

**RESOLUTION NO. \_\_\_\_\_**

**RESOLUTION OF THE SUTTER BUTTE FLOOD CONTROL AGENCY  
AUTHORIZING ADVANCE MEASURES TO REINFORCE  
FEATHER RIVER WEST LEVEE REACHES**

**WHEREAS**, the Sutter Butte Flood Control Agency (“SBFCA”) has nearly completed construction of the Feather River West Levee Project (the “Project”) to reduce flood risk in the Sutter Basin;

**WHEREAS**, there remain critically damaged levee reaches that have not yet been addressed by the Project, including the Laurel and Cypress levee sites, which protect the lives and property of around 20,000 people, small communities, associated properties, and vast tracts of agricultural infrastructure as well as outlying areas of urbanized regions;

**WHEREAS**, the service and emergency spillways at Oroville Dam have suffered damage through erosion after significant rainfall events in 2017, and the potential for flooding in light of such damage led to the evacuation of tens of thousands of residents in the SBFCA area;

**WHEREAS**, on February 12, 2017, California Governor Jerry Brown proclaimed a state of emergency pursuant to the California Emergency Services Act in the Counties of Butte, Sutter and Yuba based on potential flooding from Oroville Dam;

**WHEREAS**, the loss of full functionality of both the service and emergency spillways at Oroville Dam has greatly increased risk to life and property behind the Feather River west levee, including the Laurel and Cypress levee sites;

**WHEREAS**, loss of full functionality of both the service and emergency spills at Oroville Dam, and the uncertainty surrounding the functionality of those facilities over the remainder of the flood season, constitute a sudden, unexpected occurrence that poses a clear and imminent danger, requiring immediate action to prevent the loss or impairment of life, health, property and essential public services pursuant to Cal. Public Contract Code section 1102;

**WHEREAS**, in light of and to mitigate for the potentially devastating consequences of failure of the lower Feather River levees, SBFCA has identified certain emergency protection and advance mitigation measures along the reaches encompassing the Laurel and Cypress sites, including berm construction, fill in unused and unlined ditches and placement of sandbag dikes and rings (“Levee Fortification Measures”) that it wishes to implement and/or construct as quickly as possible in order to protect the above-referenced levees sites from further deterioration and potential failure due to underseepage;

**WHEREAS**, on February 14, 2017 SBFCA formally requested up to \$5 million in advance funds from the State of California for the Levee Fortification Measures (attached hereto as Exhibit 1);

**WHEREAS**, the emergency conditions described herein and supported by the detailed information in SBFCA's advance funding request at Exhibit 1, will not permit a delay resulting from a competitive solicitation for bids, and the Levee Fortification Measures are necessary to respond to these conditions;

**WHEREAS**, construction of the Levee Fortification Measures is exempt from review under the California Environmental Quality Act pursuant to CEQA Guidelines sections 15269(a), (b) and (c);

**NOW, THEREFORE, THE SUTTER BUTTE FLOOD CONTROL AGENCY RESOLVES AS FOLLOWS:**

1. SBFCA hereby authorizes implementation and/or construction of the Levee Fortification Measures described herein, ratifies any such work that has begun to date, and authorizes execution of all related documentation, including but not limited to documentation for construction and financing of the Levee Fortification Measures, by the Executive Director as SBFCA's agent.

2. SBFCA hereby declares that an emergency exists pursuant to Public Contract Code section 1102. Pursuant to Public Contract Code section 22050, the SBFCA board will review the emergency action at its next meeting to determine if there is a need to continue the action.

3. SBFCA hereby appropriates an additional \$5,000,000 in the Capital Budget for the purpose of implementing the Levee Fortification Measures, with the directive to the Executive Director as its agent to use his best efforts to obtain funding from State, Federal and local sources for the work.

**ADOPTED** this 15<sup>th</sup> day of February, 2017.

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Larry Munger, Chair



**Sutter Butte Flood Control Agency**

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(530) 755-9859

sutterbutteflood.org

**COUNTIES**

Butte County  
Sutter County

**CITIES**

City of Biggs  
City of Gridley  
City of Live Oak  
City of Yuba City

**LEVEE DISTRICTS**

Levee District 1  
Levee District 9

February 13, 2017

Mr. Eric Koch, Chief  
Division of Flood Management  
California Department of Water Resources  
3310 El Camino Avenue, Room 151  
Sacramento, CA 95821

**Subject:** Request for Funding for Advance Measures on the Lower Feather River due to Oroville Spillway Incident

Dear Mr. Koch:

The loss of full functionality of both the service and emergency spillways of Oroville Dam has greatly increased risk to life and property along the west bank of the Feather River south of Star Bend in Sutter County. Immediate flood fight measures in advance of high water will greatly reduce risk and liability from levee failure. SBFCA and constituent agencies have coordinated with DWR to identify sites, prepare designs and identify resources to immediately carry out these measures. \$5 million is requested.

Background

The Sutter-Butte Basin has experienced numerous flood events since the 1800's. The devastating 1955 flood resulted in significant property damage and the loss of 38 lives. The largely completed Feather River West Levee Project (FRWLP) rehabilitates over 36 miles of the Feather River West Levee between Thermalito Afterbay Dam and just south of Star Bend to an urban level of flood protection (200-year, or 0.5% annual chance). The project is led by the Sutter Butte Flood Control Agency (SBFCA), with the majority of funding provided by, and in partnership with, the California Department of Water Resources (DWR). The worst of these sites, located near Laurel Avenue, was slated to be completed last summer but was delayed due to extraordinary permitting delays associated with cultural resources imposed by USACE.

The predominately rural area in the southern and southwestern portion of the Sutter-Butte basin is protected by levees on the east along the Feather River west bank south of Star Bend, by levees on the west along the Sutter Bypass, and by levees on the northwest along Wadsworth Canal (see Figure 1). Failure of any of these levees during severe flood events would likely result not only in the inundation of extensive agricultural areas, but also several small rural communities that lie within the area. Further, failure of these levees could also result in shallow flooding of the southern and western edges of Yuba City (Attachment 1).

## Hazard

Recent studies conducted by SBFCA and in partnership with DWR and the USACE have identified three critically damaged levee reaches that provide approximately 10-year level of flood protection under design flow/stage. Calculated exit gradients range from 1 to 1.8 for all reaches, and all have well documented performance histories consistent with these high gradients, including a prior failure and the near failure of the Laurel Avenue levee in 1997. As recently as January 2017, an expert elicitation exercise facilitated by David Ford was conducted to evaluate and prioritize critically deficient levee reaches on the lower Feather River. The expert panel included representatives from DWR, USACE and private consultants with expertise and experience with the subject levees (Attachment 2). Recent storm events have produced relatively low water surface elevations with respect to design stage, yet have induced heavy seepage conditions and boil activity.

While levee conditions remain relatively stable currently (notwithstanding the progressive failure mode of subsurface seepage and piping), the compromised and uncertain functionality of both the service and emergency spillways has significant impact on the safety of these previously identified critical levee reaches. Both spillways are severely damaged. Service spillway flows have unexpectedly and rapidly eroded the underlying foundation to within 1600 feet of the spillway gates; during the current and prolonged period of high flow, the unknown condition of foundation rock may quickly advance on the gates, prompting the Division of Safety of Dams, FERC and/or DWR to close the gates for the remainder of the flood season. In so doing, dam releases would be essentially subject to run-of-the-river operation and could quickly increase stage in the river without the attenuation of reservoir storage. This scenario is exacerbated by the damaged emergency spillway which nearly failed in just a few hours due to flows that were a small fraction of design capacity. In addition, the severely compromised condition of the emergency spillway may have a devastating impact on downstream levees if allowed to operate in conjunction with the service spillway as DWR struggles to balance non-erosive service spillway flow with reduced operation of the emergency spillway. The sudden and episodic advance of erosion due to complex foundation features has already reduced or nullified advance warning of high water events downstream. Given these dynamics and the over-performance of storm events in the past month, there is a high likelihood that failure of one or both spillways will excessively increase WSE throughout the Feather River system during the remainder of this long runoff season, with the critically deficient levees on the lower Feather River being most vulnerable to failure.

Due to the concerns regarding the emergency spillway in the past few days, SBFCA has run a number of emergency spillway failure hydrographs which further highlight the unsafe condition of the unrepaired and deficient condition of the lower Feather River. This heightened hazard is due to a foreseeable and likely high water event caused by a severely damaged State-owned facility.

## Consequences of Failure

Despite DWR classification of the lower Feather River reaches as “rural,” the subject lower Feather River levees protect the lives and property of around 20,000 people, associated properties, and vast tracts of agricultural infrastructure as well as outlying areas of urbanized regions. As described above, an upstream levee at Shanghai Bend failed in 1955 with devastating consequences, and the Laurel Avenue levee came perilously close to failing in 1997 but for a massive flood fight and the tragic failure of the Arboga levee across the river.

## *Advance Measures Funding Request*

Failure of the lower Feather River will almost certainly flood State Highway 99, a key evacuation route from Yuba City and Live Oak, as well as communities north. Loss of this transportation corridor will eliminate one of only five evacuation routes should another regional evacuation be necessary.

### Proposed Advance Measures

On behalf of constituent local maintaining agencies and communities, SBFCA proposes that advanced measures be taken to protect the Laurel and Cypress levees sites from further deterioration and potential failure due to underseepage. Measures include the following:

- An approximately 10,000-foot long berm constructed on the reach comprising the Laurel and Cypress sites. The berm will consist of a 2-foot thick lift of 1.5-inch minus drain rock underlain by non-woven filter fabric at the landside toe and extending approximately 6-feet up the embankment. The width of the berm will be dependent on site conditions but will be up to 50-feet from the toe. Suitable, economical sandy materials may be substituted for the filtered berm if quickly acquired. Much of the right-of-way has already been acquired due to the impending Laurel slurry wall construction later this year and additional landowner contact has already initiated.
- Fill unused and unlined ditches throughout the Cypress and Laurel reaches.
- Reaches between Star Bend and Cypress will be evaluated on a case-by-case basis and will involve similar measures as well as potential hand-crew work to place discrete sandbag dikes and rings.

By taking these measures, exit gradients will be greatly reduced and floodfight access will be increased. Moreover, long-term maintenance will be enhanced by filling in problematic ditches that have been a source of boils and sloughing.

Upon approval of funding, construction contractors will complete work within seven to ten calendar days. Total cost is estimated to be \$5 million.

### Conclusions and Recommendation

Unacceptable risk caused by the compromised performance and potential failure of the Oroville Dam spillway system can be quickly and effectively mitigated by proactive implementation of advance flood fighting measures proposed above.

SBFCA respectfully requests and recommends the immediate approval of \$5 million to begin construction and implementation.

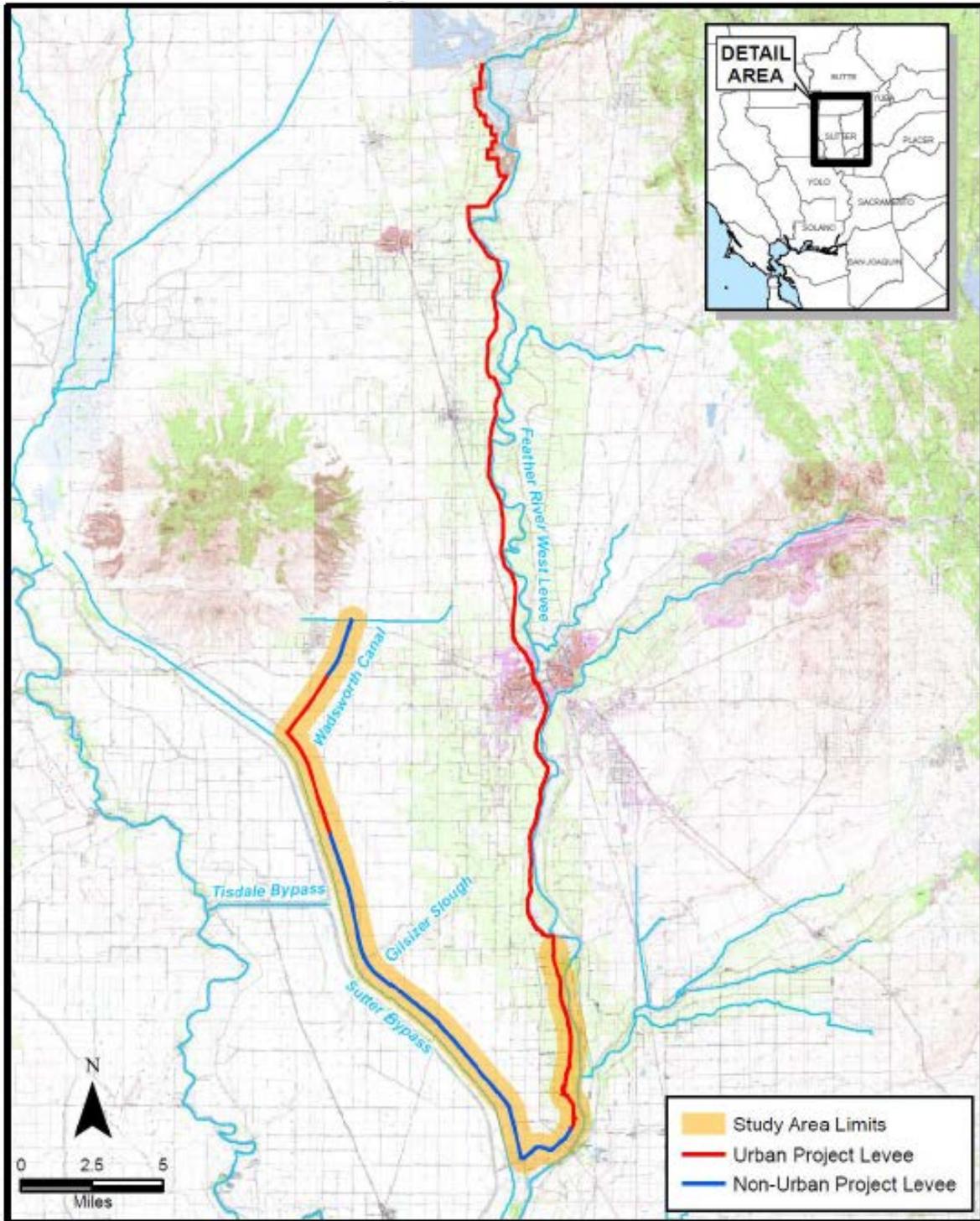
Thank you for your prompt attention to this matter. Feel free to contact me any time with any questions at [m.inamine@water.ca.gov](mailto:m.inamine@water.ca.gov) or (530) 740-2448.

Sincerely,



Mike Inamine  
Executive Director

Attachments (2)



Attachment 1. Rural Sutter-Butte basin.

*Advance Measures Funding Request*



Attachment 2. Critical levee sites.