

# Firebaugh Levee Project Presentation

**April 29, 2015**

Presented by:

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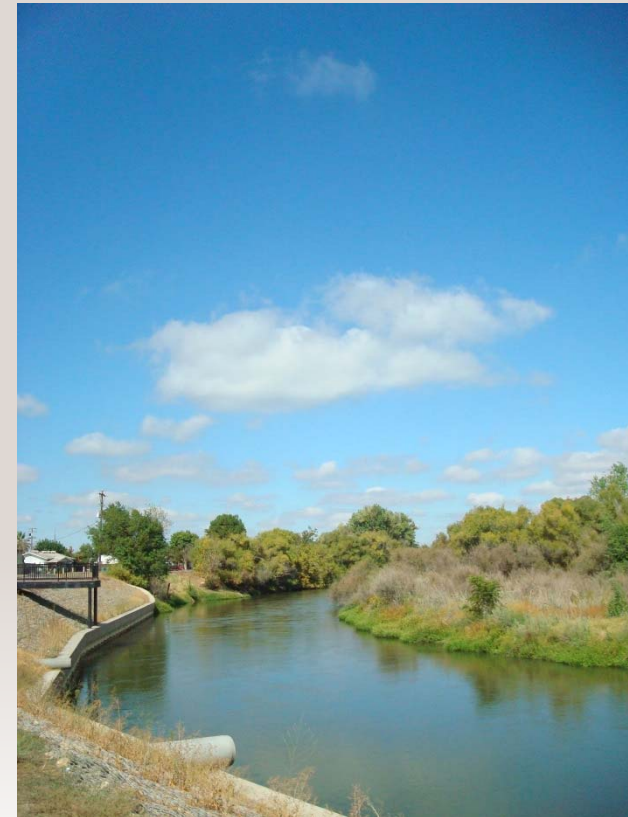
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**Upper San Joaquin Regional Flood  
Management Planning Program Meeting**



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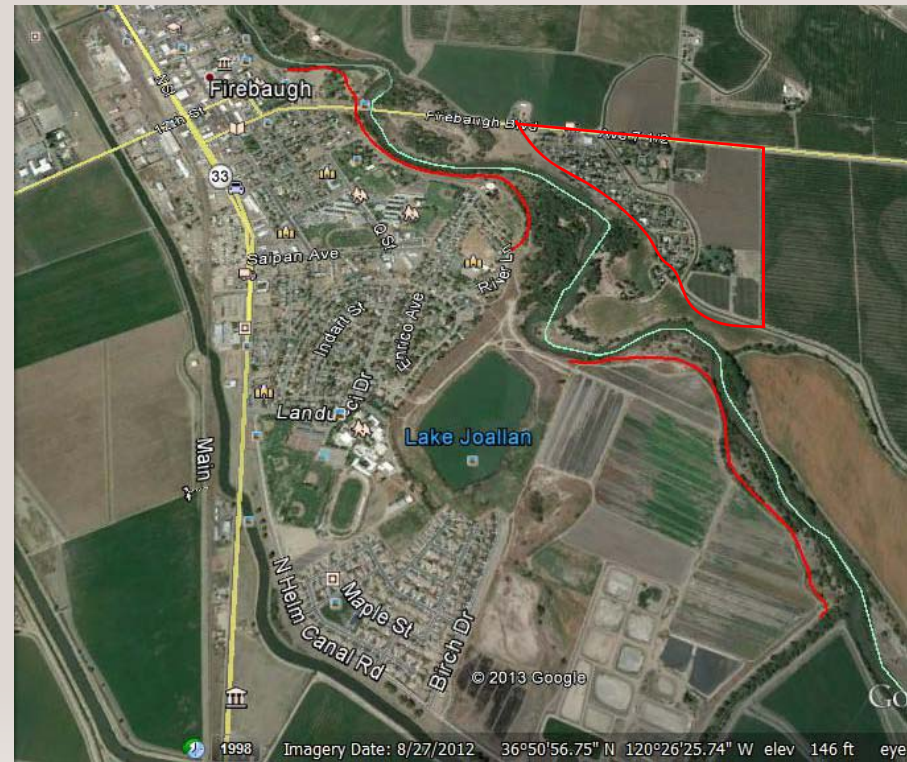
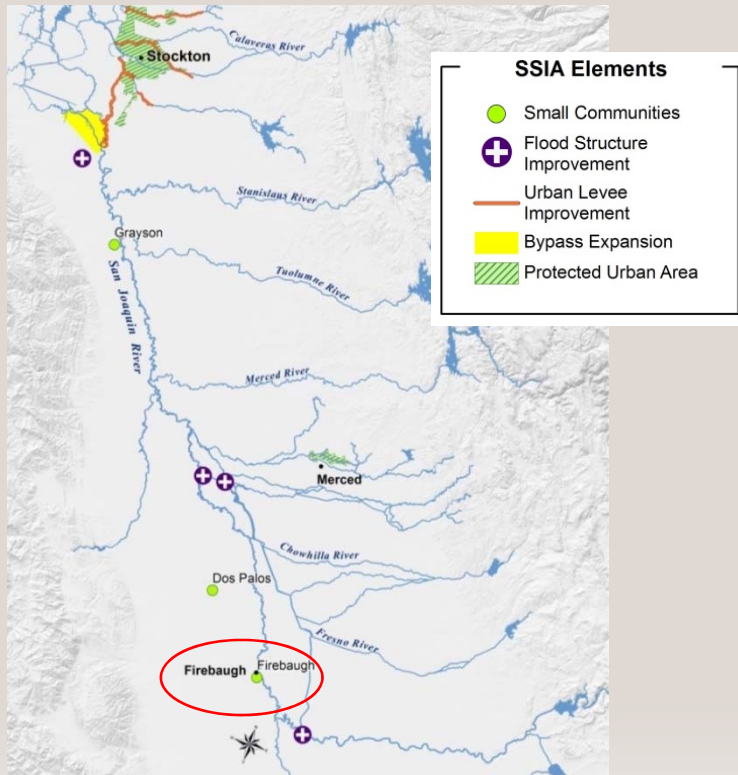


# Today's Discussion

- Background
- Planning Process
- Planning Alternatives
- Preliminary Cost Estimates
- Benefits
- Preliminary Conclusions
- Next Steps



# Background



2012 CVFPP recommended 100-year level of protection for small communities, including Firebaugh.

City of Firebaugh Identified Levee Improvements in Upper SJ RFMP

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# Firebaugh Has a History of Flood Problems

- Flows >4,000 cfs requires sandbagging and flood-fighting
- Emergency response and flood-fighting needed on a regular basis
- Flooding reported in Firebaugh in 1958
- Threat of flooding also occurred in:
  - 1969
  - 1986
  - 1997
  - 2006



- In 1997, much of the city was ordered to evacuate
- Much of Firebaugh is in the regulatory floodplain

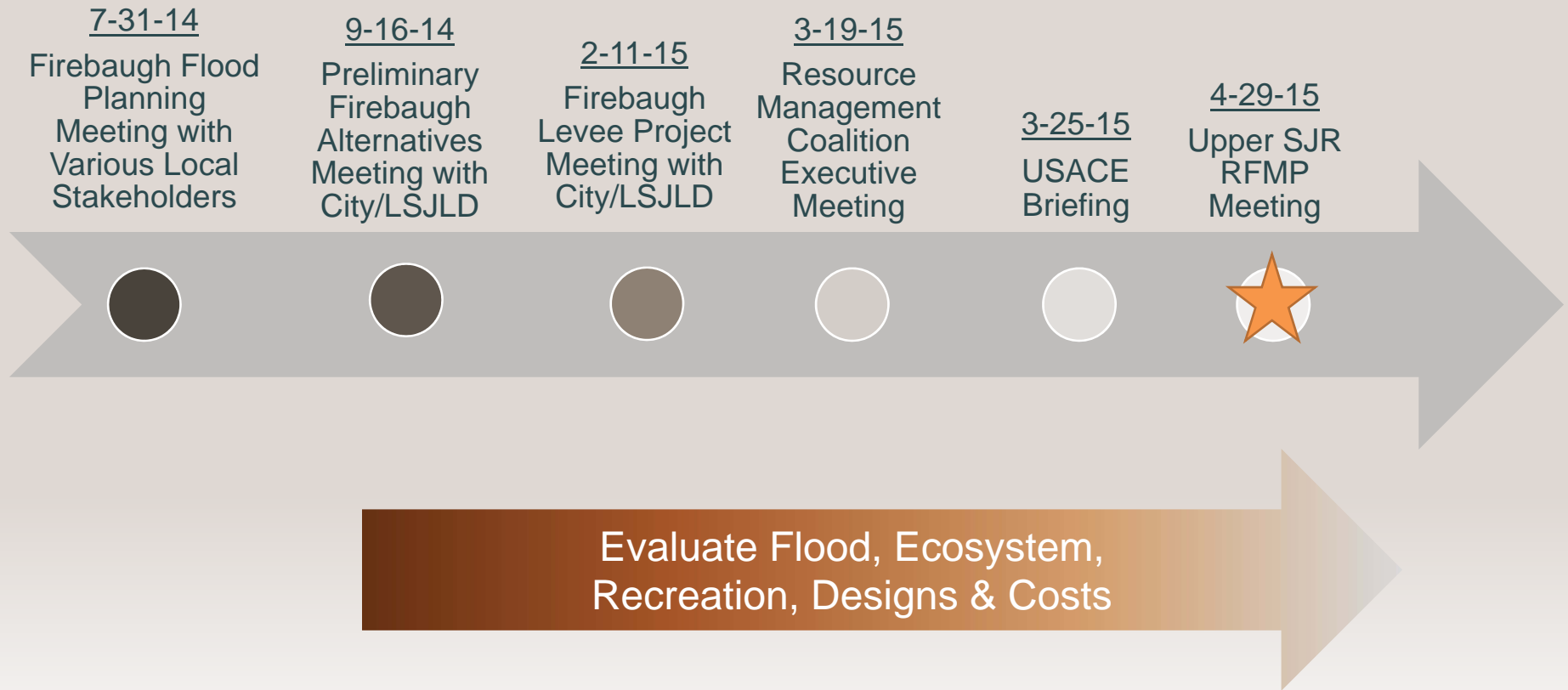
# Why is the State interested?

## Desired Outcomes

- Protect from the potential loss of life and increase public safety
- Reduce potential flood damages to property
- Promote economic stability and growth in the region
- Remove people from the regulatory floodplain to avoid mandatory flood insurance
- Protect a key agricultural center and disadvantaged community, which serves as economic and cultural hub for the region
- Increase overall quality of life in Firebaugh



# Planning Process to Date



# Planning Alternatives: Configuration B



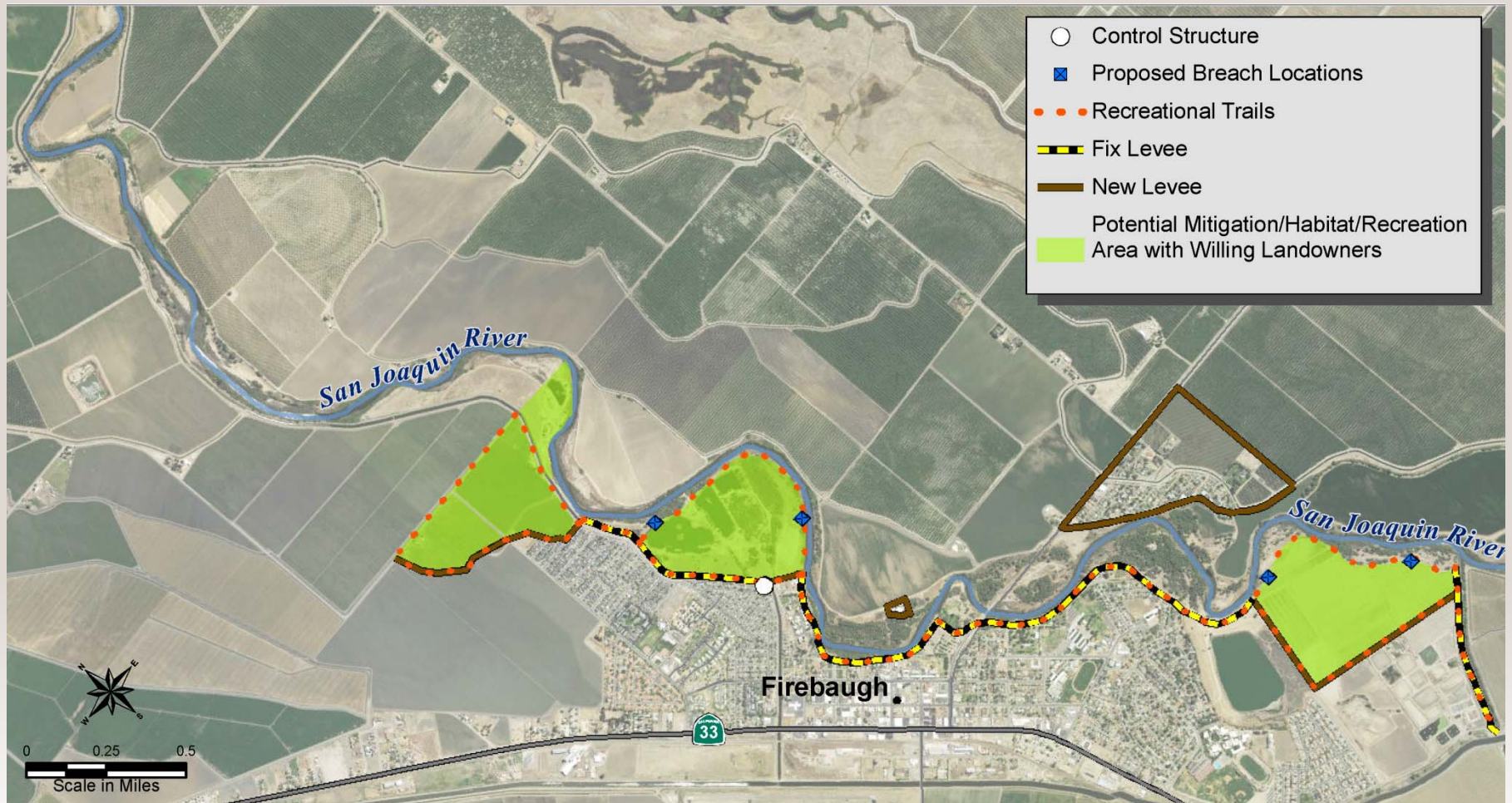
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# Planning Alternatives: Configuration C



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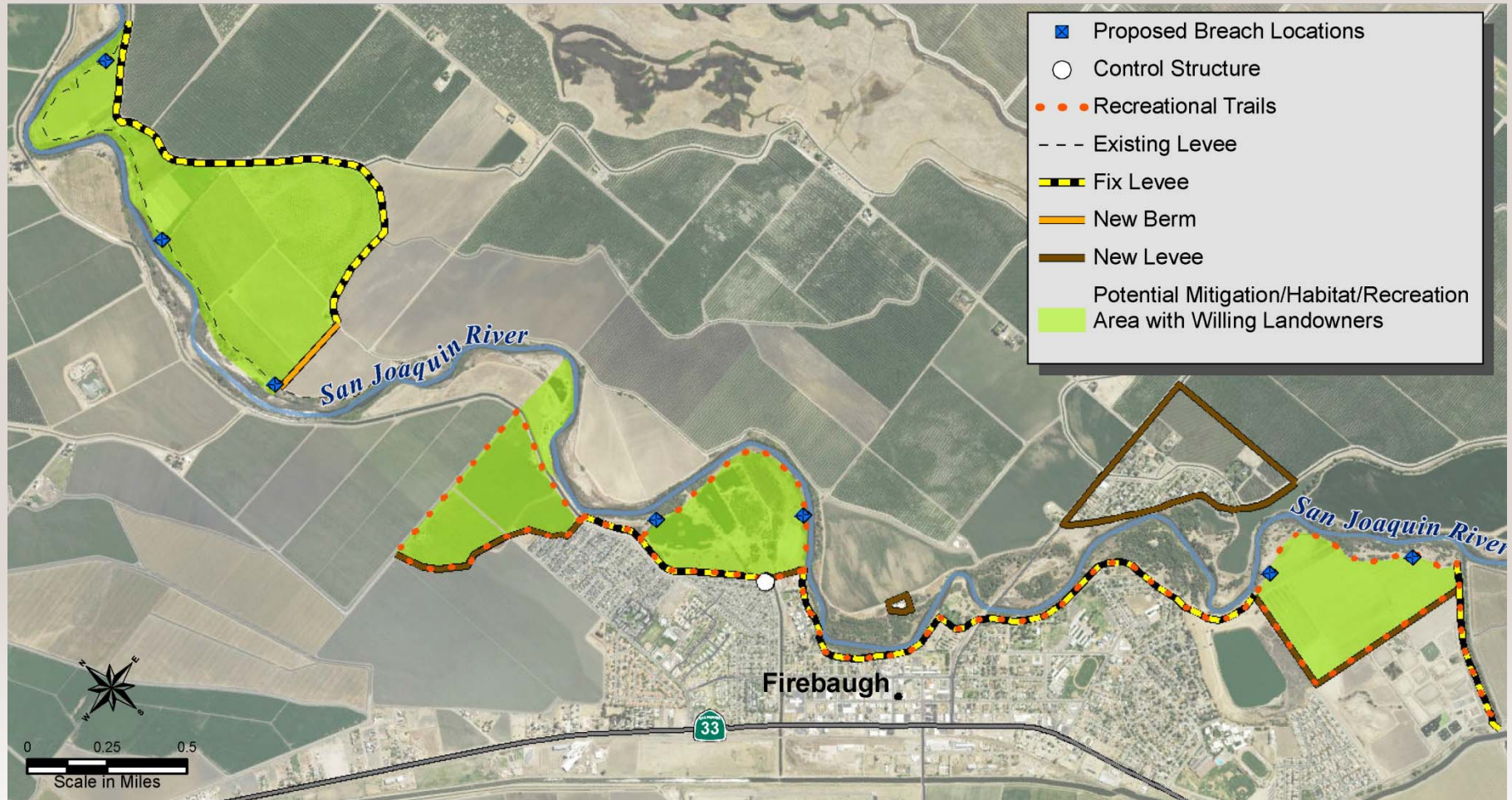
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# Planning Alternatives: Configuration D



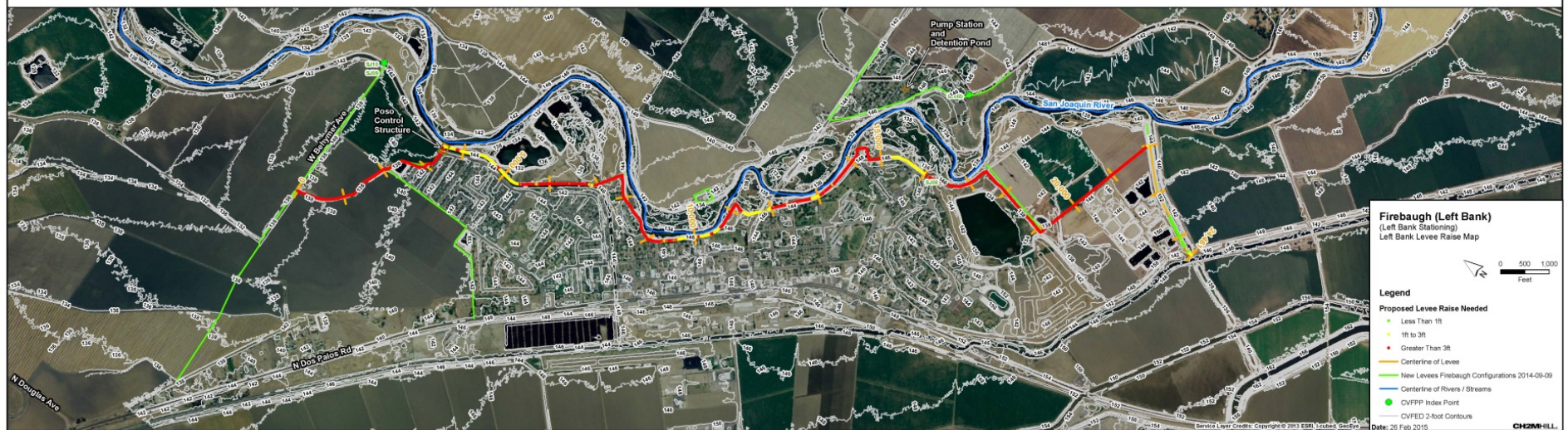
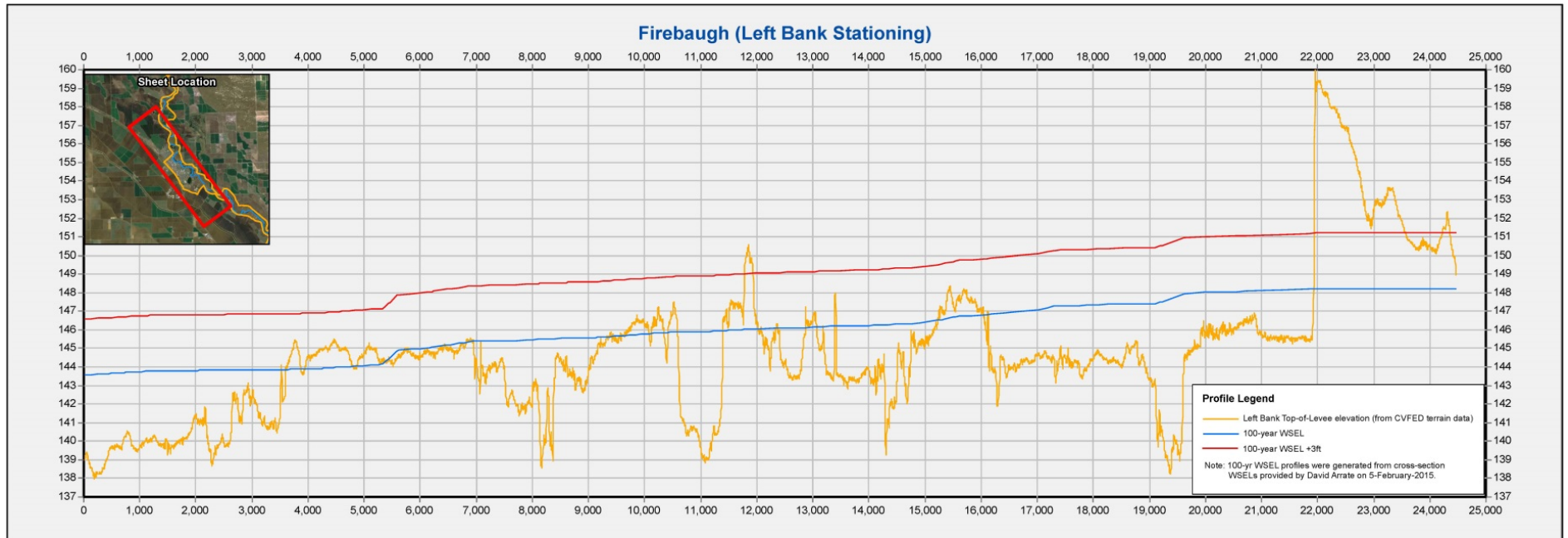
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# Firebaugh Project Plan and Profile



# Preliminary Cost Estimate (In Progress)

Item Description	Configuration B	Configuration C	Configuration D
Clearing and Grubbing	\$282,900	\$271,600	\$271,600
Stripping	\$113,200	\$112,000	\$112,000
Levee Embankment	\$3,350,200	\$3,760,900	\$3,761,000
Levee Removal		\$38,100	\$38,100
Inspection Trench	\$669,300	\$3,661,600	\$3,663,900
Geotechnical Improvements	\$14,486,000	\$7,533,000	\$7,533,000
Recreational Trail	\$2,260,500	\$1,831,500	\$1,831,500
Poso Closure Structure	\$1,390,000	\$1,390,000	\$1,390,000
<b>Subtotal</b>	<b>\$22,552,100</b>	<b>\$18,598,700</b>	<b>\$18,598,800</b>
<b>Contingencies (Including Ecosystem Restoration Costs)</b>	<b>\$24,054,000</b>	<b>\$42,609,000</b>	<b>\$48,403,000</b>
<b>Left Bank Total</b>	<b>\$46,606,100</b>	<b>\$61,207,700</b>	<b>\$67,004,100</b>
<b>Annualized Left Bank Total</b>	<b>\$2,954,827</b>	<b>\$3,880,568</b>	<b>\$4,248,060</b>

Costs are in progress and subject to change.

Contingencies include unallocated items in construction costs, mobilization and demobilization, contingency, engineering during construction, environmental mitigation costs, design and engineering, permitting and legal costs, land acquisition and easements, ecosystem restoration.



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# Preliminary Cost Estimate: Eastside Acres (In Progress)

Item Description	Ring Levee	Raise Structures
<b>Right Bank (Eastside Levee)</b>		
Clearing and Grubbing	\$56,500	\$5,500
Stripping	\$23,100	\$1,700
Levee Embankment	\$606,800	\$1,500
Inspection Trench	\$1,619,200	\$243,800
Structures Raises	-	\$12,600,000
Eastside Levee Closure Structure	\$570,000	-
Eastside Levee Pump Station	\$500,000	-
<b>Right Bank Subtotal</b>	<b>\$3,375,600</b>	<b>\$12,852,500</b>
<b>Contingencies (Including Ecosystem Restoration)</b>	<b>\$5,249,000</b>	<b>\$11,185,000</b>
<b>Right Bank Total</b>	<b>\$8,624,600</b>	<b>\$24,037,500</b>
<b>Annualized Right Bank Total</b>	<b>\$546,800</b>	<b>\$1,523,978</b>

Costs are in progress and subject to change.

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# Accomplishments Summary (In Progress)

## Left Bank Improvements (Without Eastside Acres)

Category	Benefit or Cost	Configuration B	Configuration C	Configuration D
<b>Flood Management Benefits</b>	Flood Risk Reduction Benefits (Expected Annual Damages)	\$323,000	\$323,000	\$323,000
	Flood Risk Reduction Benefits (Life Loss Reduction)	0	0	0
<b>Ecosystem Benefits</b>	Riparian/Wetland Habitat (Acres)	0	336	640
	Ecological Benefit Units	TBD	TBD	TBD
<b>Recreation Benefits</b>	Potential Visitor Use Days	TBD	~2,500	~4,900
<b>Costs</b>	Partial Cost Estimate	\$46.6 million	\$61.2 million	\$67.0 million
	Annualized Partial Cost Estimate	\$3.0 million	\$3.9 million	\$4.2 million

Costs are in progress and subject to change.

# Preliminary Conclusions



- A single-purpose flood management project would be extremely difficult to justify and fund locally
- A multi-benefit project is potentially promising and much more likely to attract State, federal, and other funding sources
- Phased implementation would be needed to move forward

# Potential Next Steps

- Basin-wide Feasibility Study Next Steps and Documentation
- DWR Small Communities Program
- U.S. Army Corps of Engineers Coordination
- Firebaugh Project Workgroup



# Appendix Slides



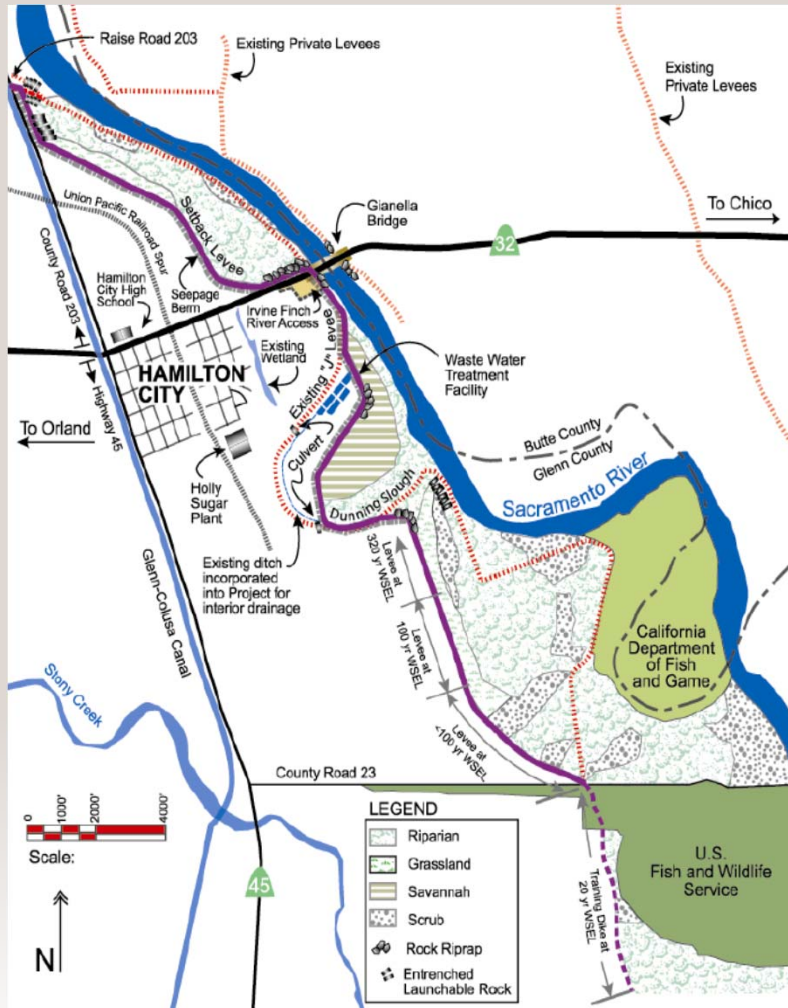
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# Has This Been Done Before?



## Case Study: Hamilton City Flood Risk Damage Reduction and Ecosystem Restoration Project

- Hamilton City Population: ~2,500
- Extensive flood-fighting or evacuation needed in 1983, 1986, 1995, 1997, and 1998
- Without-Project Flooding Return Period: 10 Years

## Recommended Plan

- 6.8 Miles of setback levee
- 1,500 acres of native habitat restoration
- With-Project Flooding Return Period: 75 Years
- Total Project Cost: ~\$50 million (\$34 million from federal funding)
- Project Purposes: Flood Damage Reduction and Ecosystem Restoration
- Project Status:
  - 1<sup>st</sup> USACE multi-benefit project for flood risk reduction and ecosystem in nation
  - Federally authorized and funding appropriated, State funding approved
  - Construction planned in Summer 2015

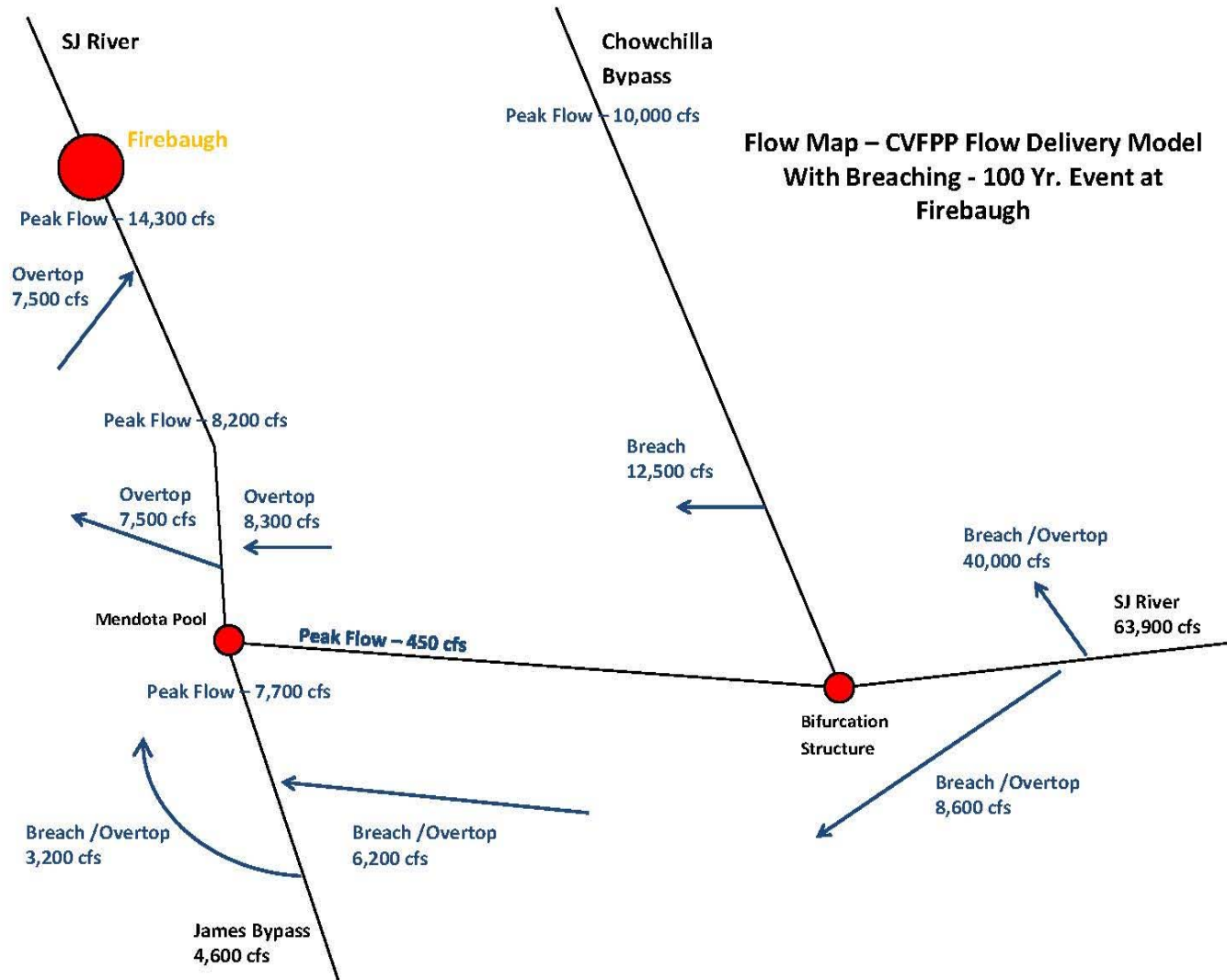
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# 100-year Flow Map



# Firebaugh RFMP Projects

System Improvement Name	System Improvement Description
Eastside Acres San Joaquin River Levee Project	The Community of Eastside Acres, a housing subdivision consisting of about 70 residences and one commercial business, is located east of the city of Firebaugh along the right bank of the San Joaquin River in Madera County. Eastside Acres is in the 100-year flood plain and sand bagging is required during routine flood events. The conceptual levee project layout consists of a ring levee system that would encircle the housing subdivision. The ring levee would be approximately 1.32 miles in length, and have an average height of 4.63 feet.
San Joaquin River Levee at Firebaugh Wastewater Treatment Plant	The City of Firebaugh's wastewater treatment plant is located near the west bank of the San Joaquin River at the south end of Firebaugh. Flood flows in the river have threatened the treatment plant in recent years. Constructing an earthen levee between the river and the treatment plant would protect it against future flooding. Undeveloped space along the upper floodplain of the river is available for the proposed levee. Untreated effluents from the City of Firebaugh's waste water treatment plant would threaten the water quality of the San Joaquin River in case of catastrophic flooding in the area. This project could include recreation and environmental enhancement components.
San Joaquin River Bank Stabilization at Firebaugh	Just north of 13th Street (Firebaugh Boulevard) the San Joaquin River turns due west toward downtown Firebaugh. It then makes a sharp turn to the northwest and parallels the downtown area. In recent years, a bank stabilization project was constructed at this turn that included sheet piling and rock-filled wire cages. About 0.25 mile downstream of this project, the river makes another sharp turn to the northeast near the intersection of 9th Street and Q Street. The west bank at this turn is steep, unstable, and less than 50 feet from several residences. A second bank stabilization SI with a similar configuration to the first is needed at this location. This project could include recreation and environmental enhancement components.
San Joaquin River Levee at Firebaugh Rodeo Grounds	One of Firebaugh's water treatment plants is located south of the 13th Street (Firebaugh Boulevard) bridge that crosses the San Joaquin River. The City's rodeo grounds and a park area are located north of the bridge. Flood flows in the river have inundated the rodeo grounds and threatened the treatment plant in recent years. Constructing an earthen levee between the river and the facilities would protect them from future flooding. Undeveloped space along the upper floodplain of the river is available for the proposed levee. This project could include recreation and environmental enhancement components.