awareness is extremely important during an emergency. In fact, it is the key to a successful evacuation. In the case of a potential flood, the public must be kept informed of water levels and their implications for a flood event, levee conditions, short- and long-term weather forecasts, and any other threat that might exist. KRCD will keep the EOCs informed about conditions that cause a flood threat.

Several methods are available to inform the public of the need to evacuate, including the following:

- Emergency Alert System
- Emergency Digital Information System
- Local Alert and Notification
- Local Radio and Television Stations
- Fire and Police Vehicle Loudspeakers

KRCD does not own or use any of these systems, and the local agencies have responsibility to maintain and use them during emergencies.

D.4 Facilities

The flood inundation maps show that residents will generally not need to travel far to escape flooding (no more than a few miles). Section 32282 of the State Education Code requires school districts to "grant the use of school buildings, grounds and equipment to public agencies, including the American Red Cross, for mass care and welfare shelters during disasters." Public junior high and high school facilities are commonly used for evacuation centers. County fairgrounds, community centers, community colleges, auditoriums, armories, churches, and some commercial and industrial buildings are also possible shelter sites.

Appendix E - Flood Water Removal

Floodwater removal generally includes dewatering areas to: 1) prevent further flooding, 2) protect the overall integrity of the flood protection system, or 3) remove the water to recover the area to pre-flood conditions. This appendix addresses responsibilities, priorities for considering floodwater removal, and contractors/vendors that can assist with floodwater removal.

E.1 Responsibility

In general, it is the responsibility of KRCD to remove flood water in the vicinity of the levee system. Engineers and Flood Managers at KRCD will analyze the situation and determine the best alternatives. The KRCD levee patrol and flood fight staff will execute the floodwater removal when necessary. KRCD may request assistance from other local agencies, or other agencies may volunteer staff to assist.

E.2 Priorities

Considerations for floodwater removal include:

- How many people are affected by the flooding?
- What is the value of the flooded area?
- What are the long-term consequences and ramifications?

These will be evaluated when considering one of the four floodwater removal alternatives below, which are followed by a more detailed description:

Alternative 1 – No Immediate Dewatering Needed
Alternative 2 – Close Breach; No Water Removal
Alternative 3 – Repair Breach and Remove Water by Pumping
Alternative 4 – Repair Breach and Remove Water by Making a Relief Cut

E.2.1 Alternative 1 – No Immediate Dewatering Needed

In some situations, it may be advisable to take no immediate action. For example, an inundated agricultural area with no threat to life and property may be left flooded until waters naturally recede. Due to public perception and expectations, this may be a difficult decision to reach, albeit logical. For some areas this choice can be made in advance of a flood event. KRCD, local governments, DWR, USACE, and Cal OES will work together to ensure everyone understands the reasoning and supports the choice.

E.2.2 Alternative 2 – Close Breach; No Water Removal

Closing the opening in a failed levee is generally the first step of any levee breach repair. It may be necessary to wait for the inflow to slow before taking this action. Rock and fill material are available at KRCD staging areas to fill breaches and provide armoring. After the breach is closed, it may be cost-effective to simply let the ground dry out on its own depending on the extent of flooding.

E.2.3 Alternative 3 – Repair Breach and Remove Water by Pumping

After a breach is closed, this alternative would remove water using available on-site or portable pumps. For large flooded areas, the time and expense for this can be extensive. This alternative is desirable when flooding is causing damage or there is need to return the area to pre-flood conditions sooner.

E.2.4 Alternative 4 – Repair Breach and Remove Water by Making a Relief Cut

One alternative is to make a relief cut (i.e., second breach) to allow flood waters to drain from behind the land side of a levee. KRCD has used this method in the past. This effort may limit the depth of flood waters behind the levee and prevent further flooding of areas within the basin. Consideration should also be given that two breaches now need to be closed.

E.2.5 Environmental Considerations

Flood Water Removal projects are generally exempt from CEQA. Statutory exemptions include "emergency projects such as actions required to restore damaged facilities or mitigate an emergency" (*CEQA Guidelines Section 15269).*

E.3 Contractors and Vendors

Contractors and vendors that can supply pumps, equipment, and equipment operators to assist with floodwater removal are shown in **Table E-1**.

Table E-1: Contractors and Vendors for Flood Fighting

Contractor/Vendor	Service Type	Address	Phone
United Rentals	Large equipment rental	5741 S Toyota Ave Fresno, CA	(559) 834-6207
Sunbelt Rentals	Pump rentals	Fowler, CA	(559) 834-6400
A1 Equipment Rentals	Pump rentals	Clovis, CA	(559) 273-8878
Wood Brothers	Heavy equipment	14147 18th Ave Lemoore, CA	(559) 924-7715
Superior Ag Construction, Inc.	Heavy Equipment	25211 Ave 196 Strathmore, CA	(559) 920-1825

Kings River Flood Safety Response Plan

APPENDIX F – LEVEE SYSTEM MAPS

Kings River Levee Index

Kings River
Conservation District

Flood Safety Response Plan

- Kings River Weirs
- Kings River Weirs with Staff Gauges
- Kings River and Associated Waterways
- County Boundary
- Mapbook Pages

Kings River Levee Reaches Monitored by KRCD*

- Clarks Fork
- Cole Slough
- Cresent Bypass
- Dutch John Cut
- Kings River
- Kings River North Fork
- Kings River South Fork

* Refer to individual map figures for detailed levee reaches and units

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Page 2
Page 3
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Page 6

Reedley
Selma
Kingsburg
Delft Colony
London
Traver
Laton
Caruthers
Lanare
Riverdale
Westside
Grangeville
Hanford
Armona
Goshen
Lemoore
Lemoore Station
Huron
Stratford
Fresno County
Kings County
Tulare County
North Fork Kings River
Kings River

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PROVOST & PRITCHARD
CONSULTING GROUP
An Employee Owned Company

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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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Cole Slough and Dutch John Cut Levee Reaches

Kings River Conservation District

Flood Safety Response Plan

Kings River Weirs

Kings River and Associated Waterways

County Boundary

Kings River Levee Reaches by Unit

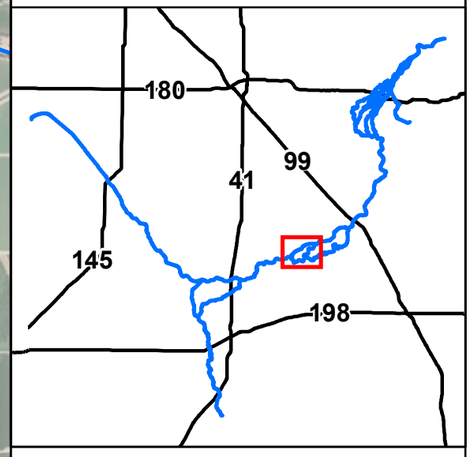
Unit 14

Unit 15

Unit 16

Unit 17

Page 1



Fowler
Cerini
Harlan
Letson
Corona
Riverdale
Cairo
Laton
Mt. Whitney
Denver
Douglas
Dover
Fresno County
Kings County
43
Cole Slough Weir
Dutch John Cut Weir
Liberty Weir
Murphy Slough Weir
Grant Weir
Reynolds Weir
Last Chance Weir

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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Kings River Levee Reach

Kings River
Conservation District

Flood Safety Response Plan

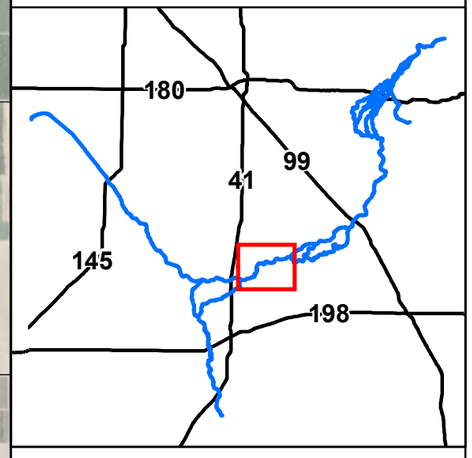
Harlan
Riverdale
East
Mt. Whitney
Cedar
Chestnut
Peach
Clovis
Laton
Liberty Weir
Murphy Slough Weir
Grant Weir
Reynolds Weir
Wood
Maple
Douglas
Lemoore Weir
Last Chance Weir
Laguna
Dover
Lewiston
Fresno County
Kings County
Excelsior
Hardwick
13 1/4
12 TH
17 TH
Everett
Island Weir
Army Weir
Edler
15 1/2
14 TH
16 TH
Flint

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

- Kings River Weirs
- Kings River Weirs with Staff Gauges
- Kings River and Associated Waterways
- County Boundary

Kings River Levee Reaches by Unit

- Unit 1
- Unit 2
- Unit 13
- Unit 18



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Kings River South Fork Levee Reach

Kings River Conservation District

Flood Safety Response Plan

Kings River Weirs

Kings River and Associated Waterways

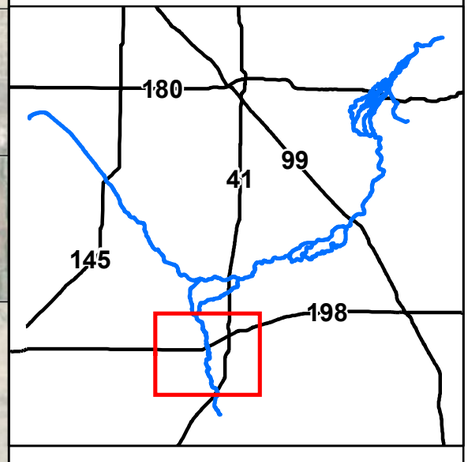
County Boundary

Kings River Levee Reaches by Unit

Unit 11

Unit 12

Page 3



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Miles

Hanford Armona
Lemoore
Idaho
Jackson
Jersey
Kent
Kansas
Lansing
Lincoln
Stratford
Laurel
Lemoore Station
Jackson
Westlawn
Fresno County
Kings County
Reeves
25 TH
27 TH
21 ST
19 TH
18 TH
17 TH
16 TH
Avenal Cutoff
198
41
Empire 1 Weir
Empire 2 Weir

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

4/9/2020 : \\ppeng.com\pzdata\clients\Kings River Conservation Dist-1364\GIS\Map\2019\Mapbook\KRCD_Levees_Sheet3.mxd

Clarks Fork and Cresent Bypass Levee Reaches

Kings River Conservation District

Flood Safety Response Plan

Crescent Weir

Island Weir

Army Weir

Elder

Elgin

Flint

Fremont

Fargo

Fairfax

Grangeville

Geneva

Lacey

Glendale

Hanford Armona

Lemoore

24 TH

23 RD

22 ND

21 ST

20 TH

18 TH

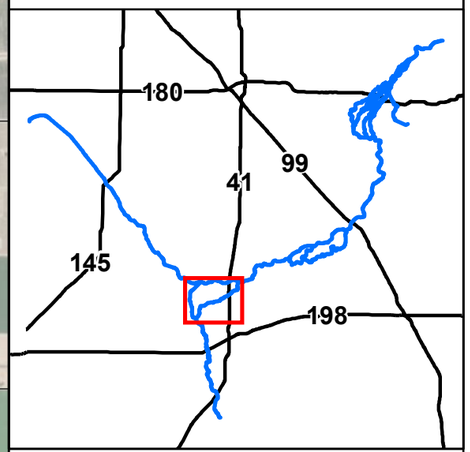
25 TH

41

- Kings River Weirs
- Kings River Weirs with Staff Gauges
- Kings River and Associated Waterways

Kings River Levee Reaches by Unit

- Unit 7
- Unit 8
- Unit 9
- Unit 10



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Source: Esri, DigitalBox, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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Kings River North Fork Levee Reach

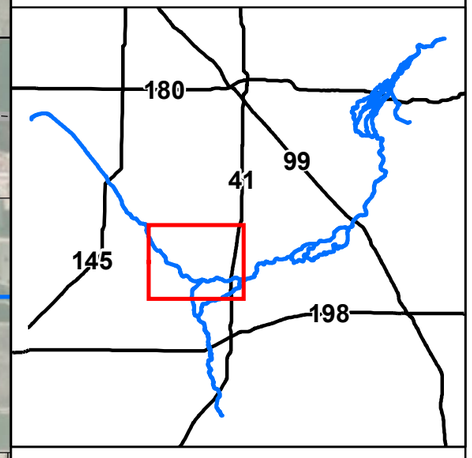
Kings River Conservation District

Flood Safety Response Plan

- Kings River Weirs
- Kings River Weirs with Staff Gauges
- Kings River and Associated Waterways
- County Boundary

Kings River Levee Reaches by Unit

- Unit 3
- Unit 4
- Unit 5
- Unit 6



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Kings River North Fork Levee Reach

Kings River Conservation District

Flood Safety Response Plan

James Weir

Stinson Weir

Nebraska

Mountain View

Madera

Colorado

Lassen

Conejo

Clarkson

Swanson

Dickenson

Elkhorn

Jameson

Westlawn

Grantland

Davis

Howard

Dower

Cerini

Harlan

Garfield

Lanare

145

Kings River Weirs

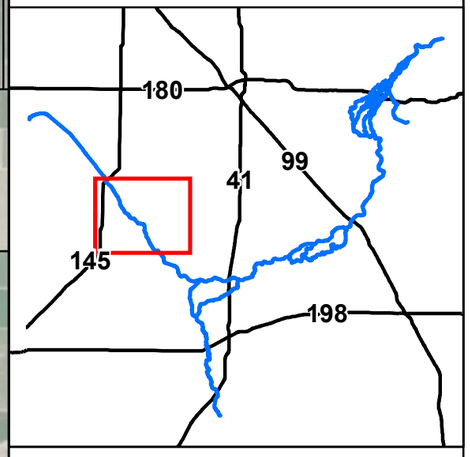
Kings River Weirs with Staff Gauges

Kings River and Associated Waterways

Kings River Levee Reaches by Unit

Unit 5

Unit 6



EST. 1968
PROVOST & PRITCHARD
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N

0 0.5 1
Miles

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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Kings River Flood Safety Response Plan

APPENDIX G – FLOOD INUNDATION MAPS AND CRITICAL FACILITIES

Appendix G – Flood Inundation Maps and Critical Facilities

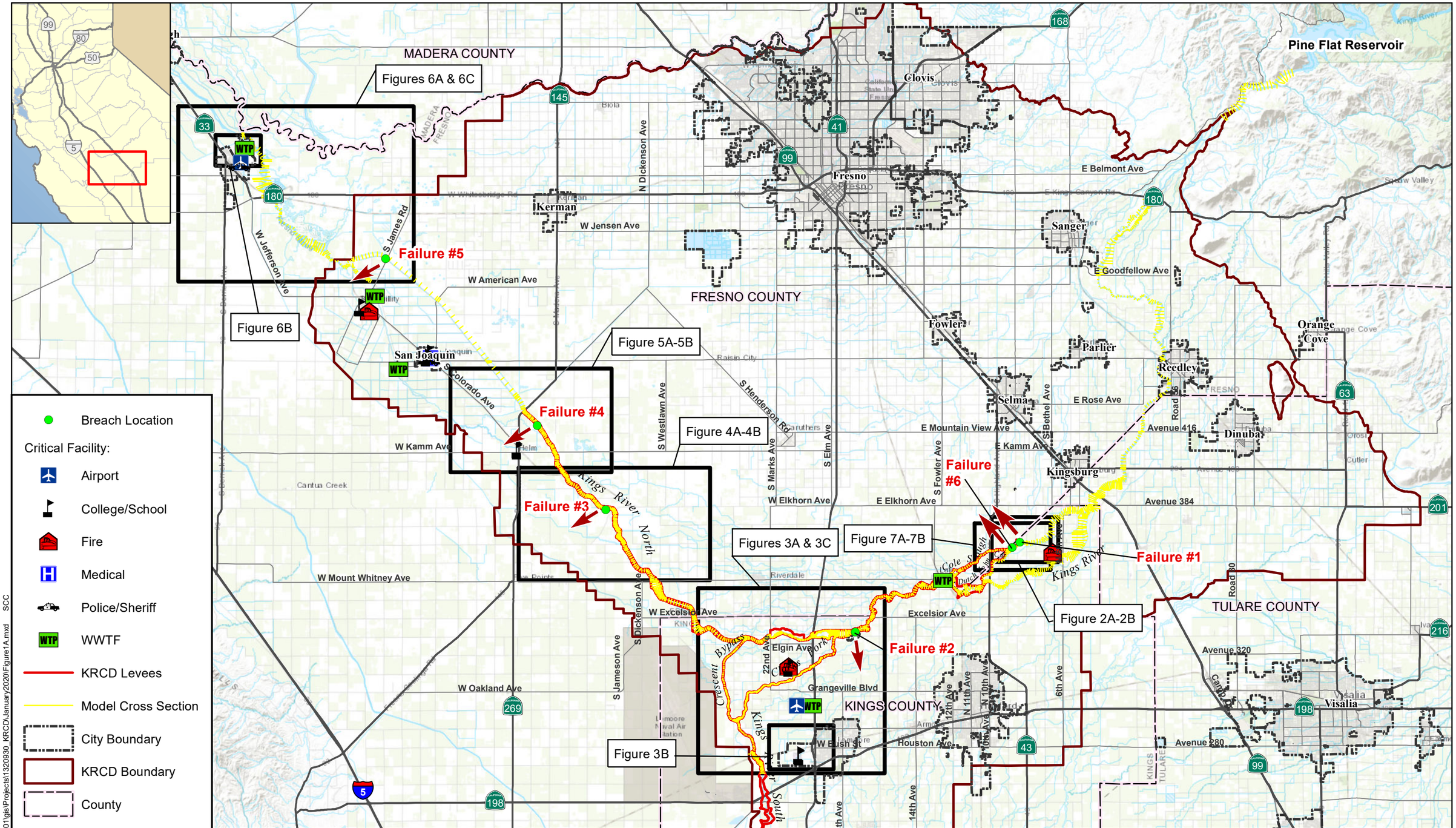
This appendix shows the Flood Modeling Maps developed by GEI Consultants. These maps show how water is projected to flow in the event of a breach at the locations shown on the map. The following page of this appendix is a list of Critical Facilities and their location within Fresno and Kings Counties.

The direction of flow is shown with red arrows on the maps. The water depth is color coded in blue in a table on the left-hand side of the figures showing inundation mapping. There are also maps showing time to one foot depth that are color coded as well.

The purpose of these maps and index is to give first responders an idea of which critical facilities will be impacted in the event of a breach and the amount of time they will have to protect those facilities.

Kings River Conservation District
Kings River Flood Safety Response Plan

No.	Facility Name	Facility Type	Address	County	Latitude	Longitude
1	Stone Airstrip	Airport	Lacey Blvd and 21st Ave	Kings	36.3312838	-119.8255305
2	William Robert Johnson Municipal Airport	Airport	359 Airport Blvd, Mendota, CA 93640	Fresno	36.7593336	-120.3716002
3	West Hills College	College	555 College Ave. Lemoore, CA 93245	Kings	36.2924088	-119.8238768
4	Kings County Station #1	Fire	6575 Clinton Ave, Kingsburg, CA	Kings	36.4520758	-119.5743997
5	Kings County Station #6	Fire	7735 21st Ave, Lemoore, CA	Kings	36.3623979	-119.8335966
6	Tranquility Station #95	Fire	25101 W Morton Ave, Tranquillity, CA 93668	Fresno	36.6424786	-120.2449027
7	Dr. Husam S, Kaileh, MD	Medical	21890 W Colorado Ave. San Joaquin, CA 93660	Fresno	36.6052609	-120.1847237
8	Fresno County Sheriff	Police/Sheriff	21925 W Manning Ave. San Joaquin, CA 93660	Fresno	36.602922	-120.1857383
9	Mendota Police Department	Police/Sheriff	1000 Airport Blvd, Building A. Mendota, CA 93640	Fresno	36.756134	-120.3728879
10	Golden Plains Community Day School	School	22000 Nevada Ave. Ste. B, San Joaquin, CA 93660	Fresno	36.6094982	-120.1867051
11	Helm Elementary	School	13883 S. Lassen Ave. Helm, CA 93627	Fresno	36.5330119	-120.0993311
12	Island Elementary	School	7799 21st Ave. Lemoore, CA 93245	Kings	36.361551	-119.8332474
13	Lemoore Middle College High School	School	555 College Ave. Lemoore, CA 93245	Kings	36.2914798	-119.8233284
14	Lemoore University Elemetary Charter	School	450 Marsh Dr. Lemoore, CA 93245	Kings	36.2915717	-119.8229712
15	Rio Del Rey High School	School	13871 S. Lassen Ave. Helm, CA 93627	Fresno	36.5342093	-120.0995449
16	San Joaquin Elementary	School	8535 S. 9th, San Joaquin, CA 93660	Fresno	36.6062305	-120.1888822
17	Tranquility Elementary	School	6116 S. Daniels, Tranquility, CA 93668	Fresno	36.6456571	-120.2534326
18	Tranquility High School	School	6052 Juanche St. Tranquility, CA 93668	Fresno	36.6457419	-120.2542655
19	El Dorado MHP WWTF	WWTF	Lacey Blvd and 19 1/2 Ave	Kings	36.3316786	-119.8107096
20	Laton WWTF	WWTF	Fowler Ave and Levee Rd	Fresno	36.4303494	-119.6820304
21	Mendota WWTF	WWTF	Bass Ave and Belmont Ave	Fresno	36.7710014	-120.367925
22	San Joaquin WWTF	WWTF	Manning Ave and Levee Rd	Fresno	36.5971047	-120.2160282
23	Tranquility WWTF	WWTF	James Rd and Levee Rd	Fresno	36.6545563	-120.2393187



Kings River Levee Evaluation
Fresno and Kings Counties, California

Kings River Conservation District

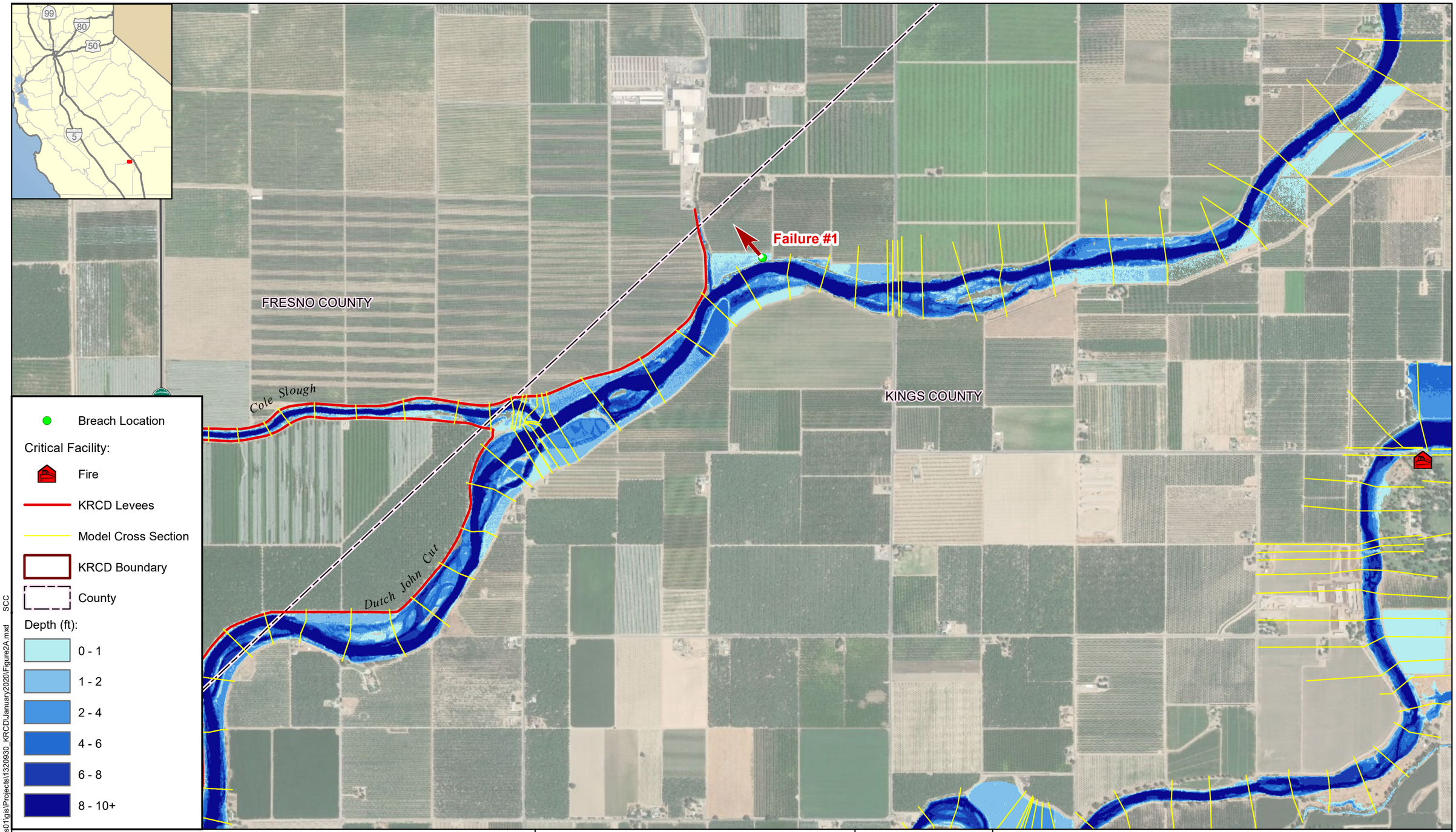
GEI Consultants

INDEX MAP OF HYDRAULIC MODEL PROJECT LOCATION

JUNE 2020

FIGURE 1A

20-April-2016 \\Sac1s-fs01\gis\Projects\13200930_KRCD\January2020\Figure1A.mxd SCC



Kings River Levee Evaluation
Fresno and Kings Counties, California

Kings River Conservation District

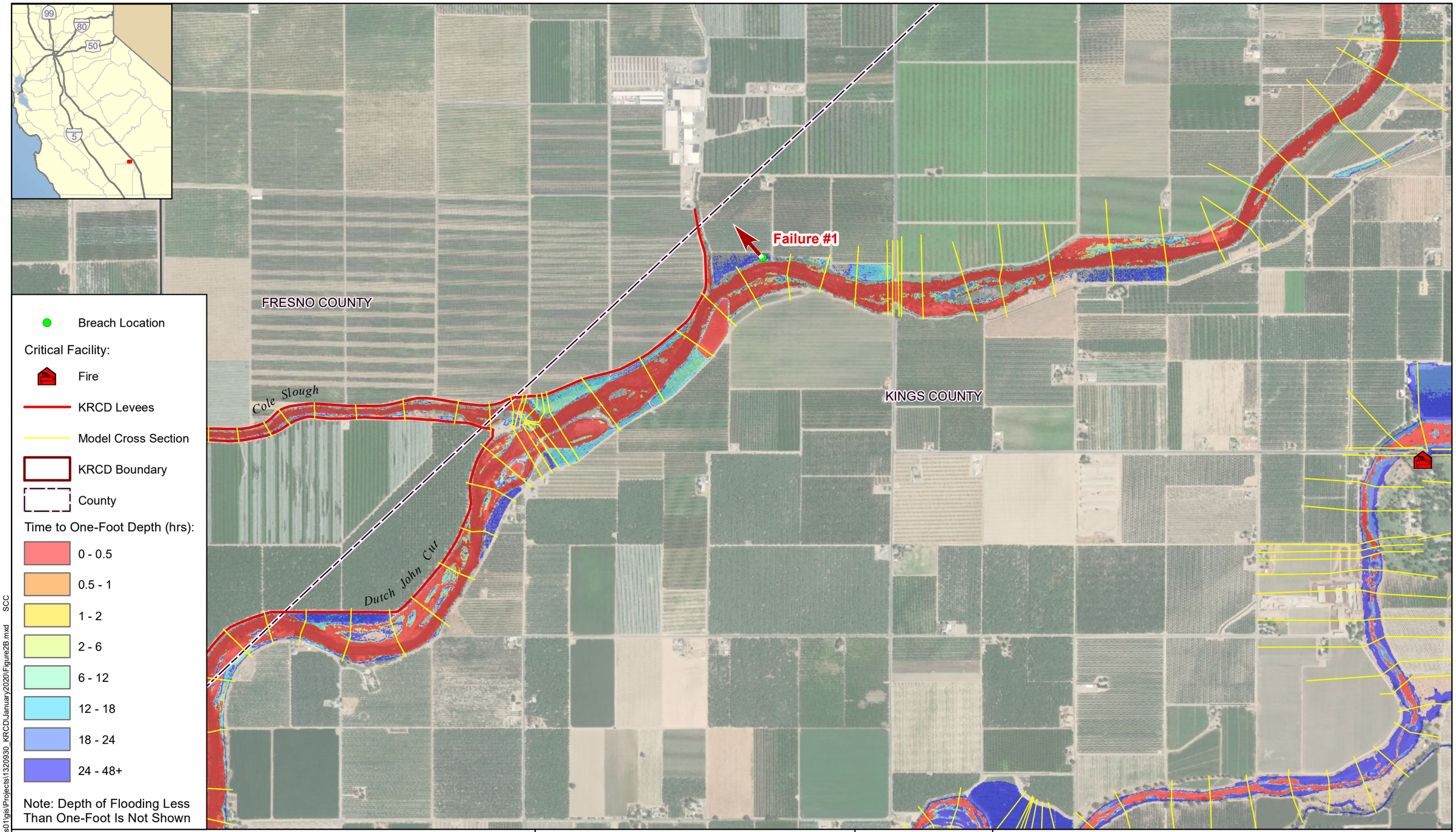
GEI Consultants

INUNDATION MAPPING
FAILURE NO.1

JUNE 2020

FIGURE 2A

20-April-2016 \\Sac1s-fs01\gis\Projects\13209930_KRCD\January2020\Figure2A.mxd SCC



Kings River Levee Evaluation
Fresno and Kings Counties, California

Kings River Conservation District

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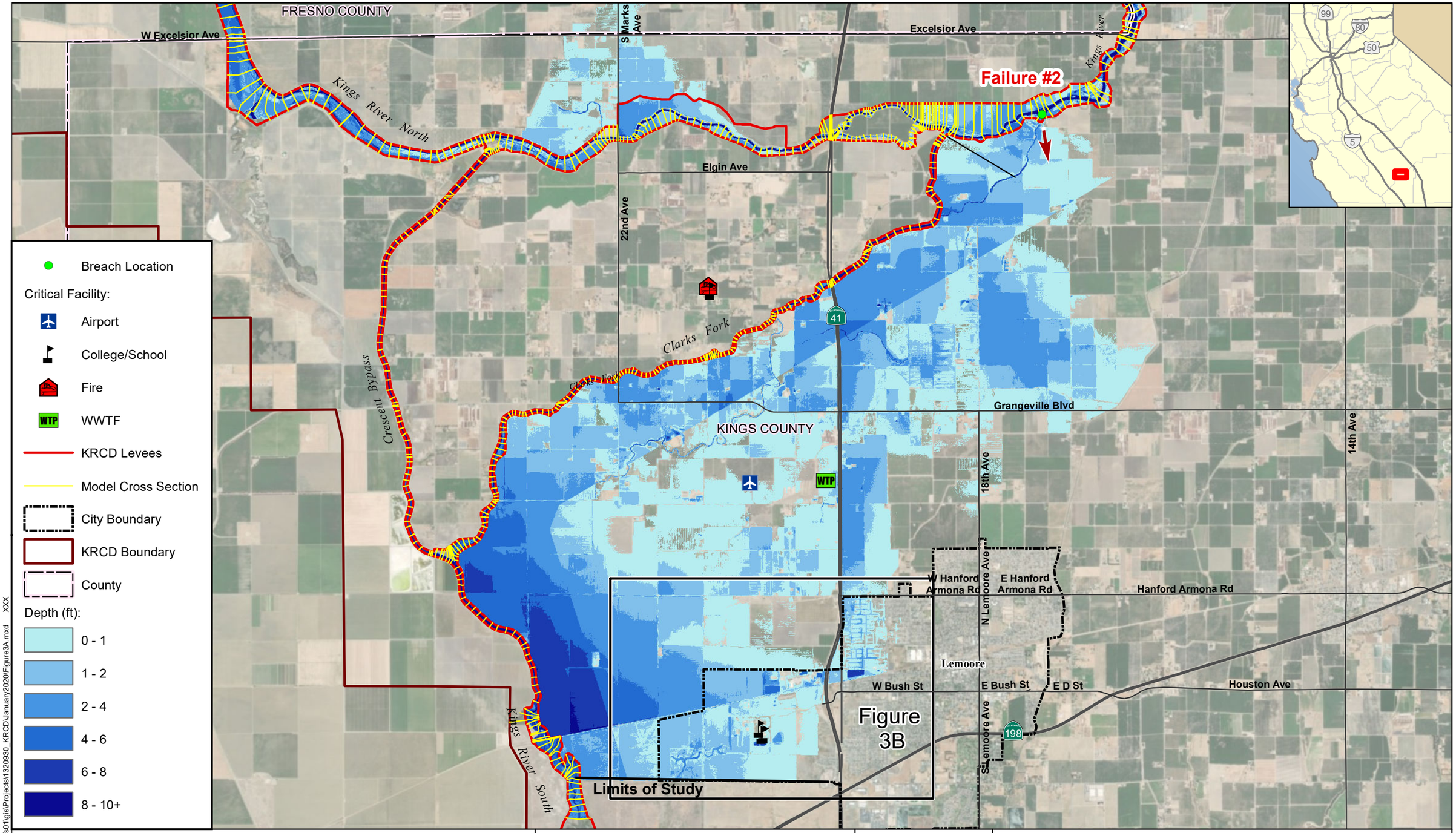
INUNDATION MAPPING FOR TIME TO ONE-FOOT DEPTH FAILURE NO.1

JUNE 2020

FIGURE 2B

20-April-2016 \\Sac1s-fs01\gis\Projects\13209930_KRCD\January2020\Figure2B.mxd SCC



08-Jun-2020 \\Sac1s-fs01\gis\Projects\1320930_KRCD\January2020\Figure3A.mxd XXX

Kings River Levee Evaluation
Fresno and Kings Counties, California

Kings River Conservation District

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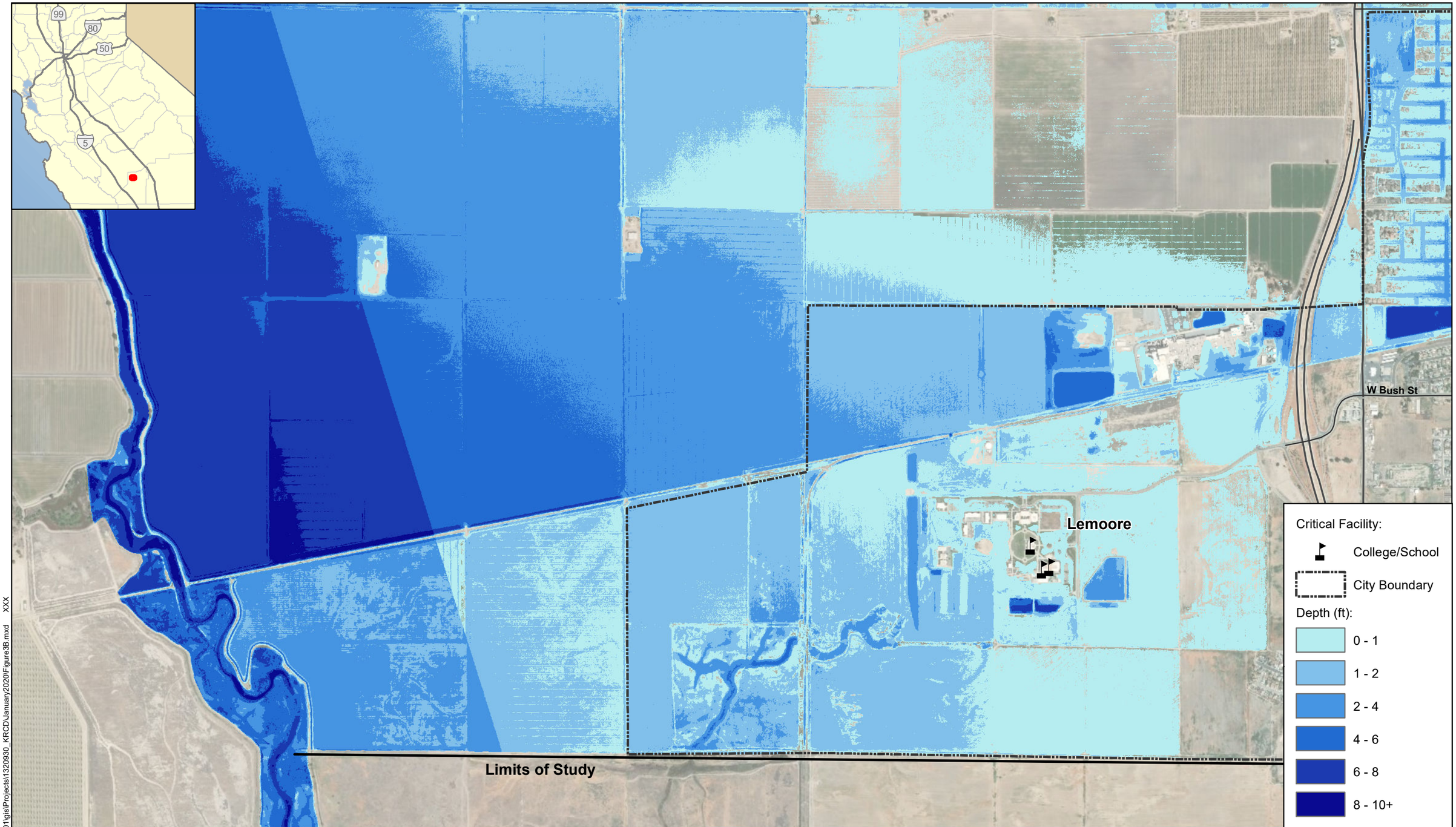
INUNDATION MAPPING FAILURE NO.2

JUNE 2020

FIGURE 3A



0 0.125 0.25 0.5

Miles

N W E S

Kings River Levee Evaluation
Fresno and Kings Counties, California

Kings River Conservation District

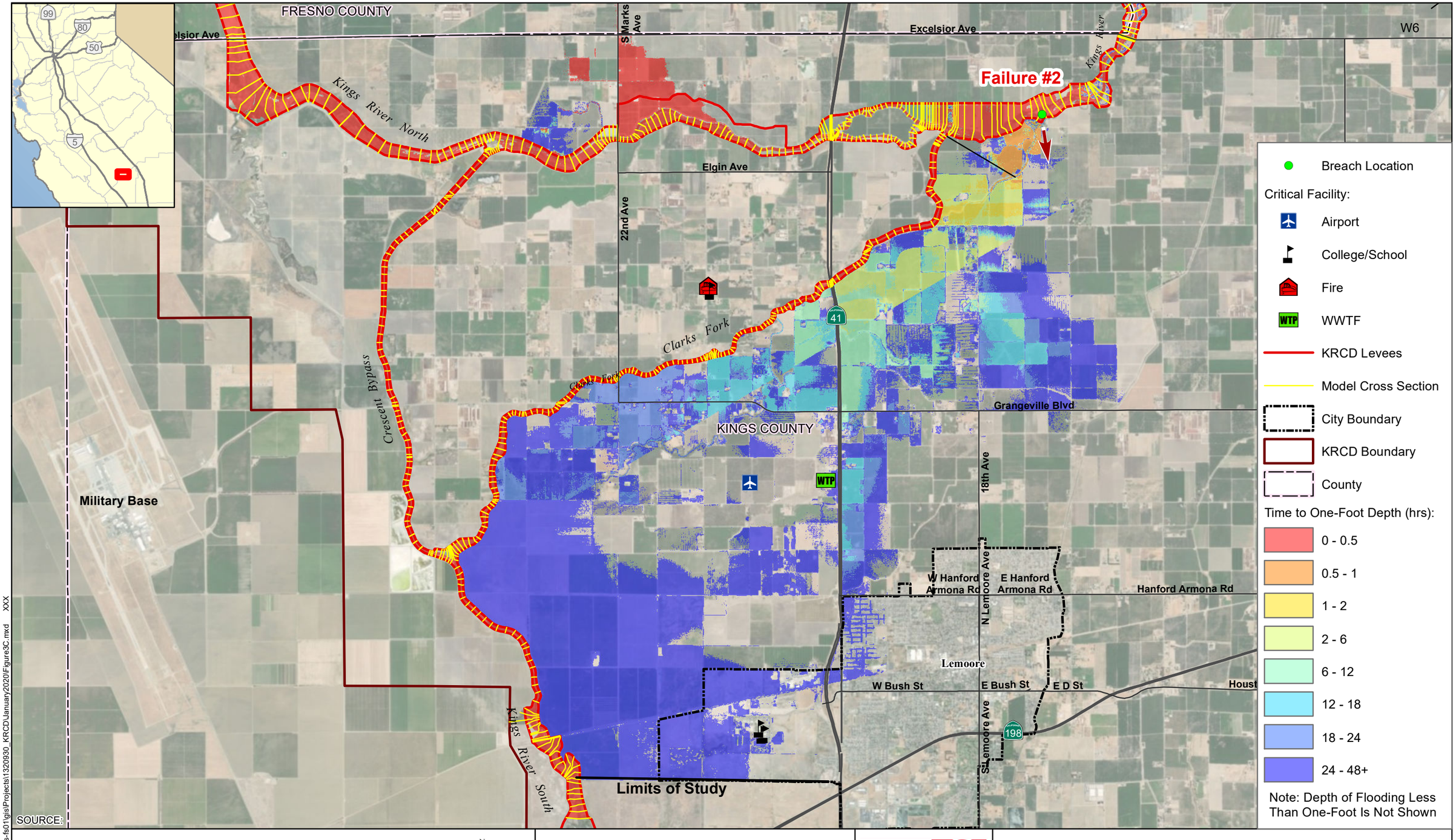
GEI Consultants

CITY OF LEMOORE INUNDATION MAPPING FROM FAILURE NO.2

JUNE 2020

FIGURE 3B

08-Jun-2020 \\Sac1s-fs01\gis\Projects\1320930_KRCD\January2020\Figure3B.mxd XXX



08-Jun-2020 \\Sac1s-fs01\gis\Projects\1320930_KRCD\January2020\Figure3C.mxd XXX

Kings River Levee Evaluation
Fresno and Kings Counties, California

Kings River Conservation District

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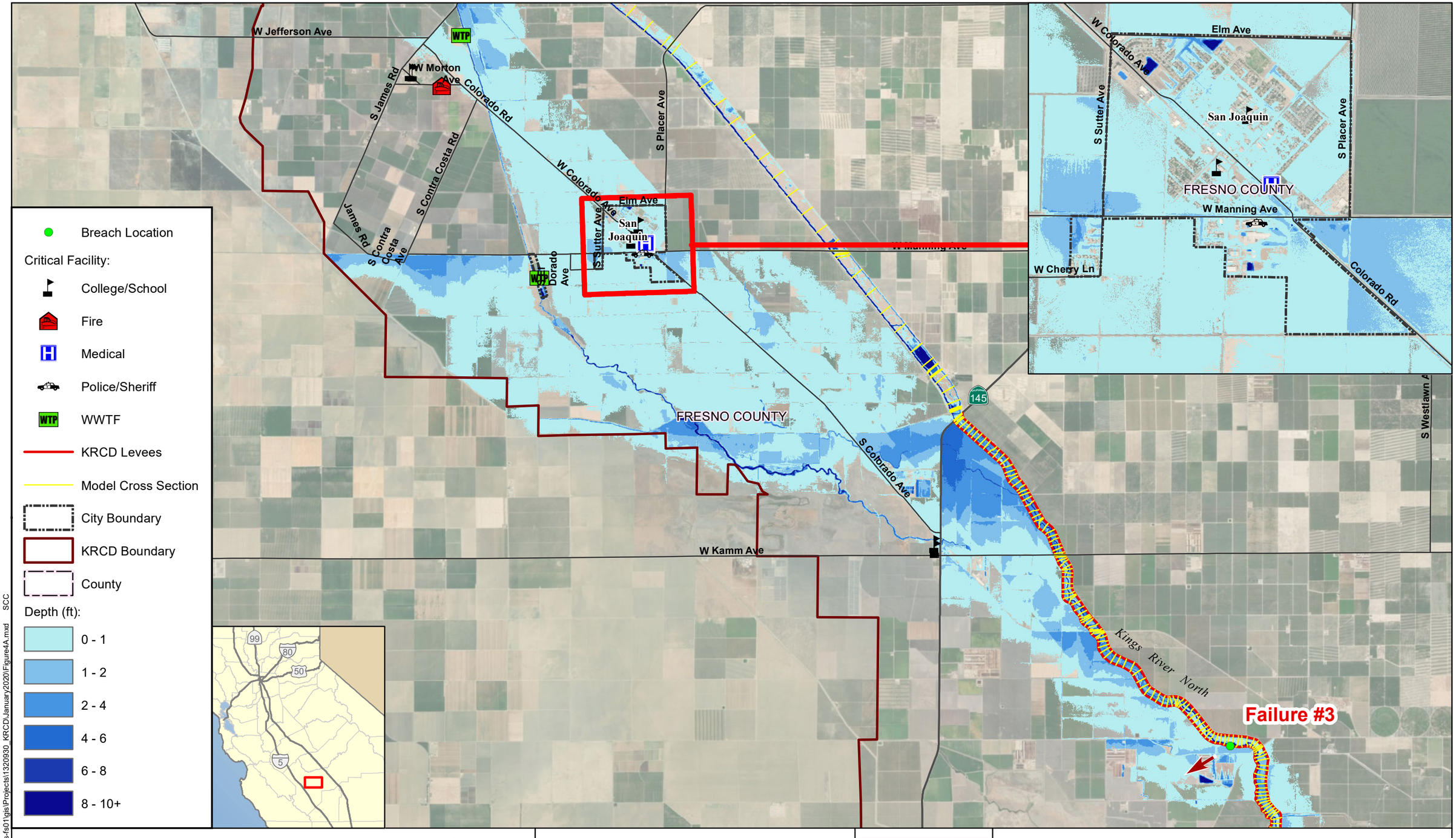
INUNDATION MAPPING FOR TIME TO ONE-FOOT DEPTH FAILURE NO.2

FEBRUARY 2020 FIGURE 3C



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20-April-2016

Kings River Levee Evaluation
Fresno and Kings Counties, California

Kings River Conservation District

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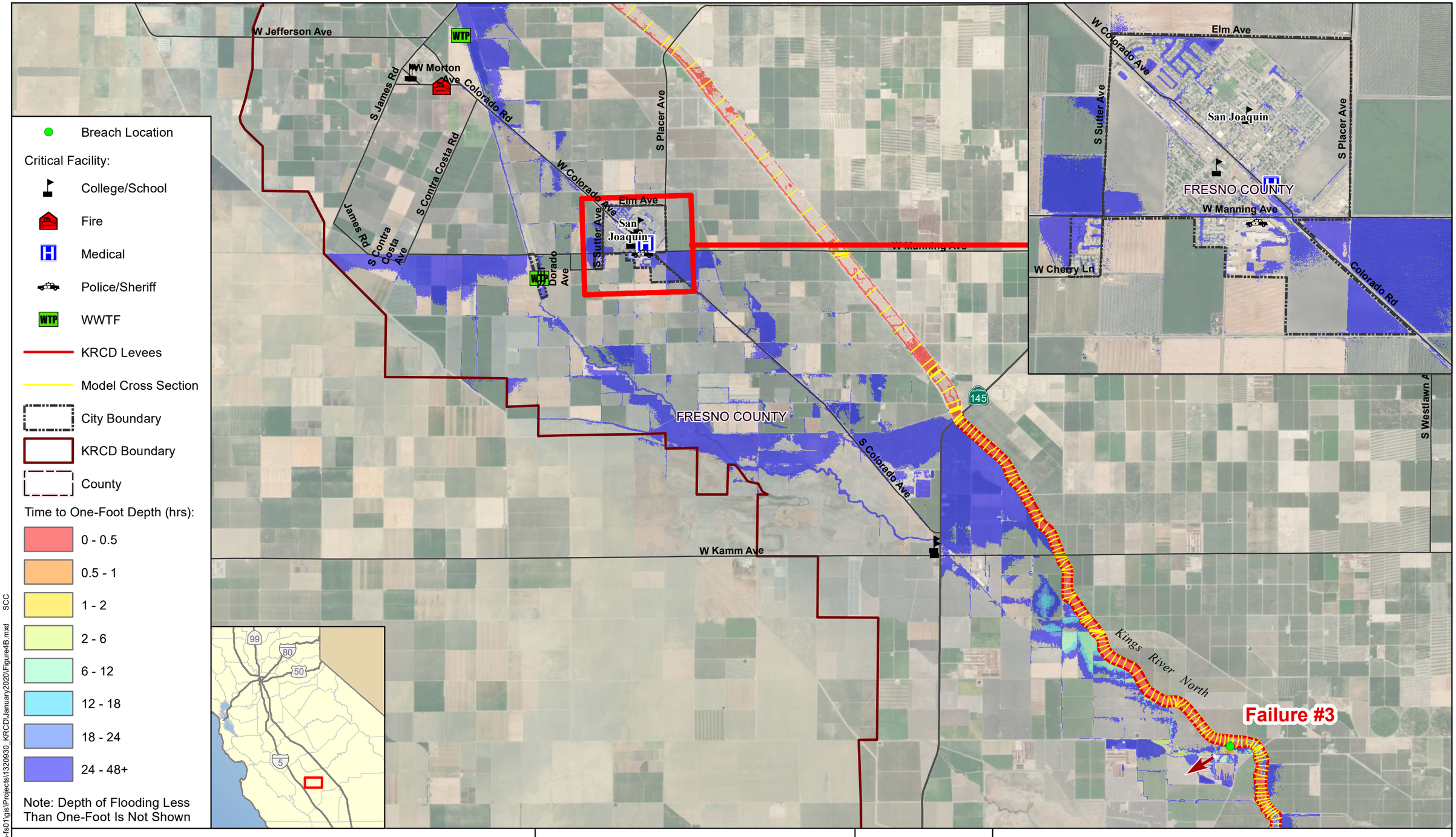
INUNDATION MAPPING
FAILURE NO.3

JUNE 2020

FIGURE 4A



Kings River Levee Evaluation
Fresno and Kings Counties, California

Kings River Conservation District

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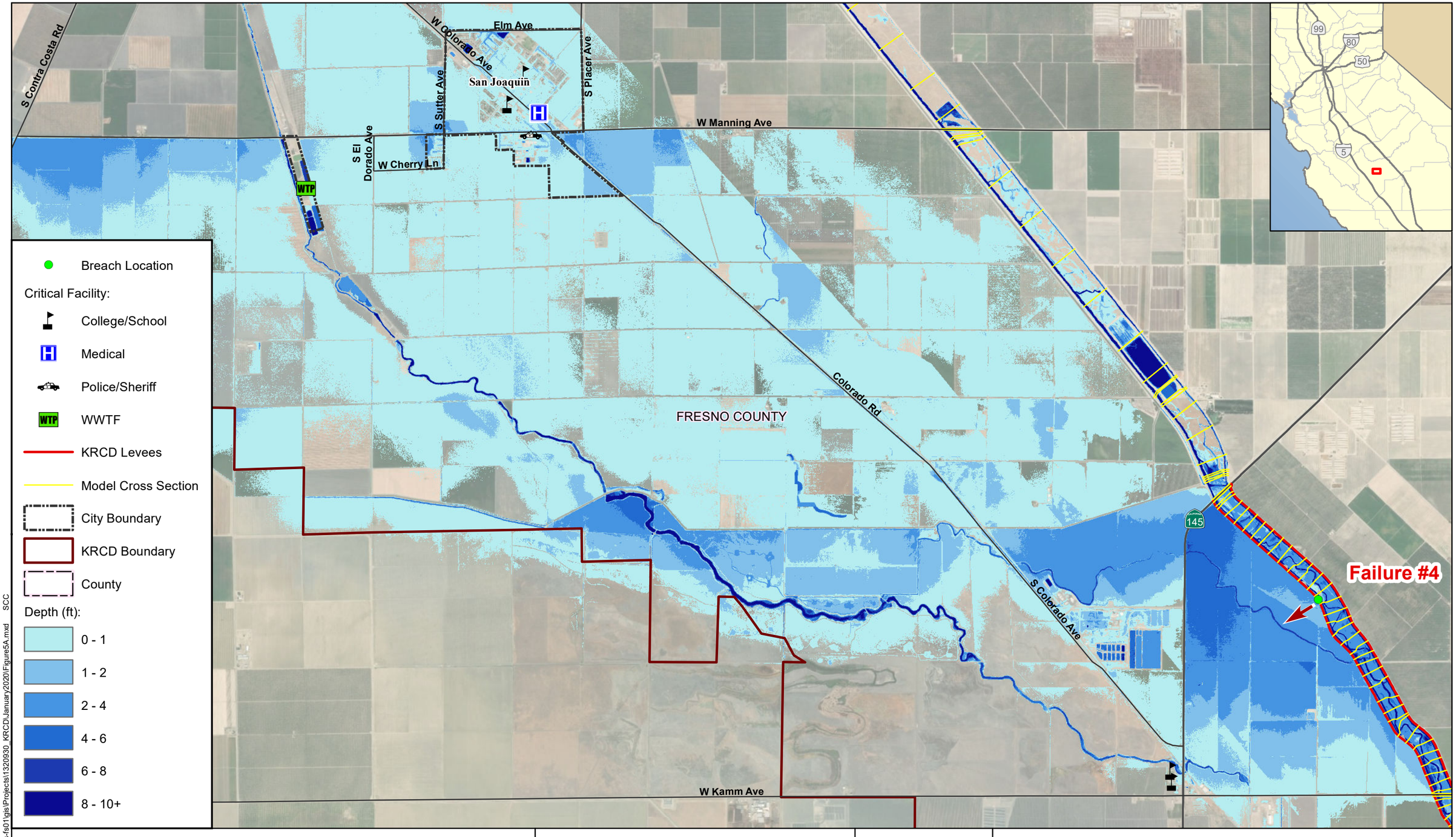
INUNDATION MAPPING FOR TIME TO ONE-FOOT DEPTH FAILURE NO.3

JUNE 2020

FIGURE 4B

20-April-2016 \\Sac1s-fs01\gis\Projects\1320930_KRCD\January2020\Figure4B.mxd SCC



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20-April-2016

Kings River Levee Evaluation
Fresno and Kings Counties, California

Kings River Conservation District

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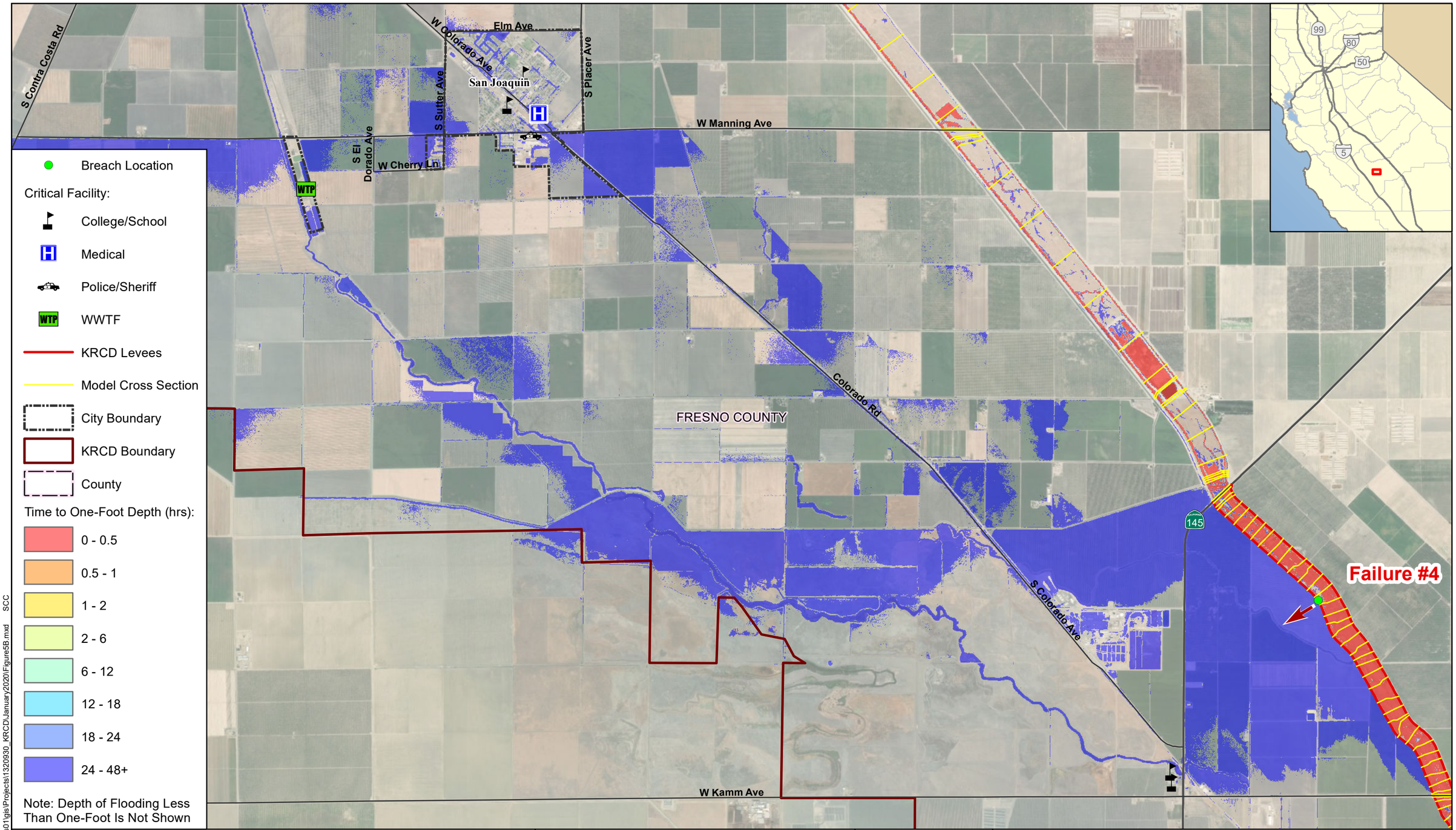
INUNDATION MAPPING
FAILURE NO.4

JUNE 2020

FIGURE 5A



Kings River Levee Evaluation
Fresno and Kings Counties, California

Kings River Conservation District

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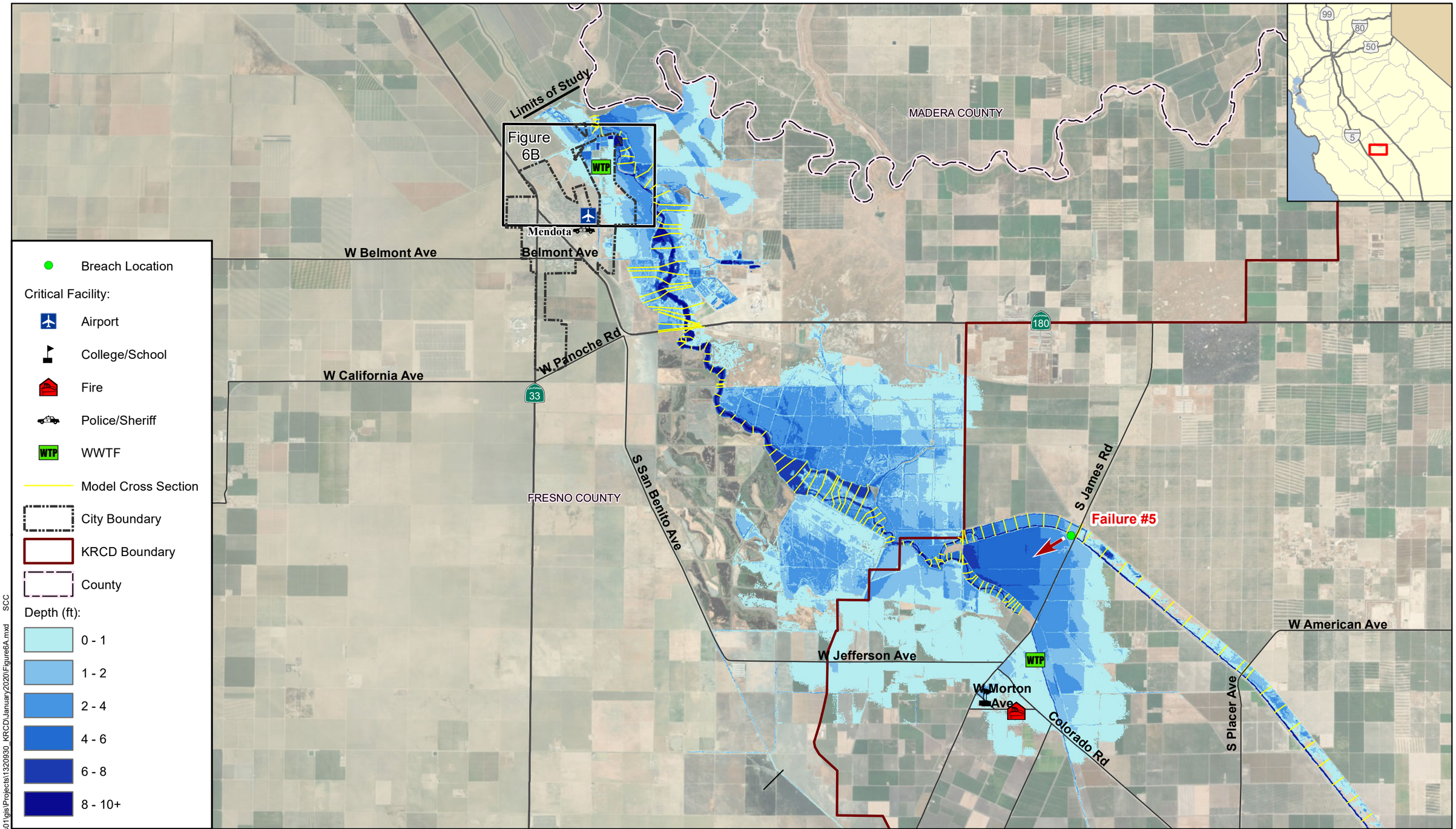
INUNDATION MAPPING FOR TIME TO ONE-FOOT DEPTH FAILURE NO.4

JUNE 2020

FIGURE 5B

20-April-2016 \\Sac1s-fs01\gis\Projects\1320930_KRCD\January2020\Figure5B.mxd SCC



\\Sac1s-fs01\gis\Projects\13220930_KRCD\January2020\Figure6A.mxd SCC
20-April-2016

Kings River Levee Evaluation
Fresno and Kings Counties, California

Kings River Conservation District

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INUNDATION MAPPING FAILURE NO.5

JUNE 2020

FIGURE 6A

Critical Facility:

- Airport
- Police/Sheriff
- WWTF
- Model Cross Section
- City Boundary
- County

Depth (ft):

- 0 - 1
- 1 - 2
- 2 - 4
- 4 - 6
- 6 - 8
- 8 - 10+

FRESNO COUNTY

Mendota

W Belmont Ave

Belmont Ave

WTP

33

180

0.3 0.15 0 0.3

Miles

N

Kings River Levee Evaluation
Fresno and Kings Counties, California

Kings River Conservation District

GEI Consultants

CITY OF MENDOTA INUNDATION MAPPING FROM FAILURE NO.5

FEBRUARY 2020

FIGURE 6B

20-April-2016 \\Sac1s-fs01\gis\Projects\13320930_KRCD\January2020\Figure6B.mxd SCC

Breach Location

Critical Facility:

Airport

College/School

Fire

Police/Sheriff

WTP WWTF

Model Cross Section

City Boundary

KRCD Boundary

County

Time to One-Foot Depth (hrs):

0 - 0.5

0.5 - 1

1 - 2

2 - 6

6 - 12

12 - 18

18 - 24

24 - 48+

Note: Depth of Flooding Less Than One-Foot Is Not Shown

Limits of Study

MADERA COUNTY

FRESNO COUNTY

Mendota

W Belmont Ave

Belmont Ave

W Panoche Rd

W California Ave

S San Benito Ave

S James Rd

Failure #5

W American Ave

W Jefferson Ave

W Morton Ave

Colorado Rd

S Placer Ave

WTP

33

180

99

80

50

5

1.5 0.75 0 1.5

Miles

N

Kings River Levee Evaluation
Fresno and Kings Counties, California

Kings River Conservation District

GEI Consultants

INUNDATION MAPPING FOR TIME TO ONE-FOOT DEPTH
FAILURE NO.5

JUNE 2020

FIGURE 6C

20-April-2016 \\Sac1s-fs01\gis\Projects\13209930_KRCD\January2020\Figure6C.mxd SCC

Kings River Flood Safety Response Plan

APPENDIX H – EQUIPMENT AND STAGING AREA MAPS

Kings River Conservation District

Staging Areas and Equipment Yards

Map ID	Name
1	Phil Brooks Farms
2	Reynolds Weir
3	River View Farms
4	Rosa Farms #1
5	Rosa Farms #2
6	Steve Low Farms
7	Stone Land Farms
8	Tos Farms
9	Warmerdam Farms
10	Maddox Farms
11	Lemoore Weir
12	Last Chance Weir
13	Hanse Farms
14	Gary Trigueiro Farms
15	Erickson Farms
16	Crescent Weir
17	BDL Farms
18	Avenue 26 1/4
19	Army Weir
20	Riverdale Yard

Kings River and Associated Waterways

County Boundary

Location Type

- Equipment
- Rubble
- Rubble and fill dirt
- Riverdale Yard

Kings River Levees Monitored by KRCD*

- Clarks Fork
- Cole Slough
- Cresent Bypass
- Dutch John Cut
- Kings River
- Kings River North Fork
- Kings River South Fork

* Refer to individual map figures for detailed levee reaches

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N

0 1.5 3
Miles

Kings River Conservation District

Kings River Staging Areas

Name	Type	Acres	River Unit	Latitude	Longitude
Army Weir	Rubble	0.26	Unit 4 North Fork	36.386877	-119.787673
Avenue 26 1/4	Rubble and fill dirt	1.58	Unit 6 North Fork	36.391415	-119.927228
BDL Farms	Staging Area	0.04	Unit 5 North Fork	36.419623	-119.949909
Crescent Weir	Staging Area	0.21	Unit 5 North Fork	36.386875	-119.877889
Erickson Farms	Staging Area	0.11	Unit 5 North Fork	36.484935	-119.985277
Gary Trigueiro Farms	Staging Area	0.10	Unit 8 Clarks Fork	36.329911	-119.874626
Hanse Farms	Staging Area	0.09	Unit 18 Main River	36.420487	-119.708813
Last Chance Weir	Staging Area	0.02	Unit 18 Main River	36.416739	-119.667038
Lemoore Weir	Staging Area	0.46	Unit 2 Main River	36.416379	-119.722911
Maddox Farms	Staging Area	0.71	Unit 5 North Fork	36.530251	-120.023828
Phil Brooks Farms	Staging Area	0.01	Unit 11 South Fork	36.203663	-119.849640
Reynolds Weir	Staging Area	0.06	Unit 14 Main River	36.434492	-119.670825
River View Farms	Staging Area	0.05	Unit 12 South Fork	36.313113	-119.851200
Rosa Farms #1	Staging Area	0.09	Unit 1 Main River	36.393369	-119.792812
Rosa Farms #2	Staging Area	0.06	Unit 5 North Fork	36.401147	-119.913860
Steve Low Farms	Staging Area	0.11	Unit 8 Clarks Fork	36.356388	-119.820093
Stone Land Farms	Staging Area	0.48	Unit 11 South Fork	36.262544	-119.869055
Tos Farms	Staging Area	0.19	Unit 7 Clarks Fork	36.380156	-119.791134
Warmerdam Farms	Staging Area	0.02	Unit 2 Main River	36.403833	-119.748925

Notes:

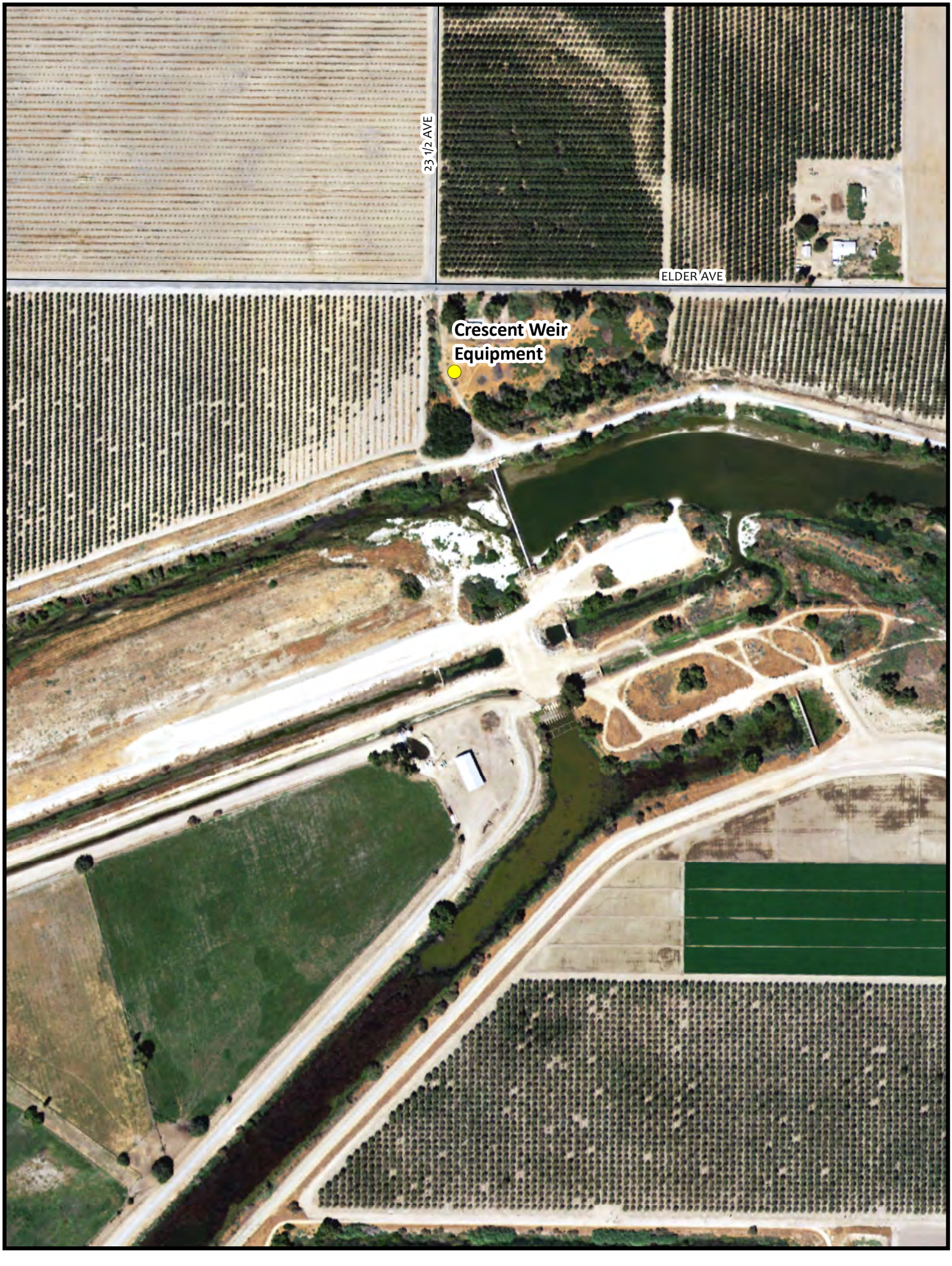
1 - Refer to Master Map and individual aerial photographs for more details on locations

2 – Most staging areas are in remote rural areas without clear cross streets. The cross streets provided are nearby streets, and the staging area is not always located at the intersection of the two streets.


Army Weir
Rubble


26 1/4 AVE
Avenue 26 1/4
Rubble and fill dirt


BDL Farms
Equipment
S MONROE AVE
W LAGUNA AVE


23 1/2 AVE
ELDER AVE
Crescent Weir
Equipment


W ELKHORN AVE
S DOWER AVE
Erickson Farms
Equipment


Gary Trigueiro Farms
Equipment
LACEY BLVD


Hanse Farms
Equipment


Last Chance Weir
Equipment
DOVER AVE


Lemoore Weir
Equipment


W KAMM AVE
Maddox Farms
Equipment


22ND AVE
Phil Brooks Farms
Equipment


Reynolds Weir
Equipment
DE WOODY AVE
E MOUNT WHITNEY AVE


HANFORD ARMONA RD
River View Farms
Equipment


19TH AVE
EVERETT AVE
Rosa Farms #1
Equipment


S BRYAN AVE
W EXCELSIOR AVE
Rosa Farms #2
Equipment


Steve Low Farms
Equipment


KEARSEGE CIR
LEXINGTON DR
KEARSEGE CIR
ANTIETAM CIR
ANTIETAM CIR
AVENGER AVE
AVENAL CUTOFF
Stone Land Farms
Equipment
HIGHWAY 198
WEBER AVE
198

Tos Farms
Equipment


Warmerdam Farms
Equipment