Appendix G: Proposed System Improvements – Backup Information Worksheets

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Upper San Joaquin River Regional Flood Management Plan System Improvement Bear Creek Diversion Structure		
System Improvement Background	Abbreviated System Improvement Name	Bear_Crk_Div_Structure
	System Improvement Name	Bear Creek Diversion Structure
	System Improvement ID	1
	Lead Agency	Lower San Joaquin Levee District
	Contact Person	Reggie Hill, Bob Kelly
	Partner Agency	Stevinson Water District
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	N
	Does the system improvement have redirected impacts (Yes/No)	Y
	Existing Supporting Documents / References	Stevinson Water District Flood Control Project memos
	County	Merced
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Enlarge the BCSDS by building additional bays.
	System Improvement Description	In 1963, the state Department of Water Resources (DWR) constructed the Bear Creek siphon and diversion structure (BCSDS) at the intersection of Bear Creek and the East Side Canal. The facility was intended to channel Bear Creek flows over the East Side Canal Siphon during the winter and to divert these flows into the East Side Canal during the irrigation season. The invert of the structure is higher than the upstream channel which constrains flood flows, causes upstream ponding and migration of flood flows around the system improvement levee unit, and results in landside flooding. The proposed system improvement will enlarge the BCSDS by building additional bays to extend the structure to the south. These bays would be used at times of unusual storm runoff when properties, both agricultural and residential, are threatened by rising flood waters in Bear Creek. Design would incorporate fish passage elements. The Bear Creek Diversion Structure system improvement could also be developed in conjunction with proposed improvements on the Sno-Bird Unit of the San Luis Nat'l Wildlife Refuge Complex, as described in projects 67 and 68 on this list, to enhance the ability of this project to provide multiple benefits
	Problem Addressed by System Improvement	Landside and upstream flooding during storm events
	System Improvement Benefits	Reduces flood risk to agricultural and residential areas; Fish passage
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	X
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	X
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Bear Creek Diversion Structure				
System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		260,000.00
	Base Year of Cost			
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
		$ 80,000.00		$ 80,000.00
				$ -
				$ -
	Subtotal	$ 80,000.00	$ -	$ 80,000.00
	Construction			$ -
		$ 118,000.00		$ 118,000.00
				$ -
				$ -
				$ -
	Subtotal	$ 118,000.00	$ -	$ 118,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 42,000.00		
	Property Acquisition			
	Environmental Documentation (Permitting)	$ 20,000.00		
	Legal Services			
	Subtotal	$ 62,000.00	$ -	$ 62,000.00
	Grand Total	$ 260,000.00	$ -	$ 260,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	X		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.254870		
	Longitude	-120.718270		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Bear Creek Diversion Structure		
Coordination with other System Improvements	System Improvement 1	68
	System Improvement 2	49
	System Improvement 3	2, 3
	Other System Improvements	11, 60, 61, 62, 63, 64, 65
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	X
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Levee Breaches Unit 1, LM 9.90 ; Unit 5, LM 0.25		
System Improvement Background	Abbreviated System Improvement Name	Levee_Breaches_LSJLD
	System Improvement Name	Levee Breaches Unit 1, LM 9.90 ; Unit 5, LM 0.25
	System Improvement ID	2
	Lead Agency	Lower San Joaquin Levee District
	Contact Person	Reggie Hill, Bob Kelly
	Partner Agency	Stevinson Water District
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Merced
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Construct flash boards to close existing levee breaches and lower infrastructure invert elevations.
	System Improvement Description	Levee breaches at Unit 1, levee mile (LM) 9.90 and Unit 5, LM 0.25 are the result of previous flood flow actions. Recent USACE inspection rated the levee units unacceptable to project standards (potential PL84-99). It is proposed to add structures with removable flash boards that would contain flood water in the river channel and permit landside flood water to drain into the river by removing the flash boards.
	Problem Addressed by System Improvement	Flooding of property
	System Improvement Benefits	Reduces flood risk to agricultural and residential areas; Potential PL84-99 compliance issue
Permits (X=Required)	CVFPB	X
	404	
	408	X
	USFWS	
	RWQCB	
	ESA	
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	X
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	X
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Levee Breaches Unit 1, LM 9.90 ; Unit 5, LM 0.25				
System Improvement Status	Conceptual			
	Planning			
	Permitting / Preliminary Design	X		
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		535,000.00
	Base Year of Cost			
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
		$ 60,000.00		$ 60,000.00
				$ -
				$ -
	Subtotal	$ 60,000.00	$ -	$ 60,000.00
	Construction			$ -
		$ 290,000.00		$ 290,000.00
				$ -
				$ -
				$ -
	Subtotal	$ 290,000.00	$ -	$ 290,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 145,000.00		
	Property Acquisition			
	Environmental Documentation (Permitting)	$ 40,000.00		
	Legal Services			
	Subtotal	$ 185,000.00	$ -	$ 185,000.00
	Grand Total	$ 535,000.00	$ -	$ 535,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	X		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	Unit 1: 37.291533, Unit 5: 37.276634		
	Longitude	Unit 1: -120.839352 Unit 5: -120.819753		
	Shape	Line		

Upper San Joaquin River Regional Flood Management Plan System Improvement Levee Breaches Unit 1, LM 9.90 ; Unit 5, LM 0.25		
Coordination with other System Improvements	System Improvement 1	1, 3
	System Improvement 2	11
	System Improvement 3	49
	Other System Improvements	60, 61, 62, 63, 64, 65, 68
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	
	Redundancy	X
	Resourcefulness	
	Rapidity	X
System Improvement Groups	Rural	X
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Raise Part of Left Bank Levee Unit 6		
System Improvement Background	Abbreviated System Improvement Name	Raise_Left_Bank_Levee_6
	System Improvement Name	Raise Part of Left Bank Levee Unit 6
	System Improvement ID	3
	Lead Agency	Lower San Joaquin Levee District
	Contact Person	Reggie Hill
	Partner Agency	
	Identified State Partner Name	DWR
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	Y
	Existing Supporting Documents / References	
	County	Merced
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Long-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Raise right bank of levee in Unit 6
	System Improvement Description	Portions of the left bank levee Unit 6 which are opposite right bank levee Units 5, 7, 8, 9 & 10, were constructed as much as 2 feet lower than the right bank levees and need to be raised to provide the design freeboard. System improvement would require modeling of the system in the area to set levee elevation. Project levee was never accepted by LSJLD (governance issue)
	Problem Addressed by System Improvement	Reduced system capacity
	System Improvement Benefits	Reduces flood risk to agricultural and residential areas
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	X
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	X
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	
System Improvement Status	Conceptual	
	Planning	X
	Permitting / Preliminary Design	
	Final Design / Fully Funded	
	Construction	
	O&M	

Upper San Joaquin River Regional Flood Management Plan System Improvement Raise Part of Left Bank Levee Unit 6				
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement	X		
Cost	System Improvement Costs ($)	$		4,250,000.00
	Base Year of Cost			
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
	Design, geotechnical & compaction testing	$ 250,000.00		$ 250,000.00
				$ -
				$ -
	Subtotal	$ 250,000.00	$ -	$ 250,000.00
	Construction			$ -
		$ 2,500,000.00		$ 2,500,000.00
				$ -
				$ -
				$ -
	Subtotal	$ 2,500,000.00	$ -	$ 2,500,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 1,250,000.00		
	Property Acquisition			
	Environmental Documentation (Permitting)	$ 250,000.00		
	Legal Services			
	Subtotal	$ 1,500,000.00	$ -	$ 1,500,000.00
	Grand Total	$ 4,250,000.00	$ -	$ 4,250,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	X		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.240009		
	Longitude	-120.745174		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Raise Part of Left Bank Levee Unit 6		
Coordination with other System Improvements	System Improvement 1	1, 2, 11
	System Improvement 2	49
	System Improvement 3	60, 61, 62, 63, 64, 65, 68
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	
	Long-term System Improvement	X
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	X
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Modernize Electrical Controls, Level Sensors & SCADA for Control Structures		
System Improvement Background	Abbreviated System Improvement Name	Modernize_Electrical_Controls
	System Improvement Name	Modernize Electrical Controls, Level Sensors & SCADA for Control Structures
	System Improvement ID	4
	Lead Agency	Lower San Joaquin Levee District
	Contact Person	Reggie Hill
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Madera, Merced
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural/Residential
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Install SCADA System
	System Improvement Description	The electrical controls and water level sensors for the primary control structures were installed in the 1960's with the original system improvement. They are antiquated and should be modernized for improved reliability and integration with a new SCADA system. System improvement location is at Chowchilla Canal Bypass Control Structure, San Joaquin River Control Structure, Eastside Bypass Control Structure, and Mariposa Bypass Control Structure.
	Problem Addressed by System Improvement	Aging infrastructure
	System Improvement Benefits	O&M and emergency management activities modernization
Permits (X=Required)	CVFPB	X
	404	
	408	
	USFWS	
	RWQCB	
	ESA	
	Local	
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	X
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	X
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Modernize Electrical Controls, Level Sensors & SCADA for Control Structures				
System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design	X		
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		1,885,000.00
	Base Year of Cost			
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
		$ 90,000.00		$ 90,000.00
				$ -
				$ -
	Subtotal	$ 90,000.00	$ -	$ 90,000.00
	Construction			$ -
		$ 1,178,000.00		$ 1,178,000.00
				$ -
				$ -
				$ -
	Subtotal	$ 1,178,000.00	$ -	$ 1,178,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 592,000.00		
	Property Acquisition			
	Environmental Documentation (Permitting)	$ 25,000.00		
	Legal Services			
	Subtotal	$ 617,000.00	$ -	$ 617,000.00
	Grand Total	$ 1,885,000.00	$ -	$ 1,885,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	X		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	Chowchilla Site 1: 36.773870 Eastside Site 2: 36.975626 Mariposa Site 3: 37.204421		
	Longitude	Chowchilla Site 1: -120.285232 Eastside Site 2: -120.381976 Mariposa Site 3: -120.697345		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Modernize Electrical Controls, Level Sensors & SCADA for Control Structures		
Coordination with other System Improvements	System Improvement 1	14
	System Improvement 2	
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	X
	Rapidity	X
System Improvement Groups	Rural	X
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Enlarge Chowchilla Canal Bypass Control Structure		
System Improvement Background	Abbreviated System Improvement Name	Enlarge_Chowchilla_CntrlSt
	System Improvement Name	Enlarge Chowchilla Canal Bypass Control Structure
	System Improvement ID	5
	Lead Agency	Lower San Joaquin Levee District
	Contact Person	Reggie Hill
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	Y
	Existing Supporting Documents / References	
	County	Madera
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Long-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural/Residential
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	Enlarge Chowchilla Canal Bypass Control Structure.
	System Improvement Description	The control structure at the head waters of the Chowchilla Canal Bypass should be enlarged with two additional gate bays to minimize upstream seepage and levee failure. This will increase the emergency flow capacity and operational flexibility of the structure. The bypass channel may need to be evaluated for increased channel capacity. System improvement will require geotechnical analyses and would include fish passage.
	Problem Addressed by System Improvement	Reduce upstream backup of flow
	System Improvement Benefits	Reduce seepage and levee failure potential
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	
	RWQCB	
	ESA	
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	X
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	X
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	X
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Enlarge Chowchilla Canal Bypass Control Structure				
System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design	X		
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem	X		
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		3,380,000.00
	Base Year of Cost			
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
		$ 210,000.00		$ 210,000.00
				$ -
				$ -
	Subtotal	$ 210,000.00	$ -	$ 210,000.00
	Construction			$ -
		$ 2,110,000.00		$ 2,110,000.00
				$ -
				$ -
				$ -
	Subtotal	$ 2,110,000.00	$ -	$ 2,110,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 890,000.00		
	Property Acquisition			
	Environmental Documentation (Permitting)	$ 170,000.00		
	Legal Services			
	Subtotal	$ 1,060,000.00	$ -	$ 1,060,000.00
	Grand Total	$ 3,380,000.00	$ -	$ 3,380,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	X		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	36.773997		
	Longitude	-120.284445		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Enlarge Chowchilla Canal Bypass Control Structure		
Coordination with other System Improvements	System Improvement 1	
	System Improvement 2	
	System Improvement 3	
	Other System Improvements	5A, 6, 54, 56, 57
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	
	Long-term System Improvement	X
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	X
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Rehabilitation of San Joaquin River Control Structure		
System Improvement Background	Abbreviated System Improvement Name	Rehab_SJR_CntrSt
	System Improvement Name	Rehabilitation of San Joaquin River Control Structure
	System Improvement ID	5A
	Lead Agency	Lower San Joaquin Levee District
	Contact Person	Reggie Hill
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Madera
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural/Residential
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Enlarge San Joaquin River Control Structure
	System Improvement Description	Settlement has occurred at the San Joaquin River Control Structure, resulting in the wing walls separating from the structure. The wing wall backfill could be excavated and voids grouted under the spread footings, or spread footings could be added or enlarged to minimize further settlement. Depending on phasing and/or timing, the design could be coordinated with the SJRRP 2B project to allow incorporation of fish passage and/or habitat restoration elements within the project footprint. However, it is also possible that any improvements to the SJR Control Structure resulting from implementation of 2B would occur as a separate project
	Problem Addressed by System Improvement	Improves asset condition issues; Accumulation of settlement at bifurcation structure
	System Improvement Benefits	Structural Deficiencies; Minimize further settlement at bifurcation structure
Permits (X=Required)	CVFPB	
	404	X
	408	X
	USFWS	
	RWQCB	
	ESA	
	Local	
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	X
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	X
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Rehabilitation of San Joaquin River Control Structure				
System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design	X		
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		340,000.00
	Base Year of Cost			
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$	$ -	$ -
	Design			$ -
		$ 20,000.00		$ 20,000.00
				$ -
				$ -
	Subtotal	$ 20,000.00	$ -	$ 20,000.00
	Construction			$ -
		$ 200,000.00		$ 200,000.00
				$ -
				$ -
				$ -
	Subtotal	$ 200,000.00	$ -	$ 200,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 100,000.00		
	Property Acquisition			
	Environmental Documentation (Permitting)	$ 20,000.00		
	Legal Services			
	Subtotal	$ 120,000.00	$ -	$ 120,000.00
	Grand Total	$ 340,000.00	$ -	$ 340,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	X		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	36.773997		
	Longitude	-120.284445		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Rehabilitation of San Joaquin River Control Structure		
Coordination with other System Improvements	System Improvement 1	
	System Improvement 2	
	System Improvement 3	
	Other System Improvements	5, 6, 54, 56, 57
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	
	Resourcefulness	
	Rapidity	X
System Improvement Groups	Rural	X
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Sediment Removal Chowchilla Canal Bypass Control Structure		
System Improvement Background	Abbreviated System Improvement Name	Sediment_Removal_Chow_Struct
	System Improvement Name	Sediment Removal Chowchilla Canal Bypass Control Structure
	System Improvement ID	6
	Lead Agency	Lower San Joaquin Levee District
	Contact Person	Reggie Hill
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Fresno
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural/Residential
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Sediment removal.
	System Improvement Description	Remove sediment upstream from the Chowchilla Canal Bypass Control Structure. As part of this project, opportunities for riparian and wetland habitat enhancements will be considered.
	Problem Addressed by System Improvement	Sediment removal
	System Improvement Benefits	Return to design capacity
Permits (X=Required)	CVFPB	X
	404	X
	408	
	USFWS	X
	RWQCB	
	ESA	X
	Local	
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	X
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Sediment Removal Chowchilla Canal Bypass Control Structure				
System Improvement Status	Conceptual			
	Planning			
	Permitting / Preliminary Design	X		
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		175,000.00
	Base Year of Cost			
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
		$ 20,000.00		$ 20,000.00
				$ -
				$ -
	Subtotal	$ 20,000.00	$ -	$ 20,000.00
	Construction			$ -
		$ 70,000.00		$ 70,000.00
				$ -
				$ -
				$ -
	Subtotal	$ 70,000.00	$ -	$ 70,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 35,000.00		
	Property Acquisition			
	Environmental Documentation (Permitting)	$ 50,000.00		
	Legal Services			
	Subtotal	$ 85,000.00	$ -	$ 85,000.00
	Grand Total	$ 175,000.00	$ -	$ 175,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts			
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	36.775179		
	Longitude	-120.285312		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Sediment Removal Chowchilla Canal Bypass Control Structure		
Coordination with other System Improvements	System Improvement 1	
	System Improvement 2	
	System Improvement 3	Might be able to bundle a 408 permit
	Other System Improvements	5, 5A, 54, 56, 57
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	X
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Levee Improvements in Subsidence Area		
System Improvement Background	Abbreviated System Improvement Name	Levee_Imprv_Subsidence_Area
	System Improvement Name	Levee Improvements in Subsidence Area
	System Improvement ID	7
	Lead Agency	Lower San Joaquin Levee District
	Contact Person	Reggie Hill
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Fresno, Madera, Merced
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural/Residential
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Improve levees
	System Improvement Description	Improve Eastside Bypass levees in areas of subsidence. As part of this project, opportunities for riparian and wetland habitat enhancements will be considered.
	Problem Addressed by System Improvement	Subsidence, aging infrastructure, reduced system capacity
	System Improvement Benefits	Structural Deficiencies
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	
Structural Deficiencies	Subsidence	X
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	X
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	X
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Levee Improvements in Subsidence Area				
System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		-
	Base Year of Cost			
	Source of Estimate			
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ -	$ -	$ -
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	N/A		
Basin Wide Document	USJR Systemwide Impacts			
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.033066		
	Longitude	-120.443168		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Levee Improvements in Subsidence Area		
Coordination with other System Improvements	System Improvement 1	8, 13
	System Improvement 2	47, 48, 49
	System Improvement 3	50, 52, 53
	Other System Improvements	66, 67, 68
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	
	Rapidity	X
System Improvement Groups	Rural	X
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Sediment Removal in the Eastside Bypass		
System Improvement Background	Abbreviated System Improvement Name	Sed_Removal_Eastside_Bypass
	System Improvement Name	Sediment Removal in the Eastside Bypass
	System Improvement ID	8
	Lead Agency	Lower San Joaquin Levee District
	Contact Person	Reggie Hill
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Madera, Merced
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural/Residential
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Sediment Removal
	System Improvement Description	Sediment removal in the Eastside Bypass to restore channel design capacity .
	Problem Addressed by System Improvement	Reduced System Capacity
	System Improvement Benefits	Sediment Removal
Permits (X=Required)	CVFPB	X
	404	X
	408	
	USFWS	X
	RWQCB	
	ESA	X
	Local	
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	X
	Structural Deficiencies (Breaches, Encroachments)	X
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	X
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Sediment Removal in the Eastside Bypass				
System Improvement Status	Conceptual			
	Planning			
	Permitting / Preliminary Design	X		
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		12,850,000.00
	Base Year of Cost			
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
		$ 100,000.00		$ 100,000.00
				$ -
				$ -
	Subtotal	$ 100,000.00	$ -	$ 100,000.00
	Construction			$ -
		$ 7,500,000.00		$ 7,500,000.00
				$ -
				$ -
				$ -
	Subtotal	$ 7,500,000.00	$ -	$ 7,500,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 3,750,000.00		
	Property Acquisition			
	Environmental Documentation (Permitting)	$ 1,500,000.00		
	Legal Services			
	Subtotal	$ 5,250,000.00	$ -	$ 5,250,000.00
	Grand Total	$ 12,850,000.00	$ -	$ 12,850,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts			
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.148143		
	Longitude	-120.602104		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Sediment Removal in the Eastside Bypass		
Coordination with other System Improvements	System Improvement 1	7, 13
	System Improvement 2	47, 48, 49
	System Improvement 3	50, 52, 53
	Other System Improvements	66, 67, 68
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	X
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Sand Slough Control Structure Removal		
System Improvement Background	Abbreviated System Improvement Name	Sand_Slough_Strct_Removal
	System Improvement Name	Sand Slough Control Structure Removal
	System Improvement ID	9
	Lead Agency	Lower San Joaquin Levee District
	Contact Person	Reggie Hill
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Madera
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Long-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	N
	Area Protected	Agricultural/Residential
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Remove Sand Slough Control Structure
	System Improvement Description	Removal of the Sand Slough Control Structure to improve fish passage and increase flow capacity.
	Problem Addressed by System Improvement	Improve fish passage and increase flows
	System Improvement Benefits	Increase capacity of system
Permits (X=Required)	CVFPB	X
	404	
	408	X
	USFWS	
	RWQCB	
	ESA	
	Local	
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	X
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Sand Slough Control Structure Removal				
System Improvement Status	Conceptual			
	Planning			
	Permitting / Preliminary Design	X		
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		290,000.00
	Base Year of Cost			
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
		$ 20,000.00		$ 20,000.00
				$ -
				$ -
	Subtotal	$ 20,000.00	$ -	$ 20,000.00
	Construction			$ -
		$ 160,000.00		$ 160,000.00
				$ -
				$ -
				$ -
	Subtotal	$ 160,000.00	$ -	$ 160,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 80,000.00		
	Property Acquisition			
	Environmental Documentation (Permitting)	$ 30,000.00		
	Legal Services			
	Subtotal	$ 110,000.00	$ -	$ 110,000.00
	Grand Total	$ 290,000.00	$ -	$ 290,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts			
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.114504		
	Longitude	-120.590527		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Sand Slough Control Structure Removal		
Coordination with other System Improvements	System Improvement 1	58
	System Improvement 2	
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	
	Long-term System Improvement	X
	Recommendation/Recommended Actions	
Resiliency	Robustness	
	Redundancy	
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	X
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Gravelly Ford Madera Ranch Recharge Project		
System Improvement Background	Abbreviated System Improvement Name	GravellyFord_RechargePr
	System Improvement Name	Gravelly Ford Madera Ranch Recharge Project
	System Improvement ID	10
	Lead Agency	Gravelly Ford Water District
	Contact Person	Don Roberts
	Partner Agency	Madera Irrigation District
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	N
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Fresno, Madera
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	N
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural/Residential
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	GFWD Recharge Project
	System Improvement Description	Gravelly Ford Water District is located north and east of the San Joaquin River in Madera County. The District has an existing diversion from the river located approximately 8 miles upstream of the Chowchilla bifurcation structures. The District's existing water delivery system includes open ditches, pipelines, control structures and pumps. The system runs west from the river diversion point then turns north. The proposed Madera Irrigation Water Bank land is located between Avenue 7, which is about 3 miles north of the turn, and Avenue 12. Gravelly Ford's system has the ability to convey water from the river to the water bank lands, but a number of improvements are needed to maximize capacity and improve the operating efficiency. The improvements would include replacement of existing road crossing culverts, modifications to control structures, water measurement improvements, and canal and pipeline enlargements. Flood water diverted to the land would be spread for groundwater recharge and then re-used for irrigation. The proposed improvements would allow the delivery system to operate in both directions to bring flood water in and then later distribute the recaptured groundwater for irrigation. With the proposed improvements the system could divert a maximum flow of 50 cubic-feet per second (cfs). A possible secondary benefit would be to make some of the banked water available to the Red Top area through transfers to help mitigate subsidence.
	Problem Addressed by System Improvement	Remove peak flow from system and provides for groundwater recharge (i.e., water supply).
	System Improvement Benefits	System Capacity; Reduce subsidence in Red Top area
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	X
	ESA	X
	Local	
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Gravelly Ford Madera Ranch Recharge Project				
System Improvement Status	Conceptual	X		
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem	X		
	Recreation			
	Transportation			
	Water Quality			
	Water Supply	X		
	Groundwater Recharge	X		
	Multi-Objective System Improvement	X		
Cost	System Improvement Costs ($)	$		1,970,000.00
	Base Year of Cost			
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
		$ 220,000.00		$ 220,000.00
				$ -
				$ -
	Subtotal	$ 220,000.00	$ -	$ 220,000.00
	Construction			$ -
		$ 1,220,000.00		$ 1,220,000.00
				$ -
				$ -
				$ -
	Subtotal	$ 1,220,000.00	$ -	$ 1,220,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 330,000.00		
	Property Acquisition			
	Environmental Documentation (Permitting)	$ 200,000.00		
	Legal Services			
	Subtotal	$ 530,000.00	$ -	$ 530,000.00
	Grand Total	$ 1,970,000.00	$ -	$ 1,970,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts			
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	36.894978		
	Longitude	-120.249891		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Gravelly Ford Madera Ranch Recharge Project		
Coordination with other System Improvements	System Improvement 1	15
	System Improvement 2	76
	System Improvement 3	11, 47, 48, 49, 60, 61, 62, 63, 64, 65, 66, 67, 68
	Other System Improvements	55
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	
	Redundancy	X
	Resourcefulness	
	Rapidity	X
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	X
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Flooding Existing Pasture Lands		
System Improvement Background	Abbreviated System Improvement Name	Flooding_Ext_PastureLands
	System Improvement Name	Flooding Existing Pasture Lands
	System Improvement ID	11
	Lead Agency	Gravelly Ford Water District
	Contact Person	Don Roberts
	Partner Agency	Madera Irrigation District
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	
	System Improvement Type	
	Structural	
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Long-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural/Residential
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	Flood existing pasture land
	System Improvement Description	There are two blocks of existing pasture land located immediately north of Firebaugh Avenue which crosses the Chowchilla Canal Bypass channel about 7 miles east of Firebaugh. On the west side of the Bypass channel there is approximately 1400 acres of non-irrigated pasture that could be flooded. A new turnout from the Bypass channel and a pipeline across the Chowchilla Canal would be needed to deliver flood water to this land. On the east side of the Bypass channel there is approximately 1700 acres of pasture that could be flooded. About half of this acreage already has an existing flood irrigation system that could be used to distribute flood water. The system irrigates from east to west so approximately 2 miles of new pipeline would be needed to divert Bypass water to the east side of the property.
	Problem Addressed by System Improvement	Reduce peak flows
	System Improvement Benefits	Reduce peak flows
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	X
	ESA	X
	Local	
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	X
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Flooding Existing Pasture Lands				
System Improvement Status	Conceptual	X		
	Planning			
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply	X		
	Groundwater Recharge	X		
	Multi-Objective System Improvement	X		
Cost	System Improvement Costs ($)	$		-
	Base Year of Cost			
	Source of Estimate			
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal		$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ -	$ -	$ -
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	N/A		
Basin Wide Document	USJR Systemwide Impacts	X		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	36.872101		
	Longitude	-120.318386		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Flooding Existing Pasture Lands		
Coordination with other System Improvements	System Improvement 1	44, 45, 46
	System Improvement 2	10
	System Improvement 3	
	Other System Improvements	60, 61, 62, 63, 64, 65
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	X

Upper San Joaquin River Regional Flood Management Plan System Improvement Great Valley Grassland State Park (GVGSP) Levee De-Authorization		
System Improvement Background	Abbreviated System Improvement Name	GVGSP_Levee_Deauthorize
	System Improvement Name	Great Valley Grassland State Park (GVGSP) Levee De-Authorization
	System Improvement ID	12
	Lead Agency	Great Valley Grassland State Park, Lower San Joaquin Levee District
	Contact Person	Heather Reith, Reggie Hill
	Partner Agency	
	Identified State Partner Name	California Department of Parks and Recreation
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Merced
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural/Residential
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	Restore habitat/floodplain at GVGSP
	System Improvement Description	In 2011, the California Department of Parks and Recreation assessed the feasibility of restoring floodplain connectivity and dependent habitats to approximately 330 acres within the GVGSP. The system improvement would provide a more natural floodplain process to help control exotic species and restore geomorphic and ecological conditions similar to the pre-levee conditions. The system improvement would reduce flood flow constraints below Highway 165 thereby improving upstream flood conditions in Stevinson Water District. The levee along the river would be deauthorized to allow flood water to flow into State Park lands. System improvement will include wetland creation and invasive species removal. Proposed improvements on GVGSP should be coordinated with adjacent system improvements proposed on San Luis Nat'l Wildlife Refuge units (projects 60-65 on this list) to optimize attainment of flood and ecosystem benefits in this area.
	Problem Addressed by System Improvement	Inadequate floodplains / O&M problem
	System Improvement Benefits	Habitat restoration and improve flood conditions; Restore O&M costs
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	
	RWQCB	
	ESA	
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	X
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	X
	Vegetation / Invasive Species	X
	Control of Upstream Flows	
	Disconnected Floodplains	X
	O&M/ Emergency Management Issues	
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Great Valley Grassland State Park (GVGSP) Levee De-Authorization				
System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem	X		
	Recreation	X		
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge	X		
	Multi-Objective System Improvement	X		
Cost	System Improvement Costs ($)	$		4,930,000.00
	Base Year of Cost			
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
		$ 60,000.00		$ 60,000.00
				$ -
	Subtotal	$ 60,000.00	$ -	$ 60,000.00
	Construction			$ -
		$ 3,045,000.00		$ 3,045,000.00
				$ -
				$ -
				$ -
	Subtotal	$ 3,045,000.00	$ -	$ 3,045,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 1,525,000.00		
	Property Acquisition			
	Environmental Documentation (Permitting)	$ 300,000.00		
	Legal Services			
	Subtotal	$ 1,825,000.00	$ -	$ 1,825,000.00
	Grand Total	$ 4,930,000.00	$ -	$ 4,930,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	X		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.287079		
	Longitude	-120.865287		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Great Valley Grassland State Park (GVGSP) Levee De-Authorization		
Coordination with other System Improvements	System Improvement 1	2
	System Improvement 2	65
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	X
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

		`
System Improvement Background	Abbreviated System Improvement Name	Bridge_Enlg_SandyMushRd
	System Improvement Name	Bridge Enlargement over Eastside Bypass at Sandy Mush Road
	System Improvement ID	13
	Lead Agency	Lower San Joaquin Levee District
	Contact Person	Reggie Hill
	Partner Agency	Merced County
	Identified State Partner Name	CalTrans
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Merced
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Enlarge Sandy Mush Road Crossing
	System Improvement Description	The Sandy Mush Road crossing of the Eastside Bypass Channel includes a bridge deck and piles with elevated road embankments at each end of the bridge. The flow area under the bridge and between the embankments is much less than the upstream flow area of the Bypass. This constricts flood flows and causes upstream freeboard encroachment. The elevated road embankments have been cut three times in the past to allow the flood flows to pass. Cutting the road is problematic for Merced County because the road is designated as an arterial evacuation route. The bridge needs to be lengthened to reduce the flow restriction. An alternative option could be to install culverts in the embankments to reduce the flow area. As part of this project, opportunities for riparian and wetland habitat enhancements will be considered.
	Problem Addressed by System Improvement	Protects property from flooding due to back-up at road crossing
	System Improvement Benefits	Increases ability to move flood flow and improves facilities for emergency management
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	X
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	X
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

		`			
System Improvement Status	Conceptual				
	Planning	X			
	Permitting / Preliminary Design				
	Final Design / Fully Funded				
	Construction				
	O&M				
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X			
	Agriculture				
	Ecosystem				
	Recreation				
	Transportation	X			
	Water Quality				
	Water Supply				
	Groundwater Recharge				
	Multi-Objective System Improvement				
Cost	System Improvement Costs ($)	$			1,610,000.00
	Base Year of Cost				
	Source of Estimate	Developed for RFMP			
	Additional Cost Details, Assumptions, or Information				
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**	
	Planning			$	-
				$	-
				$	-
				$	-
	Subtotal	$ -	$ -	$	-
	Design			$	-
		$ 140,000.00		$	140,000.00
				$	-
				$	-
	Subtotal	$ 140,000.00	$ -	$	140,000.00
	Construction			$	-
		$ 930,000.00		$	930,000.00
				$	-
				$	-
				$	-
	Subtotal	$ 930,000.00	$ -	$	930,000.00
	Contingencies and Incidentals				
	Contingency and Incidentals	$ 460,000.00			
	Property Acquisition				
	Environmental Documentation (Permitting)	$ 80,000.00			
	Legal Services				
	Subtotal	$ 540,000.00	$ -	$	540,000.00
	Grand Total	$ 1,610,000.00	$ -	$	1,610,000.00
	Local Agency Cost Share			$	-
	Partner Agency Cost Share			$	-
	Total Annual O&M Costs			$	-
Cost Estimate Status	C=Complete, N/A=Not Available	C			
Basin Wide Document	USJR Systemwide Impacts	X			
KMZ File	KMZ File Provided (Yes/No)	Y			
GIS Information	Latitude	37.186169			
	Longitude	-120.659549			
	Shape	Point			

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Coordination with other System Improvements	System Improvement 1	66
	System Improvement 2	
	System Improvement 3	
	Other System Improvements	7, 8, 47, 48, 49, 50, 52, 53, 67, 68
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	
	Rapidity	X
System Improvement Groups	Rural	X
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Install New Gaging Stations		
System Improvement Background	Abbreviated System Improvement Name	Gaging
	System Improvement Name	Install New Gaging Stations
	System Improvement ID	14
	Lead Agency	Lower San Joaquin Levee District
	Contact Person	Reggie Hill
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Fresno, Madera, Merced
	System Improvement Type	
	Structural	
	Non-Structural	X
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Residential/Agricultural
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	New Gaging stations
	System Improvement Description	Gaging stations to anticipate flows into the Eastside Bypass.
	Problem Addressed by System Improvement	Emergency management of flood flows (real-time flood information)
	System Improvement Benefits	Improved system operation and management of flood flows
Permits (X=Required)	CVFPB	X
	404	
	408	
	USFWS	
	RWQCB	
	ESA	
	Local	
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	X
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Install New Gaging Stations				
System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		330,000.00
	Base Year of Cost			
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ 40,000.00	$ -	$ 40,000.00
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ 180,000.00	$ -	$ 180,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 50,000.00		
	Property Acquisition			
	Environmental Documentation (Permitting)	$ 60,000.00		
	Legal Services			
	Subtotal	$ 110,000.00	$ -	$ 110,000.00
	Grand Total	$ 330,000.00	$ -	$ 330,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	X		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	Multiple locations within system		
	Longitude			
	Shape			

Upper San Joaquin River Regional Flood Management Plan System Improvement Install New Gaging Stations		
Coordination with other System Improvements	System Improvement 1	4
	System Improvement 2	
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	
	Redundancy	X
	Resourcefulness	X
	Rapidity	X
System Improvement Groups	Rural	X
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Western Madera and Merced County Subsidence Solution		
System Improvement Background	Abbreviated System Improvement Name	MaderaCt_SubSoln
	System Improvement Name	Western Madera and Merced County Subsidence Solution
	System Improvement ID	15
	Lead Agency	Red Top and Washington Ave area growers
	Contact Person	Chris White, CCID
	Partner Agency	Central California Irrigation District & San Luis Canal Company, Madera County
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Madera
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural, Dairies, County Roads and State Highways, SJR Flood System, Rural School
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	Wester Madera and Merced County Subsidence Solution
	System Improvement Description	The Red Top Area Joint Banking project would consist of a combined banking and overdraft correction program in the Red Top/El Nido (Washington Avenue) areas east of the San Joaquin River in an effort to reduce pumping groundwater from below the Corcoran Clay. Significant subsidence has been observed lately in this area. Red Top area growers are planning to develop 720 acres of recharge ponds, 30 new shallow water wells, and surface water distribution to 26,000 acres of lands currently irrigated with well water. The recharge areas could be expanded and if flood flows occur before vine or tree budding, larger cropped areas could be flooded. Based on current projections the 720 acres of ponds can provide capacity to absorb about 180 cfs off the flood system. Over three months that adds up to 32,400 AF. Potential rehabilitation of existing and construction of new turnouts from the San Joaquin River flood system will be considered along with direct pipelines to the recharge sites. The water source could be from the Fresno and Chowchilla River systems, SJR flood flows, Kings River flood flows, which are limited to a few months in wet years. Also, the SJRECWA and/or Friant. Contractors could sell water to the growers directly. For the El Nido/Washington Ave. area, the projects would consist of detention reservoirs scattered throughout the area north of Highway 152 to enable transitory storage, thereby extending the availability of surface water by a month for use by growers. This reduces groundwater pumping which will help reduce subsidence. Additional turnouts from the Eastside By-pass and potential extensions of local irrigation systems to the area are under evaluation. Adding tile drains to the reservoirs with connections to the aquifer below the Corcoran clay would also be evaluated.
	Problem Addressed by System Improvement	Subsidence, reduced bypass flood flow capacity
	System Improvement Benefits	Increased groundwater recharge (water supply), reduce subsidence
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	X
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	X
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	X
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	X
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	

Upper San Joaquin River Regional Flood Management Plan System Improvement Western Madera and Merced County Subsidence Solution				
System Improvement Addresses Non-Structural Deficiencies	Governance Issues			
	Permitting Issues			
	Inadequate Funding			
System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture	X		
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply	X		
	Groundwater Recharge	X		
	Multi-Objective System Improvement	X		
Cost	System Improvement Costs ($)	$		19,600,000.00
	Base Year of Cost	2012		
	Source of Estimate	Technical Memorandum to SJRECWA, Red Top Growers and Madera County regarding Western Madera County Subsidence, Revised December 10, 2012, by Provost and Pritchard		
	Additional Cost Details, Assumptions, or Information	Costs estimates include: construction of 720 acres of recharge ponds, channel and Flood System Turnouts at $2.2 M; 30 new shallow water production wells at $3.6 M, surface water distribution (canals, channel improvements and pumps and pipelines) to 26,000 acres of agricultural lands currently irrigated with well water at $4.0 M. Remove about 240 cfs from flood system. Cost estimated for both Red top and washington Ave. Washington ave cost is estimated to be equivalent to the red top area.		
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ -	$ -	$ -
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	X		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	36.913472		
	Longitude	-120.300606		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Western Madera and Merced County Subsidence Solution		
Coordination with other System Improvements	System Improvement 1	10
	System Improvement 2	76
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	X
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Los Banos Creek Recharge and Recovery		
System Improvement Background	Abbreviated System Improvement Name	LosBanosCrk_RR
	System Improvement Name	Los Banos Creek Recharge and Recovery
	System Improvement ID	16
	Lead Agency	Central California Irrigation District
	Contact Person	Chris White, General Manager
	Partner Agency	SJRECWA, San Luis Water District, Grassland Water District, City of Los Banos
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	Fatal Flaws Analysis for Los Banos Creek Recharge and Recovery, November 26, 2013, by Provost and Pritchard.
	County	Merced
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	N
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	Flood Flow Recharge West of Los Banos. Yield: 50 cfs - 9,000 AF in wet years
	System Improvement Description	The Los Banos Creek Recharge & Recovery project includes construction of 103 acres of recharge ponds and 6 recovery wells along LBC between the California Aqueduct and the Central California Irrigation District's (CCID) Outside Canal. The project would receive surface water from LBC, the SJRECWA, San Luis Water District (SLWD), CCID Main and Outside Canals or through exchange from other contractors. The DMC and Outside Canal would be used to convey the water to the bank. Water wells will be piped to the DMC and CCID Outside canals.
	Problem Addressed by System Improvement	Removes Peak flood flow, water supply storage
	System Improvement Benefits	Peak flow reduction
Permits (X=Required)	CVFPB	
	404	X
	408	
	USFWS	X
	RWQCB	X
	ESA	X
	Local	
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Los Banos Creek Recharge and Recovery				
System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture	X		
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality	X		
	Water Supply	X		
	Groundwater Recharge	X		
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		5,000,000.00
	Base Year of Cost	2006		
	Source of Estimate	Westside Integrated Water Management Plan		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
	Initial Study			$ -
	Follow-up Study			$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
		$ 100,000.00		$ 100,000.00
				$ -
				$ -
	Subtotal	$ 100,000.00	$ -	$ 100,000.00
	Construction			$ -
		$ 1,600,000.00		$ 1,600,000.00
		$ 1,200,000.00		$ 1,200,000.00
				$ -
				$ -
	Subtotal	$ 2,800,000.00	$ -	$ 2,800,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 800,000.00		$ 800,000.00
	Property Acquisition	$ 1,200,000.00		$ 1,200,000.00
	Environmental Documentation (Permitting)	$ 80,000.00		$ 80,000.00
	Legal Services	$ 20,000.00		$ 20,000.00
	Subtotal	$ 2,100,000.00	$ -	$ 2,100,000.00
	Grand Total	$ 5,000,000.00	$ -	$ 5,000,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	X		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.036105		
	Longitude	-120.890086		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Los Banos Creek Recharge and Recovery		
Coordination with other System Improvements	System Improvement 1	19, 20
	System Improvement 2	54
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	
	Redundancy	
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	X
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Update San Joaquin River Flood Control Project Operations and Maintenance Manual		
System Improvement Background	Abbreviated System Improvement Name	SJRFC_OM
	System Improvement Name	Update San Joaquin River Flood Control Project Operations and Maintenance Manual
	System Improvement ID	17
	Lead Agency	Lower San Joaquin Levee District
	Contact Person	Reggie Hill
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	N
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Fresno, Merced, Madera
	System Improvement Type	
	Structural	
	Non-Structural	X
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	Update O&M Manual
	System Improvement Description	Update the existing San Joaquin River Flood Control Project Operations and Maintenance Manual for Levees, Irrigation and Drainage Structures, Channels, and Miscellaneous Facilities that was prepared in 1967. This update will require hydraulic modeling and will include significant USACE, Central Valley Flood Protection Board, and Department of Water Resources coordination.
	Problem Addressed by System Improvement	Required O&M manual update
	System Improvement Benefits	Update O&M manual to current conditions
Permits (X=Required)	CVFPB	X
	404	
	408	
	USFWS	
	RWQCB	
	ESA	
	Local	
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Update San Joaquin River Flood Control Project Operations and Maintenance Manual				
System Improvement Status	Conceptual			
	Planning			
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M	X		
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement	X		
Cost	System Improvement Costs ($)	$		500,000.00
	Base Year of Cost	2014		
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ 500,000	$ -	$ 500,000
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			$ -
	Contingency and Incidentals			$ -
	Property Acquisition			$ -
	Environmental Documentation (Permitting)			$ -
	Legal Services			$ -
	Subtotal	$ -	$ -	$ -
	Grand Total	$ 500,000	$ -	$ 500,000
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts			
KMZ File	KMZ File Provided (Yes/No)			
GIS Information	Latitude			
	Longitude			
	Shape			

Upper San Joaquin River Regional Flood Management Plan System Improvement Update San Joaquin River Flood Control Project Operations and Maintenance Manual		
Coordination with other System Improvements	System Improvement 1	
	System Improvement 2	
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	
	Redundancy	
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	X
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Sheet		
System Improvement Background	Abbreviated System Improvement Name	ESA_SJLP
	System Improvement Name	Eastside Acres San Joaquin River Levee Project
	System Improvement ID	18
	Lead Agency	Madera County
	Contact Person	Johannes Hoevertsz
	Partner Agency	City of Firebaugh and CSA 5 Eastside Acres
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Madera
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Long-Term
	Within Planning Area (Yes/No)	Yes
	Addresses Deficiency Within Planning Area (Yes/No)	Yes
	Area Protected	Firebaugh
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Building ring levee around Eastside Acres
	System Improvement Description	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.
	Problem Addressed by System Improvement	Flood issues in Eastside Acres
	System Improvement Benefits	Levee Improvement
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	X
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	X
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Sheet

System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		1,210,000.00
	Base Year of Cost	2014		
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
		10% of Subtotal for Engineering Costs	$ 70,000.00	$ 70,000.00
				$ -
				$ -
	Subtotal	$ -	$ 70,000.00	$ 70,000.00
	Construction			$ -
		Furnish and Install Compacted Embankment	$ 690,000.00	$ 690,000.00
				$ -
				$ -
				$ -
	Subtotal	$ -	$ 690,000.00	$ 690,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals		$ 350,000.00	
	Property Acquisition			
	Environmental Documentation (Permitting)		$ 100,000.00	
	Legal Services			
	Subtotal	$ -	$ 450,000.00	$ 450,000.00
	Grand Total	$ -	$ 1,210,000.00	$ 1,210,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts			
KMZ File	KMZ File Provided (Yes/No)			
GIS Information	Latitude			
	Longitude			
	Shape			

Upper San Joaquin River Regional Flood Management Plan System Improvement Sheet		
Coordination with other System Improvements	System Improvement 1	45, 46
	System Improvement 2	50
	System Improvement 3	51
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	
	Long-term System Improvement	X
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	
	Rapidity	X
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	X
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Fresno Slough South Levee Repair and Floodplain Enhancement Project		
System Improvement Background	Abbreviated System Improvement Name	FresnoSl_Slevee_Repair
	System Improvement Name	Fresno Slough South Levee Repair and Floodplain Enhancement Project
	System Improvement ID	19
	Lead Agency	Fresno Slough Improvement Group
	Contact Person	Steve Stadler (KRCD)
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	Y
	Existing Supporting Documents / References	
	County	Fresno
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Repair or rebuild south levee of Fresno Slough.
	System Improvement Description	Improve the south levee, which has open toe drains and inadequate freeboard. Improvements might include removing the toe drains, rebuilding the levees, and bringing the levees under the jurisdiction of a responsible stakeholder. Enhancements would involve the modification of existing levees surrounding a State-owned parcel of land. The levee modifications would improve flow over the land and reduce pressure on other nearby levees during flood events. The current configuration of levees and cuts concentrates channel flow and increases the pressure at a weak point of the nearby levees.
	Problem Addressed by System Improvement	Aging infrastructure; Reduce hydrostatic pressure on nearby levees
	System Improvement Benefits	Restoring system and identifying a responsible party for O&M; Remove flow constraint
Permits (X=Required)	CVFPB	X
	404	X
	408	
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	X
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	X
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	X
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	X
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	X
	Permitting Issues	
	Inadequate Funding	X

Upper San Joaquin River Regional Flood Management Plan System Improvement Fresno Slough South Levee Repair and Floodplain Enhancement Project				
System Improvement Status	Conceptual	X		
	Planning			
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		1,340,000.00
	Base Year of Cost			
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
	Design, geotechnical & compaction testing	$ 70,000.00		$ 70,000.00
		$ 20,000.00		$ 20,000.00
				$ -
	Subtotal	$ 90,000.00	$ -	$ 90,000.00
	Construction			$ -
		$ 700,000.00		$ 700,000.00
		$ 80,000.00		$ 80,000.00
				$ -
				$ -
	Subtotal	$ 780,000.00	$ -	$ 780,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 380,000.00		
	Property Acquisition			
	Environmental Documentation (Permitting)	$ 90,000.00		
	Legal Services			
	Subtotal	$ 470,000.00	$ -	$ 470,000.00
	Grand Total	$ 1,340,000.00	$ -	$ 1,340,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts			
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	36.691385		
	Longitude	-120.308024		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Fresno Slough South Levee Repair and Floodplain Enhancement Project		
Coordination with other System Improvements	System Improvement 1	16
	System Improvement 2	20, 22
	System Improvement 3	54
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	
	Resourcefulness	
	Rapidity	X
System Improvement Groups	Rural	X
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Fresno Slough Sediment Removal		
System Improvement Background	Abbreviated System Improvement Name	Fresno_Sl_Sediment_Removal
	System Improvement Name	Fresno Slough Sediment Removal
	System Improvement ID	20
	Lead Agency	Fresno Slough Improvement Group
	Contact Person	Steve Stadler (KRCD)
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	N
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Fresno
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Sediment Removal from Fresno Slough
	System Improvement Description	Remove sediment from Fresno Slough both inside and outside the Wildlife Refuge. It is uncertain, but probable to obtain permits to do this work. It would be easier and less costly if the work could be done at the same time that the Mendota Pool is dewatered for maintenance.
	Problem Addressed by System Improvement	Restore capacity and improve water quality
	System Improvement Benefits	Sediment Removal from Fresno Slough
Permits (X=Required)	CVFPB	X
	404	X
	408	
	USFWS	X
	RWQCB	
	ESA	
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	X
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	X
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Fresno Slough Sediment Removal				
System Improvement Status	Conceptual	X		
	Planning			
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		720,000.00
	Base Year of Cost			
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
	Surveying	$ 20,000.00		$ 20,000.00
				$ -
				$ -
	Subtotal	$ 20,000.00	$ -	$ 20,000.00
	Construction			$ -
		$ 430,000.00		$ 430,000.00
				$ -
				$ -
				$ -
	Subtotal	$ 430,000.00	$ -	$ 430,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 220,000.00		
	Property Acquisition			
	Environmental Documentation (Permitting)	$ 50,000.00		
	Legal Services			
	Subtotal	$ 270,000.00	$ -	$ 270,000.00
	Grand Total	$ 720,000.00	$ -	$ 720,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts			
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	36.722346		
	Longitude	-120.332599		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Fresno Slough Sediment Removal		
Coordination with other System Improvements	System Improvement 1	16
	System Improvement 2	19
	System Improvement 3	
	Other System Improvements	54
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	X
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Upper San Joaquin Sediment Study		
System Improvement Background	Abbreviated System Improvement Name	USJR_Sediment
	System Improvement Name	Upper San Joaquin Sediment Study
	System Improvement ID	21
	Lead Agency	Lower San Joaquin Levee District
	Contact Person	Reggie Hill
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Fresno, Madera, Merced
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural/Residential
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	USJR sediment study
	System Improvement Description	Develop a sediment study in USJR region that identifies upstream sources of sediment as well as regional mitigation efforts.
	Problem Addressed by System Improvement	Sediment and system condition
	System Improvement Benefits	Sediment removal; Restoration of hydraulic capacity; Improved O&M
Permits (X=Required)	CVFPB	
	404	
	408	
	USFWS	
	RWQCB	
	ESA	
	Local	
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	X
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Upper San Joaquin Sediment Study				
System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M	X		
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		100,000.00
	Base Year of Cost			
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ 100,000.00	$ -	$ 100,000.00
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ 100,000.00	$ -	$ 100,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	Y		
KMZ File	KMZ File Provided (Yes/No)	N		
GIS Information	Latitude	Fresno, Madera, Merced Counties		
	Longitude			
	Shape			

Upper San Joaquin River Regional Flood Management Plan System Improvement Upper San Joaquin Sediment Study		
Coordination with other System Improvements	System Improvement 1	
	System Improvement 2	
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	X
	Short-term System Improvement	
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	X
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Bear Creek Diversion Channel Feasibility Study		
System Improvement Background	Abbreviated System Improvement Name	Bear_Crk_Div_Chan_Feasb_Std
	System Improvement Name	Bear Creek Diversion Channel Feasibility Study
	System Improvement ID	22
	Lead Agency	Merced Streams Group
	Contact Person	
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	Merced IRWMP Flood Management Summary August 2013
	County	Merced
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Residential/Agricultural
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Construct Siphon and Diversion Channel on Bear Creek
	System Improvement Description	Based upon review of existing information, a diversion channel located upstream of Merced may significantly reduce flood risk within the City. The diversion channel would run in a south/southwest direction from Bear Creek. A feasibility study is needed to evaluate different options for the system improvement and define benefits and applicability.
	Problem Addressed by System Improvement	Flow reduction
	System Improvement Benefits	Peak Flood Flows; 200 year protection for City of Merced
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Bear Creek Diversion Channel Feasibility Study				
System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		100,000.00
	Base Year of Cost	2013		
	Source of Estimate	Merced IRWMP Flood Management Summary August 2013		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
		$ 100,000.00		$ 100,000.00
				$ -
				$ -
	Subtotal	$ 100,000.00	$ -	$ 100,000.00
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ 100,000.00	$ -	$ 100,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	X		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.314705		
	Longitude	-120.34383		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Bear Creek Diversion Channel Feasibility Study		
Coordination with other System Improvements	System Improvement 1	49
	System Improvement 2	25
	System Improvement 3	23, 24, 26, 27, 28, 29, 30, 31, 32, 33
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	X
	Short-term System Improvement	
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	X
	Rapidity	X
System Improvement Groups	Rural	
	Urban	X
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Le Grande/Planada Flood Control/Conjunctive Use Expansion Study		
	Abbreviated System Improvement Name	LeGrandPlanada_FC_Conjunctive
	System Improvement Name	Le Grande/Planada Flood Control/Conjunctive Use Expansion Study
	System Improvement ID	23
	Lead Agency	Merced Irrigation District
	Contact Person	Hicham Eltal
	Partner Agency	Merced Streams Groups
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	Merced IRWMP Flood Management Summary August 2013
	County	Merced
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	N
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Residential/Agricultural
	IWM System Improvement (Yes/No)	Y
System Improvement Background	Abbreviated System Improvement Description	Le Grand Planada FC Conjunctive
	System Improvement Description	The Le Grand canal was originally constructed to convey irrigation flows from Lake Yosemite (LY) south to the Planada and Le Grand area. The canal crosses multiple ravines and waterways along its course, including Black Rascal Creek (BRC) and Bear Creek (BC). The canal is the official spillway for Lake Yosemite. During flood season, MID breaches its southerly bank to discharge conveyed flows from the lake to BRC and prevent the canal from overtopping downstream due to limited channel capacity downstream. This multi-purpose system improvement study is to redirect and route the flood waters from LY, BRC, BC and the watershed between them safely downstream through various conveyance systems for beneficial uses in the southern Merced region where groundwater is the main supply. A series of checks and diversion structures would be constructed along the canal to control and manage flood flows. Various reaches of Le Grand and Planada Canals must be enlarged as well to accommodate for higher flow. The system improvement is needed to provide protection against the overtopping of Lake Yosemite, especially in the case of storms occurring within the irrigation season. The system improvement would allow MID to move from an irrigation season mode to flood management mode and vice versa with minimal impact to the system, UC Merced, the City of Merced, and Merced County. Additionally, the system improvement is needed to prevent the Le Grand and Planada Canals from breaching during high flood flows. The controlled flood waters may be re-routed to provide additional water supply downstream for various uses such as environmental, recharge, and counter subsidence measures. This multi-phased and multi-purpose system improvement allows the Merced Streams Group to direct flood water away from the City of Merced, Franklin Beachwood, Stevinson, and Planada areas as needed. Flood waters would then be directed to other areas downstream for flood management, natural resources management, water supply, land subsidence mitigation, and providing in-lieu recharge. This system improvement also provides for Lake Yosemite's volume to increase by 4,000 AF for irrigation purposes and allows for draining of 4,000 AF from Lake Yosemite in less than half the current time in preparation for major storms.
	Problem Addressed by System Improvement	Reduces flood flows
	System Improvement Benefits	Water supply and peak flood flow reduction
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X

Upper San Joaquin River Regional Flood Management Plan System Improvement Le Grande/Planada Flood Control/Conjunctive Use Expansion Study				
Structural Deficiencies	Subsidence	X		
	Seepage			
	Erosion / Sedimentation			
	Structural Deficiencies (Breaches, Encroachments)	X		
	Inadequate Capacity	X		
	Aging Infrastructure / Systems / Equipment			
	Vegetation / Invasive Species			
	Control of Upstream Flows	X		
	Disconnected Floodplains			
	O&M/ Emergency Management Issues	X		
System Improvement Addresses Non-Structural Deficiencies	Governance Issues			
	Permitting Issues			
	Inadequate Funding			
System Improvement Status	Conceptual	X		
	Planning			
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture	X		
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply	X		
	Groundwater Recharge			
	Multi-Objective System Improvement	X		
Cost	System Improvement Costs ($)	$		240,000.00
	Base Year of Cost	2013		
	Source of Estimate	Merced IRWMP Flood Management Summary August 2013		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
		$ 240,000.00		$ 240,000.00
				$ -
				$ -
	Subtotal	$ 240,000.00	$ -	$ 240,000.00
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ 240,000.00	$ -	$ 240,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -

Upper San Joaquin River Regional Flood Management Plan System Improvement Le Grande/Planada Flood Control/Conjunctive Use Expansion Study		
Cost Estimate Status	C=Complete, N/A=Not Available	C
Basin Wide Document	USJR Systemwide Impacts	X
KMZ File	KMZ File Provided (Yes/No)	Y
GIS Information	Latitude	37.302872
	Longitude	-120.484489
	Shape	Point
Coordination with other System Improvements	System Improvement 1	
	System Improvement 2	22, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	X
	Rapidity	X
System Improvement Groups	Rural	
	Urban	X
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Le Grand Canal Flood Control Structure at Black Rascal Creek		
System Improvement Background	Abbreviated System Improvement Name	LeGrandPlanada_FC_CntrSt
	System Improvement Name	Le Grand Canal Flood Control Structure at Black Rascal Creek
	System Improvement ID	24
	Lead Agency	Merced Irrigation District
	Contact Person	Hicham Eltal
	Partner Agency	Merced Streams Groups
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Merced
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	N
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Residential/Agricultural
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	Construct a Flood Control Structure at the Le Grand Canal intersection with Black Rascal Creek to provide MID control flood flows generated at Lake Yosemite.
	System Improvement Description	Le Grand Canal is considered the official spillway to Lake Yosemite by the Division of Safety of Dams (DSOD). The canal commences at the lake and traverses southeasterly along the foothills toe contour toward the town of Planada. As a result , the canal intercepts or bypasses all creeks and ravines draining the foothills. The first major water way it crossed is Black Rascal Creek. The Canal crosses the creek with a double barrel reinforced concrete box. However, at the end of the irrigation season, Merced Irrigation District (MID) breaches the right bank of the canal and places a temporary dam, whereby all flood flows from Lake Yosemite are deposited to the creek. With the start of every irrigation season, the canal is repaired and flows could continue downstream. A control structure connected to Merced Irrigation District SCADA system would give Merced Irrigation District the flexibility to react timely and divert all or portion of flood flows as needed. As part of this project, opportunities for riparian and wetland habitat enhancements will be considered.
	Problem Addressed by System Improvement	Flood flow reduction
	System Improvement Benefits	Reduce peak flood flows
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	X
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X

Upper San Joaquin River Regional Flood Management Plan System Improvement Le Grand Canal Flood Control Structure at Black Rascal Creek				
System Improvement Addresses Non-Structural Deficiencies	Governance Issues			
	Permitting Issues			
	Inadequate Funding			
System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture	X		
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply	X		
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		490,000.00
	Base Year of Cost	2014		
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information	Merced IRWMP Flood Management Summary August 2013		
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
		$ 60,000.00		$ 60,000.00
				$ -
				$ -
	Subtotal	$ 60,000.00	$ -	$ 60,000.00
	Construction			$ -
		$ 260,000.00		$ 260,000.00
				$ -
				$ -
				$ -
	Subtotal	$ 260,000.00	$ -	$ 260,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 130,000.00		
	Property Acquisition			
	Environmental Documentation (Permitting)	$ 40,000.00		
	Legal Services			
	Subtotal	$ 170,000.00	$ -	$ 170,000.00
	Grand Total	$ 490,000.00	$ -	$ 490,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	X		
KMZ File	KMZ File Provided (Yes/No)	Y		

Upper San Joaquin River Regional Flood Management Plan System Improvement Le Grand Canal Flood Control Structure at Black Rascal Creek		
GIS Information	Latitude	37.362879
	Longitude	-120.371773
	Shape	Point
Coordination with other System Improvements	System Improvement 1	22, 23, 25, 26, 27, 28, 29, 30, 31, 32, 33
	System Improvement 2	
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	X
	Rapidity	X
System Improvement Groups	Rural	
	Urban	X
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Bear Reservoir Enlargement and Downstream Levee and Channel Improvements		
System Improvement Background	Abbreviated System Improvement Name	Bear_Res_Enlarg_Chan_Imp
	System Improvement Name	Bear Reservoir Enlargement and Downstream Levee and Channel Improvements
	System Improvement ID	25
	Lead Agency	Merced Streams Group
	Contact Person	Kellie Jacobs
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	USACE
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	Merced IRWMP Flood Management Summary August 2013, USACE Design Memos
	County	Merced
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Long-term
	Within Planning Area (Yes/No)	N
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural/Residential
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	Enlarge Bear Reservoir and Channel Improvements for 200-year protection
	System Improvement Description	Bear Reservoir was constructed in the early 1950's as an element of the Merced Streams Group Project authorized by Congress's 1944 Flood Control Act. The Flood Control Act of 1970 called for three additional flood control reservoirs, enlargement of existing reservoirs, and 52 miles of levee and channel modifications. To date only one additional reservoir has been built (Castle Dam). The enlargement of Bear Reservoir and downstream levee and channel improvements would increase the level of flood protection to the most populated areas of Merced County. Bear Reservoir was originally constructed to provide protection for up to a 50-year storm event. The State of California has adopted legislation that calls for a minimum of 200-year flood protection for urbanized areas. This system improvement would meet the requirements of the new flood control legislation. As part of this project, opportunities for riparian and wetland habitat enhancements will be considered.
	Problem Addressed by System Improvement	Inadequate flood capacity in stream for SB5 requirements
	System Improvement Benefits	Provides 200-year protection for City of Merced
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X

Upper San Joaquin River Regional Flood Management Plan System Improvement Bear Reservoir Enlargement and Downstream Levee and Channel Improvements				
System Improvement Addresses Non-Structural Deficiencies	Governance Issues			
	Permitting Issues			
	Inadequate Funding			
System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem	X		
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		202,940,000.00
	Base Year of Cost	2014		
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information	USACE Design Memo 2, Chapter IX, 1979		
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
	Engineering and administration	$ 23,553,000.00		$ 23,553,000.00
				$ -
				$ -
	Subtotal	$ 23,553,000.00	$ -	$ 23,553,000.00
	Construction			$ -
	Reservoir	$ 53,295,000.00		$ 53,295,000.00
	Channels	$ 44,509,000.00		$ 44,509,000.00
				$ -
				$ -
	Subtotal	$ 97,804,000.00	$ -	$ 97,804,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 54,484,000.00		
	Property Acquisition	$ 15,089,000.00		
	Environmental Documentation (Permitting)	$ 12,010,000.00		
	Legal Services			
	Subtotal	$ 81,583,000.00	$ -	$ 81,583,000.00
	Grand Total	$ 202,940,000.00	$ -	$ 202,940,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	X		

Upper San Joaquin River Regional Flood Management Plan System Improvement Bear Reservoir Enlargement and Downstream Levee and Channel Improvements		
KMZ File	KMZ File Provided (Yes/No)	Y
GIS Information	Latitude	37.369081
	Longitude	-120.22746
	Shape	Point
Coordination with other System Improvements	System Improvement 1	22, 23, 24, 26, 27, 28, 29, 30, 31, 32, 33
	System Improvement 2	34, 35, 36
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	X
	Short-term System Improvement	
	Long-term System Improvement	X
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	X
	Rapidity	X
System Improvement Groups	Rural	
	Urban	X
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Mariposa Reservoir Enlargement and Downstream Levee and Channel Improvements		
System Improvement Background	Abbreviated System Improvement Name	Mariposa_ResEnlrg_Lev_Chan_Impv
	System Improvement Name	Mariposa Reservoir Enlargement and Downstream Levee and Channel Improvements
	System Improvement ID	26
	Lead Agency	Merced Streams Group
	Contact Person	Kellie Jacobs
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	USACE
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	Office Report, Merced County Streams Group, California, Standard Project Floods, 1 July 1963
	County	Merced
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Long-term
	Within Planning Area (Yes/No)	N
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural/Residential
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	Enlarge Mariposa Reservoir and Channel Improvements for 200-year protection
	System Improvement Description	Mariposa Reservoir was constructed in the early 1950's as an element of the Merced Streams Group Project authorized by Congress's 1944 Flood Control Act. The Flood Control Act of 1970 called for three additional flood control reservoirs, enlargement of existing reservoirs, and 52 miles of levee and channel modifications. To date only one additional reservoir has been built (Castle Dam). The enlargement of Mariposa Reservoir and downstream levee and channel improvements would increase the level of flood protection to Planada and Le Grand, both of which are DAC's in Merced County. Mariposa Reservoir was originally constructed to provide protection for up to a 50-year storm event. The State of California has adopted legislation that calls for a minimum of 200-year flood protection for urbanized areas. This system improvement would meet the requirements of the new flood control legislation. As part of this project, opportunities for riparian and wetland habitat enhancements will be considered.
	Problem Addressed by System Improvement	Inadequate flood capacity in stream for SB5 requirements
	System Improvement Benefits	Provides 200-year protection for City of Merced
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X

Upper San Joaquin River Regional Flood Management Plan System Improvement Mariposa Reservoir Enlargement and Downstream Levee and Channel Improvements				
System Improvement Addresses Non-Structural Deficiencies	Governance Issues			
	Permitting Issues			
	Inadequate Funding			
System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem	X		
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		112,500,000.00
	Base Year of Cost	2014		
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information	USACE Design Review Report, Chapter VII, 1969		
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
	Engineering and administration	$ 13,099,000.00		$ 13,099,000.00
				$ -
				$ -
	Subtotal	$ 13,099,000.00	$ -	$ 13,099,000.00
	Construction			$ -
	Reservoir	$ 34,673,000.00		$ 34,673,000.00
	Channels	$ 21,273,000.00		$ 21,273,000.00
				$ -
				$ -
	Subtotal	$ 55,946,000.00	$ -	$ 55,946,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 30,251,000.00		
	Property Acquisition	$ 6,604,000.00		
	Environmental Documentation (Permitting)	$ 6,600,000.00		
	Legal Services			
	Subtotal	$ 43,455,000.00	$ -	$ 43,455,000.00
	Grand Total	$ 112,500,000.00	$ -	$ 112,500,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	X		
KMZ File	KMZ File Provided (Yes/No)	Y		

Upper San Joaquin River Regional Flood Management Plan System Improvement Mariposa Reservoir Enlargement and Downstream Levee and Channel Improvements		
GIS Information	Latitude	37.292676
	Longitude	-120.149242
	Shape	Point
Coordination with other System Improvements	System Improvement 1	22, 23, 24, 25, 27, 28, 29, 30, 31, 32, 33
	System Improvement 2	34, 35, 36
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	X
	Short-term System Improvement	
	Long-term System Improvement	X
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	X
	Rapidity	X
System Improvement Groups	Rural	
	Urban	X
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Owens Reservoir Enlargement and Downstream Levee and Channel Improvements		
System Improvement Background	Abbreviated System Improvement Name	OwensRes_Enlarg_Lev_Chan_Imprv
	System Improvement Name	Owens Reservoir Enlargement and Downstream Levee and Channel Improvements
	System Improvement ID	27
	Lead Agency	Merced Streams Group
	Contact Person	Kellie Jacobs
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	USACE
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	USACE Review Report
	County	Merced
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Long-term
	Within Planning Area (Yes/No)	N
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	Enlarge Owens Reservoir for 200-year protection
	System Improvement Description	Owens Reservoir was constructed in the early 1950's as an element of the Merced Streams Group Project authorized by Congress's 1944 Flood Control Act. The Flood Control Act of 1970 called for three additional flood control reservoirs, enlargement of existing reservoirs, and 52 miles of levee and channel modifications. To date only one additional reservoir has been built (Castle Dam). The enlargement of Owens Reservoir would increase the level of flood protection to Planada and Le Grand, both of which are DAC's in Merced County. Owens Reservoir was originally constructed to provide protection for up to a 50-year storm event. The State of California has adopted legislation that calls for a minimum of 200-year flood protection for urbanized areas. This system improvement would meet the requirements of the new flood control legislation. As part of this project, opportunities for riparian and wetland habitat enhancements will be considered.
	Problem Addressed by System Improvement	Inadequate flood capacity in stream for SB5 requirements
	System Improvement Benefits	Provides 200-year protection for City of Merced
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X

Upper San Joaquin River Regional Flood Management Plan System Improvement Owens Reservoir Enlargement and Downstream Levee and Channel Improvements				
System Improvement Addresses Non-Structural Deficiencies	Governance Issues			
	Permitting Issues			
	Inadequate Funding			
System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem	X		
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		8,850,000.00
	Base Year of Cost	2014		
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information	USACE Design Review Report, Chapter VII, 1969		
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
	Engineering and administration	$ 1,070,000.00		$ 1,070,000.00
				$ -
				$ -
	Subtotal	$ 1,070,000.00	$ -	$ 1,070,000.00
	Construction			$ -
		$ 4,482,000.00		$ 4,482,000.00
				$ -
				$ -
				$ -
	Subtotal	$ 4,482,000.00	$ -	$ 4,482,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 2,384,000.00		
	Property Acquisition	$ 464,000.00		
	Environmental Documentation (Permitting)	$ 450,000.00		
	Legal Services			
	Subtotal	$ 3,298,000.00	$ -	$ 3,298,000.00
	Grand Total	$ 8,850,000.00	$ -	$ 8,850,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		

Upper San Joaquin River Regional Flood Management Plan System Improvement Owens Reservoir Enlargement and Downstream Levee and Channel Improvements		
Basin Wide Document	USJR Systemwide Impacts	X
KMZ File	KMZ File Provided (Yes/No)	Y
GIS Information	Latitude	37.316523
	Longitude	-120.185448
	Shape	Point
Coordination with other System Improvements	System Improvement 1	22, 23, 24, 25, 26, 28, 29, 30, 31, 32, 33
	System Improvement 2	34, 35, 36
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	X
	Short-term System Improvement	
	Long-term System Improvement	X
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	X
	Rapidity	X
System Improvement Groups	Rural	
	Urban	X
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Burns Reservoir Enlargement and Downstream Levee and Channel Improvement		
System Improvement Background	Abbreviated System Improvement Name	BurnsRes_Enlarg_Lev_Chan_Impv
	System Improvement Name	Burns Reservoir Enlargement and Downstream Levee and Channel Improvement
	System Improvement ID	28
	Lead Agency	Merced Streams Group
	Contact Person	Kellie Jacobs
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	USACE
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	Merced IRWMP Flood Management Summary August 2013, USACE Design Memos
	County	Merced
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Long-term
	Within Planning Area (Yes/No)	N
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	Enlarge Burns Reservoir for 200-year protection
	System Improvement Description	Burns Reservoir was constructed in the early 1950's as an element of the Merced Streams Group Project authorized by Congress's 1944 Flood Control Act. The Flood Control Act of 1970 called for three additional flood control reservoirs, enlargement of existing reservoirs, and 52 miles of levee and channel modifications. To date only one additional reservoir has been built (Castle Dam). The enlargement of Burns Reservoir would increase the level of flood protection to the most populated areas of Merced County. Burns Reservoir was originally constructed to provide protection for up to a 50-year storm event. The State of California has adopted legislation that calls for a minimum of 200-year flood protection for urbanized areas. This system improvement would meet the requirements of the new flood control legislation. As part of this project, opportunities for riparian and wetland habitat enhancements will be considered.
	Problem Addressed by System Improvement	Inadequate flood capacity in stream for SB5 requirements
	System Improvement Benefits	Provides 200-year protection for City of Merced
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X

Upper San Joaquin River Regional Flood Management Plan System Improvement Burns Reservoir Enlargement and Downstream Levee and Channel Improvement				
System Improvement Addresses Non-Structural Deficiencies	Governance Issues			
	Permitting Issues			
	Inadequate Funding			
System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem	X		
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		39,180,000.00
	Base Year of Cost	2014		
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information	USACE Design Memo 2, Chapter IX, 1969		
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
	Engineering and administration	$ 4,978,000.00		$ 4,978,000.00
				$ -
				$ -
	Subtotal	$ 4,978,000.00	$ -	$ 4,978,000.00
	Construction			$ -
		$ 20,791,000.00		$ 20,791,000.00
				$ -
				$ -
				$ -
	Subtotal	$ 20,791,000.00	$ -	$ 20,791,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 10,598,000.00		
	Property Acquisition	$ 733,000.00		
	Environmental Documentation (Permitting)	$ 2,080,000.00		
	Legal Services			
	Subtotal	$ 13,411,000.00	$ -	$ 13,411,000.00
	Grand Total	$ 39,180,000.00	$ -	$ 39,180,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	X		

Upper San Joaquin River Regional Flood Management Plan System Improvement Burns Reservoir Enlargement and Downstream Levee and Channel Improvement		
KMZ File	KMZ File Provided (Yes/No)	Y
GIS Information	Latitude	37.376333
	Longitude	-120.274633
	Shape	Point
Coordination with other System Improvements	System Improvement 1	22, 23, 24, 25, 26, 27, 29, 30, 31, 32, 33
	System Improvement 2	34, 35, 36
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	X
	Short-term System Improvement	
	Long-term System Improvement	X
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	X
	Rapidity	X
System Improvement Groups	Rural	
	Urban	X
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Merced Region Programmatic Environmental Impact Report for Stream Bed and Vegetation Control		
System Improvement Background	Abbreviated System Improvement Name	Merced_PEIR_Stream_Veg_Contrl
	System Improvement Name	Merced Region Programmatic Environmental Impact Report for Stream Bed and Vegetation Control
	System Improvement ID	29
	Lead Agency	Merced Streams Group
	Contact Person	Kellie Jacobs
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	Merced IRWMP Flood Management Summary August 2013
	County	Merced
	System Improvement Type	
	Structural	
	Non-Structural	X
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Residential/Agricultural
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Programmatic EIR for flood management activities
	System Improvement Description	Vegetation and stream bed/channel management is critical to decrease flood related impacts in Merced County. Recent interpretations and application of Fish and Game codes have nearly halted stream bed and channel maintenance. CEQA analyses for streambed alteration permitting for each project is expensive and defers maintenance creating complex unintended outcomes. The Merced region should explore the effectiveness and cost of preparing a local Programmatic Environmental Impact Report (PEIR) to reduce evaluation costs and speed up CEQA reviews related to flood management.
	Problem Addressed by System Improvement	System capacity reduction
	System Improvement Benefits	Restores system capacity
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	X
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Merced Region Programmatic Environmental Impact Report for Stream Bed and Vegetation Control					
System Improvement Status	Conceptual	X			
	Planning				
	Permitting / Preliminary Design				
	Final Design / Fully Funded				
	Construction				
	O&M	X			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X			
	Agriculture				
	Ecosystem				
	Recreation				
	Transportation				
	Water Quality				
	Water Supply				
	Groundwater Recharge				
	Multi-Objective System Improvement				
Cost	System Improvement Costs ($)	$			300,000.00
	Base Year of Cost	2013			
	Source of Estimate	Merced IRWMP Flood Management Summary August 2013			
	Additional Cost Details, Assumptions, or Information				
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**	
	Planning			$	-
		$ 300,000.00		$	300,000.00
				$	-
				$	-
	Subtotal	$ 300,000.00	$ -	$	300,000.00
	Design			$	-
				$	-
				$	-
				$	-
	Subtotal	$ -	$ -	$	-
	Construction			$	-
				$	-
				$	-
				$	-
				$	-
	Subtotal	$ -	$ -	$	-
	Contingencies and Incidentals				
	Contingency and Incidentals				
	Property Acquisition				
	Environmental Documentation (Permitting)				
	Legal Services				
	Subtotal	$ -	$ -	$	-
	Grand Total	$ 300,000.00	$ -	$	300,000.00
	Local Agency Cost Share			$	-
	Partner Agency Cost Share			$	-
	Total Annual O&M Costs			$	-
Cost Estimate Status	C=Complete, N/A=Not Available	C			

Upper San Joaquin River Regional Flood Management Plan System Improvement Merced Region Programmatic Environmental Impact Report for Stream Bed and Vegetation Control		
Basin Wide Document	USJR Systemwide Impacts	
KMZ File	KMZ File Provided (Yes/No)	Y
GIS Information	Latitude	Multiple locations in Merced County
	Longitude	
	Shape	Polygon
Coordination with other System Improvements	System Improvement 1	22, 23, 24, 25, 26, 27, 29, 30, 31, 32, 33
	System Improvement 2	34, 35, 36
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	X
	Short-term System Improvement	
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	X
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Merced County Flood Control District		
System Improvement Background	Abbreviated System Improvement Name	Mer_Co_Fld_Cntrl_Dist
	System Improvement Name	Merced County Flood Control District
	System Improvement ID	30
	Lead Agency	Merced Streams Group
	Contact Person	Kellie Jacobs
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	Merced IRWMP Flood Management Summary August 2013
	County	Merced
	System Improvement Type	
	Structural	
	Non-Structural	X
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Residential/Agricultural
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Form Flood Control District
	System Improvement Description	In the past decade, established flood control agencies have had great success in mitigating flood risk throughout California, due to their singular focus. Examples include the Sacramento Area Flood Control Agency (SAFCA), the Sutter Butte Flood Control Agency (SBFCA), the San Joaquin Area Flood Control Agency (SJAFCA), and the San Joaquin County Flood Control and Water Conservation District (SJCFC & WCD). This option would involve the creation of a flood control agency for the region, either as an adjunct of Merced County, or as a joint powers authority. The agency would be responsible for planning, coordinating, and managing flood control projects for the region. A central flood control agency could also perform O&M functions.
	Problem Addressed by System Improvement	Create JPA to formalize agreement between agencies in county
	System Improvement Benefits	Improved governance
Permits (X=Required)	CVFPB	X
	404	
	408	
	USFWS	
	RWQCB	
	ESA	
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	X
	Permitting Issues	
	Inadequate Funding	X

Upper San Joaquin River Regional Flood Management Plan System Improvement Merced County Flood Control District				
System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M	X		
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		100,000.00
	Base Year of Cost	2013		
	Source of Estimate	Merced IRWMP Flood Management Summary August 2013		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
		$ 100,000.00		$ 100,000.00
				$ -
				$ -
	Subtotal	$ 100,000.00	$ -	$ 100,000.00
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ 100,000.00	$ -	$ 100,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		

Upper San Joaquin River Regional Flood Management Plan System Improvement Merced County Flood Control District		
Basin Wide Document	USJR Systemwide Impacts	X
KMZ File	KMZ File Provided (Yes/No)	Y
GIS Information	Latitude	Merced County
	Longitude	
	Shape	
Coordination with other System Improvements	System Improvement 1	22, 23, 24, 25, 26, 27, 28, 29, 31, 32, 33
	System Improvement 2	
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	
	Long-term System Improvement	
	Recommendation/Recommended Actions	X
Resiliency	Robustness	
	Redundancy	
	Resourcefulness	X
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	X
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Black Rascal Creek Flood Control Project		
System Improvement Background	Abbreviated System Improvement Name	Black_Rascal_Crk_Flood_Cntrl
	System Improvement Name	Black Rascal Creek Flood Control Project
	System Improvement ID	31
	Lead Agency	Merced County
	Contact Person	Kellie Jacobs
	Partner Agency	Merced Streams Groups
	Identified State Partner Name	
	Identified Federal Partner Name	USACE
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	Merced IRWMP Flood Management Summary August 2013, Feasibility Study June 2008 & February 2009
	County	Merced
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Long-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Residential/Agricultural
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Construction of Flood Retention Basin on Black Rascal Creek for 200 year protection.
	System Improvement Description	Construction of a regulating reservoir on the Black Rascal Creek Watershed. System improvement location is immediately north of Yosemite Avenue and Arboleda Drive in northeast Merced. System improvement will provide protection against a 200-year storm event and much needed flood control on the currently unprotected Black Rascal Creek Watershed. System improvement will benefit all downstream areas of watershed. The reservoir will maintain a deadpool for wildlife purposes. During flood season the reservoir would be used primarily as a flood retention basin. During irrigation season the reservoir would regulate irrigation flows and improve efficiency of Merced Irrigation District's water system without impacting power generation scheduling by the Independent System Operator (ISO) at New Exchequer Dam. Based upon initial review of existing information, reducing flood flows in Black Rascal Creek at the Yosemite Ave. diversion to less than about 3,000 cubic feet per second (cfs) by use of upstream detention will substantially reduce the flooding in the City of Merced. The completed system improvement could protect houses in the Franklin-Beachwood area, where over 80 homes were flooded during the 2006 flood. A flood control structure on Black Rascal Creek could also offer protection to other areas situated along Bear Creek. Merced County retained a consultant to investigate the feasibility of alternative flood control improvements, including alternative operation procedures and infrastructure improvements to the Lake Yosemite facilities, to reduce the peak flows at the Black Rascal Creek diversion. The study identified four different sites along Black Rascal Creek for construction of a detention basin. The amount of new storage provided by the various detention basins ranged from 300 to 2,500 acre-feet. As part of this project, opportunities for riparian and wetland habitat enhancements will be considered.
	Problem Addressed by System Improvement	Inadequate flood capacity in stream for SB5 requirements
	System Improvement Benefits	Provides 200-year protection for City of Merced
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X

Upper San Joaquin River Regional Flood Management Plan System Improvement Black Rascal Creek Flood Control Project				
Structural Deficiencies	Subsidence			
	Seepage			
	Erosion / Sedimentation			
	Structural Deficiencies (Breaches, Encroachments)			
	Inadequate Capacity	X		
	Aging Infrastructure / Systems / Equipment			
	Vegetation / Invasive Species			
	Control of Upstream Flows	X		
	Disconnected Floodplains			
	O&M/ Emergency Management Issues	X		
System Improvement Addresses Non-Structural Deficiencies	Governance Issues			
	Permitting Issues			
	Inadequate Funding			
System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem	X		
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		32,980,000.00
	Base Year of Cost	2014		
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information	Merced County Feasibility Study, Black Rascal Creek Flood Control Project, Addendum 1, 2009		
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
		$ 1,170,000.00		$ 1,170,000.00
				$ -
				$ -
	Subtotal	$ 1,170,000.00	$ -	$ 1,170,000.00
	Construction			$ -
		$ 11,570,000.00		$ 11,570,000.00
				$ -
				$ -
				$ -
	Subtotal	$ 11,570,000.00	$ -	$ 11,570,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 5,830,000.00		
	Property Acquisition	$ 13,390,000.00		
	Environmental Documentation (Permitting)	$ 1,020,000.00		
	Legal Services			
	Subtotal	$ 20,240,000.00	$ -	$ 20,240,000.00
	Grand Total	$ 32,980,000.00	$ -	$ 32,980,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -

Upper San Joaquin River Regional Flood Management Plan System Improvement Black Rascal Creek Flood Control Project		
Cost Estimate Status	C=Complete, N/A=Not Available	C
Basin Wide Document	USJR Systemwide Impacts	X
KMZ File	KMZ File Provided (Yes/No)	Y
GIS Information	Latitude	37.340522
	Longitude	-120.376231
	Shape	Polygon
Coordination with other System Improvements	System Improvement 1	22, 23, 24, 25, 26, 27, 28, 29, 30, 32, 33, 34, 35, 36
	System Improvement 2	
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	
	Long-term System Improvement	X
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	X
	Rapidity	X
System Improvement Groups	Rural	
	Urban	X
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Construct Ring Levees Around Flood Prone Areas		
System Improvement Background	Abbreviated System Improvement Name	Construct_Ring_Levees
	System Improvement Name	Construct Ring Levees Around Flood Prone Areas
	System Improvement ID	32
	Lead Agency	Merced County
	Contact Person	
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	Y
	Existing Supporting Documents / References	Merced IRWMP Flood Management Summary August 2013
	County	Merced
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Long-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Residential/Agricultural
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Construct Ring Levee
	System Improvement Description	A ring levee is a levee that completely encircles an area subject to inundation from all directions. These can effectively protect structures or areas from shallow flooding. Ring levees are generally less than 5-feet tall, and have minor impacts to the floodplain outside the ring. Ring levees may be constructed around single facilities, or could encircle larger areas. For example, Marysville, CA is encircled by a ring levee. A recent residential subdivision on Hotchkiss Tract (RD799) included a ring levee to reduce the likelihood of flood damage to these structures. A key to the feasibility of ring levees, particularly on discrete facilities, is the availability of right-of-way and the acceptability of risk of remaining inside during a flood with evacuation routes cut off.
	Problem Addressed by System Improvement	Inadequate flood capacity in stream for SB5 requirements
	System Improvement Benefits	Provides 200-year protection for City of Merced
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X

Upper San Joaquin River Regional Flood Management Plan System Improvement Construct Ring Levees Around Flood Prone Areas				
System Improvement Addresses Non-Structural Deficiencies	Governance Issues			
	Permitting Issues			
	Inadequate Funding			
System Improvement Status	Conceptual	X		
	Planning			
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		-
	Base Year of Cost			
	Source of Estimate			
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ -	$ -	$ -
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	N/A		
Basin Wide Document	USJR Systemwide Impacts			

Upper San Joaquin River Regional Flood Management Plan System Improvement Construct Ring Levees Around Flood Prone Areas		
KMZ File	KMZ File Provided (Yes/No)	N
GIS Information	Latitude	No identified location
	Longitude	
	Shape	
Coordination with other System Improvements	System Improvement 1	22, 23, 24, 25, 26, 27, 28, 29, 30, 31,, 33
	System Improvement 2	34, 35, 36
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	X

Upper San Joaquin River Regional Flood Management Plan System Improvement Channel Dredging and/or Vegetation Removal		
System Improvement Background	Abbreviated System Improvement Name	Chanl_Dredg_Veg_Removal
	System Improvement Name	Channel Dredging and/or Vegetation Removal
	System Improvement ID	33
	Lead Agency	Merced County
	Contact Person	
	Partner Agency	Merced Irrigation District, City of Merced
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	Merced IRWMP Flood Management Summary August 2013
	County	Merced
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Residential/Agricultural
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Channel Dredging and/or Vegetation Removal
	System Improvement Description	Streams, creeks, and rivers within the Merced Region are periodically choked with vegetation causing channel capacities to be exceeded during major floods. Removing some of this vegetation and/or excavating the channel would increase the carrying capacity and decrease the flood risk for select areas. This option may benefit reaches of Bear Creek, Black Rascal Creek, and Black Rascal Slough where current channel capacities are well below the 100-year level. This option may be implemented as a capital improvement project, or implemented via current Operations and Maintenance activities.
	Problem Addressed by System Improvement	Reduced channel capacity
	System Improvement Benefits	Improve flood flows
Permits (X=Required)	CVFPB	X
	404	X
	408	
	USFWS	X
	RWQCB	
	ESA	X
	Local	
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	X
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	X
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Channel Dredging and/or Vegetation Removal				
System Improvement Status	Conceptual	X		
	Planning			
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M	X		
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		2,200,000.00
	Base Year of Cost	2013		
	Source of Estimate	Merced IRWMP Flood Management Summary August 2013		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
		$ 1,000,000.00		$ 1,000,000.00
				$ -
				$ -
				$ -
	Subtotal	$ 1,000,000.00	$ -	$ 1,000,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ 1,000,000.00	$ -	$ 1,000,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs	$ 2,200,000.00		$ 2,200,000.00
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts			
KMZ File	KMZ File Provided (Yes/No)			
GIS Information	Latitude	No identified location		
	Longitude			
	Shape			

Upper San Joaquin River Regional Flood Management Plan System Improvement Channel Dredging and/or Vegetation Removal		
Coordination with other System Improvements	System Improvement 1	22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32
	System Improvement 2	34, 35, 36
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	X
Resiliency	Robustness	X
	Redundancy	
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	X
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Construct Levees or Channel Widening Projects Along Creeks/Streams in the Region		
System Improvement Background	Abbreviated System Improvement Name	Constr_Levees_Chan_Wide
	System Improvement Name	Construct Levees or Channel Widening Projects Along Creeks/Streams in the Region
	System Improvement ID	34
	Lead Agency	Merced County
	Contact Person	
	Partner Agency	Merced Irrigation District, City of Merced
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	Merced IRWMP Flood Management Summary, August 2013
	County	Merced
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Long-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Residential/Agricultural
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Channel/Levee Improvements to Expand Capacity
	System Improvement Description	Levees and/or channel widening projects would contain flood flows in existing channels for Bear Creek, Black Rascal Creek and Slough, Deadman Creek, Dry Creek, Fahrens Creek, and Mariposa Creek, which are subject to flooding. As part of this project, opportunities for riparian and wetland habitat enhancements will be considered.
	Problem Addressed by System Improvement	Inadequate flood capacity in stream for SB5 requirements
	System Improvement Benefits	Provides 200-year protection for City of Merced
Permits (X=Required)	CVFPB	X
	404	X
	408	
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	X
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Construct Levees or Channel Widening Projects Along Creeks/Streams in the Region				
System Improvement Status	Conceptual	X		
	Planning			
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		-
	Base Year of Cost			
	Source of Estimate			
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal		$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal		$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal		$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal		$ -	$ -
	Grand Total		$ -	$ -
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	N/A		
Basin Wide Document	USJR Systemwide Impacts			
KMZ File	KMZ File Provided (Yes/No)	N		
GIS Information	Latitude	Multiple Creeks in Merced County		
	Longitude			
	Shape			

Upper San Joaquin River Regional Flood Management Plan System Improvement Construct Levees or Channel Widening Projects Along Creeks/Streams in the Region		
Coordination with other System Improvements	System Improvement 1	22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33
	System Improvement 2	35, 36
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	
	Rapidity	X
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	X

Upper San Joaquin River Regional Flood Management Plan System Improvement Divert Flood Flows to Agricultural Lands		
System Improvement Background	Abbreviated System Improvement Name	Divrt_Flood_Flows_AgLands
	System Improvement Name	Divert Flood Flows to Agricultural Lands
	System Improvement ID	35
	Lead Agency	Merced County
	Contact Person	
	Partner Agency	Merced Irrigation District, City of Merced
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	Merced IRWMP Flood Management Summary August 2013
	County	Merced
	System Improvement Type	
	Structural	X
	Non-Structural	X
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Long-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Urban/Agricultural
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	Flood Flow Diversion Merced County
	System Improvement Description	Diverting flood flows out of Bear Creek, east of City of Merced, onto nearby agricultural land could decrease peak flows within the channel. Depending on the topography, the types of crops, and the willingness of the landowners, agricultural land could be utilized as detention basins where excess flood flows would be temporarily stored until water percolates back into the ground. Agricultural lands would be temporarily flooded and the waters would be routed back into the channel after the high flows recede.
	Problem Addressed by System Improvement	Inadequate system capacity
	System Improvement Benefits	Reduce peak flood flows
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	X
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Divert Flood Flows to Agricultural Lands				
System Improvement Status	Conceptual	X		
	Planning			
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture	X		
	Ecosystem	X		
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement	X		
Cost	System Improvement Costs ($)	$		-
	Base Year of Cost			
	Source of Estimate			
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal		$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal		$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal		$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal		$ -	$ -
	Grand Total		$ -	$ -
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	N/A		
Basin Wide Document	USJR Systemwide Impacts	X		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.31509		
	Longitude	-120.343637		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Divert Flood Flows to Agricultural Lands		
Coordination with other System Improvements	System Improvement 1	22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33
	System Improvement 2	34, 36
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	X
	Rapidity	X
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	X

Upper San Joaquin River Regional Flood Management Plan System Improvement Ecosystem Restoration Along Waterways		
System Improvement Background	Abbreviated System Improvement Name	Eco_Rest_Waterways
	System Improvement Name	Ecosystem Restoration Along Waterways
	System Improvement ID	36
	Lead Agency	Merced County
	Contact Person	
	Partner Agency	Merced Irrigation District, City of Merced
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	Merced IRWMP Flood Management Summary August 2013
	County	Merced
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Long-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural/Residential
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	Restore Natural Floodplains on Bear Creek
	System Improvement Description	An alternative similar to routing flood flows onto agricultural land (system improvement 33) would be to acquire riparian areas of agricultural land and restore natural floodplains. This type of flood control system improvement could be implemented as an ecosystem mitigation bank. A secondary benefit to this option would be the direct recharge of groundwater. This type of system improvement may be feasible for reaches of Bear Creek located upstream and downstream of City of Merced. Costs would vary on the number of parcels acquired, willingness of landowner to sell all or part of their property, and environmental impacts.
	Problem Addressed by System Improvement	Inadequate system capacity
	System Improvement Benefits	Reduce peak flood flows
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	X
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Ecosystem Restoration Along Waterways				
System Improvement Status	Conceptual	X		
	Planning			
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture	X		
	Ecosystem	X		
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge	X		
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		-
	Base Year of Cost			
	Source of Estimate			
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal		$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal		$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal		$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal		$ -	$ -
	Grand Total		$ -	$ -
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	N/A		
Basin Wide Document	USJR Systemwide Impacts			
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.314134		
	Longitude	-120.36252		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Ecosystem Restoration Along Waterways		
Coordination with other System Improvements	System Improvement 1	22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33
	System Improvement 2	34, 35
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	X
	Rapidity	X
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	X

Upper San Joaquin River Regional Flood Management Plan System Improvement Modify Land Use Designations		
System Improvement Background	Abbreviated System Improvement Name	Modify_Land_Use_Designations
	System Improvement Name	Modify Land Use Designations
	System Improvement ID	37
	Lead Agency	Merced County
	Contact Person	
	Partner Agency	City of Merced
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	Merced IRWMP Flood Management Summary August 2013
	County	Merced
	System Improvement Type	
	Structural	
	Non-Structural	X
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Residential
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Land Use Designations in Merced County
	System Improvement Description	Merced County currently imposes development restrictions for Special Flood Hazard Areas (Chapter 18.34 of the County Code) in accordance with FEMA and the NFIP. Merced County's Floodplain Land Use Ordinance also provides formal primary and secondary floodplain zones along streams and describes limitations on land uses in these zones. Modifications to the existing land use designations within the Merced Region could direct growth outside of the floodplain. New options include: imposing elevation requirements for new development within the 200-yr or 500-year floodplain, limiting or restricting new development within the 200-yr or 500-year floodplain in accordance with SB-5 requirements, or designating permanent agricultural zones. While this option may inhibit economic growth in floodplains, it may reduce flood risk and ultimately cost less than flood control system capital improvements.
	Problem Addressed by System Improvement	Increased population and property at risk
	System Improvement Benefits	Reduced flood risk
Permits (X=Required)	CVFPB	
	404	
	408	
	USFWS	
	RWQCB	
	ESA	
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	X
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Modify Land Use Designations				
System Improvement Status	Conceptual	X		
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		-
	Base Year of Cost			
	Source of Estimate			
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ -	$ -	$ -
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	N/A		
Basin Wide Document	USJR Systemwide Impacts			
KMZ File	KMZ File Provided (Yes/No)			
GIS Information	Latitude	Merced County		
	Longitude			
	Shape			

Upper San Joaquin River Regional Flood Management Plan System Improvement Modify Land Use Designations		
Coordination with other System Improvements	System Improvement 1	38, 39, 40, 41
	System Improvement 2	
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	
	Long-term System Improvement	
	Recommendation/Recommended Actions	X
Resiliency	Robustness	
	Redundancy	
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	X
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Develop Emergency Response Plans		
System Improvement Background	Abbreviated System Improvement Name	Devlp_ER_Plans
	System Improvement Name	Develop Emergency Response Plans
	System Improvement ID	38
	Lead Agency	Merced County
	Contact Person	
	Partner Agency	City of Merced
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	Merced IRWMP Flood Management Summary August 2013
	County	Merced
	System Improvement Type	
	Structural	
	Non-Structural	X
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Residential/Agricultural
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Develop Emergency Flood Response Plan in Merced County
	System Improvement Description	The objective of an emergency response plan is the prevent loss of life; reduce physical damage to public and private property (evacuation equipment, pre and post flood fight materials, etc.); plan for speedy recovery; and disaster management and communication. The development of emergency response plans are typically a low-cost/high benefit option for mitigating flood risk.
	Problem Addressed by System Improvement	Emergency response planning
	System Improvement Benefits	System operation and emergency response
Permits (X=Required)	CVFPB	
	404	
	408	
	USFWS	
	RWQCB	
	ESA	
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	X
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Develop Emergency Response Plans				
System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M	X		
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		100,000.00
	Base Year of Cost	2013		
	Source of Estimate	Merced IRWMP Flood Management Summary August 2013		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
		$ 100,000.00		$ 100,000.00
				$ -
				$ -
	Subtotal	$ 100,000.00	$ -	$ 100,000.00
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ 100,000.00	$ -	$ 100,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts			
KMZ File	KMZ File Provided (Yes/No)	N		
GIS Information	Latitude	Merced County		
	Longitude			
	Shape			

Upper San Joaquin River Regional Flood Management Plan System Improvement Develop Emergency Response Plans		
Coordination with other System Improvements	System Improvement 1	37, 39, 40, 41
	System Improvement 2	
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	X
	Short-term System Improvement	
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	
	Redundancy	
	Resourcefulness	X
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	X
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Increase Public Awareness of Flooding		
System Improvement Background	Abbreviated System Improvement Name	Increase_Public_Awareness_Flood
	System Improvement Name	Increase Public Awareness of Flooding
	System Improvement ID	39
	Lead Agency	Merced County
	Contact Person	
	Partner Agency	Merced Irrigation District, City of Merced
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	Merced IRWMP Flood Management Summary August 2013
	County	Merced
	System Improvement Type	
	Structural	
	Non-Structural	X
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Residential/Agricultural
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Merced County Public Awareness of Flooding Campaign
	System Improvement Description	Increasing the public's knowledge about flood risk is another non-structural alternative for mitigating flood risk. In addition to improving safety during floods, the efforts can also enhance public support of flood control projects. Typical forms of outreach include press releases, individual mailer brochures, website development, posters, "flood awareness month", and social networking site involvement. Note that the public outreach efforts can often be completed in conjunction with other related projects in order to reduce costs. Merced and other communities are prone to flooding from the creeks in the region. Increasing public awareness of flood season, precautionary measures, and their location with respect to the floodplain may be effective in reducing flood damages.
	Problem Addressed by System Improvement	Lack of community awareness of flooding
	System Improvement Benefits	Public awareness, improved public safety
Permits (X=Required)	CVFPB	
	404	
	408	
	USFWS	
	RWQCB	
	ESA	
	Local	
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	X
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Increase Public Awareness of Flooding				
System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		50,000.00
	Base Year of Cost	2013		
	Source of Estimate	Merced IRWMP Flood Management Summary August 2013		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
		$ 50,000.00		$ 50,000.00
				$ -
				$ -
	Subtotal	$ 50,000.00	$ -	$ 50,000.00
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ 50,000.00	$ -	$ 50,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts			
KMZ File	KMZ File Provided (Yes/No)	N		
GIS Information	Latitude	Merced County		
	Longitude			
	Shape			

Upper San Joaquin River Regional Flood Management Plan System Improvement Increase Public Awareness of Flooding		
Coordination with other System Improvements	System Improvement 1	37, 38
	System Improvement 2	40, 41
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	
	Long-term System Improvement	
	Recommendation/Recommended Actions	X
Resiliency	Robustness	
	Redundancy	
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	X
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Monitor Creek Water Quality and Storm Drainage Discharges		
System Improvement Background	Abbreviated System Improvement Name	Monitor_Crk_Water_Quality
	System Improvement Name	Monitor Creek Water Quality and Storm Drainage Discharges
	System Improvement ID	40
	Lead Agency	City of Merced
	Contact Person	
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Merced
	System Improvement Type	
	Structural	
	Non-Structural	X
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	N
	Area Protected	Residential/Agricultural
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	Monitoring Creek Water Quality
	System Improvement Description	This system improvement is to monitor the discharges from storm water run-off into the local creeks and monitor the quality of those creeks as it is affected by the discharges.
	Problem Addressed by System Improvement	Water Quality
	System Improvement Benefits	Water Quality
Permits (X=Required)	CVFPB	X
	404	
	408	
	USFWS	
	RWQCB	X
	ESA	
	Local	
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Monitor Creek Water Quality and Storm Drainage Discharges				
System Improvement Status	Conceptual	X		
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality	X		
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		100,000.00
	Base Year of Cost	2013		
	Source of Estimate	Merced IRWMP Flood Management Summary August 2013		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
		$ 100,000.00		$ 100,000.00
				$ -
				$ -
				$ -
	Subtotal	$ 100,000.00	$ -	$ 100,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ 100,000.00	$ -	$ 100,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts			

Upper San Joaquin River Regional Flood Management Plan System Improvement Monitor Creek Water Quality and Storm Drainage Discharges		
KMZ File	KMZ File Provided (Yes/No)	
GIS Information	Latitude	
	Longitude	City of Merced
	Shape	
Coordination with other System Improvements	System Improvement 1	37, 38, 39
	System Improvement 2	41
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	X
Resiliency	Robustness	
	Redundancy	
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	X
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Update Stormwater Design Standards for the City and Region		
System Improvement Background	Abbreviated System Improvement Name	Update_Stwmt_Desgn_Standards
	System Improvement Name	Update Stormwater Design Standards for the City and Region
	System Improvement ID	41
	Lead Agency	City of Merced
	Contact Person	
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	Merced IRWMP Flood Management Summary August 2013
	County	Merced
	System Improvement Type	
	Structural	
	Non-Structural	X
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Residential
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Update City of Merced Stormwater Design Standards
	System Improvement Description	Update the design standards for stormwater for the Merced region.
	Problem Addressed by System Improvement	Public safety
	System Improvement Benefits	Public safety
Permits (X=Required)	CVFPB	X
	404	
	408	
	USFWS	
	RWQCB	
	ESA	
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	X
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	X
	Permitting Issues	X
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Update Stormwater Design Standards for the City and Region				
System Improvement Status	Conceptual	X		
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		80,000.00
	Base Year of Cost	2013		
	Source of Estimate	Merced IRWMP Flood Management Summary August 2013		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
		$ 80,000.00		$ 80,000.00
				$ -
				$ -
	Subtotal	$ 80,000.00	$ -	$ 80,000.00
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ 80,000.00	$ -	$ 80,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts			
KMZ File	KMZ File Provided (Yes/No)			
GIS Information	Latitude			
	Longitude	City of Merced		
	Shape			

Upper San Joaquin River Regional Flood Management Plan System Improvement Update Stormwater Design Standards for the City and Region		
Coordination with other System Improvements	System Improvement 1	37, 38, 39, 40
	System Improvement 2	
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	
	Long-term System Improvement	
	Recommendation/Recommended Actions	X
Resiliency	Robustness	
	Redundancy	
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	X
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Windmill Ditch Drainage		
System Improvement Background	Abbreviated System Improvement Name	DitchDrainage
	System Improvement Name	Windmill Ditch Drainage
	System Improvement ID	42
	Lead Agency	Merquin County Water District
	Contact Person	Garth A. Pecchenino
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	N
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	Merced IRWMP Flood Management Summary August 2013
	County	Merced
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	N
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Residential
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Installation of pipeline diversion from Windmill Ditch to prevent flooding
	System Improvement Description	Installation of approximately 4,500 feet of pipeline to transport drainage waters to an existing ditch that discharges to the San Joaquin River. The existing Windmill Ditch intercepts flood water upstream of the community in the northeast area. This installation would allow the flood waters to be moved around the community.
	Problem Addressed by System Improvement	Flooding in Stevenson area
	System Improvement Benefits	Public Safety
Permits (X=Required)	CVFPB	
	404	X
	408	
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	X
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Windmill Ditch Drainage				
System Improvement Status	Conceptual	X		
	Planning			
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		1,900,000.00
	Base Year of Cost	2013		
	Source of Estimate	Merced IRWMP Flood Management Summary August 2013		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
		$ 1,300,000.00		$ 1,300,000.00
		$ 600,000.00		$ 600,000.00
				$ -
	Subtotal	$ 1,900,000.00	$ -	$ 1,900,000.00
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ 1,900,000.00	$ -	$ 1,900,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts			
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.3302		
	Longitude	-120.8449		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Windmill Ditch Drainage		
Coordination with other System Improvements	System Improvement 1	43
	System Improvement 2	
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	
	Redundancy	
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	X
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement McCullough Road Drainage Project		
System Improvement Background	Abbreviated System Improvement Name	McCullough_Drainage Prjt
	System Improvement Name	McCullough Road Drainage Project
	System Improvement ID	43
	Lead Agency	Merquin County Water District
	Contact Person	
	Partner Agency	Merced County
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	N
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	Merced IRWMP Flood Management Summary August 2013
	County	Merced
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	N
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Residential
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Installation of Pipeline to Prevent flooding on McCullough Road
	System Improvement Description	Installation of approximately 5,000 feet of pipeline to replace the use of existing on-farm ditches and roadside ditches to convey storm flood waters and drainage waters away from the intersection of 4th Avenue and McCullough Road. The make shift operation of using private and public facilities over the years has left the area flooded most wet years.
	Problem Addressed by System Improvement	Localized drainage flooding issue
	System Improvement Benefits	Public Safety
Permits (X=Required)	CVFPB	X
	404	X
	408	
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	X
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement McCullough Road Drainage Project				
System Improvement Status	Conceptual	X		
	Planning			
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		2,700,000.00
	Base Year of Cost	2013		
	Source of Estimate	Merced IRWMP Flood Management Summary August 2013		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
		$ 1,950,000.00		$ 1,950,000.00
		$ 750,000.00		$ 750,000.00
				$ -
	Subtotal	$ 2,700,000.00	$ -	$ 2,700,000.00
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ 2,700,000.00	$ -	$ 2,700,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts			
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.3206		
	Longitude	-120.8785		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement McCullough Road Drainage Project		
Coordination with other System Improvements	System Improvement 1	42
	System Improvement 2	
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	
	Redundancy	
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	X
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement San Joaquin River Levee at Firebaugh Waste Water Treatment Plant		
System Improvement Background	Abbreviated System Improvement Name	SJR_Levee_WWTP_Firebaugh
	System Improvement Name	San Joaquin River Levee at Firebaugh Waste Water Treatment Plant
	System Improvement ID	44
	Lead Agency	City of Firebaugh
	Contact Person	Mario Gouveia, city engineer
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Fresno
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Residential/Critical Infrastructure
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Levee Construction to Protect WWTP
	System Improvement Description	The City of Firebaugh's waste water 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 flood plain 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.
	Problem Addressed by System Improvement	Flooding near treatment plant
	System Improvement Benefits	Reducing flooding near treatment plant
Permits (X=Required)	CVFPB	X
	404	X
	408	
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	X
	Structural Deficiencies (Breaches, Encroachments)	X
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement San Joaquin River Levee at Firebaugh Waste Water Treatment Plant				
System Improvement Status	Conceptual	X		
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		1,280,000.00
	Base Year of Cost			
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
		$ 70,000.00		$ 70,000.00
				$ -
				$ -
	Subtotal	$ 70,000.00	$ -	$ 70,000.00
	Construction			$ -
		$ 730,000.00		$ 730,000.00
				$ -
				$ -
				$ -
	Subtotal	$ 730,000.00	$ -	$ 730,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 370,000.00		
	Property Acquisition			
	Environmental Documentation (Permitting)	$ 110,000.00		
	Legal Services			
	Subtotal	$ 480,000.00	$ -	$ 480,000.00
	Grand Total	$ 1,280,000.00	$ -	$ 1,280,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts			
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	36.845332		
	Longitude	-120.429981		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement San Joaquin River Levee at Firebaugh Waste Water Treatment Plant		
Coordination with other System Improvements	System Improvement 1	45, 46
	System Improvement 2	50
	System Improvement 3	51
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	X
	Rapidity	X
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	X
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement San Joaquin River Bank Stabilization at Firebaugh		
System Improvement Background	Abbreviated System Improvement Name	SJR_Bank_Stabilization
	System Improvement Name	San Joaquin River Bank Stabilization at Firebaugh
	System Improvement ID	45
	Lead Agency	City of Firebaugh
	Contact Person	Mario Gouveia, city engineer
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Fresno
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Residential
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Levee Bank Stabilization
	System Improvement Description	Just north of 13th Street (Firebaugh Blvd.) 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 1/4-mile downstream of this project the river makes another sharp turn to the northeast near the intersection of 9th and Q Streets. The west bank at this turn is steep, unstable, and less than 50-feet away from several residences. A second bank stabilization system improvement with a similar configuration to the first is needed at this location. This project could include recreation and environmental enhancement components.
	Problem Addressed by System Improvement	Erosion control on San Joaquin River; Improve levee stability
	System Improvement Benefits	Bank stabilization; Levee stability
Permits (X=Required)	CVFPB	X
	404	X
	408	
	USFWS	X
	RWQCB	
	ESA	
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	X
	Structural Deficiencies (Breaches, Encroachments)	X
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement San Joaquin River Bank Stabilization at Firebaugh				
System Improvement Status	Conceptual	X		
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		1,800,000.00
	Base Year of Cost			
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
		$ 80,000.00		$ 80,000.00
				$ -
				$ -
	Subtotal	$ 80,000.00	$ -	$ 80,000.00
	Construction			$ -
		$ 1,090,000.00		$ 1,090,000.00
				$ -
				$ -
				$ -
	Subtotal	$ 1,090,000.00	$ -	$ 1,090,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 410,000.00		
	Property Acquisition			
	Environmental Documentation (Permitting)	$ 220,000.00		
	Legal Services			
	Subtotal	$ 630,000.00	$ -	$ 630,000.00
	Grand Total	$ 1,800,000.00	$ -	$ 1,800,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts			
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	36.862629		
	Longitude	-120.456129		
	Shape	Polygon		

Upper San Joaquin River Regional Flood Management Plan System Improvement San Joaquin River Bank Stabilization at Firebaugh		
Coordination with other System Improvements	System Improvement 1	44
	System Improvement 2	46, 89
	System Improvement 3	50
	Other System Improvements	51
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	X
	Rapidity	X
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	X
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement San Joaquin River Levee at Firebaugh Rodeo Grounds		
System Improvement Background	Abbreviated System Improvement Name	SJR_Levee_Rodeo_Grounds
	System Improvement Name	San Joaquin River Levee at Firebaugh Rodeo Grounds
	System Improvement ID	46
	Lead Agency	City of Firebaugh
	Contact Person	Mario Gouveia, City Engineer
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Fresno
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Residential/Critical Infrastructure
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Levee Construction to protect WTP/Rodeo Grounds
	System Improvement Description	One of Firebaugh's water treatment plants is located south of the 13th Street (Firebaugh Blvd.) 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 flood plain of the river is available for the proposed levee. This project could include recreation and environmental enhancement components.
	Problem Addressed by System Improvement	Flooding near rodeo grounds
	System Improvement Benefits	Reducing flooding near rodeo grounds
Permits (X=Required)	CVFPB	X
	404	X
	408	
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	X
	Structural Deficiencies (Breaches, Encroachments)	X
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement San Joaquin River Levee at Firebaugh Rodeo Grounds				
System Improvement Status	Conceptual	X		
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		1,450,000.00
	Base Year of Cost			
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
		$ 80,000.00		$ 80,000.00
				$ -
				$ -
	Subtotal	$ 80,000.00	$ -	$ 80,000.00
	Construction			$ -
		$ 830,000.00		$ 830,000.00
				$ -
				$ -
				$ -
	Subtotal	$ 830,000.00	$ -	$ 830,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 420,000.00		
	Property Acquisition			
	Environmental Documentation (Permitting)	$ 120,000.00		
	Legal Services			
	Subtotal	$ 540,000.00	$ -	$ 540,000.00
	Grand Total	$ 1,450,000.00	$ -	$ 1,450,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	N		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	36.860122		
	Longitude	-120.452075		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement San Joaquin River Levee at Firebaugh Rodeo Grounds		
Coordination with other System Improvements	System Improvement 1	44, 45, 89
	System Improvement 2	50
	System Improvement 3	51
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	X
	Rapidity	X
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	X
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Three Rivers Ranch Study		
System Improvement Background	Abbreviated System Improvement Name	Three_Rivers_Ranch
	System Improvement Name	Three Rivers Ranch Study
	System Improvement ID	47
	Lead Agency	3F Group (Trout Unlimited, Ducks Unlimited, and American Rivers)
	Contact Person	Chris Unkel
	Partner Agency	Trout Unlimited, Ducks Unlimited, and American Rivers
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Merced
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Yes
	Addresses Deficiency Within Planning Area (Yes/No)	Yes
	Area Protected	Agricultural land
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Flood attenuation on ranch near Eastside canal and Owens Creek
	System Improvement Description	The Ranch is situated on 205 acres directly adjacent to the Eastside bypass on the west side, Owen's Creek on the north, and the East Side Canal on the other. Currently, the entire property is managed for waterfowl habitat and includes seasonal and semi-permanent wetlands, riparian habitat and grassland, and shrub/scrub uplands. Water is supplied to the wetlands either from the East Side Canal, which then must be lifted, or from a deep well that flows approximately 2,000 gallons per minute (GPM). The landowner is continually working to restore native habitats on the property and allows limited waterfowl hunting during the hunting season. The system improvement consists of improvements to the connection of the wetlands to the adjacent waterways for the purpose of providing flood attenuation, juvenile salmonid rearing, groundwater recharge, more stable wetlands, and recreation.
	Problem Addressed by System Improvement	Reduce peak flood flows
	System Improvement Benefits	Reduce peak flood flows; Environmental needs
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	X
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	X
	O&M/ Emergency Management Issues	
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Three Rivers Ranch Study				
System Improvement Status	Conceptual	X		
	Planning			
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture	X		
	Ecosystem	X		
	Recreation	X		
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge	X		
	Multi-Objective System Improvement	X		
Cost	System Improvement Costs ($)	$		100,000.00
	Base Year of Cost			
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ 100,000.00	$ 100,000.00
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ -	$ 100,000.00	$ 100,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	X		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.21492		
	Longitude	-120.701923		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Three Rivers Ranch Study		
Coordination with other System Improvements	System Improvement 1	48, 49
	System Improvement 2	52
	System Improvement 3	60, 66, 67, 68
	Other System Improvements	7, 8, 9, 12
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	X
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Cinnamon Slough Study (Merced Wildlife Refuge)		
System Improvement Background	Abbreviated System Improvement Name	Cinnamon_Slough
	System Improvement Name	Cinnamon Slough Study (Merced Wildlife Refuge)
	System Improvement ID	48
	Lead Agency	3F Group (Trout Unlimited, Ducks Unlimited, and American Rivers)
	Contact Person	Chris Unkel
	Partner Agency	Trout Unlimited, Ducks Unlimited, and American Rivers
	Identified State Partner Name	
	Identified Federal Partner Name	U.S. Fish and Wildlife Service
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Merced
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural land
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Reconnect floodplains of Bypass to Merced National Wildlife Refuge.
	System Improvement Description	This unit of the Merced National Wildlife Refuge, adjacent to the Eastside Bypass, has recently been restored for wetlands by Ducks Unlimited. The U.S. Fish and Wildlife Service staff at the refuge complex is very supportive of a system improvement that would connect the Bypass to the Unit and thereby provide additional irrigation for wetlands while also providing rearing opportunities for spring and fall-run Chinook salmon. Water is supplied by a low-lift pump on the northwest end of the site. Additional lands within the Refuge boundaries, adjacent to the Unit and inside the Bypass, could also serve as rearing habitat if the topography were slightly modified. This system improvement would provide flood attenuation, juvenile salmonid rearing, groundwater recharge, more stable wetlands, and recreation.
	Problem Addressed by System Improvement	Reduce peak flood flows
	System Improvement Benefits	Reduce peak flood flows; Groundwater recharge; Fish habitat
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	X
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	X
	O&M/ Emergency Management Issues	
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Cinnamon Slough Study (Merced Wildlife Refuge)				
System Improvement Status	Conceptual	X		
	Planning			
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem	X		
	Recreation	X		
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge	X		
	Multi-Objective System Improvement	X		
Cost	System Improvement Costs ($)	$		100,000.00
	Base Year of Cost			
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ 100,000.00	$ 100,000.00
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ -	$ 100,000.00	$ 100,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	X		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.16559		
	Longitude	-120.615994		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Cinnamon Slough Study (Merced Wildlife Refuge)		
Coordination with other System Improvements	System Improvement 1	7, 8, 9, 12
	System Improvement 2	47, 49
	System Improvement 3	52
	Other System Improvements	60, 66, 67, 68
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	X
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Sunrise Ranch Study		
System Improvement Background	Abbreviated System Improvement Name	Sunrise_Ranch
	System Improvement Name	Sunrise Ranch Study
	System Improvement ID	49
	Lead Agency	3F Group (Trout Unlimited, Ducks Unlimited, and American Rivers)
	Contact Person	Chris Unkel
	Partner Agency	Trout Unlimited, Ducks Unlimited, and American Rivers
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Merced
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural lands
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Reconnect wetlands and floodplains at Ranch on Eastside Canal.
	System Improvement Description	Owned and operated by Grissom Family Land & Cattle, the Ranch is situated on 1,750 acres with the East Side Canal passing through on the westerly portion. Currently, the entire property is managed for cattle grazing and waterfowl habitat, including seasonal and semi-permanent wetlands and grassland uplands. The landowner maintains a low-pressure grazing program to promote excellent grass growth in future years. Ducks Unlimited is currently working on a wetland restoration project with the landowner to restore wetland topography and hydrology. The system improvement consists of improvements to the connection of the wetlands to the adjacent waterways for the purpose of providing flood attenuation, juvenile salmonid rearing, groundwater recharge, more stable wetlands, and recreation.
	Problem Addressed by System Improvement	Reduce peak flood flows
	System Improvement Benefits	Reduce peak flood flows; Fish habitat; Groundwater recharge
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	X
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	X
	O&M/ Emergency Management Issues	
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Sunrise Ranch Study				
System Improvement Status	Conceptual	X		
	Planning			
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture	X		
	Ecosystem	X		
	Recreation	X		
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge	X		
	Multi-Objective System Improvement	X		
Cost	System Improvement Costs ($)	$		100,000.00
	Base Year of Cost			
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ 100,000.00	$ 100,000.00
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ -	$ 100,000.00	$ 100,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	X		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.239186		
	Longitude	-120.697135		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Sunrise Ranch Study		
Coordination with other System Improvements	System Improvement 1	1,, 2, 3
	System Improvement 2	7, 8, 9, 12, 47, 48
	System Improvement 3	52
	Other System Improvements	60, 66, 67, 68
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	X
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement SJRRP Seepage Management Projects		
System Improvement Background	Abbreviated System Improvement Name	SJRRP_SeepageMgm
	System Improvement Name	SJRRP Seepage Management Projects
	System Improvement ID	50
	Lead Agency	San Joaquin River Restoration Program
	Contact Person	Katrina Harrison
	Partner Agency	U.S. Bureau of Reclamation
	Identified State Partner Name	
	Identified Federal Partner Name	U.S. Bureau of Reclamation
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	Y
	Existing Supporting Documents / References	
	County	Fresno
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term, Long-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Residential/agricultural
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	SJRRP Seepage Management
	System Improvement Description	Existing SJRRP seepage management options include actions that could benefit flood management in the region, including levee improvements, drainage improvements, conveyance improvements, and property acquisition. These actions are being evaluated throughout the San Joaquin River and Eastside Bypass. Continuing coordination with Reclamation on seepage management strategies may result in identification of potentially-compatible flood projects that can be coordinated with the USJR RFMP (such as the Firebaugh Flood Protection / Habitat Project).
	Problem Addressed by System Improvement	Seepage
	System Improvement Benefits	Seepage
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	X
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	X
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	X
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement SJRRP Seepage Management Projects				
System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design	X		
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		51,000,000.00
	Base Year of Cost	2012		
	Source of Estimate	Framework for Implementation: http://www.restoresjr.net/program_library/02-Program_Docs/20120619_SJRRP_Framework_for_ImplDRAFT.pdf Background Document: SJRRP Seepage Management Plan, http://restoresjr.net/flows/Groundwater/index.html#SMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ -	$ -	$ -
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	Y		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	36.800876		
	Longitude	-120.347263		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement SJRRP Seepage Management Projects		
Coordination with other System Improvements	System Improvement 1	7, 8, 13
	System Improvement 2	44, 45, 46, 89
	System Improvement 3	51, 52, 53, 54, 55, 56, 57, 58, 59
	Other System Improvements	
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	X
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	X
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Firebaugh Habitat Projects		
System Improvement Background	Abbreviated System Improvement Name	Firabaugh_FloodProtection
	System Improvement Name	Firebaugh Habitat Projects
	System Improvement ID	51
	Lead Agency	San Joaquin River Restoration Program
	Contact Person	Katrina Harrison
	Partner Agency	U.S. Bureau of Reclamation
	Identified State Partner Name	
	Identified Federal Partner Name	U.S. Bureau of Reclamation
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Fresno
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Long-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Residential/agricultural
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	SJRRP Seepage/ Habitat Project
	System Improvement Description	SJRRP is appraising several properties that may be impacted by shallow groundwater seepage in Reach 3 of the San Joaquin River due to the SJRRP. Acquisition of these properties by SJRRP could result in multi-benefit projects for transitory flood storage near Firebaugh, floodplain habitat and associated flood benefits, and could be rented or leased back to growers (estimated farmable in 80% of years) to eliminate or minimize the amount of agricultural land taken out of production. Habitat work could be done by economically disadvantaged communities of Firebaugh and Mendota to provide flood benefits. This project should be coordinated with the City of Firebaugh levee improvement projects (44-46 on this list) to provide mitigation and multi-benefit system improvements for this area.
	Problem Addressed by System Improvement	Seepage
	System Improvement Benefits	Seepage; Habitat; Transitory storage of flood water
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	X
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	X
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	X
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	X
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Firebaugh Habitat Projects					
System Improvement Status	Conceptual	X			
	Planning				
	Permitting / Preliminary Design				
	Final Design / Fully Funded				
	Construction				
	O&M				
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement				
	Agriculture	X			
	Ecosystem	X			
	Recreation				
	Transportation				
	Water Quality				
	Water Supply				
	Groundwater Recharge	X			
	Multi-Objective System Improvement	X			
Cost	System Improvement Costs ($)	$			-
	Base Year of Cost				
	Source of Estimate				
	Additional Cost Details, Assumptions, or Information				
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**	
	Planning			$	-
				$	-
				$	-
				$	-
	Subtotal	$ -	$ -	$	-
	Design			$	-
				$	-
				$	-
				$	-
	Subtotal	$ -	$ -	$	-
	Construction			$	-
				$	-
				$	-
				$	-
				$	-
	Subtotal	$ -	$ -	$	-
	Contingencies and Incidentals				
	Contingency and Incidentals				
	Property Acquisition				
	Environmental Documentation (Permitting)				
	Legal Services				
	Subtotal	$ -	$ -	$	-
	Grand Total	$ -	$ -	$	-
	Local Agency Cost Share			$	-
	Partner Agency Cost Share			$	-
	Total Annual O&M Costs			$	-
Cost Estimate Status	C=Complete, N/A=Not Available	N/A			
Basin Wide Document	USJR Systemwide Impacts	Y			
KMZ File	KMZ File Provided (Yes/No)	Y			
GIS Information	Latitude	36.893131			
	Longitude	-120.461804			
	Shape	Point			

Upper San Joaquin River Regional Flood Management Plan System Improvement Firebaugh Habitat Projects		
Coordination with other System Improvements	System Improvement 1	44, 45, 46, 89
	System Improvement 2	50
	System Improvement 3	52, 53, 54, 55, 56, 57, 58, 59
	Other System Improvements	
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	
	Long-term System Improvement	X
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	X
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Levee Improvements in Reach 2A, 3, 4A, Eastside Bypass, Mariposa Bypass, and Reach 5		
System Improvement Background	Abbreviated System Improvement Name	Levee_improv
	System Improvement Name	Levee Improvements in Reach 2A, 3, 4A, Eastside Bypass, Mariposa Bypass, and Reach 5
	System Improvement ID	52
	Lead Agency	San Joaquin River Restoration Program
	Contact Person	Paul Romero
	Partner Agency	California Department of Water Resources
	Identified State Partner Name	California Department of Water Resources
	Identified Federal Partner Name	U.S Bureau of Reclamation
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Fresno
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term, Long-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Residential/agricultural
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	SJRRP Levee Improvement
	System Improvement Description	The SJRRP is increasing channel capacity to 4,500 cfs in Reaches 2B and 4B through major projects. Levees in other reaches may also need improvements to increase capacity to 4,500 cubic feet per second (cfs). An initial hydraulic evaluation has been done and DWR has prioritized the next step in data collection and geotechnical evaluation. The result of the further evaluation will help the SJRRP identify future remediation needs for existing levees. Initial system improvement costs were developed assuming that all levees will need remediation; these costs will go down as geotechnical evaluations are complete. As a part of this project, inter-agency agreements, funding, and coordination will be formalized.
	Problem Addressed by System Improvement	Increasing Channel Capacity; Aging infrastructure
	System Improvement Benefits	Increase System Capacity
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	X
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	X
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Levee Improvements in Reach 2A, 3, 4A, Eastside Bypass, Mariposa Bypass, and Reach 5				
System Improvement Status	Conceptual	X		
	Planning			
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		235,000,000.00
	Base Year of Cost	2012		
	Source of Estimate	Framework for Implementation: http://www.restoresjr.net/program_library/02-Program_Docs/20120619_SJRRP_Framework_for_ImplDRAFT.pdf Background Document: Channel Capacity Report, http://restoresjr.net/program_library/02-Program_Docs/20130927_ChannelCapacityReportPublicDraft.pdf		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ -	$ -	$ -
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts			
KMZ File	KMZ File Provided (Yes/No)	N		
GIS Information	Latitude	Reach 2A, 3, 4A, Eastside Bypass, Mariposa Bypass, and 5		
	Longitude			
	Shape			

Upper San Joaquin River Regional Flood Management Plan System Improvement Levee Improvements in Reach 2A, 3, 4A, Eastside Bypass, Mariposa Bypass, and Reach 5		
Coordination with other System Improvements	System Improvement 1	2, 3
	System Improvement 2	7, 8, 13, 19
	System Improvement 3	44, 45, 46, 47, 48, 49, 56
	Other System Improvements	50, 51, 53, 54, 55, 57, 58, 59
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	X
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	X
	Rapidity	X
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	X
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Sediment Removal in Reach 4A and Eastside Bypass		
System Improvement Background	Abbreviated System Improvement Name	Sed_Remv_4A_EastByP
	System Improvement Name	Sediment Removal in Reach 4A and Eastside Bypass
	System Improvement ID	53
	Lead Agency	San Joaquin River Restoration Program
	Contact Person	Katrina Harrison
	Partner Agency	U.S Bureau of Reclamation
	Identified State Partner Name	California Department of Water Resources,
	Identified Federal Partner Name	U.S Bureau of Reclamation
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Fresno, Madera
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Residential/agricultural
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Sediment Removal in Reach 4A and Eastside Bypass
	System Improvement Description	Reclamation is pursuing sand removal on the Merced National Wildlife Refuge to improve conveyance capacity in the Eastside Bypass at and downstream of El Nido Road. Permitting is underway and sand is expected to be removed by 2015.
	Problem Addressed by System Improvement	Reduced system capacity, Sediment deposition
	System Improvement Benefits	Restored system capacity and sediment removal
Permits (X=Required)	CVFPB	
	404	X
	408	
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	X
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	X
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Sediment Removal in Reach 4A and Eastside Bypass				
System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)			
	Base Year of Cost			
	Source of Estimate			
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ -	$ -	$ -
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts			
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.138792		
	Longitude	-120.594811		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Sediment Removal in Reach 4A and Eastside Bypass		
Coordination with other System Improvements	System Improvement 1	6, 8, 13
	System Improvement 2	47, 48, 49, 50, 52, 55, 57
	System Improvement 3	50, 51, 52, 54, 55, 56, 57, 58, 59
	Other System Improvements	66, 67, 68
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	X
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Reach 2B/Mendota Pool Bypass		
System Improvement Background	Abbreviated System Improvement Name	MendotaPool2B
	System Improvement Name	Reach 2B/Mendota Pool Bypass
	System Improvement ID	54
	Lead Agency	San Joaquin River Restoration Program
	Contact Person	Katrina Harrison
	Partner Agency	U.S Bureau of Reclamation
	Identified State Partner Name	California Department of Water Resources,
	Identified Federal Partner Name	U.S Bureau of Reclamation
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Long-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Residential/agricultural
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	Fish Passage around Mendota Pool
	System Improvement Description	Reach 2B levees will be setback by the SJRRP to provide floodplain habitat for fish and increase the capacity of Reach 2B to 4,500 cfs (from an estimated 1,300 cfs). Floodplain could be used as transitory storage and this system improvement will repair any levee stability issues in this reach by replacing them. This system improvement would increase flood protection to lands in the area and could increase operational flexibility to manage flood releases. Continued coordination with flood agencies could result in additional benefits. The SJRRP will be constructing a means for fish passage over Mendota Dam, either through the Mendota Pool Bypass or the Fresno Slough Dam. Fresno Slough Dam may have benefits to improving the ability of CCID to manage flood flows in Mendota Pool through a new dam. The Mendota Pool Bypass could provide flood benefits by an expanded river width / floodplain and an alternate channel around Mendota Pool. As a part of this project, inter-agency agreements, funding, and coordination will be formalized.
	Problem Addressed by System Improvement	Fish Passage around Mendota Pool
	System Improvement Benefits	Increase capacity upstream; Transitory storage; Fish passage; Energy management
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	X
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	X
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	X
	O&M/ Emergency Management Issues	

Upper San Joaquin River Regional Flood Management Plan System Improvement Reach 2B/Mendota Pool Bypass				
System Improvement Addresses Non-Structural Deficiencies	Governance Issues			
	Permitting Issues			
	Inadequate Funding			
System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design	X		
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem	X		
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		295,000,000.00
	Base Year of Cost	2012		
	Source of Estimate	Framework for Implementation: http://www.restoresjr.net/program_library/02-Program_Docs/20120619_SJRRP_Framework_for_ImplDRAFT.pdf Project Description TM and other meeting materials, http://restoresjr.net/activities/site_specific/MPB/index.html		
	Additional Cost Details, Assumptions, or Information	Reach 2B Project -- Mendota Pool Bypass - $174 million Reach 2B Project -- Channel Capacity Improvements - $121 million		
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ -	$ -	$ -
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	X		
KMZ File	KMZ File Provided (Yes/No)	Y		

Upper San Joaquin River Regional Flood Management Plan System Improvement Reach 2B/Mendota Pool Bypass		
GIS Information	Latitude	36.787367
	Longitude	-120.345138
	Shape	Point
Coordination with other System Improvements	System Improvement 1	4, 5, 5A
	System Improvement 2	16, 19, 20
	System Improvement 3	50, 51, 52, 53, 55, 56, 57, 58, 59
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	X
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	X
	Rapidity	X
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	X
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Reach 4B Improvements		
System Improvement Background	Abbreviated System Improvement Name	Reach4B
	System Improvement Name	Reach 4B Improvements
	System Improvement ID	55
	Lead Agency	San Joaquin River Restoration Program
	Contact Person	Katrina Harrison
	Partner Agency	U.S Bureau of Reclamation
	Identified State Partner Name	
	Identified Federal Partner Name	U.S Bureau of Reclamation
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	Y
	Existing Supporting Documents / References	
	County	Madera, Merced
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Long-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Residential/agricultural
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	SJRRP 4B Improvements
	System Improvement Description	The SJRRP is required in the Settlement to increase the capacity of Reach 4B1 of the San Joaquin River to 475 cfs (from an estimated 20 cfs). In addition, the SJRRP will be determining whether to route fish and flows up to 4,500 cfs through Reach 4B1 of the San Joaquin River, or through the Eastside Bypass, or some combination. Setback levees would be built in either case. If flows are to be routed into the Eastside Bypass, Mariposa Bypass, and then to Reach 4B2, Mariposa Bypass setback levees may also be built. Setback levees maintain flood capacity, repair existing flood levees, and allow for habitat improvements such as vegetation growth within the channels. As a part of this project, inter-agency agreements, funding, and coordination will be formalized.
	Problem Addressed by System Improvement	System capacity, levee seepage, aging infrastructure
	System Improvement Benefits	Maintain flood capacity, repair existing levees, and allow for habitat improvements.
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	X
	Seepage	X
	Erosion / Sedimentation	X
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	X
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	X
	O&M/ Emergency Management Issues	
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Reach 4B Improvements				
System Improvement Status	Conceptual	X		
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem	X		
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		-
	Base Year of Cost			
	Source of Estimate			
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ -	$ -	$ -
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	N/A		
Basin Wide Document	USJR Systemwide Impacts	X		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.164276		
	Longitude	-120.632503		
	Shape			

Upper San Joaquin River Regional Flood Management Plan System Improvement Reach 4B Improvements		
Coordination with other System Improvements	System Improvement 1	7, 8, 9, 10
	System Improvement 2	50, 51, 52, 53, 54, 56, 57, 58, 59
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	
	Long-term System Improvement	X
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	X
	Rapidity	X
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	X
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Reach 2B Project - San Mateo Road Crossing		
System Improvement Background	Abbreviated System Improvement Name	SanMateo_RdCross
	System Improvement Name	Reach 2B Project - San Mateo Road Crossing
	System Improvement ID	56
	Lead Agency	San Joaquin River Restoration Program
	Contact Person	Katrina Harrison
	Partner Agency	U.S Bureau of Reclamation
	Identified State Partner Name	
	Identified Federal Partner Name	U.S Bureau of Reclamation
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Merced, Madera
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Long-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Residential/agricultural
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	San Mateo Ave River Crossing and Levee Improvements
	System Improvement Description	Construct a crossing across the San Joaquin River at San Mateo Avenue and build levee setbacks as part of the project in Reach 2B.
	Problem Addressed by System Improvement	Flow construction in system
	System Improvement Benefits	Improved system capacity, emergency management, fish passage
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	X
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	X
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Reach 2B Project - San Mateo Road Crossing				
System Improvement Status	Conceptual	X		
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem	X		
	Recreation			
	Transportation	X		
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement	X		
Cost	System Improvement Costs ($)	$		-
	Base Year of Cost			
	Source of Estimate			
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ -	$ -	$ -
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	N/A		
Basin Wide Document	USJR Systemwide Impacts			
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	36.782221		
	Longitude	-120.312649		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Reach 2B Project - San Mateo Road Crossing		
Coordination with other System Improvements	System Improvement 1	5, 5A, 6
	System Improvement 2	50, 51, 52, 53, 54, 55, 57, 58, 59
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	
	Long-term System Improvement	X
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	X
	Rapidity	X
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	X
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Fish Passage Improvement at Flood Control Structures		
System Improvement Background	Abbreviated System Improvement Name	FishPassageIMP
	System Improvement Name	Fish Passage Improvement at Flood Control Structures
	System Improvement ID	57
	Lead Agency	San Joaquin River Restoration Program
	Contact Person	Katrina Harrison
	Partner Agency	U.S Bureau of Reclamation
	Identified State Partner Name	
	Identified Federal Partner Name	U.S Bureau of Reclamation
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Fresno, Madera, Merced
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Long-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Residential/agricultural
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	Fish passage at Flood Control Structures
	System Improvement Description	Flood control structures in the Mariposa Bypass, Eastside Bypass, and the San Joaquin River including the Sand Slough Control Structure, Reach 4B headgates, and the Chowchilla Bifurcation Structure are partial barriers to fish passage at higher flows and may be complete barriers at lower flows. Some of these structures may be in need of repair or replacement by SJRRP in order to adequately serve their intended flood management purpose and meet fish passage requirements.
	Problem Addressed by System Improvement	Aging infrastructure
	System Improvement Benefits	Aging infrastructure, Fish passage
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	X
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Fish Passage Improvement at Flood Control Structures				
System Improvement Status	Conceptual	X		
	Planning			
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem	X		
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		-
	Base Year of Cost			
	Source of Estimate			
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ -	$ -	$ -
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	N/A		
Basin Wide Document	USJR Systemwide Impacts			
KMZ File	KMZ File Provided (Yes/No)			
GIS Information	Latitude	Systemwide		
	Longitude			
	Shape			

Upper San Joaquin River Regional Flood Management Plan System Improvement Fish Passage Improvement at Flood Control Structures		
Coordination with other System Improvements	System Improvement 1	5
	System Improvement 2	5A
	System Improvement 3	6
	Other System Improvements	50, 51, 52, 53, 54, 55, 56, 58, 59
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	
	Long-term System Improvement	X
	Recommendation/Recommended Actions	
Resiliency	Robustness	
	Redundancy	
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	X
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Arroyo Canal Screening and Sack Dam Passage		
System Improvement Background	Abbreviated System Improvement Name	Arroyo_Canal
	System Improvement Name	Arroyo Canal Screening and Sack Dam Passage
	System Improvement ID	58
	Lead Agency	San Joaquin River Restoration Program
	Contact Person	Katrina Harrison, Chase Hurley
	Partner Agency	U.S Bureau of Reclamation, Henry Miller Reclamation District
	Identified State Partner Name	
	Identified Federal Partner Name	U.S Bureau of Reclamation
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Merced
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Long-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	N
	Area Protected	Residential/agricultural
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	New Sack Dam and fish passage at Arroyo Canal
	System Improvement Description	The SJRRP and HMRD will be constructing the new Sack Dam and providing a fish screen at Arroyo Canal. The new Sack Dam could improve the operational ability to release water into Reach 4A during flood conditions.
	Problem Addressed by System Improvement	Improved flood management
	System Improvement Benefits	Improved flood management and fish passage
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	X
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Arroyo Canal Screening and Sack Dam Passage				
System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design	X		
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem	X		
	Recreation			
	Transportation			
	Water Quality			
	Water Supply	X		
	Groundwater Recharge			
	Multi-Objective System Improvement	X		
Cost	System Improvement Costs ($)	$		25,000,000.00
	Base Year of Cost	2012		
	Source of Estimate	Framework for Implementation: http://www.restoresjr.net/program_library/02-Program_Docs/20120619_SJRRP_Framework_for_ImplDRAFT.pdf Final Arroyo Canal EA/ IS: http://www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=9797		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ -	$ -	$ -
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts			
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.112449		
	Longitude	-120.588395		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Arroyo Canal Screening and Sack Dam Passage		
Coordination with other System Improvements	System Improvement 1	9
	System Improvement 2	50, 51, 52, 53, 54, 55, 56, 57, 59
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	X
	Rapidity	X
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	X
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Salt Slough Barrier and Mud Slough Barrier		
	Abbreviated System Improvement Name	SaltSl_MudSl
	System Improvement Name	Salt Slough Barrier and Mud Slough Barrier
	System Improvement ID	59
	Lead Agency	San Joaquin River Restoration Program
	Contact Person	Katrina Harrison, Chase Hurley
	Partner Agency	U.S Bureau of Reclamation, Henry Miller Reclamation District
	Identified State Partner Name	
	Identified Federal Partner Name	U.S Bureau of Reclamation
	Systemwide Benefits - Local	N
	Basin Wide Benefits	N
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Merced
	System Improvement Type	
System Improvement Background	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Long-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	N
	Area Protected	Residential/agricultural
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	Fish Barrier at Salt and Mud Sloughs
	System Improvement Description	Construct fish screens / barriers at the Salt and Mud Sloughs to prevent fish straying.
	Problem Addressed by System Improvement	Ecosystem
	System Improvement Benefits	Fish passage
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	X
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Salt Slough Barrier and Mud Slough Barrier				
System Improvement Status	Conceptual	X		
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem	X		
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		-
	Base Year of Cost			
	Source of Estimate			
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ -	$ -	$ -
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	N/A		
Basin Wide Document	USJR Systemwide Impacts			
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.117086		
	Longitude	-120.627116		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Salt Slough Barrier and Mud Slough Barrier		
Coordination with other System Improvements	System Improvement 1	50, 51, 52, 53, 54, 55, 56, 57, 58
	System Improvement 2	
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	
	Long-term System Improvement	X
	Recommendation/Recommended Actions	
Resiliency	Robustness	
	Redundancy	
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	X
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Modify Water Intake Structures at Selected Refuge Units		
System Improvement Background	Abbreviated System Improvement Name	Modify_Intake_Struct
	System Improvement Name	Modify Water Intake Structures at Selected Refuge Units
	System Improvement ID	60
	Lead Agency	San Luis National Wildlife Refuge
	Contact Person	Karl Stromayer
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Merced
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	Modify San Luis Intake Structure to take peak flood flows
	System Improvement Description	There are 40 locations on the East Bear Creek Unit, West Bear Creek Unit, and San Luis Unit where pipes with flap-gates are present in the flood control levees of the San Joaquin River and Eastside Bypass. Some of these locations are well situated to divert floodwaters onto National Wildlife Refuge (NWR) lands. Screw-gates could be installed where needed and catwalks to these screw-gates could be placed on existing pipes. In some locations water control structures and/or armoring of existing water conveyance facilities would be needed. This would allow multiple controlled diversions onto refuge floodplain lands. Control on volume and limits on amounts of water diverted at these locations would be necessary to prevent damage to refuge infrastructure, resource values, and adjacent private lands. A study would be needed to determine which of these possible diversion points for floodwater would benefit wildlife conservation and floodwater storage objectives the best. At some locations enhancement of existing channels likely would be necessary to achieve the desired outcome - placing water into already defined managed wetlands, managed riparian habitat or low elevation uplands which evolved under conditions which included low depth (sheet water) flooding. This system improvement would seek to further develop a subset of the 40 available sites.
	Problem Addressed by System Improvement	Reduce flood flows
	System Improvement Benefits	Reduce Peak flood flows; Environmental Restoration
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	X
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Modify Water Intake Structures at Selected Refuge Units				
System Improvement Status	Conceptual	X		
	Planning			
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem	X		
	Recreation	X		
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement	X		
Cost	System Improvement Costs ($)	$		1,540,000.00
	Base Year of Cost	2014		
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ 50,000.00	$ -	$ 50,000.00
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ 960,000.00	$ -	$ 960,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 480,000.00		
	Property Acquisition			
	Environmental Documentation (Permitting)	$ 50,000.00		
	Legal Services			
	Subtotal	$ 530,000.00	$ -	$ 530,000.00
	Grand Total	$ 1,540,000.00	$ -	$ 1,540,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	Y		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	East Bear Creek Unit: 37.254081 West Bear Creek Unit: 37.251751 San Luis Unit: 37.196843		
	Longitude	East Bear Creek Unit:-120.811426 West Bear Creek Unit:-120.830663 San Luis Unit:-120.814427		
	Shape			

Upper San Joaquin River Regional Flood Management Plan System Improvement Modify Water Intake Structures at Selected Refuge Units		
Coordination with other System Improvements	System Improvement 1	1, 2, 3
	System Improvement 2	10, 11, 12
	System Improvement 3	47, 48, 49
	Other System Improvements	61, 62, 63, 64, 65
System Improvement Phase	Conceptual	X
	Study	X
	Short-term System Improvement	
	Long-term System Improvement	X
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	X
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement San Luis NWR East Bear Creek Unit - Install lift pumps to divert water onto 1000 acres of wetland basins during flood flows		
System Improvement Background	Abbreviated System Improvement Name	EBearCr_InstallLiftPump
	System Improvement Name	San Luis NWR East Bear Creek Unit - Install lift pumps to divert water onto 1000 acres of wetland basins during flood flows
	System Improvement ID	61
	Lead Agency	San Luis National Wildlife Refuge
	Contact Person	Karl Stromayer
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Madera
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	Install lift pumps to divert water onto 1000-acres of wetland basins during flood flows
	System Improvement Description	The East Bear Creek Unit has a pumping plant on Bear Creek that is used to flood approximately 1000 acres of managed wetlands when the water level elevation of Bear Creek is between 66 feet and 83 feet. The pumping plant is equipped with four 125 horse power lift pumps and until water level elevation 83 is reached the pumping plant can divert up to 120-acre feet per day of floodwater into managed wetlands and floodplain. When water level elevation exceeds 83 feet (a common condition during flood events) the pumping plant intake alarm goes off and the pumping plant is shut down. Once water level elevation 83 is exceeded the following options could be implemented to divert water onto the unit (which is bounded by levees on all sides but does have frequent intake/discharge points). a) Install a lift pump (125 hp pump capable of diverting 30 ac/ft per day) just northeast of the pumping plant on Bear Creek and build a short pipeline to connect with the existing two mile long pipeline utilized by the pumping plant. This would enable refuge staff to continue diversions into the East Bear Creek Unit throughout a flood event regardless of water level elevation. Electrical power is available at the site. b) Install a lift pump (125 hp pump capable of diverting 30 ac/ft per day) at an existing but now defunct diversion point on the San Joaquin River and build a short pipeline to connect with the terminus of the existing two mile pipeline. The station could also divert water into an existing 0.8-mile long canal running parallel to the River which delivers water to a series of riparian wetlands currently cutoff from the River by the flood control levee. The improvements would restore floodplain channel and basins that extend across the length of the unit.
	Problem Addressed by System Improvement	Reduce peak flood flows
	System Improvement Benefits	Reduce peak flood flows
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	X
	ESA	X
	Local	X

Upper San Joaquin River Regional Flood Management Plan System Improvement San Luis NWR East Bear Creek Unit - Install lift pumps to divert water onto 1000 acres of wetland basins during flood flows			
Structural Deficiencies	Subsidence		
	Seepage		
	Erosion / Sedimentation		
	Structural Deficiencies (Breaches, Encroachments)		
	Inadequate Capacity	X	
	Aging Infrastructure / Systems / Equipment	X	
	Vegetation / Invasive Species		
	Control of Upstream Flows	X	
	Disconnected Floodplains	X	
	O&M/ Emergency Management Issues		
System Improvement Addresses Non-Structural Deficiencies	Governance Issues		
	Permitting Issues		
	Inadequate Funding		
System Improvement Status	Conceptual	X	
	Planning		
	Permitting / Preliminary Design		
	Final Design / Fully Funded		
	Construction		
	O&M		
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement		
	Agriculture		
	Ecosystem	X	
	Recreation	X	
	Transportation		
	Water Quality		
	Water Supply		
	Groundwater Recharge		
	Multi-Objective System Improvement	X	
Cost	System Improvement Costs ($)	$	1,260,000.00
	Base Year of Cost	2014	
	Source of Estimate	Developed for RFMP	
	Additional Cost Details, Assumptions, or Information		

Upper San Joaquin River Regional Flood Management Plan System Improvement San Luis NWR East Bear Creek Unit - Install lift pumps to divert water onto 1000 acres of wetland basins during flood flows				
	Activity	**Short-term**	**Long-term**	**Total Cost**
Cost Estimate	***Planning***			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ 100,000.00	$ -	$ 100,000.00
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ 710,000.00	$ -	$ 710,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 350,000.00		
	Property Acquisition			
	Environmental Documentation (Permitting)	$ 100,000.00		
	Legal Services			
	Subtotal	$ 450,000.00	$ -	$ 450,000.00
	Grand Total	$ 1,260,000.00	$ -	$ 1,260,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	Y		
KMZ File	KMZ File Provided (Yes/No)	N		
GIS Information	Latitude	37.258855		
	Longitude	-120.808371		
	Shape	Point		
Coordination with other System Improvements	System Improvement 1	1, 2, 3		
	System Improvement 2	5, 10, 11		
	System Improvement 3	12, 47, 48, 49		
	Other System Improvements	62, 63, 64, 65		
System Improvement Phase	Conceptual	X		
	Study			
	Short-term System Improvement			
	Long-term System Improvement	X		
	Recommendation/Recommended Actions			
Resiliency	Robustness	X		
	Redundancy	X		
	Resourcefulness			
	Rapidity			
System Improvement Groups	Rural			
	Urban			
	Small Community / DAC			
	Environmental	X		
	Emergency Management			
	O&M			
	SJRRP			
	Groundwater Recharge / Conjunctive Use / Water Supply			
	Recommended Action			
	Conceptual			

Upper San Joaquin River Regional Flood Management Plan System Improvement San Luis NWR East Bear Creek Unit - Restore a wetland swale to divert floodwaters onto 1000 acres of wetland basins during flood flows		
System Improvement Background	Abbreviated System Improvement Name	EBearCr_WetlandSwale
	System Improvement Name	San Luis NWR East Bear Creek Unit - Restore a wetland swale to divert floodwaters onto 1000 acres of wetland basins during flood flows
	System Improvement ID	62
	Lead Agency	San Luis National Wildlife Refuge
	Contact Person	Karl Stromayer
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Madera
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	Flood flow diversion at East Bear Creek Unit
	System Improvement Description	Utilize an existing pipe and screw-gate on the flood control levee east of the Fish and Wildlife Service (FWS) pumping station to divert floodwaters. Construct a wide swale leading from the levee to an existing refuge ditch to convey water to the restored floodplain swales and basins extending across the East Bear Creek Unit.
	Problem Addressed by System Improvement	Reduce peak flood flows
	System Improvement Benefits	Reduce peak flood flows; Reconnect floodplains; Habitat Restoration
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	X
	O&M/ Emergency Management Issues	
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement
San Luis NWR East Bear Creek Unit - Restore a wetland swale to divert floodwaters onto 1000 acres of wetland basins during flood flows

System Improvement Status	Conceptual	X		
	Planning			
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem	X		
	Recreation	X		
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement	X		
Cost	System Improvement Costs ($)	$		340,000.00
	Base Year of Cost	2014		
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ 40,000.00	$ -	$ 40,000.00
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ 190,000.00	$ -	$ 190,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 100,000.00		
	Property Acquisition			
	Environmental Documentation (Permitting)	$ 10,000.00		
	Legal Services			
	Subtotal	$ 110,000.00	$ -	$ 110,000.00
	Grand Total	$ 340,000.00	$ -	$ 340,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	Y		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.245644		
	Longitude	-120.791368		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement San Luis NWR East Bear Creek Unit - Restore a wetland swale to divert floodwaters onto 1000 acres of wetland basins during flood flows		
Coordination with other System Improvements	System Improvement 1	1, 2, 3
	System Improvement 2	10, 11
	System Improvement 3	
	Other System Improvements	60, 61, 63, 64, 65
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	
	Long-term System Improvement	X
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	X
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement San Luis NWR East Bear Creek Unit - Enhance existing wetland depth and configuration to provide additional habitat and flood water storage on approximately 500 acres of wetland basins		
System Improvement Background	Abbreviated System Improvement Name	EBearCr_EnhanceWetland
	System Improvement Name	San Luis NWR East Bear Creek Unit - Enhance existing wetland depth and configuration to provide additional habitat and flood water storage on approximately 500 acres of wetland basins
	System Improvement ID	63
	Lead Agency	San Luis National Wildlife Refuge
	Contact Person	Karl Stromayer
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Madera
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	Wetland Restoration in East Bear Creek Unit
	System Improvement Description	A portion of the existing restored wetlands in the East Bear Creek Unit, which currently comprise some 1000 acres, could be enhanced by deepening, expanding, and reconfiguring the current wetland acreage. This work would increase the capability of the unit for transitory floodwater storage while improving the wetlands for wildlife. This project would identify several options to achieve these objectives and fully develop and implement those options most feasible and efficient to meet the desired objectives.
	Problem Addressed by System Improvement	Reduce peak flood flows
	System Improvement Benefits	Reduce peak flood flows; Wetland restoration
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	X
	O&M/ Emergency Management Issues	
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement San Luis NWR East Bear Creek Unit - Enhance existing wetland depth and configuration to provide additional habitat and flood water storage on approximately 500 acres of wetland basins				
System Improvement Status	Conceptual	X		
	Planning			
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem	X		
	Recreation	X		
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement	X		
Cost	System Improvement Costs ($)	$		1,150,000.00
	Base Year of Cost	2014		
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ 40,000.00	$ -	$ 40,000.00
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ 730,000.00	$ -	$ 730,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 370,000.00		
	Property Acquisition			
	Environmental Documentation (Permitting)	$ 10,000.00		
	Legal Services			
	Subtotal	$ 380,000.00	$ -	$ 380,000.00
	Grand Total	$ 1,150,000.00	$ -	$ 1,150,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	Y		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.264091		
	Longitude	-120.798217		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement San Luis NWR East Bear Creek Unit - Enhance existing wetland depth and configuration to provide additional habitat and flood water storage on approximately 500 acres of wetland basins		
Coordination with other System Improvements	System Improvement 1	1, 2, 3
	System Improvement 2	10, 11
	System Improvement 3	
	Other System Improvements	60, 61, 62, 64, 65
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	
	Long-term System Improvement	X
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	X
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement San Luis NWR Freitas Unit – Restore anabranches of Salt Slough		
System Improvement Background	Abbreviated System Improvement Name	Freitas_RestoreSaltSl
	System Improvement Name	San Luis NWR Freitas Unit – Restore anabranches of Salt Slough
	System Improvement ID	64
	Lead Agency	San Luis National Wildlife Refuge
	Contact Person	Karl Stromayer
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Madera
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	Restore sections of Salt Slough to accommodate flood flows
	System Improvement Description	During flood events, water from the San Joaquin River backs up into and raises the level of Salt Slough. Numerous anabranches extend out of Salt Slough and have potential to spread water westward out into the Freitas floodplain. However the capacity for this is limited because most of the anabranches are silted in at their confluences with Salt Slough. Silt removal could be implemented to lower the channel grades back to level that would more readily accept high water from Salt Slough. Floodwaters would be spread out into floodplain basins and swales west of Hwy 165. The large double and triple box culvert crossings under the highway should readily accommodate any flows through the anabranch channels. Hwy 165 built before flood control levee constructed. Restoring the channel grades may protect Hwy 165 better than the existing condition because floodwaters would be conveyed west of the highway as waters were rising rather than waiting until the floodwaters overtopped the Salt Slough main channel and caused much higher water levels to advance upon the highway.
	Problem Addressed by System Improvement	Reduce peak flows
	System Improvement Benefits	Reduce peak flows; Reconnect floodplain; Remove revetment
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	X
	O&M/ Emergency Management Issues	
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement San Luis NWR Freitas Unit – Restore anabranches of Salt Slough				
System Improvement Status	Conceptual	X		
	Planning			
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem	X		
	Recreation	X		
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement	X		
Cost	System Improvement Costs ($)	$		50,000.00
	Base Year of Cost	2014		
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ 10,000.00	$ -	$ 10,000.00
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ 20,000.00	$ -	$ 20,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 10,000.00		
	Property Acquisition			
	Environmental Documentation (Permitting)	$ 10,000.00		
	Legal Services			
	Subtotal	$ 20,000.00	$ -	$ 20,000.00
	Grand Total	$ 50,000.00	$ -	$ 50,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	Y		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.190093		
	Longitude	-120.863697		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement San Luis NWR Freitas Unit – Restore anabranches of Salt Slough		
Coordination with other System Improvements	System Improvement 1	1, 2, 3
	System Improvement 2	10, 11
	System Improvement 3	60, 61, 62, 63, 65
	Other System Improvements	
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	
	Long-term System Improvement	X
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	X
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement San Luis NWR West Bear Creek Unit - Restore wetland slough channel connectivity with the San Joaquin River to accommodate flood flows		
System Improvement Background	Abbreviated System Improvement Name	SLNWR_WBCU
	System Improvement Name	San Luis NWR West Bear Creek Unit - Restore wetland slough channel connectivity with the San Joaquin River to accommodate flood flows
	System Improvement ID	65
	Lead Agency	San Luis National Wildlife Refuge
	Contact Person	Karl Stromayer
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Madera
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	Restore wetland slough channel connectivity with the San Joaquin River to accommodate flood flows
	System Improvement Description	This project seeks to enhance an existing location where a pipe and screwgate already permit the diversion of flood flows from the San Joaquin River into a water delivery canal that provides water to some 3,500 acres of wetlands. This project would enhance the size of the structures both leading into and exiting this canal at a location that would allow the diversion of water into a naturally existing floodwater basin that is currently cutoff from the San Joaquin River. This project likely would require increasing the size and armoring some four existing water control structures to accommodate the increased water capacity at these four locations.
	Problem Addressed by System Improvement	Reduce peak flows
	System Improvement Benefits	Reduce peak flows; Wetland restoration
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	X
	O&M/ Emergency Management Issues	
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement
San Luis NWR West Bear Creek Unit - Restore wetland slough channel connectivity with the San Joaquin River to accommodate flood flows

System Improvement Status	Conceptual	X		
	Planning			
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem	X		
	Recreation	X		
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement	X		
Cost	System Improvement Costs ($)	$		354,000.00
	Base Year of Cost	2014		
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ 20,000.00	$ -	$ 20,000.00
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ 216,000.00	$ -	$ 216,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 108,000.00		
	Property Acquisition			
	Environmental Documentation (Permitting)	$ 10,000.00		
	Legal Services			
	Subtotal	$ 118,000.00	$ -	$ 118,000.00
	Grand Total	$ 354,000.00	$ -	$ 354,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	Y		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.275283		
	Longitude	-120.842712		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement San Luis NWR West Bear Creek Unit - Restore wetland slough channel connectivity with the San Joaquin River to accommodate flood flows		
Coordination with other System Improvements	System Improvement 1	1, 2, 3
	System Improvement 2	7, 8, 10, 11, 12
	System Improvement 3	60, 61, 62, 63, 64
	Other System Improvements	
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	
	Long-term System Improvement	X
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	X
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Merced NWR Merced Unit - Enhance infrastructure to divert flood flows onto 1200 acres of existing wetlands and other refuge lands		
System Improvement Background	Abbreviated System Improvement Name	MercedUnit_EnhanceInfrSt
	System Improvement Name	Merced NWR Merced Unit - Enhance infrastructure to divert flood flows onto 1200 acres of existing wetlands and other refuge lands
	System Improvement ID	66
	Lead Agency	San Luis National Wildlife Refuge
	Contact Person	Karl Stromayer
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Madera
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	Enhance infrastructure to divert flood flows onto 1,200 acres of existing wetlands and other refuge lands
	System Improvement Description	There are numerous locations on the Merced Unit where pipes with flap-gates are present in the flood control levees of the Eastside Bypass, and are well situated to potentially divert floodwaters onto Refuge lands. However, there is no direct connection to move that water out into the Refuge water conveyance system. The refuge currently uses a pipeline to move water throughout the managed wetland units and other refuge lands. The pipeline is in close proximity to the flood control levee. Additionally there are refuge pumps in place which could be used to lift the water from the Bypass into the pipeline, but are currently not connected to the pipeline. At 2 locations along the levee existing pumps could be reconfigured and connected to the existing pipeline. The connection between the pumps and the pipeline would allow floodwater to be diverted from the eastside Bypass into managed Refuge wetlands. Control on volume and limits on amounts of water diverted at these locations would be necessary to prevent damage to refuge infrastructure, resource values, and adjacent private lands.
	Problem Addressed by System Improvement	Reduce peak flows
	System Improvement Benefits	Reduce peak flows; Habitat restoration
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	X
	O&M/ Emergency Management Issues	
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Merced NWR Merced Unit - Enhance infrastructure to divert flood flows onto 1200 acres of existing wetlands and other refuge lands				
System Improvement Status	Conceptual	X		
	Planning			
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem	X		
	Recreation	X		
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement	X		
Cost	System Improvement Costs ($)	$		235,000.00
	Base Year of Cost	2014		
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ 15,000.00	$ -	$ 15,000.00
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ 140,000.00	$ -	$ 140,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 70,000.00		
	Property Acquisition			
	Environmental Documentation (Permitting)	$ 10,000.00		
	Legal Services			
	Subtotal	$ 80,000.00	$ -	$ 80,000.00
	Grand Total	$ 235,000.00	$ -	$ 235,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	Y		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.180248		
	Longitude	-120.619792		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Merced NWR Merced Unit - Enhance infrastructure to divert flood flows onto 1200 acres of existing wetlands and other refuge lands		
Coordination with other System Improvements	System Improvement 1	1, 7, 8
	System Improvement 2	10, 13
	System Improvement 3	47, 48, 49
	Other System Improvements	50, 52, 55, 67, 68
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	
	Long-term System Improvement	X
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	X
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Merced NWR - Modify water intake structures at selected refuge units		
System Improvement Background	System Improvement Name	Merced NWR - Modify water intake structures at selected refuge units
	System Improvement ID	67
	Lead Agency	San Luis National Wildlife Refuge
	Contact Person	Karl Stromayer
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Madera
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural/Residential
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	Modify water intake structures at selected refuge units
	System Improvement Description	Existing pipes with flap-gates on flood control levee – further develop these sites to divert floodwaters onto refuge floodplain lands. There are numerous locations along the flood control levees at the Merced, Lonetree, and Sno-Bird units of Merced NWR where replacement of existing flap gates with new screw-gates and, where necessary, catwalks would allow controlled diversion of floodwaters onto refuge lands. In some locations water control structures and/or armoring of existing water conveyance facilities would be needed. This would allow controlled diversions onto refuge floodplain lands at approximately 15 locations, some of which are noted as follows:. a) Merced Unit – there is potential for diverting water into Cinnamon Slough area. However there is a need to consider impacts to managed refuge wetlands adjacent to the north. b) Lonetree Unit – floodwater could be diverted to area outside levee. However there is a need to consider impacts to adjacent private farmlands to the east. c) Sno-Bird Unit – potential to divert waters into north, middle, and south subunits. However, there is a need to consider flood impacts to adjacent landowners. Control on volume and limits on amounts of water diverted at these locations would be necessary to prevent damage to refuge infrastructure, resource values, and adjacent private lands.
	Problem Addressed by System Improvement	Reduce peak flows
	System Improvement Benefits	Reduce peak flows
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	X
	O&M/ Emergency Management Issues	
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Merced NWR - Modify water intake structures at selected refuge units				
System Improvement Status	Conceptual	X		
	Planning			
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem	X		
	Recreation	X		
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement	X		
Cost	System Improvement Costs ($)	$		580,000.00
	Base Year of Cost	2014		
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ 20,000.00	$ -	$ 20,000.00
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ 360,000.00	$ -	$ 360,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 180,000.00		
	Property Acquisition			
	Environmental Documentation (Permitting)	$ 20,000.00		
	Legal Services			
	Subtotal	$ 200,000.00	$ -	$ 200,000.00
	Grand Total	$ 580,000.00	$ -	$ 580,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	Y		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.168655		
	Longitude	-120.629449		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Merced NWR - Modify water intake structures at selected refuge units		
Coordination with other System Improvements	System Improvement 1	7, 8
	System Improvement 2	10, 13
	System Improvement 3	47, 48, 49
	Other System Improvements	50, 52, 55, 66, 68
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	
	Long-term System Improvement	X
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	X
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Merced NWR Sno-Bird Unit – Construct diversions off Eastside Canal		
System Improvement Background	System Improvement Name	Merced NWR Sno-Bird Unit – Construct diversions off Eastside Canal
	System Improvement ID	68
	Lead Agency	San Luis National Wildlife Refuge
	Contact Person	Karl Stromayer
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Madera
	System Improvement Type	
	Structural	Structural
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	Construct diversion off Eastside Canal into SnoBird Unit of Merced NWR
	System Improvement Description	The Eastside Canal, which runs along the northern boundary of the Sno-Bird Unit is also impacted by flood events and can exceed its conveyance capacity and flood out downstream locations. There is an opportunity to divert excess floodwater from the canal onto Refuge floodplain lands. a) Remove sediment in the canal at the existing weir diversion structure and rehabilitate the first section of the existing canal downstream of the weir. Replace the weir boards and make minor repairs to the concrete structure. Install two canal gates where the refuge canal flows back into Bear Creek. One gate would be for an existing culvert and the other for a new culvert through the Bear Creek flood control levee. A new channel would be excavated inside the levee to connect the new culvert to the Bear Creek pilot channel. These improvements would allow floodwater to be spread in basins and swales in the north and middle subunits and then drain back into the Eastside Bypass. b) Install a new canal turnout structure in the Eastside Canal at the northwest corner of the Sno-Bird Unit. The site has been breached in the past to relieve pressure on the Eastside Canal and prevent downstream flooding. Controlled diversions could be spread out into basins and swales of the north subunit and then drain back into the Eastside Bypass.
	Problem Addressed by System Improvement	Reduce peak flows
	System Improvement Benefits	Reduce peak flows
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	X
	O&M/ Emergency Management Issues	
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Merced NWR Sno-Bird Unit – Construct diversions off Eastside Canal				
System Improvement Status	Conceptual	X		
	Planning			
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem	X		
	Recreation	X		
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement	X		
Cost	System Improvement Costs ($)	$		263,000.00
	Base Year of Cost	2014		
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ 40,000.00	$ -	$ 40,000.00
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ 136,000.00	$ -	$ 136,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 67,000.00		
	Property Acquisition			
	Environmental Documentation (Permitting)	$ 20,000.00		
	Legal Services			
	Subtotal	$ 87,000.00	$ -	$ 87,000.00
	Grand Total	$ 263,000.00	$ -	$ 263,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	Y		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.240716		
	Longitude	-120.731901		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Merced NWR Sno-Bird Unit – Construct diversions off Eastside Canal		
Coordination with other System Improvements	System Improvement 1	1, 2, 3, 7, 10, 13
	System Improvement 2	47, 48, 49
	System Improvement 3	50, 52, 53
	Other System Improvements	66, 67
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	
	Long-term System Improvement	X
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	X
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Ash Slough Arrundo and Channel Cleaning		
System Improvement Background	Abbreviated System Improvement Name	AshSl_Arrundo_Ch_Clean
	System Improvement Name	Ash Slough Arrundo and Channel Cleaning
	System Improvement ID	69
	Lead Agency	Madera County
	Contact Person	Ken Vang
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Madera County
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	N
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Remove Arrundo and channel clearing
	System Improvement Description	Approximately 21 miles of channel clearing and arrundo eradication and channel clearing within Ash Slough. Arrundo is an aggressive bamboo weed which requires continual herbicide treatment to fully eradicate. Due to the high cost and lack of funding, Arrundo has been allowed to grow unabated and is now constricting flood flows and reducing channel capacity. USACE has indicated that Ash Slough is no longer PL 84-99 eligible.
	Problem Addressed by System Improvement	Invasive species management
	System Improvement Benefits	Return system capacity and stop the spread of invasive species
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	X
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	X
	Structural Deficiencies (Breaches, Encroachments)	X
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	X
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	X

Upper San Joaquin River Regional Flood Management Plan System Improvement Ash Slough Arrundo and Channel Cleaning				
System Improvement Status	Conceptual			
	Planning			
	Permitting / Preliminary Design	X		
	Final Design / Fully Funded			
	Construction			
	O&M	X		
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		1,500,000.00
	Base Year of Cost	2013		
	Source of Estimate	Proposed System Improvement List Submitted by Ken Vang, 11-25-13		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ -	$ -	$ -
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	N		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.122123		
	Longitude	-120.300956		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Ash Slough Arrundo and Channel Cleaning		
Coordination with other System Improvements	System Improvement 1	33
	System Improvement 2	70, 71, 72, 73, 74, 75
	System Improvement 3	81
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	X
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Berenda Slough Arrundo and Channel Clearing		
System Improvement Background	Abbreviated System Improvement Name	BerendaSI_Arrundo_ChClear
	System Improvement Name	Berenda Slough Arrundo and Channel Clearing
	System Improvement ID	70
	Lead Agency	Madera County
	Contact Person	Ken Vang
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	N
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Madera County
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	N
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Remove Arrundo and channel clearing
	System Improvement Description	Approximately 18 miles of channel clearing and arrundo eradication and channel clearing within Berenda Slough. Arrundo is an aggressive bamboo weed which requires continual herbicide treatment to fully eradicate. Due to the high cost and lack of funding, Arrundo has been allowed to grow unabated and is now constricting flood flows and reducing channel capacity.
	Problem Addressed by System Improvement	Invasive species management
	System Improvement Benefits	Return system capacity and stop the spread of invasive species
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	X
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	X
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	X
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	X

Upper San Joaquin River Regional Flood Management Plan System Improvement Berenda Slough Arrundo and Channel Clearing				
System Improvement Status	Conceptual			
	Planning			
	Permitting / Preliminary Design	X		
	Final Design / Fully Funded			
	Construction			
	O&M	X		
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		1,300,000.00
	Base Year of Cost	2013		
	Source of Estimate	Proposed System Improvement List Submitted by Ken Vang, 11-25-13		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ -	$ -	$ -
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	N		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.156679		
	Longitude	-120.126575		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Berenda Slough Arrundo and Channel Clearing		
Coordination with other System Improvements	System Improvement 1	33
	System Improvement 2	69, 71, 72, 73, 74, 75
	System Improvement 3	81
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	X
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Erosion Repair Project		
System Improvement Background	Abbreviated System Improvement Name	Erosion_Repair
	System Improvement Name	Erosion Repair Project
	System Improvement ID	71
	Lead Agency	Madera County
	Contact Person	Ken Vang
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Madera County
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Perform erosion repairs in Fresno River and Berenda Slough.
	System Improvement Description	Perform erosion repairs in Fresno River and Berenda Slough.
	Problem Addressed by System Improvement	Aging infrastructure; Erosion
	System Improvement Benefits	Repair levees
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	X
	Structural Deficiencies (Breaches, Encroachments)	X
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	X
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	X

Upper San Joaquin River Regional Flood Management Plan System Improvement Erosion Repair Project				
System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		1,500,000.00
	Base Year of Cost	2013		
	Source of Estimate	Proposed System Improvement List Submitted by Ken Vang, 11-25-13		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ -	$ -	$ -
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	N		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.167654		
	Longitude	-120.105021		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Erosion Repair Project		
Coordination with other System Improvements	System Improvement 1	2, 7, 19, 29, 44, 45, 46, 52
	System Improvement 2	69, 70, 72, 73, 74, 75
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	
	Rapidity	X
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	X
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Levee Patrol Road Repair		
System Improvement Background	Abbreviated System Improvement Name	LeveePatrol_RdRepair
	System Improvement Name	Levee Patrol Road Repair
	System Improvement ID	72
	Lead Agency	Madera County
	Contact Person	Ken Vang
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Madera County
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Perform repair and place aggregated base for levee patrol roads on approximately 12 miles
	System Improvement Description	Perform repair and place aggregated base for levee patrol roads on approximately 12 miles on the Fresno River, Berenda Slough and Ash Slough. Due to high cost and limited funding, repairs on levee patrol; roads have been delayed, and vegetation has been allowed to grow unabated. In addition, adjacent landowners have made modifications to levee patrol roads to access private properties.
	Problem Addressed by System Improvement	Aging infrastructure; Levee enhancements
	System Improvement Benefits	Public safety improvement and improvement to assets/roads; O&M on roads for emergency management
Permits (X=Required)	CVFPB	X
	404	
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	X
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	X
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	X

Upper San Joaquin River Regional Flood Management Plan System Improvement Levee Patrol Road Repair				
System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design	X		
	Final Design / Fully Funded			
	Construction	X		
	O&M	X		
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		500,000.00
	Base Year of Cost	07/05/05		
	Source of Estimate	Proposed System Improvement List Submitted by Ken Vang, 11-25-13		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ -	$ -	$ -
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	N		
KMZ File	KMZ File Provided (Yes/No)	N		
GIS Information	Latitude	12 miles along Fresno River and Berenda and Ash Sloughs		
	Longitude			
	Shape			

Upper San Joaquin River Regional Flood Management Plan System Improvement Levee Patrol Road Repair		
Coordination with other System Improvements	System Improvement 1	69, 70, 71, 73, 74, 75
	System Improvement 2	
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	X
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	X
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Berenda Creek Arrundo Removal and Channel Clearing		
System Improvement Background	Abbreviated System Improvement Name	Berenda_Cr
	System Improvement Name	Berenda Creek Arrundo Removal and Channel Clearing
	System Improvement ID	73
	Lead Agency	Madera Irrigation District
	Contact Person	Dina Nolan
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Madera County
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	N
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Berenda Creek Remove Arrundo and channel clearing
	System Improvement Description	Approximately 13 miles of channel clearing and arrundo eradication and channel clearing within Berenda Creek. Arrundo is an aggressive bamboo weed which requires continual herbicide treatment to fully eradicate. Due to the high cost and lack of funding, Arrundo has been allowed to grow unabated and is now constricting flood flows and reducing channel capacity.
	Problem Addressed by System Improvement	Invasive species management
	System Improvement Benefits	Return system capacity and stop the spread of invasive species
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	X
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	X
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	X

Upper San Joaquin River Regional Flood Management Plan System Improvement Berenda Creek Arrundo Removal and Channel Clearing				
System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M	X		
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		500,000.00
	Base Year of Cost	2013		
	Source of Estimate	Proposed System Improvement List Submitted by Ken Vang, 11-25-13		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ -	$ -	$ -
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	X		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.032516		
	Longitude	-120.303265		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Berenda Creek Arrundo Removal and Channel Clearing		
Coordination with other System Improvements	System Improvement 1	33
	System Improvement 2	69, 70, 71, 72, 74, 75
	System Improvement 3	81
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	X
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Dry Creek Arundo and Channel Clearing		
System Improvement Background	Abbreviated System Improvement Name	Dry_Cr
	System Improvement Name	Dry Creek Arundo and Channel Clearing
	System Improvement ID	74
	Lead Agency	Madera Irrigation District
	Contact Person	Dina Nolan
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Madera County
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	N
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Remove Arrundo and channel clearing in Dry Creek
	System Improvement Description	Approximately 13 miles of channel clearing and invasive species removal within Dry Creek. Due to the high cost and lack of funding, vegetation has been allowed to grow unabated and is now constricting flood flows and reducing channel capacity.
	Problem Addressed by System Improvement	Invasive species management and loss of channel capacity
	System Improvement Benefits	Return system capacity and stop the spread of invasive species
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	X
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	X
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	X

Upper San Joaquin River Regional Flood Management Plan System Improvement Dry Creek Arundo and Channel Clearing				
System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M	X		
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		500,000.00
	Base Year of Cost	2013		
	Source of Estimate	Proposed System Improvement List Submitted by Ken Vang, 11-25-13		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ -	$ -	$ -
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	N		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	36.968807		
	Longitude	-120.255369		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Dry Creek Arundo and Channel Clearing		
Coordination with other System Improvements	System Improvement 1	33
	System Improvement 2	69, 70, 71, 72, 75
	System Improvement 3	81
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	X
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Cottonwood Creek Arundo and Channel Clearing		
System Improvement Background	Abbreviated System Improvement Name	Cottonwood_Cr
	System Improvement Name	Cottonwood Creek Arundo and Channel Clearing
	System Improvement ID	75
	Lead Agency	Madera Irrigation District
	Contact Person	Dina Nolan
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Madera County
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	N
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Remove Arrundo and channel clearing on Cottonwood Creek
	System Improvement Description	Approximately 13 miles of channel clearing and invasive species removal within Cottonwood Creek. Due to the high cost and lack of funding, vegetation has been allowed to grow unabated and is now constricting flood flows and reducing channel capacity.
	Problem Addressed by System Improvement	Invasive species management
	System Improvement Benefits	Return system capacity and stop the spread of invasive species
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	X
	Structural Deficiencies (Breaches, Encroachments)	X
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	X
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	X

Upper San Joaquin River Regional Flood Management Plan System Improvement Cottonwood Creek Arundo and Channel Clearing				
System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M	X		
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		500,000.00
	Base Year of Cost	2013		
	Source of Estimate	Proposed System Improvement List Submitted by Ken Vang, 11-25-13		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ -	$ -	$ -
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	N		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	36.859344		
	Longitude	-120.323874		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Cottonwood Creek Arundo and Channel Clearing		
Coordination with other System Improvements	System Improvement 1	33
	System Improvement 2	69, 70, 71, 72, 73, 74
	System Improvement 3	81
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	X
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Madera Irrigation District Water Bank Facility		
System Improvement Background	Abbreviated System Improvement Name	MaderaID_WaterBank
	System Improvement Name	Madera Irrigation District Water Bank Facility
	System Improvement ID	76
	Lead Agency	Madera Irrigation District
	Contact Person	Dina Nolan
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Madera County
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Long-term
	Within Planning Area (Yes/No)	N
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Residential/Agricultural
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	Develop water bank facility.
	System Improvement Description	Develop water bank facility to capture flood flows and perform groundwater recharge. The facility can be used to bank water for future use.
	Problem Addressed by System Improvement	Reduce peak flows, groundwater recharge
	System Improvement Benefits	Reduce peak flows, groundwater recharge
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	X
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	X
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Madera Irrigation District Water Bank Facility				
System Improvement Status	Conceptual	X		
	Planning			
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply	X		
	Groundwater Recharge	X		
	Multi-Objective System Improvement	X		
Cost	System Improvement Costs ($)	$		124,000,000.00
	Base Year of Cost			
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ -	$ -	$ -
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	Y		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	36.897989		
	Longitude	-120.221771		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Madera Irrigation District Water Bank Facility		
Coordination with other System Improvements	System Improvement 1	10, 15
	System Improvement 2	77, 78, 79
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	
	Long-term System Improvement	X
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	
	Rapidity	X
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	X
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Madera Canal / Hidden Dam Pump Storage Project		
System Improvement Background	Abbreviated System Improvement Name	MC_HiddenDam_PS
	System Improvement Name	Madera Canal / Hidden Dam Pump Storage Project
	System Improvement ID	77
	Lead Agency	Madera Irrigation District
	Contact Person	Dina Nolan
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	USACE
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Madera County
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Long-term
	Within Planning Area (Yes/No)	N
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Residential/Agricultural
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Move up to 6,000 AFY through existing Madera ID canals
	System Improvement Description	The Madera Canal Hidden Dam Pump Storage Project has the potential to provide up to 6,000 AFY average of additional water supply for use by Madera ID as are direction of an existing water supply. Madera ID is currently seeking authorization from the USACE and will have to seek funding for the project. There are potential partnering opportunities for the Madera County and or other water agencies in the Madera County that should be pursued. Flows for this system improvement could be diverted from Hidden Dam during floods.
	Problem Addressed by System Improvement	Reduce peak flows, increase water supply
	System Improvement Benefits	.Reduce peak flows, increase water supply
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	X
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Madera Canal / Hidden Dam Pump Storage Project				
System Improvement Status	Conceptual	X		
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture	X		
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply	X		
	Groundwater Recharge	X		
	Multi-Objective System Improvement	X		
Cost	System Improvement Costs ($)	$		11,500,000.00
	Base Year of Cost	2003		
	Source of Estimate	Madera Canal/Hidden Dam Pump Storage Project Feasibility Study		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ -	$ -	$ -
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	N		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.110854		
	Longitude	-119.885498		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Madera Canal / Hidden Dam Pump Storage Project		
Coordination with other System Improvements	System Improvement 1	78, 79
	System Improvement 2	
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	
	Long-term System Improvement	X
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	X
	Rapidity	X
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	X
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Madera Lake Regulating and Recharge Project		
System Improvement Background	Abbreviated System Improvement Name	ML_Regul_Rechrg
	System Improvement Name	Madera Lake Regulating and Recharge Project
	System Improvement ID	78
	Lead Agency	Madera Irrigation District
	Contact Person	Dina Nolan
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Madera County
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Long-term
	Within Planning Area (Yes/No)	N
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Residential/Agricultural
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	Regulating and recharge at Madera Lake
	System Improvement Description	Regulating and recharge at Madera Lake. As part of this project, opportunities for riparian and wetland habitat enhancements will be considered.
	Problem Addressed by System Improvement	Reduce peak flows, groundwater recharge
	System Improvement Benefits	Reduce peak flows, groundwater recharge
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	X
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	X
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Madera Lake Regulating and Recharge Project				
System Improvement Status	Conceptual	X		
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply	X		
	Groundwater Recharge	X		
	Multi-Objective System Improvement	X		
Cost	System Improvement Costs ($)	$		3,500,000.00
	Base Year of Cost	2013		
	Source of Estimate	Proposed System Improvement List Submitted by Ken Vang, 11-25-13		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ -	$ -	$ -
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	Y		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.020082		
	Longitude	-119.993564		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Madera Lake Regulating and Recharge Project		
Coordination with other System Improvements	System Improvement 1	76, 77, 79
	System Improvement 2	
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	
	Long-term System Improvement	X
	Recommendation/Recommended Actions	
Resiliency	Robustness	X
	Redundancy	X
	Resourcefulness	X
	Rapidity	X
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	X
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Siphon Extension near Chamberlain Road		
System Improvement Background	Abbreviated System Improvement Name	SiphonExt_ChamberlainRd
	System Improvement Name	Siphon Extension near Chamberlain Road
	System Improvement ID	79
	Lead Agency	Lone Tree Mutual Water Company
	Contact Person	George Parks
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	N
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Merced
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Agricultural
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Extend existing irrigation ditch siphon across East Side Bypass
	System Improvement Description	Lone Tree Mutual Water Company has an existing irrigation ditch that crosses the East Side Bypass 1/2-mile south of Chamberlain Road. There are existing culverts under the Eastside Bypass levees and an existing siphon under the pilot channel of the Bypass, but there is open ditch within the Bypass channel between the levees and the pilot channel. High flows in the Bypass are impeded by the ditch banks and the ditch must be cleaned and maintained following flood flows. Extending the siphon so it is continuous across the entire Bypass channel would improve flood operations, reduce maintenance and bring the siphon up to current flood system standards.
	Problem Addressed by System Improvement	Improved flood flow hydraulics, reduced maintenance
	System Improvement Benefits	Reduces flood risk to agricultural areas
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	X
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	X
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Siphon Extension near Chamberlain Road				
System Improvement Status	Conceptual	X		
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		700,000.00
	Base Year of Cost			
	Source of Estimate	Developed for RFMP		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
		$ 50,000.00		$ 50,000.00
				$ -
				$ -
	Subtotal	$ 50,000.00	$ -	$ 50,000.00
	Construction			$ -
		$ 383,000.00		$ 383,000.00
				$ -
				$ -
				$ -
	Subtotal	$ 383,000.00	$ -	$ 383,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals	$ 187,000.00		
	Property Acquisition			
	Environmental Documentation (Permitting)	$ 80,000.00		
	Legal Services			
	Subtotal	$ 267,000.00	$ -	$ 267,000.00
	Grand Total	$ 700,000.00	$ -	$ 700,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts			
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	37.14972		
	Longitude	-120.60441		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Siphon Extension near Chamberlain Road		
Coordination with other System Improvements	System Improvement 1	
	System Improvement 2	
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	
	Redundancy	
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	X
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Ingomar Reservoir Surface Storage		
System Improvement Background	Abbreviated System Improvement Name	IngomarRSS
	System Improvement Name	Ingomar Reservoir Surface Storage
	System Improvement ID	80
	Lead Agency	Central California Irrigation District & San Luis Canal Company
	Contact Person	Chris White, CCID
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Fresno
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Long-term
	Within Planning Area (Yes/No)	N
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	Expanding Ingomar reservoir
	System Improvement Description	The Ingomar Reservoir surface storage project includes expansion of the existing Ingomar Reservoir. The project is located east of the CCID Main Canal and north of Henry Miller Road. A 2013 report evaluated the expansion of the existing 41-acre site to about 650 acres (San Luis & Delta Mendota Water Authority, 2013). The project would receive surface water from the SJRECWA or flood flows off the SJR or Kings River. CCID facilities would be used to convey water to the project lands.
	Problem Addressed by System Improvement	Reduce peak flows
	System Improvement Benefits	System operation during flood events, groundwater recharge
Permits (X=Required)	CVFPB	
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Ingomar Reservoir Surface Storage				
System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge	X		
	Multi-Objective System Improvement	X		
Cost	System Improvement Costs ($)	$		18,300,000.00
	Base Year of Cost	2014		
	Source of Estimate	Lower SJR Flood Management- Flood Impacts Reduction Memo-2014-0516		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
			$ 18,300,000.00	$ 18,300,000.00
				$ -
				$ -
	Subtotal	$ -	$ 18,300,000.00	$ 18,300,000.00
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ -	$ 18,300,000.00	$ 18,300,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts			
KMZ File	KMZ File Provided (Yes/No)			
GIS Information	Latitude	37.1432761		
	Longitude	-120.9138091		
	Shape			

Upper San Joaquin River Regional Flood Management Plan System Improvement Ingomar Reservoir Surface Storage		
Coordination with other System Improvements	System Improvement 1	
	System Improvement 2	
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	
	Long-term System Improvement	X
	Recommendation/Recommended Actions	
Resiliency	Robustness	
	Redundancy	X
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	X
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement San Joaquin River Invasive Species Management		
System Improvement Background	Abbreviated System Improvement Name	SJR_Invasive_Mgmt
	System Improvement Name	San Joaquin River Invasive Species Management
	System Improvement ID	81
	Lead Agency	River Partners and San Joaquin Parkway and Conservation Trust
	Contact Person	Julie Rentner
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	Y
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Merced, Madera, Fresno
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Short-term, Long-term
	Within Planning Area (Yes/No)	Y
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Residential/Agricultural
	IWM System Improvement (Yes/No)	Yes
	Abbreviated System Improvement Description	Invasive species management
	System Improvement Description	Map, treat, and monitor populations of invasive weeds within the channel and floodplain of the San Joaquin River between Friant Dam and the Merced River confluence.
	Problem Addressed by System Improvement	Invasive species management
	System Improvement Benefits	This is an ongoing weed management project that seeks to manage invasive vegetation in the floodway. The result of the system improvement is to reduce roughness in the floodway associated with invasive species.
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	X
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	X
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	X
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement San Joaquin River Invasive Species Management				
System Improvement Status	Conceptual			
	Planning			
	Permitting / Preliminary Design	X		
	Final Design / Fully Funded			
	Construction			
	O&M	X		
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem	X		
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		2,800,000.00
	Base Year of Cost	2013		
	Source of Estimate	Actual costs for 2013. Water Year 2010 Interim Flows EIR - Appendix F		
	Additional Cost Details, Assumptions, or Information	State Agency (Prop 84 - CCC) - $600K, Federal Agency (USBR) - $2 million, Private Entity (NFWF) - $200 K Variable - depends on site conditions and extent of invasive weeds. More funds to expand footprint and timeline are welcome. This project currently spends ~$600,000/year		
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ -	$ -	$ -
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	N		
KMZ File	KMZ File Provided (Yes/No)	N		
GIS Information	Latitude	Fresno, Madera, and Merced Counties		
	Longitude			
	Shape			

Upper San Joaquin River Regional Flood Management Plan System Improvement San Joaquin River Invasive Species Management		
Coordination with other System Improvements	System Improvement 1	29, 33
	System Improvement 2	69, 70, 71
	System Improvement 3	73, 74, 75
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	X
	Long-term System Improvement	X
	Recommendation/Recommended Actions	X
Resiliency	Robustness	X
	Redundancy	
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	X
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Municipal Well Relocation/ Flood-Proofing in City of Mendota		
System Improvement Background	Abbreviated System Improvement Name	Municipal_Well_A
	System Improvement Name	Municipal Well Relocation/ Flood-Proofing in City of Mendota
	System Improvement ID	82A
	Lead Agency	City of Mendota
	Contact Person	David McGlasson
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	N
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	
	System Improvement Type	
	Structural	
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Long-term
	Within Planning Area (Yes/No)	N
	Addresses Deficiency Within Planning Area (Yes/No)	N
	Area Protected	City of Mendota facilities
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Municipal well relocation and flood-proofing
	System Improvement Description	The City relies on three municipal wells, all located south of the San Joaquin and east of the Mendota Pool. Each of these wells is in a location that would be inundated by the flood levees proposed for construction by the River Restoration project. Inundation of even one of the wells would result in loss of the City's ability to deliver clean, healthful water to its customers. The wells are in the only local general location known to overlie water of such quality. All wells west of the Mendota Pool are of much lower quality, containing levels of iron, manganese and turbidity exceeding CDPH MCLs. The first form of the project: A) Extend well casings to 3.0 feet above the maximum breakover elevation of the new flood channel, and build corresponding improvements to access roads, power supplies site lighting, distribution piping, fencing and other associated construction, so that the wells could remain in operation and be fully accessible by City staff under the most extreme and potentially long-lasting flood conditions. The City has no other water resources and so cannot plan for these wells to be out of service for even 24 hours at a time.
	Problem Addressed by System Improvement	Inundation of facilities
	System Improvement Benefits	Protection of critical facilities
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	X
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Municipal Well Relocation/ Flood-Proofing in City of Mendota				
System Improvement Status	Abbreviated System Improvement Name	Municipal_Well_A		
	Conceptual	X		
	Planning			
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		6,431,782.00
	Base Year of Cost			
	Source of Estimate	City of Mendota		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction		$ 4,190,000.00	$ 4,190,000.00
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ 4,190,000.00	$ 4,190,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals		$ 1,310,000.00	
	Property Acquisition		$ 172,782.00	
	Environmental Documentation (Permitting)		$ 549,000.00	
	Legal Services		$ 210,000.00	
	Subtotal	$ -	$ 2,241,782.00	$ 2,241,782.00
	Grand Total	$ -	$ 6,431,782.00	$ 6,431,782.00
	Local Agency Cost Share			
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	N		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	36.78338		
	Longitude	-120.349046		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Municipal Well Relocation/ Flood-Proofing in City of Mendota		
Coordination with other System Improvements	Abbreviated System Improvement Name	Municipal_Well_A
	System Improvement 1	83, 84, 85, 83B, 84, 85
	System Improvement 2	54
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	
	Redundancy	
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	X
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Municipal Well Relocation/ Flood-Proofing in City of Mendota		
System Improvement Background	Abbreviated System Improvement Name	Municipal_Well_B
	System Improvement Name	Municipal Well Relocation/ Flood-Proofing in City of Mendota
	System Improvement ID	82B
	Lead Agency	City of Mendota
	Contact Person	David McGlasson
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	N
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	
	System Improvement Type	
	Structural	
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Long-term
	Within Planning Area (Yes/No)	N
	Addresses Deficiency Within Planning Area (Yes/No)	N
	Area Protected	City of Mendota facilities
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Municipal well relocation and flood-proofing
	System Improvement Description	The City relies on three municipal wells, all located south of the San Joaquin and east of the Mendota Pool. Each of these wells is in a location that would be inundated by the flood levees proposed for construction by the River Restoration project. Inundation of even one of the wells would result in loss of the City's ability to deliver clean, healthful water to its customers. The wells are in the only local general location known to overlie water of such quality. All wells west of the Mendota Pool are of much lower quality, containing levels of iron, manganese and turbidity exceeding CDPH MCLs. The second form of the project: B) Relocate all three wells outside of the proposed flood levee, farther to the south and still north of SR 180. (This location has been validated as being the best location for municipal water wells.) Relocate all power supply and SCADA equipment. Extend raw water transmission pipeline from the existing well area to the new wells. Construct new access roads as needed.
	Problem Addressed by System Improvement	Inundation of facilities
	System Improvement Benefits	Protection of critical facilities
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	X
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Municipal Well Relocation/ Flood-Proofing in City of Mendota				
System Improvement Status	Abbreviated System Improvement Name	Municipal_Well_B		
	Conceptual	X		
	Planning			
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		23,110,603.00
	Base Year of Cost			
	Source of Estimate	City of Mendota		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction		$ 15,400,000.00	$ 15,400,000.00
			$ -	$ -
			$ -	$ -
			$ -	$ -
			$ -	$ -
	Subtotal	$ -	$ 15,400,000.00	$ 15,400,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals		$ 4,813,000.00	
	Property Acquisition		$ 177,603.00	
	Environmental Documentation (Permitting)		$ 1,950,000.00	
	Legal Services		$ 770,000.00	
	Subtotal	$ -	$ 7,710,603.00	$ 7,710,603.00
	Grand Total	$ -	$ 23,110,603.00	$ 23,110,603.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	N		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	36.78338		
	Longitude	-120.349046		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Municipal Well Relocation/ Flood-Proofing in City of Mendota		
Coordination with other System Improvements	Abbreviated System Improvement Name	Municipal_Well_B
	System Improvement 1	83, 84, 85, 83A, 84, 85
	System Improvement 2	54
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	
	Redundancy	
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	X
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Wastewater Treatment Plant Flood Levee in City of Mendota		
System Improvement Background	Abbreviated System Improvement Name	WWTP_Levee
	System Improvement Name	Wastewater Treatment Plant Flood Levee in City of Mendota
	System Improvement ID	83
	Lead Agency	City of Mendota
	Contact Person	David McGlasson
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	N
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	
	System Improvement Type	
	Structural	
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Long-term
	Within Planning Area (Yes/No)	N
	Addresses Deficiency Within Planning Area (Yes/No)	N
	Area Protected	City of Mendota facilities
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Build flood levee near wastewater treatment plant.
	System Improvement Description	The City's wastewater treatment facility is located west of the Mendota Pool, separated from the waterway by a single parcel of farmland owned by another party. The plant is a series of open lagoons. Any inundation by the Mendota Pool would result not only in loss of wastewater treatment for the City of Mendota, but in flushing wastewater into the San Joaquin River. The plan itself has no outlet. Discharge is by percolation and evaporation only. The total volume of the wastewater lagoons on site is approximately 250 million gallons.
	Problem Addressed by System Improvement	Inundation of facilities
	System Improvement Benefits	Protection of critical facilities
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	X
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Wastewater Treatment Plant Flood Levee in City of Mendota				
System Improvement Status	Abbreviated System Improvement Name	WWTP_Levee		
	Conceptual	X		
	Planning			
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		10,885,000.00
	Base Year of Cost			
	Source of Estimate	City of Mendota		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction		$ 7,300,000.00	$ 7,300,000.00
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ 7,300,000.00	$ 7,300,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals		$ 2,282,000.00	
	Property Acquisition			
	Environmental Documentation (Permitting)		$ 938,000.00	
	Legal Services		$ 365,000.00	
	Subtotal	$ -	$ 3,585,000.00	$ 3,585,000.00
	Grand Total	$ -	$ 10,885,000.00	$ 10,885,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	N		
KMZ File	KMZ File Provided (Yes/No)			
GIS Information	Latitude	36.773808		
	Longitude	-120.368642		
	Shape			

Upper San Joaquin River Regional Flood Management Plan System Improvement Wastewater Treatment Plant Flood Levee in City of Mendota		
Coordination with other System Improvements	Abbreviated System Improvement Name	WWTP_Levee
	System Improvement 1	83, 84, 85, 83A, 83B, 85
	System Improvement 2	54
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	
	Redundancy	
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	X
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Mendota Pool Park Flood Protection		
System Improvement Background	Abbreviated System Improvement Name	MendotaPoolPark
	System Improvement Name	Mendota Pool Park Flood Protection
	System Improvement ID	84
	Lead Agency	City of Mendota
	Contact Person	David McGlasson
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	N
	Basin Wide Benefits	N
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	
	System Improvement Type	
	Structural	
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Long-term
	Within Planning Area (Yes/No)	N
	Addresses Deficiency Within Planning Area (Yes/No)	N
	Area Protected	City of Mendota facilities
	IWM System Improvement (Yes/No)	N
	Abbreviated System Improvement Description	Protecting Mendota pool park from flood
	System Improvement Description	Mendota Pool Park is located adjacent to the west bank of the San Joaquin River and would be inundated in a major flood event, leading to damage to the park, picnic equipment, and associated improvements. Construction of a flood protection levee along the park boundary could mitigate this risk. This project could include recreation components.
	Problem Addressed by System Improvement	Inundation of facilities
	System Improvement Benefits	Protection of park
Permits (X=Required)	CVFPB	X
	404	X
	408	X
	USFWS	X
	RWQCB	X
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Mendota Pool Park Flood Protection				
System Improvement Status	Abbreviated System Improvement Name	MendotaPoolPark		
	Conceptual	X		
	Planning			
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement			
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge			
	Multi-Objective System Improvement			
Cost	System Improvement Costs ($)	$		1,737,000.00
	Base Year of Cost			
	Source of Estimate	City of Mendota		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ 1,150,000.00	$ 1,150,000.00
	Contingencies and Incidentals			
	Contingency and Incidentals		$ 360,000.00	
	Property Acquisition			
	Environmental Documentation (Permitting)		$ 169,000.00	
	Legal Services		$ 58,000.00	
	Subtotal	$ -	$ 587,000.00	$ 587,000.00
	Grand Total	$ -	$ 1,737,000.00	$ 1,737,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts	N		
KMZ File	KMZ File Provided (Yes/No)	Y		
GIS Information	Latitude	36.784879		
	Longitude	-120.368437		
	Shape	Point		

Upper San Joaquin River Regional Flood Management Plan System Improvement Mendota Pool Park Flood Protection		
Coordination with other System Improvements	Abbreviated System Improvement Name	MendotaPoolPark
	System Improvement 1	83, 84, 85, 83A, 83B, 84
	System Improvement 2	54
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	X
	Study	
	Short-term System Improvement	
	Long-term System Improvement	
	Recommendation/Recommended Actions	
Resiliency	Robustness	
	Redundancy	
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	X
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Camp 13 Area Surface Storage		
System Improvement Background	Abbreviated System Improvement Name	Camp13
	System Improvement Name	Camp 13 Area Surface Storage
	System Improvement ID	85
	Lead Agency	Central California Irrigation District & San Luis Canal Company
	Contact Person	Chris White, CCID
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Fresno
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Long-term
	Within Planning Area (Yes/No)	N
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	Firebaugh
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	Constructing reservoir between CCID outside canal and Main canal
	System Improvement Description	The Camp 13 Area surface storage project includes construction of a reservoir project west of Firebaugh between the CCID Outside Canal and Main Canal. A 2013 report evaluated about 5,200 acres of land for potential storage (San Luis & Delta Mendota Water Authority, 2013). The evaluation considered options for 500, 1,000, and 1,800 acre reservoir sites, at specific locations to be determined in the future. The project would receive surface water from the SJRECWA or flood flows off the SJR or Kings River. CCID facilities would be used to convey water to the project lands
	Problem Addressed by System Improvement	Reduce peak flows
	System Improvement Benefits	System operation during flood events, groundwater recharge
Permits (X=Required)	CVFPB	
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Camp 13 Area Surface Storage				
System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge	X		
	Multi-Objective System Improvement	X		
Cost	System Improvement Costs ($)	$		44,000,000.00
	Base Year of Cost	2014		
	Source of Estimate	Lower SJR Flood Management- Flood Impacts Reduction Memo-2014-0516		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
			$ 44,000,000.00	$ 44,000,000.00
				$ -
				$ -
	Subtotal	$ -	$ 44,000,000.00	$ 44,000,000.00
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ -	$ 44,000,000.00	$ 44,000,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts			
KMZ File	KMZ File Provided (Yes/No)			
GIS Information	Latitude	36.857817		
	Longitude	-120.464633		
	Shape			

Upper San Joaquin River Regional Flood Management Plan System Improvement Camp 13 Area Surface Storage		
Coordination with other System Improvements	System Improvement 1	
	System Improvement 2	
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	
	Long-term System Improvement	X
	Recommendation/Recommended Actions	
Resiliency	Robustness	
	Redundancy	X
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	X
	Recommended Action	
	Conceptual	

Upper San Joaquin River Regional Flood Management Plan System Improvement Orestimba Creek Recharge & Recovery Project		
System Improvement Background	Abbreviated System Improvement Name	OC_RR
	System Improvement Name	Orestimba Creek Recharge & Recovery Project
	System Improvement ID	86
	Lead Agency	Central California Irrigation District & San Luis Canal Company
	Contact Person	Chris White, CCID
	Partner Agency	
	Identified State Partner Name	
	Identified Federal Partner Name	
	Systemwide Benefits - Local	Y
	Basin Wide Benefits	
	Does the system improvement have redirected impacts (Yes/No)	N
	Existing Supporting Documents / References	
	County	Fresno
	System Improvement Type	
	Structural	X
	Non-Structural	
	System Improvement Time-frame (Short-term <5 years, Long-term >5 years)	Long-term
	Within Planning Area (Yes/No)	N
	Addresses Deficiency Within Planning Area (Yes/No)	Y
	Area Protected	
	IWM System Improvement (Yes/No)	Y
	Abbreviated System Improvement Description	Constructing recharge ponds and recovery wells along Orestimba Creek
	System Improvement Description	The Orestimba Creek Recharge & Recovery Project includes construction of 85 acres of recharge ponds and 5 recovery wells along Orestimba Creek between the DMC and the Eastin Water District boundary. The project would receive surface water from Orestimba Creek, SJR flood system, CCID and/or Del Puerto Water District (DPWD). The DMC and/or CCID Main Canal could be used to convey the SJR flood water to the bank. Water wells will be piped to the DMC or CCID Main Canal.
	Problem Addressed by System Improvement	Reduce peak flows
	System Improvement Benefits	System operation during flood events, groundwater recharge
Permits (X=Required)	CVFPB	
	404	X
	408	X
	USFWS	X
	RWQCB	
	ESA	X
	Local	X
Structural Deficiencies	Subsidence	
	Seepage	
	Erosion / Sedimentation	
	Structural Deficiencies (Breaches, Encroachments)	
	Inadequate Capacity	
	Aging Infrastructure / Systems / Equipment	
	Vegetation / Invasive Species	
	Control of Upstream Flows	X
	Disconnected Floodplains	
	O&M/ Emergency Management Issues	
System Improvement Addresses Non-Structural Deficiencies	Governance Issues	
	Permitting Issues	
	Inadequate Funding	

Upper San Joaquin River Regional Flood Management Plan System Improvement Orestimba Creek Recharge & Recovery Project				
System Improvement Status	Conceptual			
	Planning	X		
	Permitting / Preliminary Design			
	Final Design / Fully Funded			
	Construction			
	O&M			
Type of IWM System Improvement (X=Yes)	Multiple Agency System Improvement	X		
	Agriculture			
	Ecosystem			
	Recreation			
	Transportation			
	Water Quality			
	Water Supply			
	Groundwater Recharge	X		
	Multi-Objective System Improvement	X		
Cost	System Improvement Costs ($)	$		8,200,000.00
	Base Year of Cost	2014		
	Source of Estimate	Lower SJR Flood Management- Flood Impacts Reduction Memo-2014-0516		
	Additional Cost Details, Assumptions, or Information			
Cost Estimate	**Activity**	**Short-term**	**Long-term**	**Total Cost**
	Planning			$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Design			$ -
			$ 8,200,000.00	$ 8,200,000.00
				$ -
				$ -
	Subtotal	$ -	$ 8,200,000.00	$ 8,200,000.00
	Construction			$ -
				$ -
				$ -
				$ -
				$ -
	Subtotal	$ -	$ -	$ -
	Contingencies and Incidentals			
	Contingency and Incidentals			
	Property Acquisition			
	Environmental Documentation (Permitting)			
	Legal Services			
	Subtotal	$ -	$ -	$ -
	Grand Total	$ -	$ 8,200,000.00	$ 8,200,000.00
	Local Agency Cost Share			$ -
	Partner Agency Cost Share			$ -
	Total Annual O&M Costs			$ -
Cost Estimate Status	C=Complete, N/A=Not Available	C		
Basin Wide Document	USJR Systemwide Impacts			
KMZ File	KMZ File Provided (Yes/No)			
GIS Information	Latitude	37.423215		
	Longitude	-121.002810		
	Shape			

Upper San Joaquin River Regional Flood Management Plan System Improvement Orestimba Creek Recharge & Recovery Project		
Coordination with other System Improvements	System Improvement 1	
	System Improvement 2	
	System Improvement 3	
	Other System Improvements	
System Improvement Phase	Conceptual	
	Study	
	Short-term System Improvement	
	Long-term System Improvement	X
	Recommendation/Recommended Actions	
Resiliency	Robustness	
	Redundancy	X
	Resourcefulness	
	Rapidity	
System Improvement Groups	Rural	
	Urban	
	Small Community / DAC	
	Environmental	
	Emergency Management	
	O&M	
	SJRRP	
	Groundwater Recharge / Conjunctive Use / Water Supply	X
	Recommended Action	
	Conceptual	