

# Orestimba Creek, West Stanislaus County, CA Flood Risk Management Feasibility Study

Civil Works Review Board Briefing

COL William Leady  
Commander, Sacramento District

29 May 2013



US Army Corps of Engineers  
**BUILDING STRONG**



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# Legislative Authority

- Interim Report  
*Study addresses specific area rather than entire area authorized for study*
- Flood Control Act of 1936 (Public Law [PL] 74-738)  
*Sacramento and San Joaquin River Valleys, California*
- House Document No. 367, dated October 13, 1949  
*Letter from Secretary of the Army on Sacramento – San Joaquin Basin Streams, California*
- House Resolution was adopted on May 8, 1964  
*For development of water resources in the San Joaquin River Basin, California*
- Energy and Water Development Appropriations Act, 1997 (PL 104-206)  
*for the San Joaquin River Basin, West Stanislaus County, California*



# Project Purpose

- Determine Federal interest in plans to reduce flood risk in the City of Newman and vicinity



# Non-Federal Sponsor

- Study: Stanislaus County
  - ▶ Funding support:
    - State of California – Department of Water Resources (DWR)
    - City of Newman
- Implementation: City of Newman

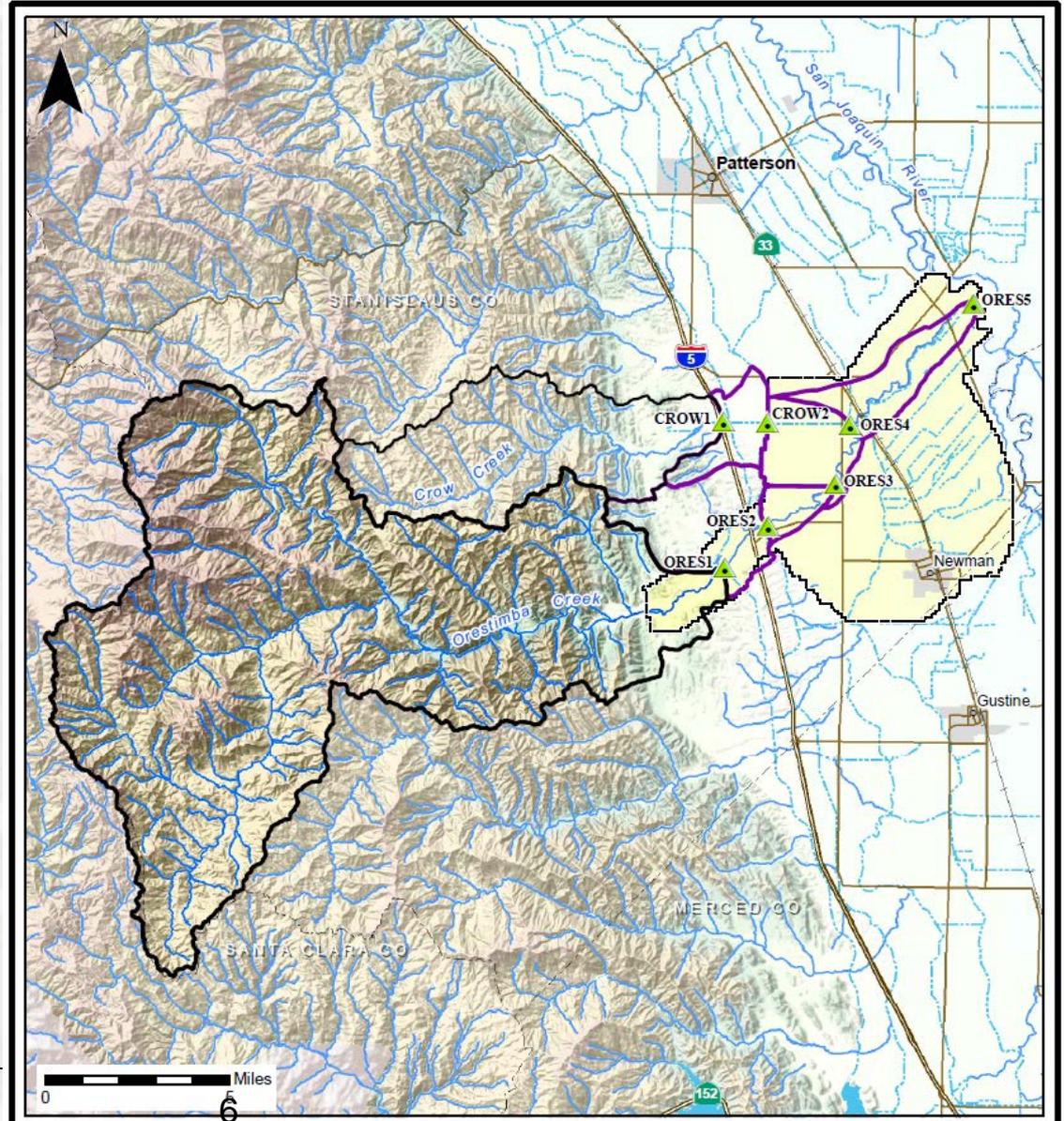


# Orestimba Creek Watershed



Study Location

Watershed: 134 sq miles  
Crow Creek: 27 sq miles  
Alluvial Fan: 45 sq miles

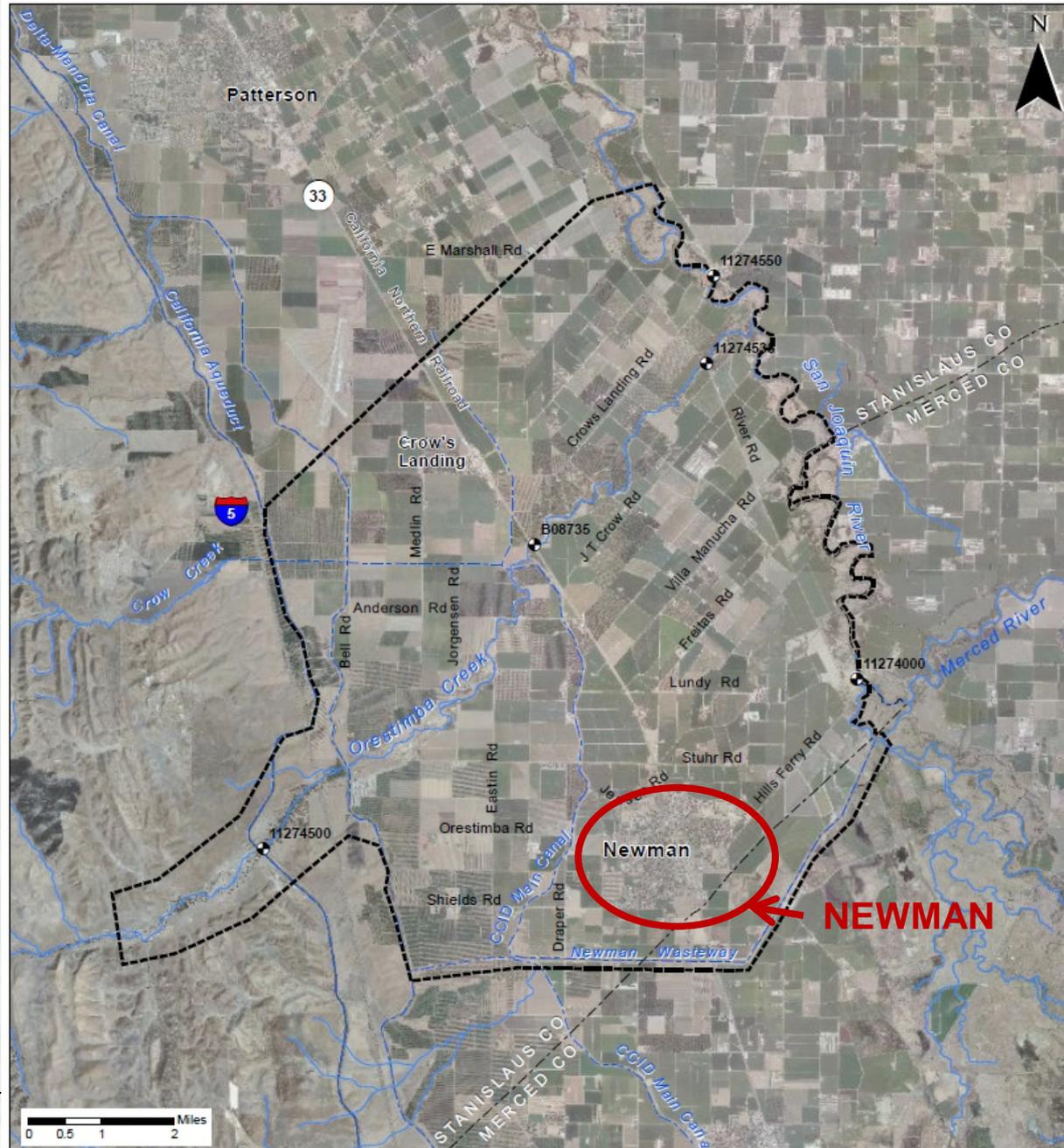




# Orestimba Creek Study Area

- Tributary to San Joaquin River
- Alluvial Fan
- Unconfined Floodplain
- City of Newman
- Agricultural Area
- Regional infrastructure

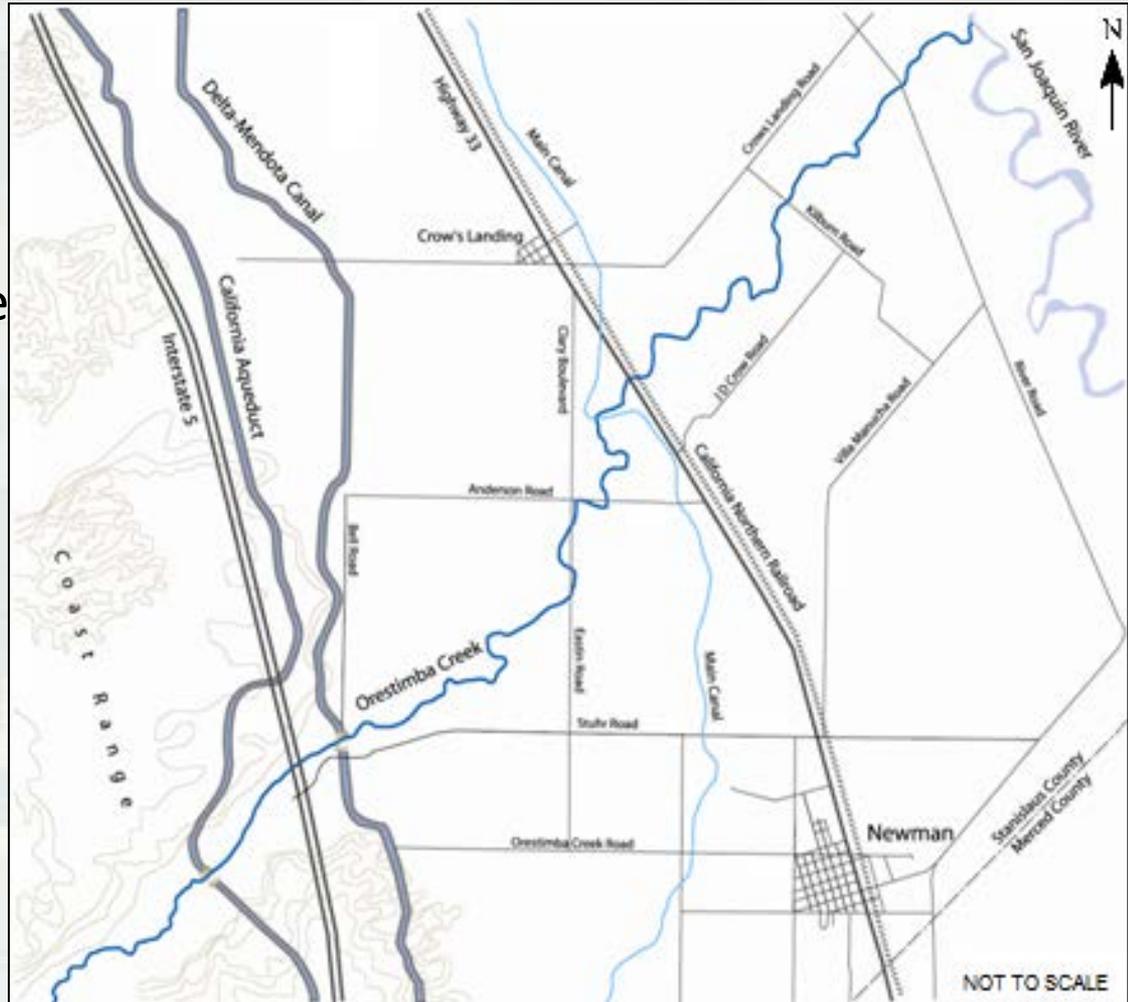
*Orestimba Creek,  
West Stanislaus County, California*



# Orestimba Creek Study Area

## Critical Infrastructure

- California Aqueduct
- Delta Mendota Canal
- Highway 33 and I-5
- California Northern Rail line
- Other transportation corridors
- City emergency response and facilities



# Study History

- Flooding in Study area 12 times since 1932
- Significant flooding in 1995 and 1998
- Feasibility initiated in 1999
- Feasibility Scoping Meeting 2001
- Alternative Review Conference Jan 2010
- NFS funding lapse 2010
- Alternative Formulation Briefing July 2012



# Problems

- Extensive flood damages
- Risk to life and safety from flooding in City of Newman and surrounding rural areas
- Orestimba Creek altered by human activities



# Flooding in Newman 1995

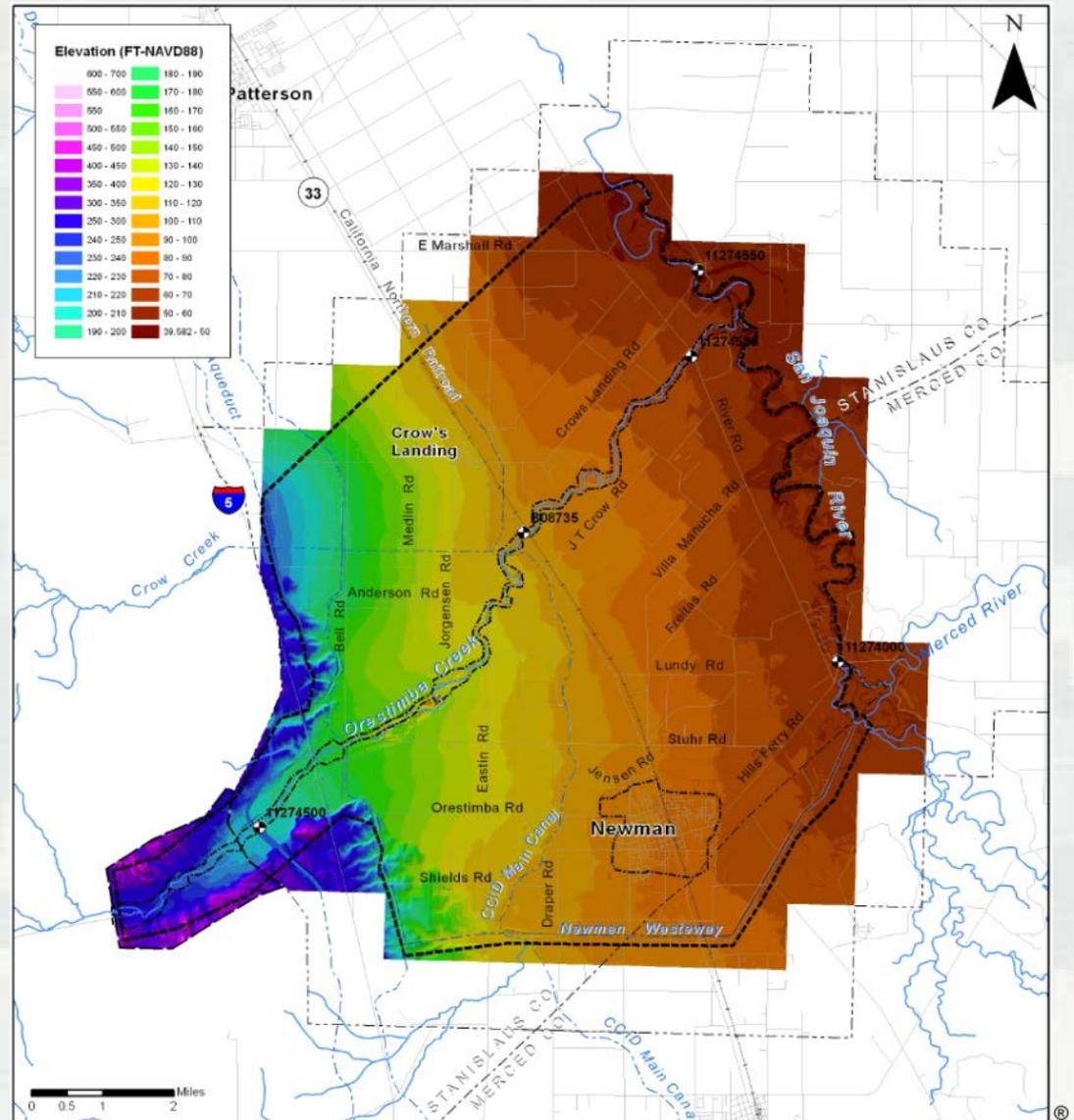
about 1/60 Annual Chance Exceedence (ACE)



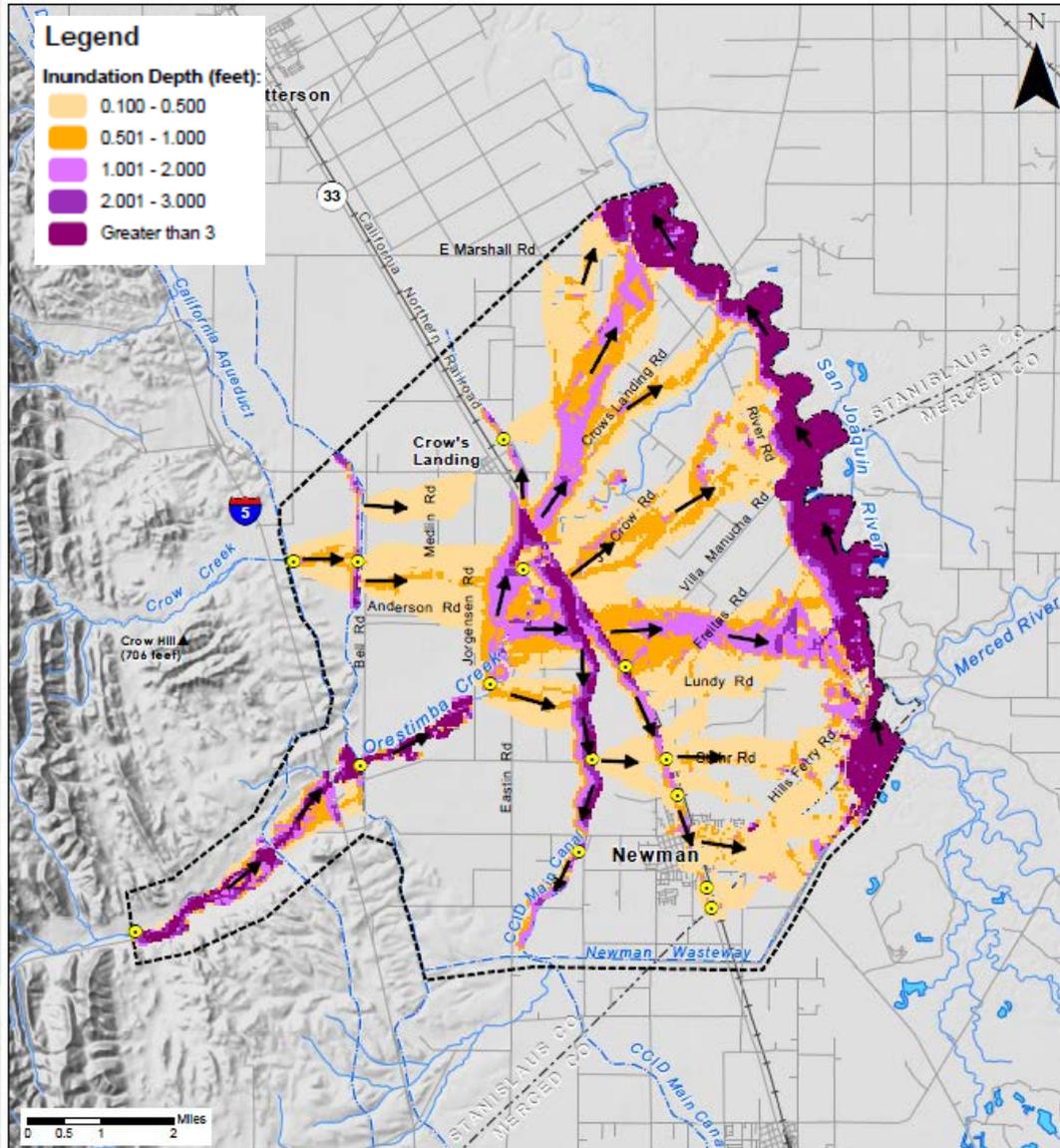
Orestimba Creek,  
West Stanislaus County, California

# Study Area Topography

- Datum: NAVD88
- Unconfined Alluvial Fan Floodplain
- CCID Canal Embankment
- Rail Road Embankment



# March 1995 Flood Event



- Largest recorded event since 1932
- 1/60 ACE event
- Unconfined Flooding
- Canal and Railroad Embankments Directed flood towards town
- \$8.1 Million Damages

# Non Federal Sponsor Objectives

- Seek plans that achieve minimal 200-year urban level of protection standard as defined by State of California
- Minimization of Operations, Maintenance, Repair, Rehabilitation & Replacement costs



# Alternatives Considered

Preliminary Alternatives	Completeness	Effectiveness	Efficiency	Acceptability	Carried Forward?
1–Enlarge Channel/Remove Constrictions	Yes	Yes	Costly land acquisition and structure removal	Potential for extensive vegetation removal - not acceptable	No
2-Setback Levees along Creek	Yes	Yes	Costly land acquisition	Agencies accepted but not locally preferred	No
3-Chevron Levee for risk reduction to Newman	Yes	Yes	Very cost effective	Agencies supportive but little local support	Yes
4-Bypass Channel	Yes	Yes	Expensive land acquisition	Agencies supportive but little local support	No
5-Upstream Flood Attenuation Basin	Yes	Yes	Very expensive with potentially unmitigable environmental effects	Local support but agencies opposed based on environmental and safety concerns	No
6-Downstream Flood Attenuation Basin	Yes	Yes	Very expensive – land value of mining sites very high	Some local support and agencies less opposed to this than to upstream dam	No
7 – Chevron Levee & Channel Modifications	Yes	Yes	Channel Mods not incrementally justified	Local support	No
9- Non-structural	Yes	Yes	Yes	Yes	Yes



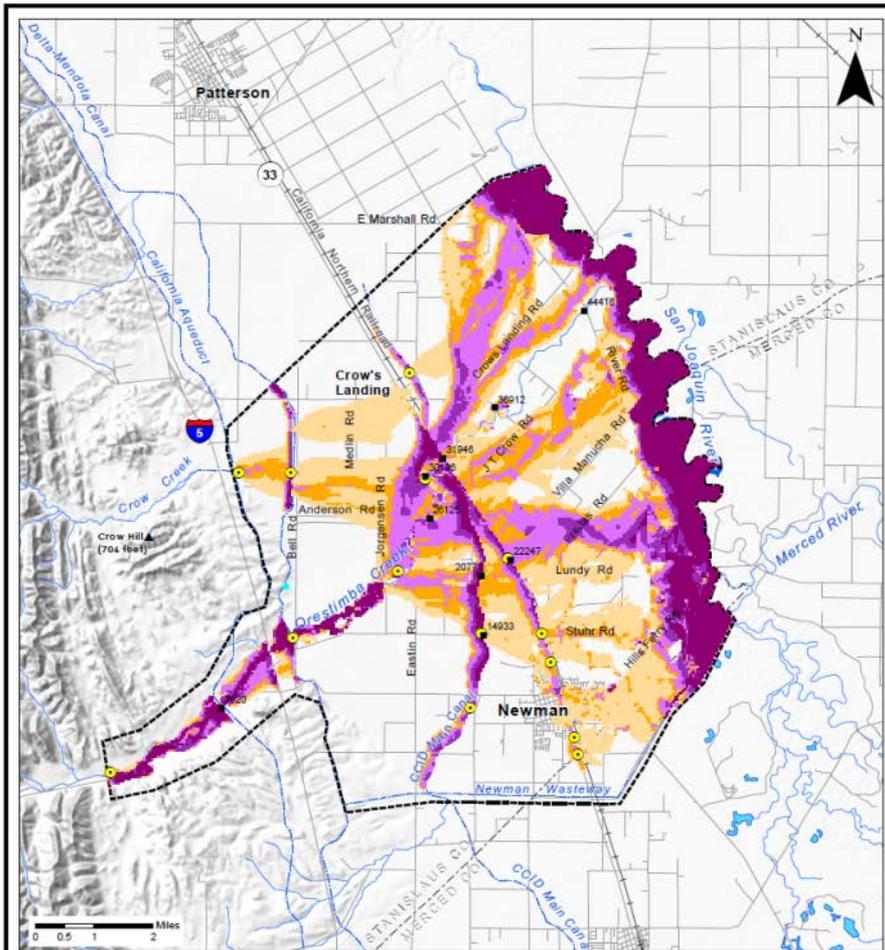
# Non-Structural Features

- Advanced warning system based on stream gages
- Reverse 911 system
- Public notification of flood risk, specifically at flooded roadway crossings
- Informational signs along road
- These features included in both the NED and LPP



# 1/200 year without project

# 1/200 year with project (NED & LPP)



**Legend**

**Inundation Depth (feet):**

- 0.100 - 0.500
- 0.501 - 1.000
- 1.001 - 2.000
- 2.001 - 3.000
- Greater than 3

- Economic Index Point
- Inflow Node
- Canal
- ▭ Floodplain Mapping Extent

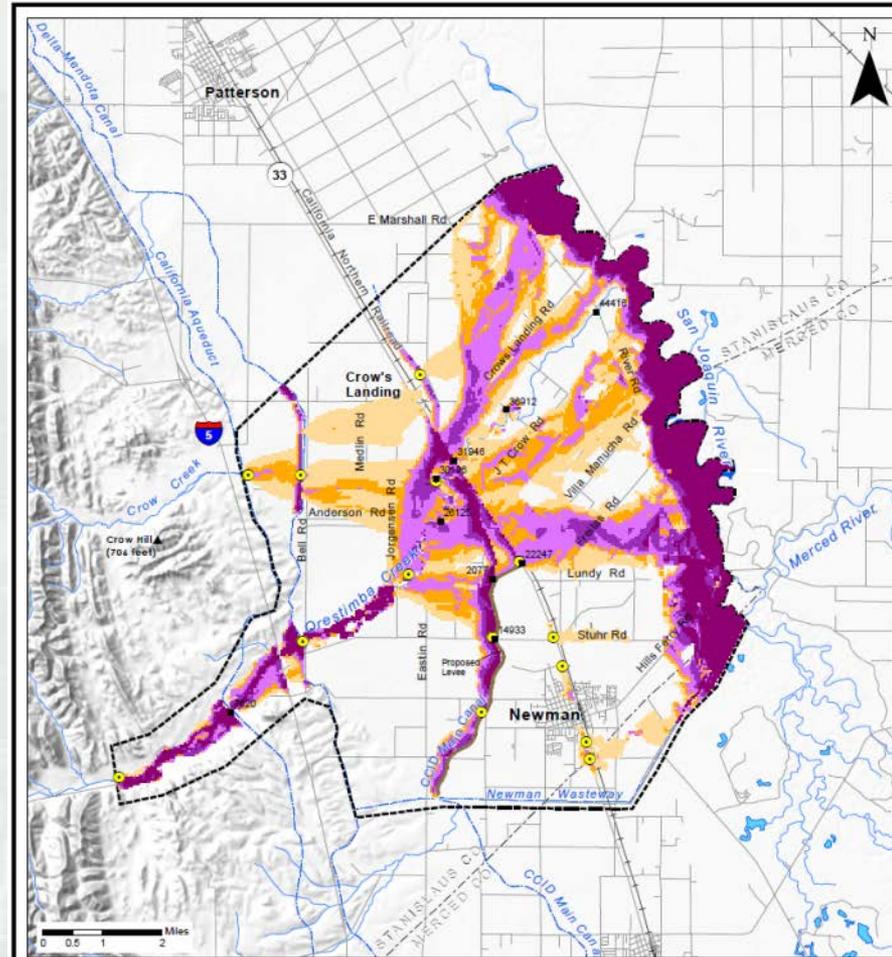
Note: Below Jorgensen Rd. in-channel flow depths are not shown.

ORESTIMBA CREEK, STANISLAUS COUNTY, CALIFORNIA  
FEASIBILITY STUDY

**EXISTING (WITHOUT-PROJECT) CONDITIONS**

**0.5% (1/200) ACE FLOOD EVENT**

U.S. ARMY CORPS OF ENGINEERS  
SACRAMENTO DISTRICT



**Legend**

**Inundation Depth (feet):**

- 0.100 - 0.500
- 0.501 - 1.000
- 1.001 - 2.000
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- Canal
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ORESTIMBA CREEK, STANISLAUS COUNTY, CALIFORNIA  
FEASIBILITY STUDY

**CHEVRON LEVEE  
PROFILES B AND C**

**0.5% (1/200) ACE FLOOD EVENT**

U.S. ARMY CORPS OF ENGINEERS  
SACRAMENTO DISTRICT

# Residual Risk

- LPP assurance greater than 99% of passing the .2% (1/500 ACE) event
- Residual risk within Newman extremely low
- Residual flooding from storm (interior) drainage shallow and localized
- Remaining risk on rural roads that could flood; especially low water crossings



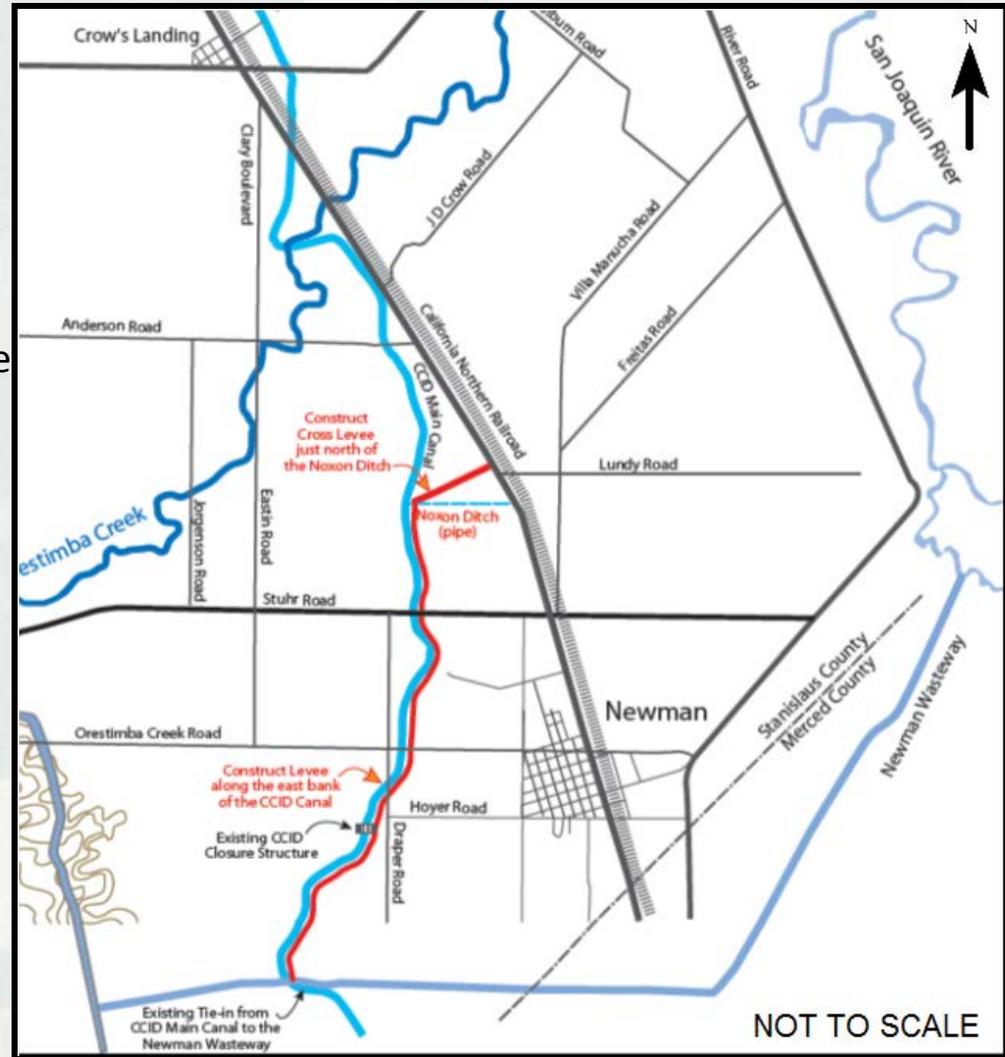
# Growth in the Floodplain

- Addressed in Stanislaus County and City of Newman General Plans
- Both seek to balance growth within existing agricultural context
- Agriculture significant socioeconomic driver, provides many jobs in the region
- Building codes = lowest floor must be constructed above base flood elevation.



# Recommended Plan Features

- LPP - based on 1/200 Annual Chance of Exceedance plus 3' freeboard per State of California requirements for Urban areas
- Structural features:
  - Chevron Levee: 4 miles aligned along East side of CCID Main Canal and 1 mile cross levee
  - 20' Required Setback
  - Seepage Berms
  - Railroad Embankment Protection and Closure Structure
  - Raising of 2000' of State Highway 33
- Non-structural:
  - Advanced warning system
  - Reverse 911 system
  - Public educational materials
  - Floodplain Management Plan



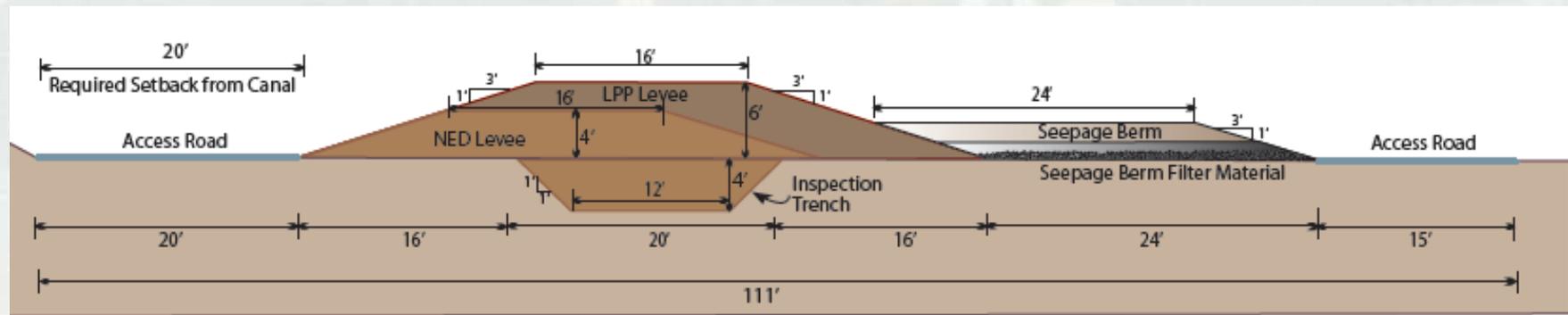
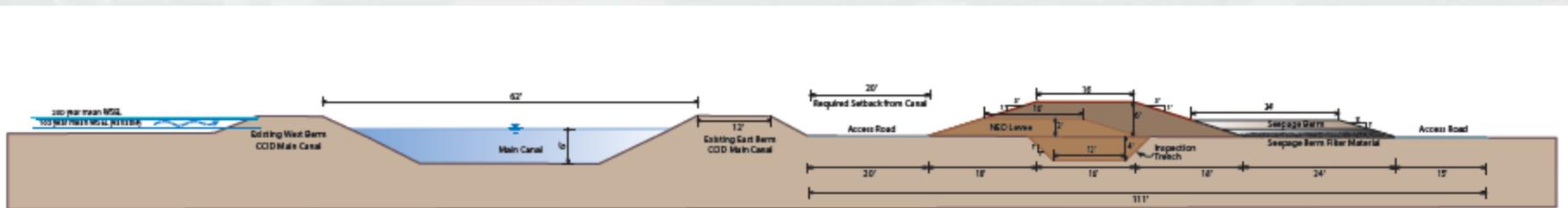
# Chevron Levee

- Levee height and water surface elevation
- Wide, shallow flood plain
- Small incremental height differences between 1/50 and 1/200 year Water Surface Elevation
- Low sensitivity to climate change



# Chevron Levee Cross Section

- East side of CCID Main Canal
- 20' Required Setback
- NED and LPP Levee height relationship
- Seepage Berms in some locations



# Orestimba Creek

## Economic Summary

### Comparison of Total Annual Benefits and Costs for the NED and LPP<sup>1,2</sup>

Item	NED Plan	LPP Plan
<b>Investment Costs:</b>		
Flood Risk Management First Costs	\$36,308,000	\$45,333,000
Interest During Construction	\$2,068,000	\$2,582,000
<b>Total</b>	<b>\$38,376,000</b>	<b>\$47,915,000</b>
<b>Annual Cost</b>		
Interest and Amortization	\$1,711,000	\$2,136,000
OMRR&R <sup>4</sup>	\$164,000	\$180,000
<b>Total</b>	<b>\$1,875,000</b>	<b>\$2,316,000</b>
<b>Annual Benefits</b>	\$3,236,000	\$3,236,000
<b>Net Annual Flood Risk Management Benefits</b>	\$1,361,000	\$920,000
<b>Benefit to Cost Ratio</b>	1.7	1.4

<sup>1</sup> Based on October 2013 price levels, 3.75% interest rate, and a 50-year period of analysis.

<sup>2</sup> Some numbers have been rounded and may be slightly different than those displayed in the appendices.

<sup>3</sup> Operation, Maintenance, Repair, Replacement and Rehabilitation



# Orestimba Creek

## Cost Sharing for the Recommended Plan <sup>1</sup>

Item	Federal <sup>2</sup>	Non-Federal	Total
Construction	\$17,146,831	\$1,804,169	\$18,951,000
LERRDs <sup>3</sup>		\$10,159,000	\$10,159,000
PED <sup>4</sup>	\$4,279,695	\$450,305	\$4,730,000
Construction Management <sup>5</sup>	\$2,255,224	\$212,776	\$2,468,000
<b>Subtotal Total (NED Plan Cost Sharing)</b>	<b>\$23,681,750</b>	<b>\$12,626,250</b>	<b>\$36,308,000</b>
Percentage	<b>65%</b>	<b>35%</b>	
<b>Additional LPP Project Costs</b>		<b>\$9,025,000</b>	<b>\$9,025,000</b>
Construction		\$6,245,000	
LERRDs		\$905,000	
PED		\$1,275,000	
Construction Management		\$367,000	
<b>Total Project Costs</b>	<b>\$23,681,750</b>	<b>\$21,651,250</b>	<b>\$45,333,000</b>

### Notes:

<sup>1</sup> Based on October 2013 price levels, 3.75% interest rate, and a 50-year period of analysis.

<sup>2</sup> Federal Project First Costs are based on 65% of the NED Plan of \$36.3 million.

<sup>3</sup> Non-Federal interests must provide all LERRDs and a minimum cash contribution of 5% (\$1,815,000) of the total project cost. LERRDs include Lands, Easements, Rights-of-way, Relocations, and Disposal sites.

<sup>4</sup> Planning, Engineering, and Design. Includes supplemental environmental compliance work and efforts to identify and evaluate cultural resources, as well as alternative mitigations aside from data-recovery activities.

<sup>5</sup> Includes a Cultural Resources contingency for Data Recovery if needed.



# Deviation from NED Plan

## Recommendation of LPP

- ASA(CW) approved Policy Exception – 2 Jan 2013
- Discussion:
  - ▶ LPP includes same elements as NED but raises levee height to include freeboard
  - ▶ LPP levee meets FEMA levee accreditation requirements and more stringent State of California requirements for urbanizing areas for the .5% ACE (1 in 200 chance event)
  - ▶ The LPP has positive net benefits
  - ▶ Federal Costs capped at 65 % of NED Plan



# Environmental Compliance

- Environmental Assessment
  - ▶ FWCA Coordination Act Report finalized
  - ▶ ESA Consultation completed
  - ▶ NHPA Section 106 compliance under Programmatic Agreement
- No significant compliance issues
- Completion of NEPA (FONSI signed) after signing of Chief's Report



# Public Involvement

- Stakeholder meetings (12+)
  - ▶ State Resource Agencies
  - ▶ Local landowners and residents
  - ▶ Central California Irrigation District (CCID)
  - ▶ The Nature Conservancy (TNC)
  - ▶ CA Department of Transportation
  - ▶ Union Pacific and California Northern Railroad
  - ▶ Congressman Representatives
  
- Public meetings (2)
  
- Public comments
  - ▶ Concerns with CCID canal
  - ▶ Concerns with continued and induced agricultural flooding
  - ▶ Concerns with flooding in Hill's Ferry Cemetery



# Status of Reviews

- Review Plan Updated – posted to website
- District Quality Control – Complete
- Office of Counsel Review – Complete
- Agency Technical Review - Complete
- Risk analysis Review (HEC) – Complete
- IEPR – SPK finalizing Agency responses
- Public and Agency Review of Draft Report – Complete
- Presentation of ATR and IEPR comments to follow



# Environmental Operating Principles

1. Foster sustainability as a way of life throughout the organization.
2. Proactively consider environmental consequences of all Corps activities and act accordingly.
3. Create mutually supporting economic and environmentally sustainable solutions.
4. Continue to meet our corporate responsibility and accountability under the law for activities undertaken by the Corps, which may impact human and natural environments.
5. Consider the environment in employing a risk management and systems approach throughout the life cycles of projects and programs.
6. Leverage scientific, economic and social knowledge to understand the environmental context and effects of Corps actions in a collaborative manner.
7. Employ an open, transparent process that respects views of individuals and groups interested in Corps activities.



# Environmental Operating Principles

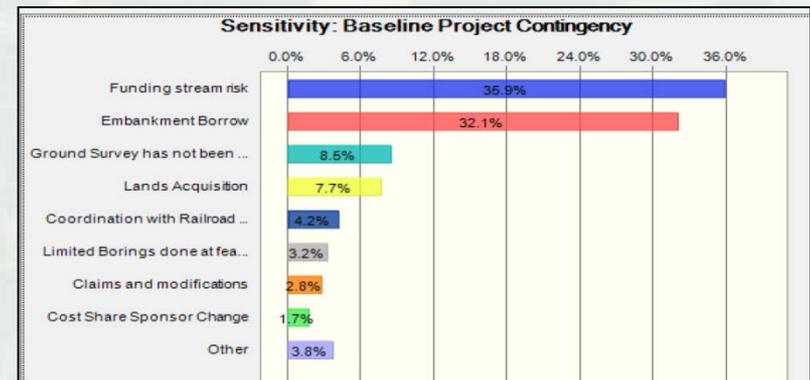
- **EOPs are part of our culture:**
  - ▶ Project constructed away from creek to avoid riparian corridor
  - ▶ Project avoids or minimizes environmental impacts while maximizing future safety and economic benefits to the community
  - ▶ LPP Policy Exception to recommend Plan that meets FEMA and State criteria
  - ▶ Worked with local resource agencies during planning phase to minimize impacts to the environment
  - ▶ Recommended Plan allows for continued floodplain flooding while focusing flood risk reduction on the established urban area
  - ▶ Held stakeholder and public meetings throughout the process
  - ▶ Worked with local groups to achieve a balance of project goals and public concerns



# Risk Management

- Risks to future project delivery assessed during Cost and Schedule Risk Analysis
  - ▶ Project & Program Management
  - ▶ Contract Acquisition
  - ▶ Technical
  - ▶ Regulatory and Environmental
  - ▶ Construction
  - ▶ Estimate and Schedule Risks
- High risks contributing to the Baseline Project Contingency
  - ▶ Funding Stream (External risk)
  - ▶ Embankment Borrow
  - ▶ Ground Surveys
  - ▶ Land Acquisition
  - ▶ Coordination with Railroad
- Future Risk Management; mitigation and avoidance strategies

Oristimba Creek NED Risk Register										
		Risk Level								
Frequency/Consequence	Very Likely	Low	Moderate	High	High	High				
	Likely	Low	Moderate	High	High	High				
	Unlikely	Low	Low	Moderate	Moderate	High				
	Very Unlikely	Low	Low	Low	Low	High				
		Negligible		Marginal	significant	Critical	Crisis			
		Impact or Consequence of Occurrence								
Risk No.	Risk/Opportunity Event	Concerns	POT Discussions	Likelihood	Impact	Risk Level	Likelihood	Impact	Risk Level	Responsibility/POC
Contract Risks (Internal Risk items are those that are generated, caused, or controlled within the POT's sphere of influence.)										
<b>PROJECT &amp; PROGRAM MGMT</b>										
PPM-1	Funding stream risk	Level of annual funding could cause project to be split up or unable to contract.	Some uncertainty of funding could cause project to be split up or unable to contract. Cost estimates are not set until 12/31/2016. Road issues are not to get EIR or have project start until 2017.	Unlikely	Marginal	MODERATE	Unlikely	Critical	High	District Management
PPM-2	Work windows	No specific work windows currently identified.	It is required that there are no specific construction windows required. Plans should be able to be coordinated during construction season but will require temporary curfews.	Unlikely	Negligible	LOW	Unlikely	Marginal	LOW	Environmental
PPM-3	Cost Share Sponsor Change	Current Sponsor may change from County to State.	State bid times can be lengthy. State can be easier to work with than the county. This could mitigate funding issues.	Very Unlikely	Marginal	MODERATE	Very Unlikely	Marginal	LOW	Project Manager
PPM-4	LFP-Neomorph Wetlands	Does LFP plan include adequate credit to ensure the existing total level is adequate to meet the LFP goal?	Future evaluation of the LFP system relative to FEMA delineate would need to include an evaluation of the bearing capacity issue and its stability. The road base would not affect the wetland credit but could impact the upland cost.	Very Unlikely	Marginal	LOW	Very Unlikely	Marginal	LOW	Project Sponsor(s)
PPM-5	Coordination with Railroad	Final contract project will need railroad right of way. Will require coordination.	FCP has had minimal contact with railroad. Railroad generally does not work with early design stages. State and County will have higher demands more they need through coordination will be required as a minimum. The railroad will have the right of way. Significant coordination will be required with railroad.	Very Unlikely	Marginal	MODERATE	Very Unlikely	Significant	High	Project Manager
PPM-6	Coordination with CALTRANS	Coordination with CALTRANS will be required for road issues.	Not thought to be significant issue.	Very Unlikely	Negligible	LOW	Very Unlikely	Marginal	MODERATE	
PPM-7	COG board may need approving project	COG has to end approval of project will be required to have FFA system.	Future maintenance of irrigation systems that pass thru the project area will require coordination with CALTRANS and may have to have higher demands more they need through coordination will be required as a minimum. The railroad will have the right of way. Significant coordination will be required with railroad.	Unlikely	Marginal	LOW	Unlikely	Marginal	LOW	Project Manager
<b>CONTRACT ACQUISITION RISKS</b>										
CA1	Certifications and Documentation	These conditions of documentation, agreements, approvals, all must satisfy advertisement and or contract award.	Items could occur while also plan to existing contract after completion of health phase.	Unlikely	Negligible	LOW	Unlikely	Marginal	LOW	Project Manager
CA2	Subscription Type	Will contracts be awarded as best value, FFA, LFP?	Currently awarded as FFA large business. Most likely will not require extensive RFP and coordination.	Unlikely	Marginal	LOW	Unlikely	Marginal	LOW	TASS
CA3	Highway/Railway Specification Issues	Coordination with Caltrans and RR will be required to ensure all agency specifications and or contract requirements are met.	Designs may be required to be done at other agencies. Coordination will be required to ensure all specifications with other agencies will be required.	Unlikely	Marginal	MODERATE	Unlikely	Marginal	MODERATE	Project Manager
<b>TECHNICAL RISKS</b>										



# Project Delivery Team Members

- Project Management
- Planning
  - ▶ Plan Formulation
  - ▶ Environmental
  - ▶ Economics
- Engineering
  - ▶ Hydraulics
  - ▶ Hydrology
  - ▶ Geotechnical
  - ▶ Cost Engineering
  - ▶ Value Engineering
  - ▶ Civil Design
- Real Estate
- Office of Counsel
- PAO
- ATR Team
- Resource Agencies
  - ▶ U.S. Fish and Wildlife Service
  - ▶ Natural Resources Conservation Service (NRCS)
  - ▶ California Department of Fish and Game
- Sponsors
  - ▶ Stanislaus County
    - State of California Department of Water Resources
    - City of Newnam



# Orestimba Creek

## Project Implementation



# District Recommendation

- Release Final Report for State and Agency Review
- Approve Final Report
- Complete Chief's Report



# Discussion



# CITY OF NEWMAN



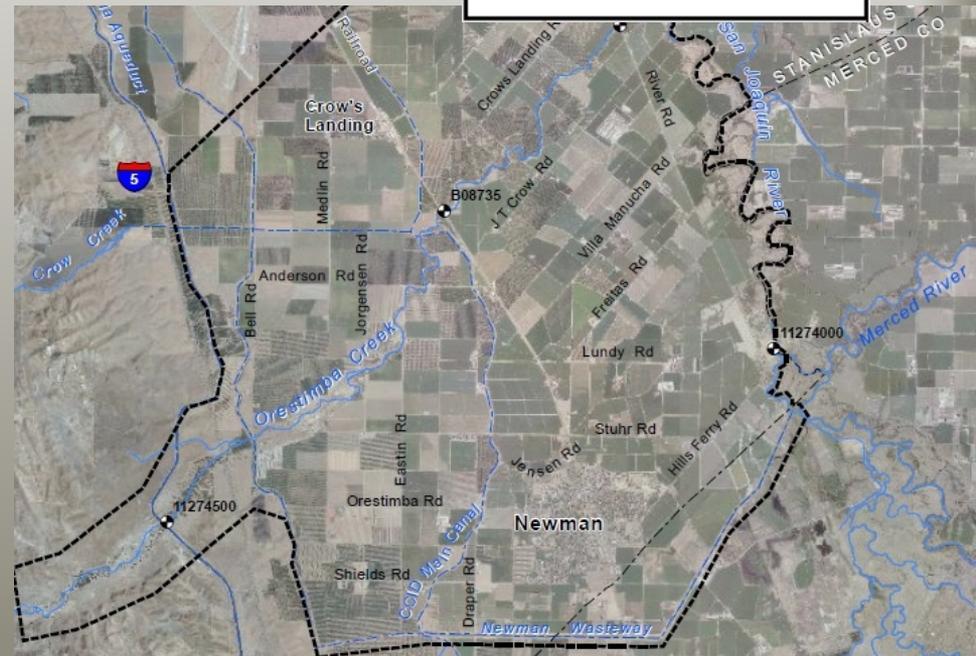
- *HONORING THE PAST,*
- *CELEBRATING THE PRESENT,*
- *BUILDING FOR THE FUTURE*

# 125 YEARS IN THE MAKING

- 1849 - Hills Ferry founded on San Joaquin River
- 1886 - Simon Newman donated 320 acres near the new Southern Pacific Rail Station for town site, 3 miles inland from Hills Ferry and river
- 1888 – Community of Newman founded – many residents moved from Hills Ferry.
- In 125 years, Newman has grown from its original 320 acres to its current 2 square miles and has retained its historical character and small town charm.

# LOCATION

- The City of Newman is located in western Stanislaus County in California's great Central Valley.
- With its origins at the former settlement of Hills Ferry, Newman has always been linked to its local river systems.



# A RAILROAD TOWN



# NEWMAN CIRCA 1912



# AERIAL VIEW CIRCA 1920'S



# DEMOGRAPHICS

- Population (2011 estimate) 10,306
  - Hispanic 61.6%
  - White 32.5%
  - Other 5.9%
  - Foreign Born 23%
  - Language other than English 51.7%
  - High School graduate or higher 75%
  - Bachelor's degree or higher 10.7%
  - Unemployment Rate (April 2013) 20.1%
- Housing
  - Housing Units 3,357
  - Homeownership 65%
  - Median Value of homes \$172,000
  - Median household income \$48,500
  - Population below poverty level 15.3%
- Land
  - City land in square miles 2.1 sq. miles

# RECENT FLOOD HISTORY

**1958:** Newman had its wettest rainy season since 1870, with a total rainfall of 20.54". By April, high waters had flooded parts of the City and countryside.

**1965:** The Newman Chamber of Commerce began trying to persuade the State Department of Water Resources of the need for a dam on upper Orestimba Creek as a protection from the costly floods of the past.

**1969:** Both the Orestimba Creek and San Joaquin River flooded and due to damages caused by the flood, the 80-year-old Orestimba Creek Bridge was removed and replaced.

**1995:** On Friday March 10<sup>th</sup>, significant flood waters reached Newman due to heavy rains which caused Orestimba Creek to flood and go over the Central California Irrigation District (CCID) Canal. Floodwaters in the form of a 2-3 foot high sheet began flowing towards the City at approximately 6:00 p.m. At one point, Newman was covered with a swath of flood waters from its northern boundary to its southern boundary. The water was deep enough that canoes could be paddled some down the streets of Newman.

**1998:** On Tuesday, February 3<sup>rd</sup>, flood waters from the creek rolled into Newman again. During an El Niño storm, with the ground already saturated from previous storms, the area experienced heavy rainfall resulting the Orestimba Creek and CCID canal overflowing. This was the second significant Newman flood in three years. The Orestimba Creek flows were slightly less than those of 1995 but still the third largest on record; only 1995 and 1958 flows were greater.

# 80 YEARS OF CREEK DATA (1930-2010)

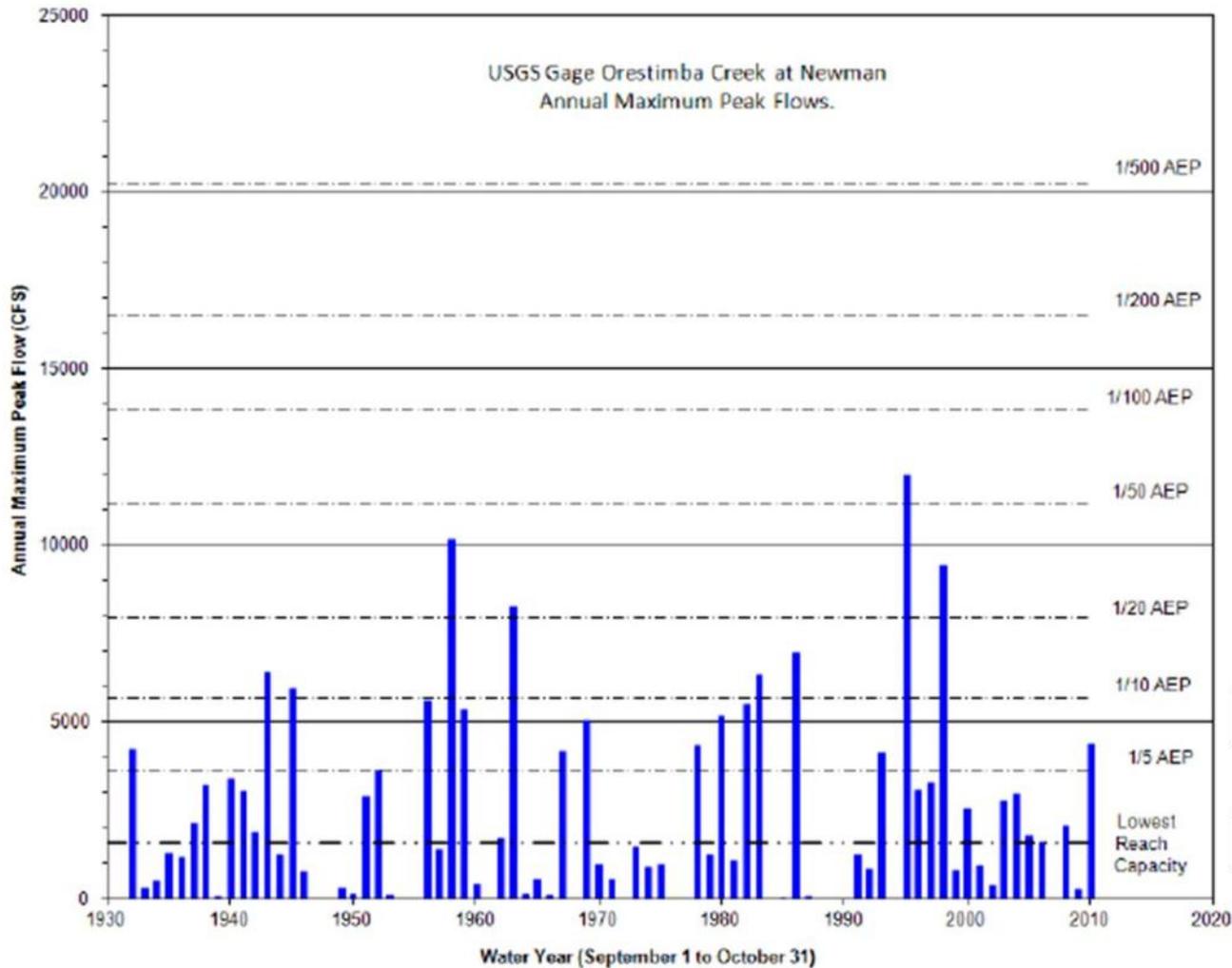
- The City of Newman has seen flood waters in town 12 times during this time period.
- Floods waters have toppled the banks of Orestimba Creek 33 times during this time period.



1920's & 1930's



# HISTORY OF ORESTIMBA CREEK



City of Newman Begins to Flood

Creek Capacity

# PAST FLOODS



1995



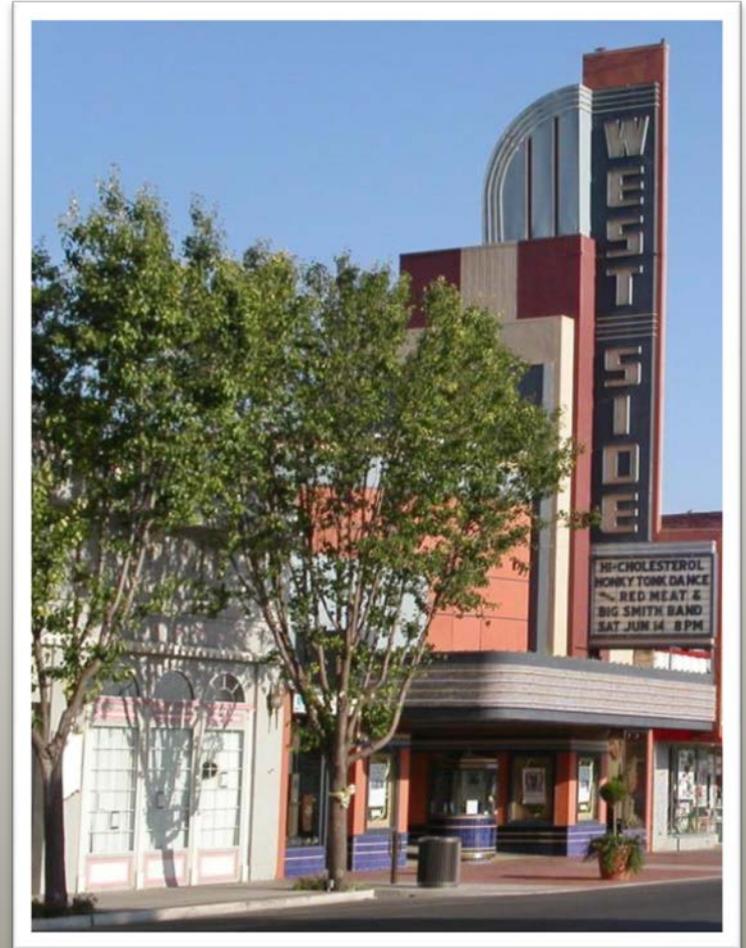
1998



# NEWMAN NOW



**I.O.O.F. Building (Newman City Hall)  
938 Fresno Street**



**West Side Theatre  
1329 Main Street**

# NEWMAN NOW



**Newman Downtown Plaza  
1328 Main Street**

# NEWMAN NOW



**Downtown Newman  
1300 Block of Main Street**



**St. George Building  
1342 Main Street**

# Orestimba Creek, West Stanislaus County, CA

## Flood Risk Management

### Feasibility Study

Civil Works Review Board Briefing

Joseph Calcara  
Director  
Programs Directorate  
South Pacific Division

29 May 2013



US Army Corps of Engineers  
**BUILDING STRONG**



# Briefing Objectives

- Rationale for support
- Quality Assurance Activities
- Expected Response to the Draft Report of Chief of Engineers
- Policy Issues
- Lessons Learned



# Rationale for SPD Support

- Report complies with all applicable policy & laws
- Recommended plan is technically sound, economically feasible and environmentally acceptable
- Recommended plan supported by the Sponsors, Congressional delegation, and the Public



# Rationale for SPD Support

- Recommended Plan is a significant positive step for improved flood risk management for City of Newman
- Recommended Plan based on the National Economic Development (NED) Plan
- Recommended Plan attains non-Federal sponsor objective for urbanized areas
- Division Engineer's Transmittal Letter signed 10 April 2013



# Rationale for SPD Support: USACE Campaign Plan

## ■ FY11:

- ▶ Objective 2a: Deliver Integrated and Sustainable Water Resource Solutions: Recommended plan provides positive FRM outputs
- ▶ Objective 2b: Collaborative Approaches: Collaboration with State of California and The Nature Conservancy
- ▶ Objective 4b: Communicate Strategically and Transparently: Public workshops; Regular briefings to Congressman Cardoza; and Frequent Vertical Team communication on study status



## ■ FY13-18:

- ▶ Objective 2a: Modernize the Civil Works Project Planning Process; Implement Planning Modernization: Legacy study executing during transformation applied critical thinking to uncertainty and level of detail required. Full Vertical Team Integration.



# Legal & Policy Compliance Certification

- Technical and Policy Compliance: ATR of total project cost baseline by NWW Cost- Engineering CX; completed 17 May 2013
- ATR compliance review of Decision Document by team comprised of members from CELRL, CESPL, CELRB and CENWS; completed 12 March 2013
- All ATR comments have been resolved
- All policy compliance issues have been resolved
- Legal certification of Integrated Final Feasibility Report/Environmental Assessment/Initial Study by SPK District Counsel completed 11 April 2013; SPD Division Counsel Legal Certification 11 April 2013.



# SPD Quality Assurance Activities

- Continuous involvement throughout development of Final Report
- Facilitated issue resolution and dialog among vertical and horizontal team throughout study process
- Review of Policy Guidance Memo: all issues adequately addressed
- IEPR Agency Responses
  - ▶ IEPR is complete but Agency review will be ongoing
  - ▶ A Review plan for PED will be submitted for MSC approval and will contain IEPR Type II Safety Assurance Review



# Expected Response to Draft Report of the Chief of Engineers

- Expectations are a favorable response to draft Chief's Report
- Recommendation supported by non-Federal partner
- Collaboration with resource agencies and stakeholders throughout study process
- Public support for timely project construction



# Policy Issues

- Alluvial Floodplain Modeling
  - ▶ Flood plain depth reference
  - ▶ Supported by ATR, Risk Assessment and IEPR reviews
  - ▶ Recognized by SPD as best practical method
  
- EO 11988 compliance
  - ▶ Risk based assessment
    - Residual risk
    - Interior drainage
    - Growth in the floodplain



# District Recommendation

- Release Final Report for State and Agency Review
- Approve Final Report
- Complete Chief's Report



# Discussion



# Orestimba Creek, West Stanislaus County, CA

## Flood Risk Management

### Feasibility Study

## AGENCY TECHNICAL REVIEW CONCERNS

Mr. Roger Setters, Louisville District  
*ATR Chairperson, Flood Risk  
Management Planning Center of  
Expertise*

29 May 2013



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# Agency Technical Review (ATR)

- Mr. Roger Setters, Louisville District  
*ATR Chairperson, Flood Risk Management  
Planning Center of Expertise*



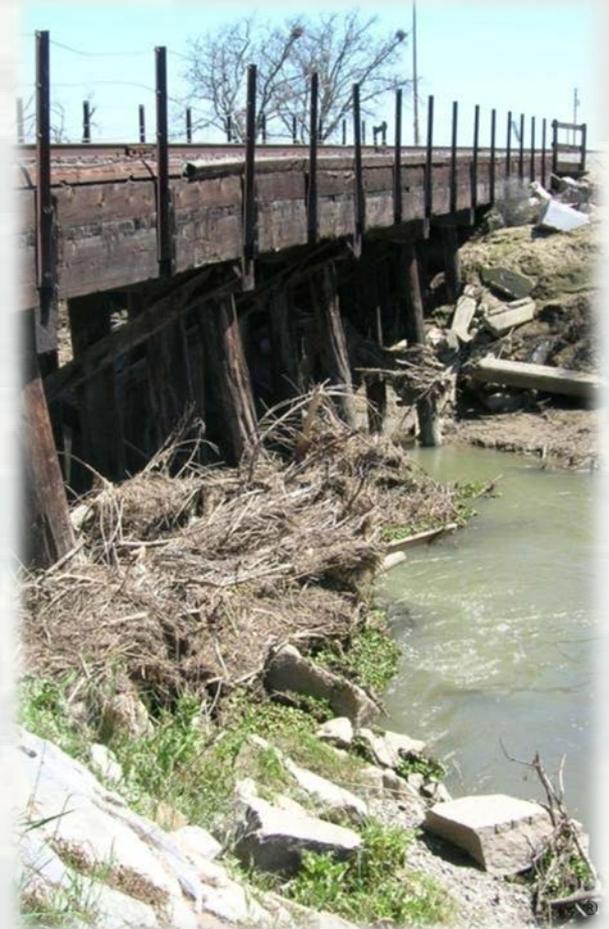
# Agency Technical Review

- Review led by LRL with reviewers from SPL, LRB and NWS.
- AFB submittal reviewed Feb-April 2012
- All comments resolved and closed
- Cost Estimates reviewed and certified by Cost Engineering Center of Expertise
- Cost estimate certified 17 May 2013
- Final ATR certified 12 March 2013



# ATR Issues

- Uncertainty in floodplain modeling due to alluvial fan
- Geotech analysis to support levee location
- Optimization of levee height
- Agricultural Damage Calculations
- Identification of Borrow sites
- Coordination with the Railroad
- Addressing induced Damages



## Independent External Peer Review (IEPR)

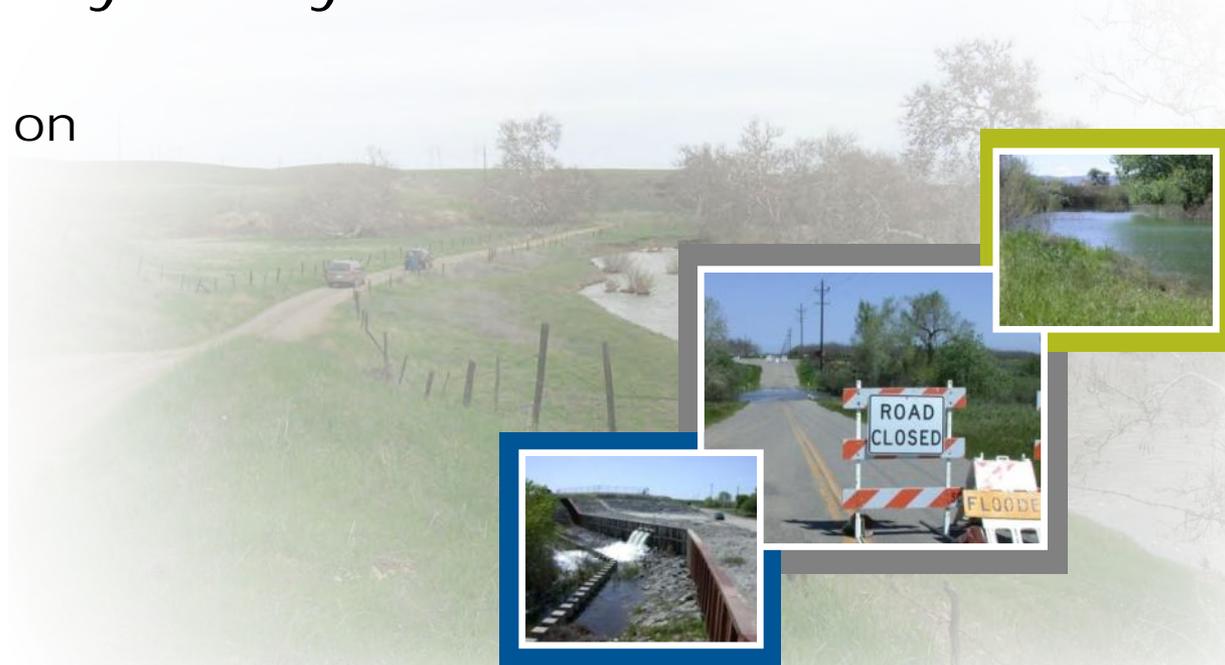
# Orestimba Creek – West Stanislaus County, California, Feasibility Study

Presented to the CWRB on  
May 29, 2013

**Battelle**

**Karen Johnson-Young, PMP**  
*Program Manager*

**Richard Uhler, PMP**  
*Project Manager*



# IEPR – Orestimba Creek

## Orestimba Creek Panel Members

## Panel Discipline

Brian Bledsoe, <i>P.E., Ph.D.</i> (Lead Panel Member)	Hydraulic and Hydrologic Engineering
William Rudolph, <i>P.E., G.E.</i>	Geotechnical Engineering
Steven Henderson, <i>M.S.</i>	Biology/Ecology
Larry Saunders, <i>M.S.</i>	Civil Works Planning & Economics

## The Orestimba Creek IEPR was conducted in September 2012

- The Panel reviewed the August 2012 version of the documents
- The Panel received the public comments after completion of the Final IEPR report.

# IEPR – Orestimba Creek

## Final IEPR Report submitted on October 10, 2012

### Results:

- 15 Final Panel Comments
  - 9 medium significance
  - 6 low significance

## Post-Final Panel Comments/Response results documented on November 6, 2012

### Results:

- PDT Evaluator Responses to Final Panel Comments
  - 15 concurs, 0 non-concurs
- Panel BackCheck Responses to the PDT Responses
  - 15 concurs, 0 non-concurs

# IEPR – Orestimba Creek

## Notable Panel Findings from the Final IEPR Report

- The economic analysis was thorough and complete.
- The analysis of potential impacts to infrastructure and quality of life, agricultural damages and benefits, and the assessment of social and regional economic development impacts were well presented.
- The use of geotechnical data from the initial western alignment introduced uncertainty regarding subsurface conditions.
- The documentation describing testing, validation, and prediction accuracy of the hydraulic model that was used to estimate project performance and benefits was not presented in quantitative terms.
- Baseline conditions of biological resources affected by project implementation were not clearly described and did not directly support the effects analysis and conclusions.
- The effects analysis, conclusions, and proposed mitigation for biological resources did not include the appropriate rationale and supporting evidence required for CEQA and NEPA review.

# IEPR – Orestimba Creek

## Conclusions

- All concerns and questions brought forward by the Panel were addressed by the PDT during the Comment/Response process

# Orestimba Creek, West Stanislaus County, CA

## Flood Risk Management

### Feasibility Study

## HQUSACE POLICY REVIEW CONCERNS

Andrea Walker  
Office of Water Project Review  
Planning and Policy Division

29 May 2013



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## HQUSACE Team Reviews:

- AFB was held in July 2012
- Draft report review February 2013
- Final Feasibility Report /EA: May 2013



# Policy Issues from AFB & Draft Report Reviews

- ❑ Peer Review
- ❑ Problem Identification
- ❑ Residual Risk
- ❑ **Plan Reliability/Uncertainty**
- ❑ MCACES Price Level/Discount Rate
- ❑ **Plan Formulation/Optimization**
- ❑ Standard Deviation of WSE
- ❑ Mitigation
- ❑ Environmental Assessment Impact Assessment
- ❑ **Real Estate Plan**
- ❑ HTRW
- ❑ **Cultural Resources**
- ❑ **Locally Preferred Plan and EO 11988**



# Significant Areas of Policy Concern:

- Plan Optimization
- Plan Uncertainty
- Plan Reliability
- Real Estate
- Cultural Resources
- Locally Preferred Plan and EO 11988



# Plan Optimization

- **CONCERN:** AFB documentation left significant questions to the optimization of project features.
- **REASON:** ER 1105-2-100 (2-4e) directs that USACE examine increments of plans or project features to determine their incremental costs and incremental benefits. Increments of plans continue to be added and evaluated as long as the incremental benefits exceed the incremental costs. It goes on to indicate that “This process is more efficient than trial and error, and is thus used in formulating and evaluating most Corps projects”.
- **RESOLUTION:** The final report includes an expanded discussion on plan formulation, incremental analysis.
- **RESOLUTION IMPACT:** Concern Resolved.



# Plan Uncertainty

- **CONCERN:** The AFB submittal raised significant concerns over the uncertainty of formulation results due to the limitations of the hydrodynamic / economic modeling in capturing the unique characteristics of the Orestimba floodplain.
- **REASON:** ER 1105-2-100 (E-19.j. and k.) indicate that the basis for existing damage is historic flooding events and projected damages should be based on observed relationships between damage, flood characteristics, and indicators used for measurement and projection.
- **RESOLUTION:** The final report includes a sample of empirical data and photographic evidence from the 1996 flood as well as a sensitivity analysis of the risk and uncertainty parameters in the model, which validate the outputs from the economics model used to identify the NED and LPP plans.
- **RESOLUTION IMPACT:** Concern Resolved.



# Plan Reliability

- **CONCERN:** The AFB document indicated potential for overtopping at the railroad embankment during infrequent flood events under the future with project condition if the closure structure does not operate as planned. The extent of residual flooding that might result was a concern. The railroad prefers raising the bed and tracks to the elevation of the levee protection to maximize reliability and minimize impacts to operations, however that is not economical.
- **REASON:** Principles and Guidelines (Paragraph 10) requires identification and description of risk and uncertainty, so that decisions can be made with knowledge of reliability of benefits and costs and the effectiveness of alternative plans.
- **RESOLUTION:** The final report includes an assessment of engineering measures to address this problem. The selected plan includes a closure structure consistent with the top of the levee. Further refinement is planned during PED.
- **RESOLUTION IMPACT:** Concern Resolved.



# Real Estate

- **CONCERN:** The Real Estate Plan provided in the AFB documentation was not complete, nor policy compliant. The original draft REP would have deferred a detailed REP until PED. The lack of information had the potential to delay construction and increase total project costs.
- **REASON:** ER 405-1-12 provides specific guidance as to the level of detail for feasibility-level Real Estate documentation. This was particularly so because real estate acquisition is also scheduled to occur during PED.
- **RESOLUTION:** The final report includes a detailed Real Estate plan that adequately conveys the LERRD requirements and estates to be utilized for project implementation. It was necessary to identify lands and facilities, and to make a determination on compensability to support the recommended plan.
- **RESOLUTION IMPACT:** Concern is resolved.



# Cultural Resources

- **CONCERN:** AFB documentation did not include adequate information to demonstrate Section 106 compliance, yet the document identified data recovery costs for PED/Construction.
- **REASON:** ER 1105-2-100 (C-4d5e) specifies that feasibility reports describe identified and predicted historic properties which could be impacted by the alternative plans, beginning with a literature and records review.
- **RESOLUTION:** The final report includes expanded discussion regarding the analysis conducted during the feasibility to identify the area of potential effect. The Recommended Plan includes a contingency for data recovery, should it be needed.
- **RESOLUTION IMPACT:** Concern is resolved.



# Locally Preferred Plan and EO 11988

- **CONCERN:** AFB documentation intended to recommend a (Locally Preferred) Plan that was larger than the NED Plan. The LPP addresses CA state law that requires urban areas to have a 200 year risk reduction plan that may increase the residual risk in the study area through induced development.
- **REASON:** ER 1105-2-100 (2-3.f) requires approval of the Assistant Secretary of the Army for Civil Works when recommending a LPP. The LPP needed to address whether the 200 year plan would induce growth in the floodplain.
- **RESOLUTION:** The District, in coordination with the Vertical Team, prepared a Waiver Request that included an evaluation on the potential for induce growth in the floodplain. On 2 January 2013, the Secretary approved the request and as such, the LPP is the recommended plan.
- **RESOLUTION IMPACT:** Concern is resolved.



# **HQUSACE POLICY COMPLIANCE REVIEW TEAM RECOMMENDATION**

**Approval to release the draft Chief's Report –  
Feasibility Report and EA for S&A Review.**



# Orestimba Creek, West Stanislaus County, CA Flood Risk Management Feasibility Study

## BOARD DISCUSSION AND VOTE

29 May 2013



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# Orestimba Creek, West Stanislaus County, CA Flood Risk Management Feasibility Study

## LESSON LEARNED

29 May 2013



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# District Lessons Learned

- OWPR provided detailed and insightful review that improved the overall quality and integrity of the project recommendations.
- Vertical coordination and integration essential; Regional teaming worked well; early engagement of vertical team.
- Time is most precious resource -- time for plan formulation vs. ITR/EPR vs. NEPA review vs. for upward reporting
- Vertical coordination and integration essential
- Extensive regional agency and public participation instrumental in identifying immediate needs and building public support
- Collaboration with Stakeholders is essential
- Developing rationale to support cost effective projects is a challenge
- Active public involvement by the City and County improved the responsiveness of the decision document recommendations.
- External Peer Review Process still evolving (cost, process, product)



# Division Lessons Learned

- + Planning process eliminated controversial & environmentally damaging alternative, focused on life safety (national award)
- + Legacy study executing during transformation (evolving policy and standards); early critical thinking SMART planning
- + Use of risk informed decision making
  - Cost & Schedule Risk analysis to account for cost uncertainties
  - Defining risk thresholds and acceptance; Cultural Resources and Real Estate
  
- △ Risk informed decision making must scrutinize level of baseline information and analysis required
- △ Risk informed determination of appropriate delegation for LPP approval authority
- △ Earlier alignment of comment scope and path to resolution

