

Upper San Joaquin River Regional Flood Management Plan

Regional Flood Protection
Now and in the Future

Workshop 1: Regional
Setting and Flood Hazard

Wednesday June 26th
Lower San Joaquin Levee District
11704 Henry Miller Ave
Dos Palos, CA 93620



Agenda

- Introduction
- Regional Setting and Flood Hazard
 - Overview
 - Questions/Comments
- Emergency Response Overview and Needs
- RFMP Updates
- Project List Format
- Website Overview

Workshop Protocols

Protocols

- Use common conversational courtesy
- Humor is welcome
- Be comfortable
- Spelling doesn't count
- Electronics courtesy
- Avoid editorials

RFMP Overview

- Purpose:
 - **Document existing flood risk conditions and management**
 - Identify flood problems and issues
 - Identify potential actions/projects
 - Develop prioritization methodology and criteria
 - Prioritize and integrate potential projects/actions to develop multi-benefit alternatives
 - Prepare financial plan with costs and financial strategies

Regional Setting and Flood Hazard



Introduction

- Background
- Purpose
- Organization
- Limitation of information sources
- Study Area

Regional Setting

Encompasses the areas of the SJ systems protected by SPFC facilities from Gravelly Ford to the Merced River, including the LSJLD, MSG, and Madera County FCWCA systems.



Flood Hazards

Types of flooding occur due to variations in:

- Weather and climate
- Hydrologic features
- Composition of soil and bedrock
- Type and density of vegetation
- Patterns of land use
- Age and condition of flood management infrastructure



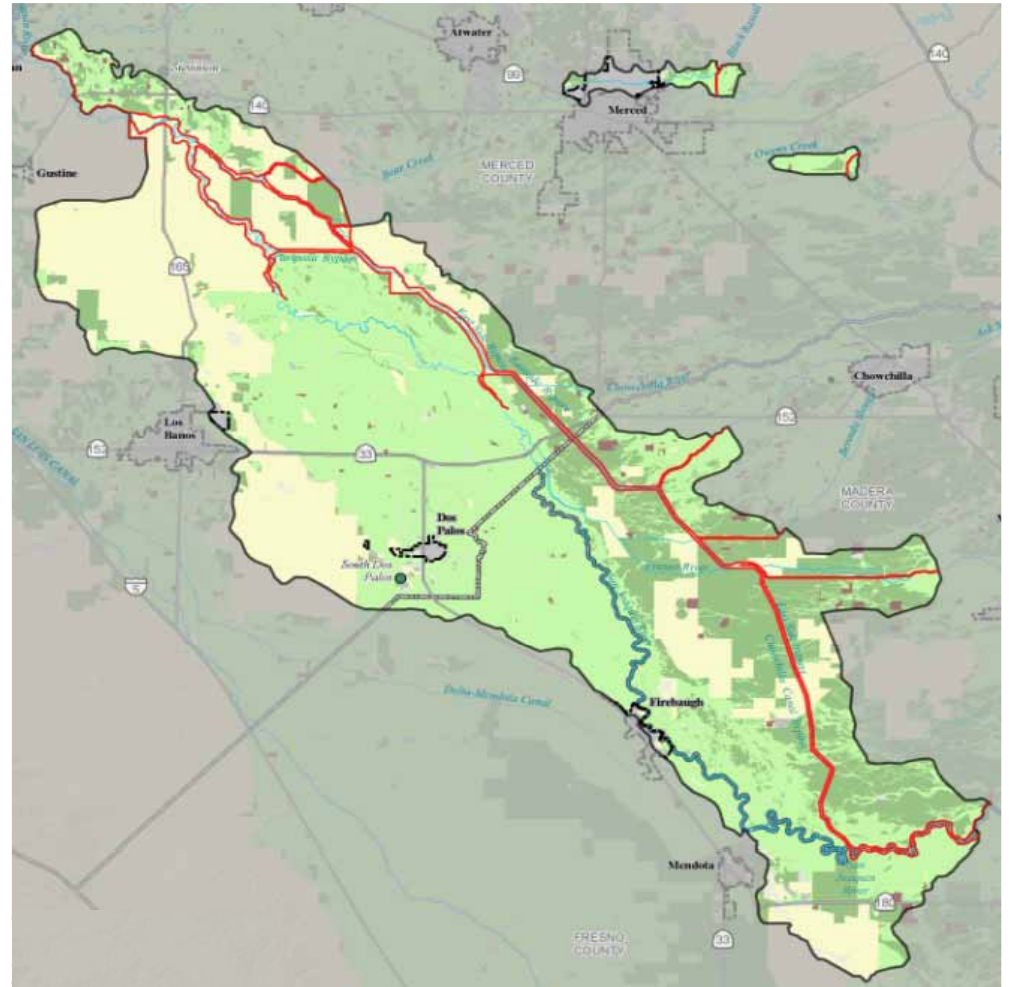
Types of Flooding

- Flash flooding
(1998 Valentine's Day Storm)
- Slow rise flooding
(2006 Flooding)
- Debris flow flooding
(2006 Flooding)
- Alluvial fan flooding
(1982-1983 flood)
- Stormwater flooding
(2002 Merced)
- Engineered structure failure flooding
(1997 Flooding)



Land Use Characteristics

- Primarily rural
- Dominated by agriculture (95% of land use)
- Land use tied to agriculture and water systems
- Urban development:
 - Firebaugh
 - Dos Palos
 - Los Banos
 - Merced
- Wildlife areas - upper and lower region (3 % of land use)

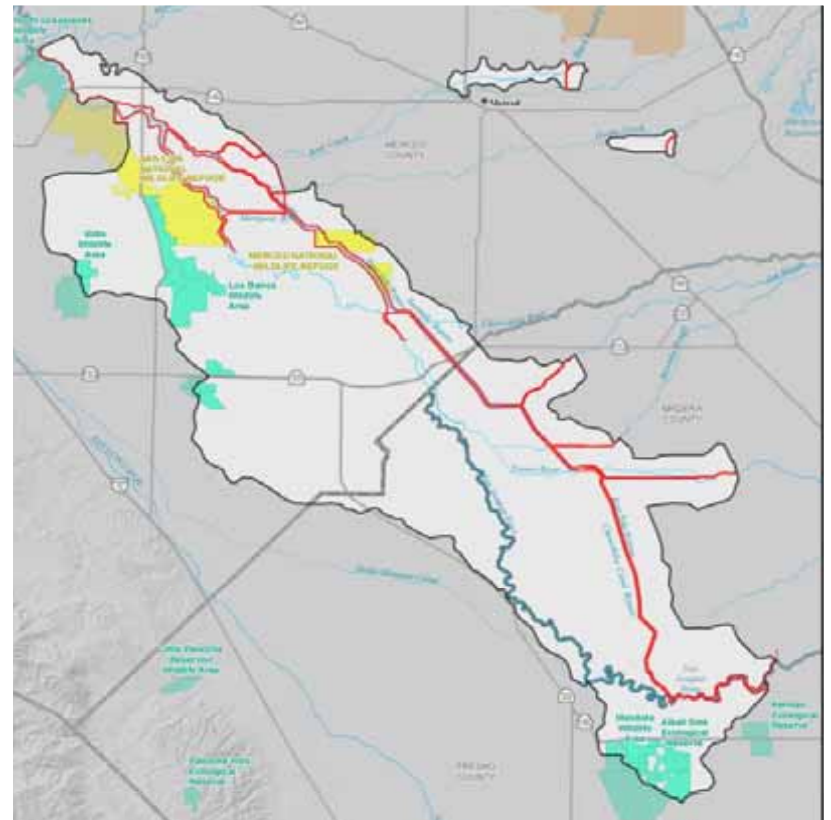


Agricultural Land

- 27 % of California agricultural production – Fresno, Madera, and Merced Counties (\$43.5B)
- Nuts, row crops, and livestock primary products
- 95 % of land in region used for farming of this:
 - 25 % Grazing
 - 30 % Prime farmland
 - 20 % Farmland of Statewide Significance
 - 18 % Unique farmland

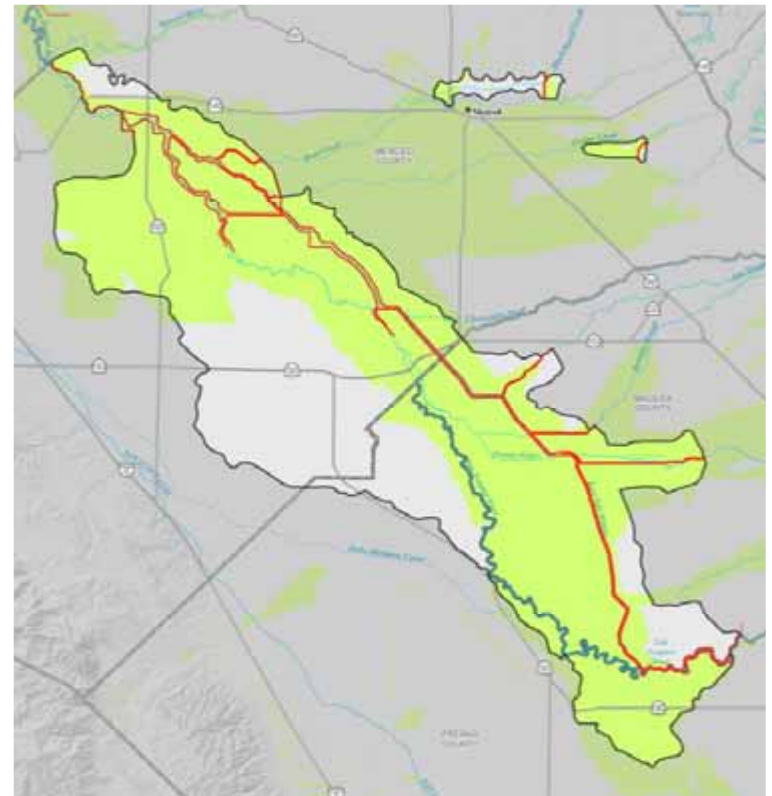
Managed Wildlife Areas

- California Department of Fish and Wildlife:
 - Los Banos Wildlife Area
 - Volta Wildlife Area
 - Mendota Wildlife Area
 - Alkali Sink Ecological Reserve
- United States Fish and Wildlife Service:
 - San Luis National Wildlife Refuge
 - Merced National Wildlife Refuge
- California State Parks
 - Great Valley Grasslands State Park



Flood Risk

- **Hazard** (what causes the harm)
- **Performance** (how the flood management system reacts to the harm)
- **Exposure** (who and what can be harmed)
- **Vulnerability** (how susceptible are people and property to the harm)
- **Consequence** (what are the costs in lives lost and dollars)



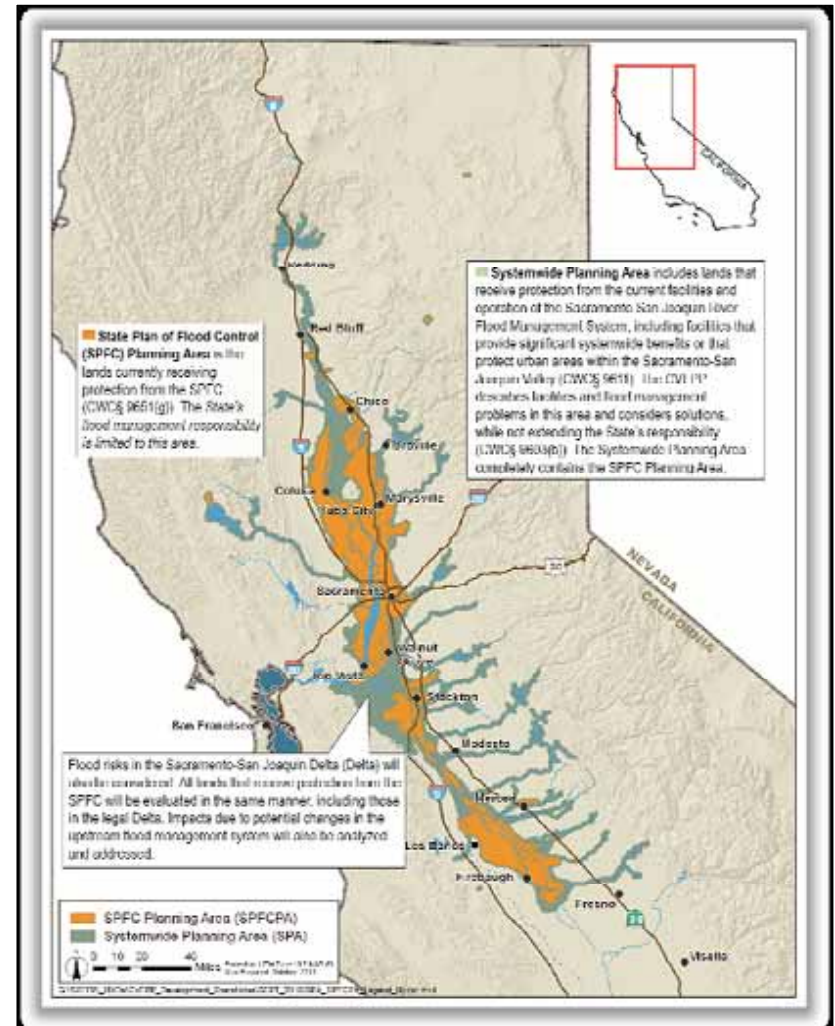
Local Flood Risk

- 70 % of land in 100-year floodplain
- 43 % of population in 100-year floodplain
- 60 % of Firebaugh in 100-year floodplain
(only half of city in region)
- Estimated annual damage for flooding is:
 - Approximately \$427 M for structures
 - Approximately \$13 M for agriculture

Governance

Major flood control facilities are maintained by:

- **Local Agencies**
 - Local Maintaining Agencies
 - Cities and Counties
- **Federal/State Resource and Regulatory Agencies**
 - USACE
 - Reclamation
 - DWR
 - CVFPB



Local Maintaining Agencies SPFC

- Lower San Joaquin Levee District (LSJLD)
- Merced Stream Group
- Madera County Flood Control Water Conservation Agency
- Other agencies operation effecting USJR region
 - KRCD - Responsible for Kings River flows into Mendota Pool
 - CCID - Responsible for operations of Mendota Dam

Nongovernmental Organizations and Other Stakeholders

Organizations representing agricultural, environmental, and industry interests in the USJR Region



American Rivers
Rivers Connect Us



Pertinent Recent Flood Management Legislation

- Assembly Bill (AB) 162, Senate Bill (SB) 5, AB 70, and AB 156
- CVFPP was officially adopted in June 2012
 - Required updates to General Plans
 - Flood Emergency Plans
 - Requirements for zoning code amendments
- SB 5 requires:
 - 200-year level of protection for areas with greater than 10,000 residents



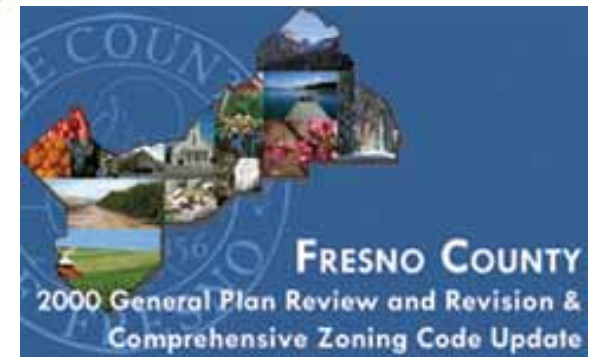
General Plans

General Plans are a statement of policies, setting forth objectives, principles, standards, and plan proposals, for the future physical development of the city or county

Local plans include:

- Agricultural elements
- Wetland resource elements
- Elements related to natural resources and flood management

Plans from 3 Counties and Cities of Merced and Firebaugh used



Natural Resources

- Merced County has the largest block of pristine, high-density, vernal pool, and grassland habitat
- Land use and aquatic species are impacted by:
 - Altered flow regimes with substantial flow reductions
 - Reductions in the frequency, magnitude, and duration of floodplain inundation
 - Isolation of floodplains from the river channel by channelization and levee construction
 - Changes in the supply and transport of sediment
 - Habitat fragmentation and blockage of migration pathways by physical barriers
 - Poor water quality
 - Water temperature constraints

Flood Management

Lower San Joaquin Levee District Facilities

- Levees:
 - 191 miles of levees along San Joaquin River, Ash Slough, Berenda Slough, Fresno River, Bear Creek, and Bypasses
- Facilities:
 - Chowchilla Bifurcation Structure
 - Eastside Bypass Control Structure
 - Sand Slough Control Structure
 - Mariposa Bypass Structure
 - Fresno Slough
 - Chowchilla Canal Bypass
 - Eastside Bypass
 - Mariposa Bypass



Flood Management

Merced Streams Group Facilities

- 6 miles of levees along Black Rascal and Owens Creek
- Owens Creek Siphon Structure
- Black Rascal Creek Structure



Flood Management

Madera County Flood Control and Water Conservation Agency

- 25 miles of levees on Fresno River; Berenda and Ash Slough
- Fresno River Diversion Weir

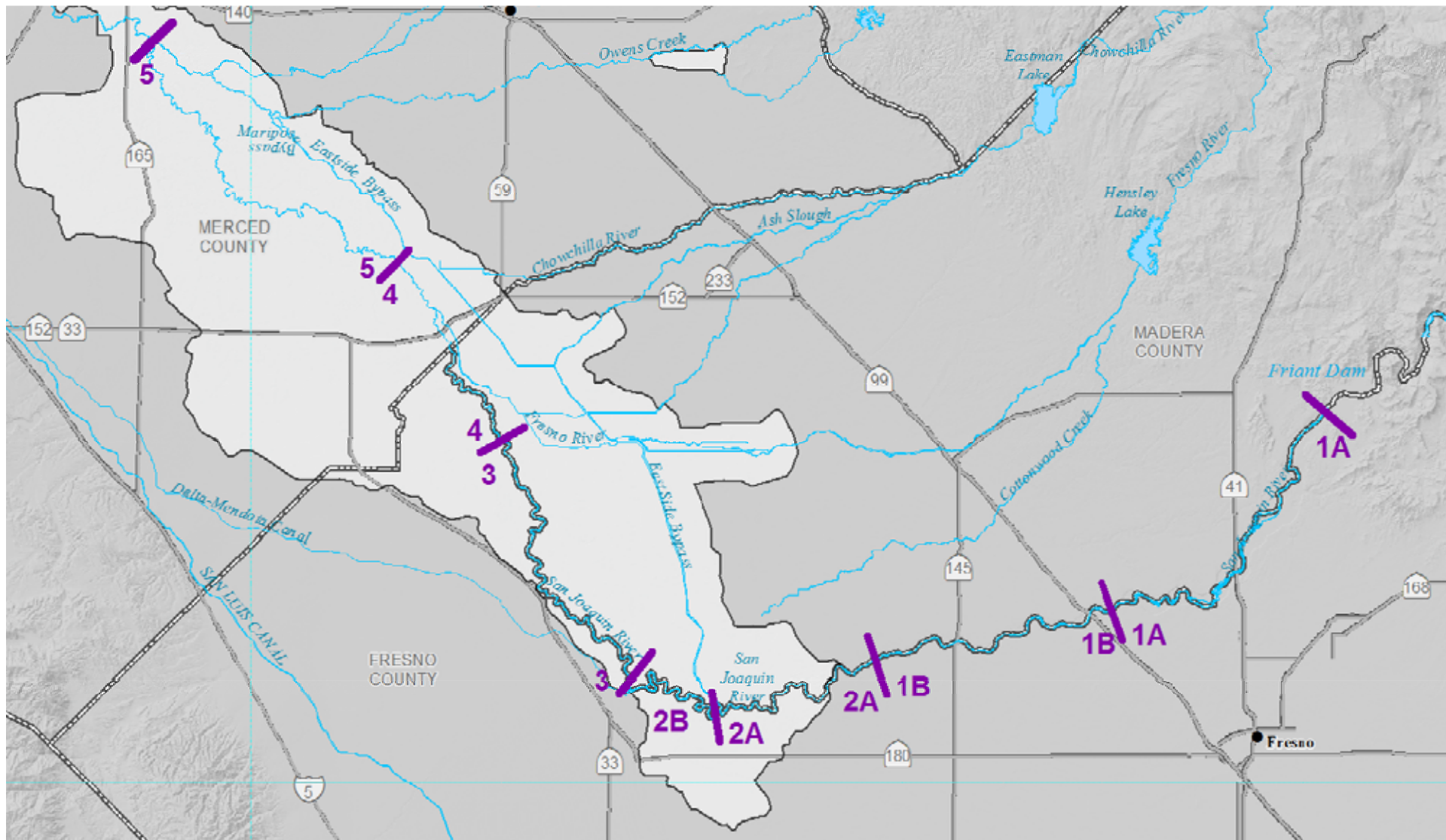


Flood Management Other Facilities

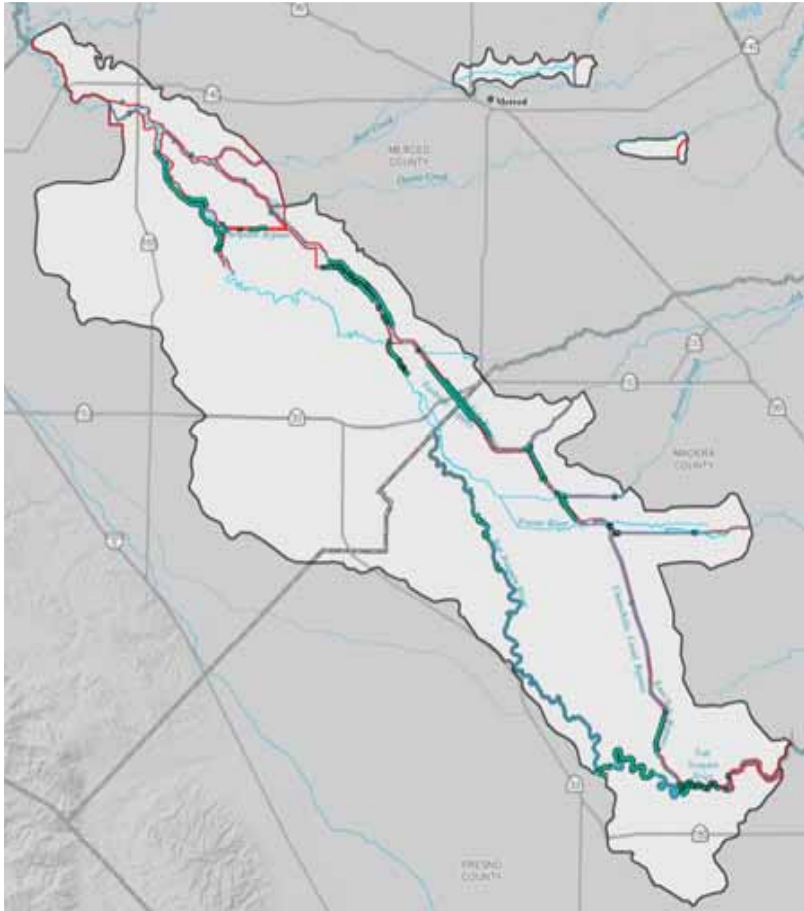
- Friant Dam/ Millerton Lake (Reclamation)
- James Weir (KRCD)
- Mendota Pool (CCID)



Map of San Joaquin River Reaches



Flood Management Issues

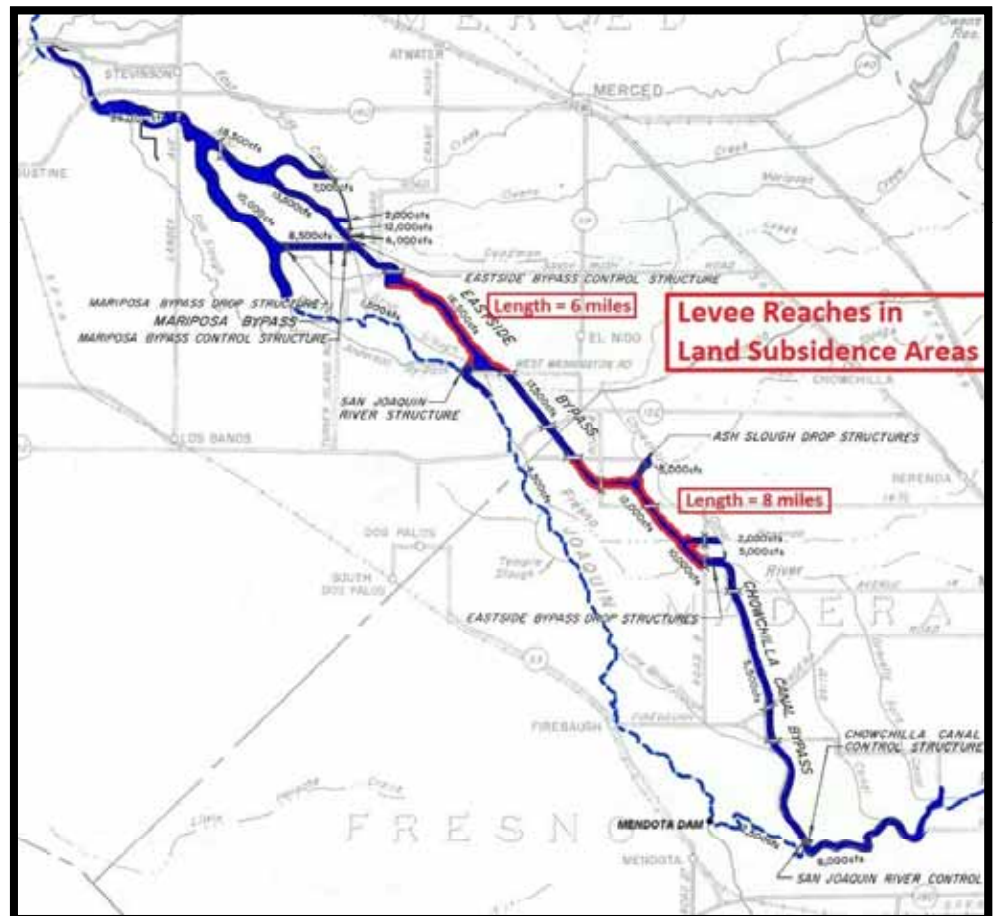


Major issues:

- Subsidence
- Insufficient or aging infrastructure
- Seepage
- Operations and maintenance
- Sedimentation and vegetation encroachment
- Complex system operations
- Funding

Subsidence Problem

- Two areas within Eastside Bypass:
 - 8 miles Berenda to Ash Slough
 - 6 miles near Washington Avenue Merced County
- Impacts water diversions, system operations, and flood conveyance capacity



Subsidence Problem

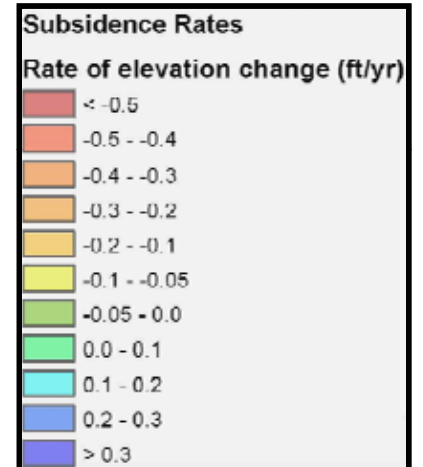
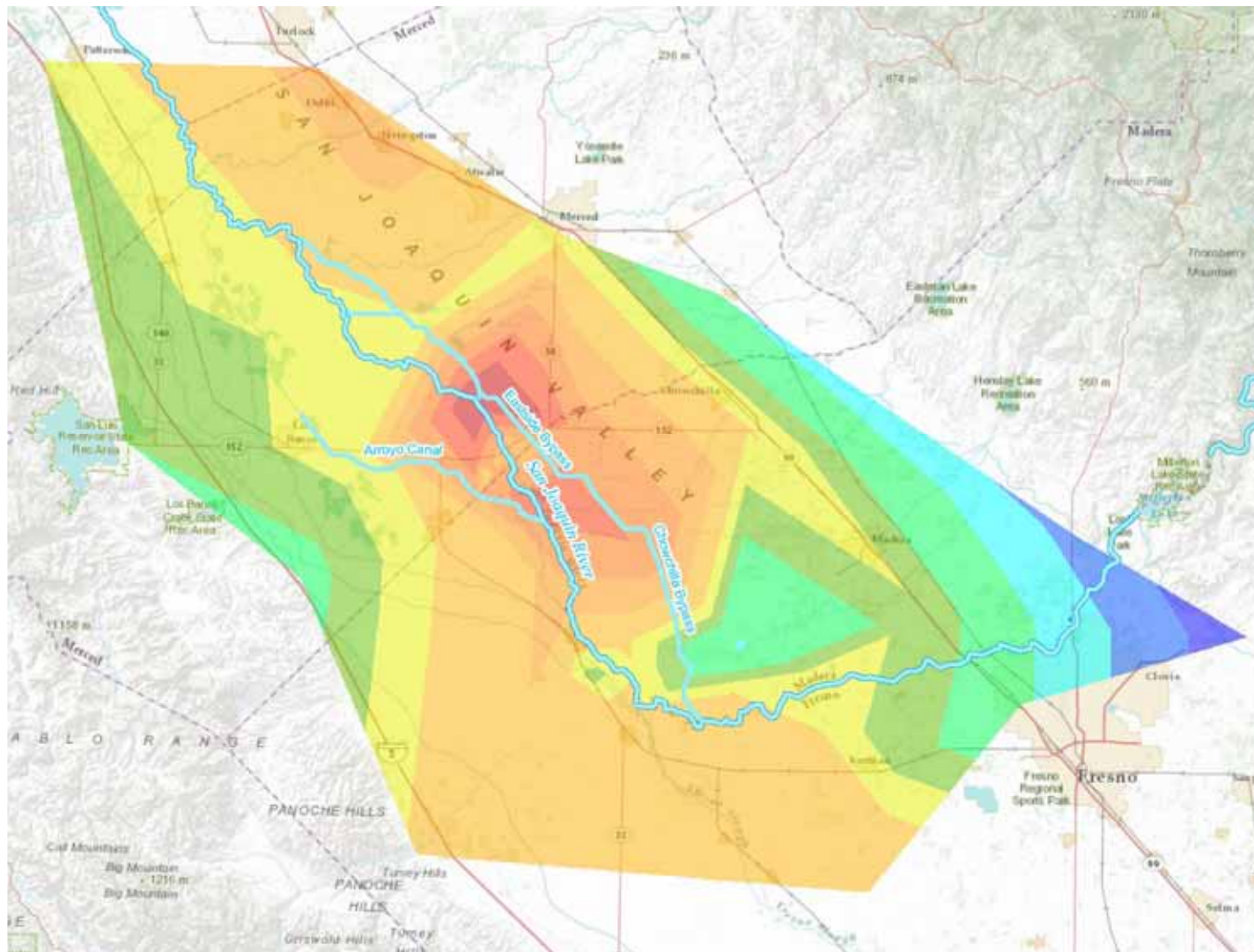
- Subsidence rate more than 0.75 ft/yr in Red Top Area
- Deep well pumping, below the Corcoran Clay, is the likely cause of the subsidence
 - Pumping increased since 2005
 - Corcoran Clay is prevalent in the Red Top Area
 - Irrigation demand greater than groundwater replenishment



Gas well (above) and water well (below) in Red Top Area



Map of Subsidence Rates



RECLAMATION
Managing Water in the West
Reclamation Subsidence
NGS Stations
December 2011 to July 2012

Subsidence rates calculated by comparing July 2012 survey values at NGS Stations with December 2011 survey values. Additional points that were surveyed between May 2012 and July 2012 were used along the Arroyo and Temple Santa Rita Canals to supplement the data around point 375 USE.

Insufficient or Aging Infrastructure

- Aging infrastructure – 40-55 years old
- Native materials used for levees – sand
- Slope instability issues
 - Firebaugh (Reach 3)
 - Reach 2A
 - Smaller issues throughout
- Improvements needed to protect City of Merced



Seepage

- Levees built of local materials (sand)
- High groundwater in some areas
- Seepage issues in Reaches 2, 3, 4A, and 5
- Flows from SJRRP will exacerbate seepage without required mitigation



Operations and Maintenance

- LMAs responsible for:
 - Coordinating operations
 - Vegetation removal
 - Maintaining facilities, channels, and levees
- Issues:
 - SJRRP flows increase O&M costs
 - Permits difficult to obtain
 - O&M may not be performed on privately owned levees (Reaches 2B, 3, and 4)



Sedimentation and Vegetation Encroachment

- Reduces capacities
- Deposition of soil and other debris
- Reduces slope stability
- Sedimentation occurs at facilities
- Vegetation encroachment in Reaches 1, 3, and 4B



Complex System Operations

- Requires coordination among:
 - Local agencies
 - State agencies
 - Federal agencies
 - Water districts
 - Private land owners
- Competing water needs:
 - Water supply
 - Irrigation
 - Flood management
- Upstream releases from Friant and Kings River are controlled by others
- Portions of LSJLD system are manually operated



Funding Issues

- Agencies funded by property tax assessments but facing:
 - Disappearing tax base
 - Rising O&M costs
 - Increasing SJRRP flows
- Reduced Federal funding
- Inadequate funding for agency responsibilities



Findings

- Region is rural and agricultural
- Many reaches have significantly reduced flow capacities below published design values
- Levees constructed using local materials are subject to seepage and stability problems
- Significant increases in recent subsidence rates along the bypass compromise flood flow capacity and operations
- Facilities reaching the end of expected service life and need upgrades to meet current criteria
- Complex flood operations require coordination between multiple agencies

Findings

- Portions of the system are still manually operated
- Sedimentation and vegetation encroachment have reduced capacities
- San Joaquin River Restoration Program poses special challenges for flood operations and management
- Upstream storage is needed above City of Merced
- Invasive species are found in channels
- O&M difficult due to funding issues and permitting requirements
- Conversion of agricultural land to wildlife areas reducing tax base

Questions/Comments

Remember this section of the RFMP sets the background for project needs

- Missing background material?
- Are systems described correctly?
- Any issues or system deficiencies missed?

Comments due **July 3rd** on draft sections

Emergency Response Overview and Needs



Who Is Required to Have an ER Plan

- Counties: Fresno, Madera, and Merced
- Cities: Firebaugh, Dos Palos, and Merced
- LMAs: LSJLD, Madera County FCWCA, and Merced Streams Group

What is in a Emergency Response Plan

- Operation information (normal and flood)
- Organization, responsibilities, and authorities
- EM Procedures, protocols, and coordination
- Communications (public alerts methods)
- Levee patrol (flood monitoring)
- Finance and logistics (material stockpiles, mutual aid, EM centers)
- Process and training (plan updates and exercises)
- Flood fight procedures
- Evacuation plans
- Recovery (flood water removal operations)

Existing Emergency Management Information

- Merced and Madera Emergency Operation Plan
- Fresno and Madera Hazard Mitigation Plan
- UC-Merced and City of Merced EOP
- City of Merced Local Hazard Mitigation Plan
- Analysis of Community Risk for City of Merced
- County and City General Plans

Need information by July 3rd

RFMP Updates



Workshop Schedule

RFMP Workshops (10)

- Kick-off Workshop 05/08/13
- Workshop 1 (Atlas, Flood Hazard, and Regional Setting) 06/26/13
- Workshop 2 (Land Use and Environment) 08/21/13
- Workshop 3 (Emergency Response Planning and Enhanced O&M) 09/18/13
- Workshop 4 (Proposed Improvements) 10/16/13
- Workshop 5 (Regional Priorities - Selection Criteria) 01/15/14
- Workshop 6 (Regional Priorities) 03/19/14
- Workshop 7 (Finance Plan) 04/16/14
- Workshop 8 (Draft RFMP) 06/18/14
- Workshop 9 (Final) 08/20/14

Upcoming Activities

- Interviews with LMAs and upstream agencies about ER and O&M
- Contact wildlife area managers for additional information (O&M, land use, and environment)
- Need all pertinent environmental documents and information by July 10th
- Draft project list compilation

Preview of Project List Format



Project List

- List prepopulated with information from IRWMPs and SFMP
- Comments and additional projects needed by August 1
- How to add a project:
 - Download table from website
 - Fill-in project information
 - Provide best contact for additional information
 - Provide all back-up documents or link to existing document
 - Email information to Erika Powell
- Team will follow-up with questions

Types of Information Needed

- Project name, location, description, and cost (year)
- Project partners and financing information
- Project timeframe and status
- Source of information
- Background documents
- Contact information for source of project
- IWM project (Y/N) and type

Project List Draft Format

County	Hydrologic Region	Project Partners		Project Name	Project Description	Unique Project Characteristics/Differentiators	Project Status				Project Cost		Project Time-frame		Cost-sharing								Is this an IWM Project? (Yes/No)	Type of IWM Project						Location		Source of Estimate	Background Document Titles	Notes		
		Primary	Lead Agency				Partner Agency(s)	Planning	Design	Construction	O&M	Amount (\$)	Estimate Base Year	Short-term (1-5 years)	Long-term (>5 years)	Local Agency Name	Amount	State Agency Name	Amount	Federal Agency Name	Amount	Private Entity		Amount	Agriculture	Ecosystem	Recreation	Transportation	Water Quality	Water Supply	Groundwater Recharge				Latitude	Longitude
Merced	San Joaquin River	Merced Streams Group (County of Merced, City of Merced, Merced)	Black Rascal and Bear Creek Flood Control Project		This project integrates two previously proposed projects - the Black Rascal Creek Flood Control Project and the Bear Creek Siphon Project.						\$ 1,000,000																							Merced IRWMP http://www.rmwater.com/merced/pr_master.php?m=review&frm_id=1&id=1000000	Contact: Merced Streams Group (County of Merced, City of Merced, Merced)	
Merced	San Joaquin River	Merced Streams Group (County of Merced, City of Merced, Merced)	Margosa Reservoir Enlargement and		Margosa Reservoir was constructed in the early 1950's as an element of the Merced Streams Group Project authorized by Congress.						\$ 15,000,000																						Merced IRWMP http://www.rmwater.com/merced/pr_master.php?m=review&frm_id=1&id=1000000	Organization: Merced Streams Group (County of Merced, City of Merced, Merced)		
Merced	San Joaquin River	Merced Streams Group (County of Merced, City of Merced, Merced)	Owens Reservoir Enlargement and		Owens Reservoir was constructed in the early 1950's as an element of the Merced Streams Group Project authorized by Congress.						\$ 15,000,000																						Merced IRWMP http://www.rmwater.com/merced/pr_master.php?m=review&frm_id=1&id=1000000	Organization: Merced Streams Group (County of Merced, City of Merced, Merced)		
Merced	San Joaquin River	Merquin County Water District	Windmill Ditch Drainage		Installation of approximately 4,500 feet of pipeline to transport drainage water to an existing						\$ 600,000																						Merced IRWMP http://www.rmwater.com/merced/pr_master.php?m=review&frm_id=1&id=1000000	Contact: Merquin County Water District		
Merced	San Joaquin River	Merced County	Black Rascal Creek Detention Basin		Based upon initial review of existing information, reducing flood flows in Black Rascal Creek at						\$ 30,000,000																						Merced IRWMP http://www.rmwater.com/merced/pr_master.php?m=review&frm_id=1&id=1000000	Contact: PBI Name: Jesse Patchett		
Merced	San Joaquin River	Merced County	Divert Flood Flows to Agricultural		Diverting flood flows out of Bear Creek, east of Merced onto nearby agricultural land could decrease						\$ 20,000,000																						Merced IRWMP http://www.rmwater.com/merced/pr_master.php?m=review&frm_id=1&id=1000000	Contact: PBI Name: Jesse Patchett		
Merced	San Joaquin River	Merced County	Ecosystem Restoration Along		An alternative, similar to routing flood flows onto agricultural lands, would be to acquire riparian areas						\$ 20,000,000																						Merced IRWMP http://www.rmwater.com/merced/pr_master.php?m=review&frm_id=1&id=1000000	Contact: PBI Name: Jesse Patchett		
Merced	San Joaquin River	Merced County	Bear Creek Diversion Channel		Based upon review of existing information, a diversion channel located upstream of Merced County						\$ 100,000																							Merced IRWMP http://www.rmwater.com/merced/pr_master.php?m=review&frm_id=1&id=1000000	Contact: PBI Name: Jesse Patchett	
Merced	San Joaquin River	Merced County	Channel Dredging and/or		Streams, creeks, and rivers within the Merced Region are periodically choked with vegetation causing						\$ 1,000,000																							Merced IRWMP http://www.rmwater.com/merced/pr_master.php?m=review&frm_id=1&id=1000000	Contact: PBI Name: Jesse Patchett	
Merced	San Joaquin River	Merced County	Construct Levees or Channel		Based on a review of the available information, Bear Creek, Black Rascal Creek (South Diversion),						\$ 100,000,000																							Merced IRWMP http://www.rmwater.com/merced/pr_master.php?m=review&frm_id=1&id=1000000	Contact: PBI Name: Jesse Patchett	
Merced	San Joaquin River	Merced County	Modify Land Use Designations		Merced County currently imposes development restrictions for Special Flood Hazard Areas						N/A																							Merced IRWMP http://www.rmwater.com/merced/pr_master.php?m=review&frm_id=1&id=1000000	Contact: PBI Name: Jesse Patchett	
Merced	San Joaquin River	Merced County	Develop Emergency Response Plans		The objective of an emergency response plan is to prevent loss of life, reduce physical damage to						\$ 100,000																							Merced IRWMP http://www.rmwater.com/merced/pr_master.php?m=review&frm_id=1&id=1000000	Contact: PBI Name: Jesse Patchett	
Merced	San Joaquin River	Merced County	Construct Ring Levees Around Flood-prone		A ring levee is a levee that completely encircles an area subject to inundation from all						\$ 10,000,000																							Merced IRWMP http://www.rmwater.com/merced/pr_master.php?m=review&frm_id=1&id=1000000	Contact: PBI Name: Jesse Patchett	
Merced	San Joaquin River	RMC	Merced County Flood Control District		In the past decade, established flood control agencies have had great success in mitigating flood						\$ 100,000																								Merced IRWMP http://www.rmwater.com/merced/pr_master.php?m=review&frm_id=1&id=1000000	Contact: RMC Name: Jesse Patchett
Merced	San Joaquin River	Merced County	Increase Public Awareness of Flooding		Increasing the public's knowledge about flood risk is another non-structural alternative for mitigating						\$ 50,000																								Merced IRWMP http://www.rmwater.com/merced/pr_master.php?m=review&frm_id=1&id=1000000	Contact: PBI Name: Jesse Patchett
Merced	San Joaquin River	Merced County	Merced Region Programmatic Environmental		Flood management continues to be increasingly important and difficult at the local level.						\$ 300,000																								Merced IRWMP http://www.rmwater.com/merced/pr_master.php?m=review&frm_id=1&id=1000000	Contact: Merced County
Merced	San Joaquin River	Merced Irrigation District	Bear Creek Siphon and Diversion		In 1965, the State Department of Water Resources (DWR) constructed the BOCDS at the						\$ 80,000																								Merced IRWMP http://www.rmwater.com/merced/pr_master.php?m=review&frm_id=1&id=1000000	Contact: Organization: Stevinson Water District and
Merced	San Joaquin River	Merced Streams Group (County of Merced, City of Merced, Merced)	Black Rascal Creek Flood Control Project		Construction of a regulating reservoir on the Black Rascal Creek watershed. Project location is						\$ 32,800,759																							Merced IRWMP http://www.rmwater.com/merced/pr_master.php?m=review&frm_id=1&id=1000000	Contact: Organization: Merced Streams Group (County of Merced, City of Merced, Merced)	
Merced	San Joaquin River	Merced Streams Group (County of Merced, City of Merced, Merced)	Bear Reservoir Enlargement and		Bear Reservoir was constructed in the early 1950's as an element of the Merced Streams Group Project						\$ 20,000,000																							Merced IRWMP http://www.rmwater.com/merced/pr_master.php?m=review&frm_id=1&id=1000000	Contact: Organization: Merced Streams Group (County of Merced, City of Merced, Merced)	
Merced	San Joaquin River	Merquin County Water District	McCullough Road Drainage Project		The project would install approximately 5,000 feet of pipeline to replace the use of						\$ 750,000																							Merced IRWMP http://www.rmwater.com/merced/pr_master.php?m=review&frm_id=1&id=1000000	Contact: Organization: Merquin County Water District	
Merced	San Joaquin River	City of Merced	Update Stormwater Sump		A project to update the design standards for stormwater for this region.						\$ 80,000																								Merced IRWMP http://www.rmwater.com/merced/pr_master.php?m=review&frm_id=1&id=1000000	Contact: Organization: City of Merced
Merced	San Joaquin River	City of Merced	Wetland Creek Water Quality and Storm		This project is to minimize the discharges from storm water runoff into the local creeks and						\$ 100,000																								Merced IRWMP http://www.rmwater.com/merced/pr_master.php?m=review&frm_id=1&id=1000000	Contact: Organization: City of Merced
Merced	San Joaquin River	City of Los Banos	Los Banos Creek Conjunctive Use Project		Project is to utilize the stream bed and abandoned gravel mining pits along the creek, west of the City of																														Westside IRWP	Document compiled by: San Luis & Delta-Mendota Water
Fresno	San Joaquin River	Westlands Water District	Westlands Surface Storage Reservoir		Westlands Water District (WWD) is planning the construction of a surface storage reservoir project						\$ 622,700																								Westside IRWP	Document compiled by: San Luis & Delta-Mendota Water

Website:

<http://www.usjrflood.org>





Homepage

- About
- Search
- Quick links to:
 - Calendar
 - Documents
 - Next meeting date
- Link to pages

Upper San Joaquin River Regional Flood Management Plan

[About](#) [Meetings](#) [Board Meetings](#) [Documents](#) [Participating Agencies](#) [Resources](#) [Contact](#)



ABOUT US

The San Joaquin River Flood Control Project Agency is a joint powers authority formed to lead the Regional Flood Management Plan (RFMP) and represent local interests. The Agency is composed of the Lower San Joaquin Levee District and the San Joaquin River Exchange Contractors Water Authority, with auditor/controller services provided by Merced County.

LATEST UPDATE

A meeting is planned for Wednesday, June 26, 2013. Please check above for more information.

[View the Meetings Calendar](#)

If you'd like to be notified of future meetings and opportunities to review project documents, please [Contact Us](#) and provide your name and email address.

RECENT DOCUMENTS

- [Project Management](#)
- [Upper San Joaquin River Region Boundary Map](#)
- [Guidelines for Directed Funding to Prepare Regional Flood Management Plans](#)

SEARCH

Can't find what you're looking for?
Search the entire site here:

[Administrator Login](#)

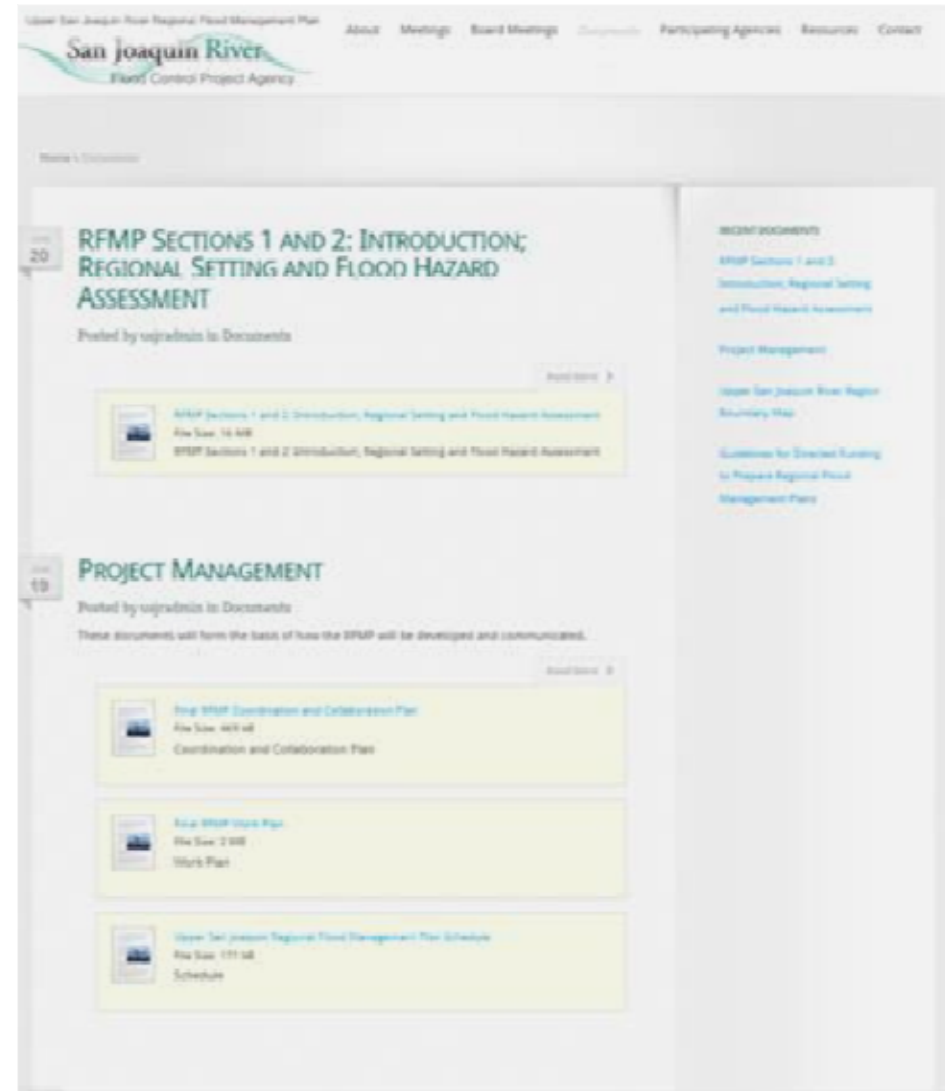
Meetings

- Meeting information by date
 - Kick-off Meeting
 - Workshop 1: Regional Setting and Flood Hazard

The screenshot displays the website for the San Joaquin River Flood Control Project Agency. The header includes the agency name and a navigation menu with links for About, Meetings, Board Meetings, Documents, Participating Agencies, Resources, and Contact. The main content area features a post titled "WORKSHOP 1- REGIONAL SETTING AND FLOOD HAZARD MANAGEMENT MEETING" dated June 19, 2013. The post text provides details: "Posted by usjradmin in Meetings", "Upper San Joaquin River Regional Flood Management Plan Date: Wednesday, June 26, 2013 Time: 10am - Noon Location: Lower San Joaquin Levee District, 11704 Henry Miller Avenue, Dos Palos CA", and "For more information call: Reggie Hill (209) 387-4545". Below the text are two file attachments: "USJRRFMP_Flyer_062613" (166 kB) and "Regional Setting and Flood Hazard Assessment" (16 MB). A "Read More >" link is also present. To the right, a sidebar titled "RECENT DOCUMENTS" lists links for "Project Management", "Upper San Joaquin River Region Boundary Map", and "Guidelines for Directed Funding to Prepare Regional Flood Management Plans". At the bottom of the screenshot, a second post titled "KICKOFF MEETING" is partially visible, also dated June 19 and posted by usjradmin.

Documents

- RFMP Sections 1 and 2: Introduction; Regional Setting and Flood Hazard
- Project Management
 - C&C Plan
 - Workplan
 - Schedule
- USJR Region Boundary Map
- Guidelines for RFMP



Other Pages

- About – Background information on RFMP
- Participating Issues – List of agencies participating with links to agency website
- Links & Resources – Web- links for resources and documents
- Contact – List of Contact and Contact form
- Board Meetings – agenda and minutes

**For more information please contact:
Reggie Hill (209) 387-4545**

website: <http://www.usjrflood.org>

