Appendix B

Regional Improvements Summary Tables

Appendix B – Regional Improvements

Lower Sacramento/Delta North Regional Flood Management Plan

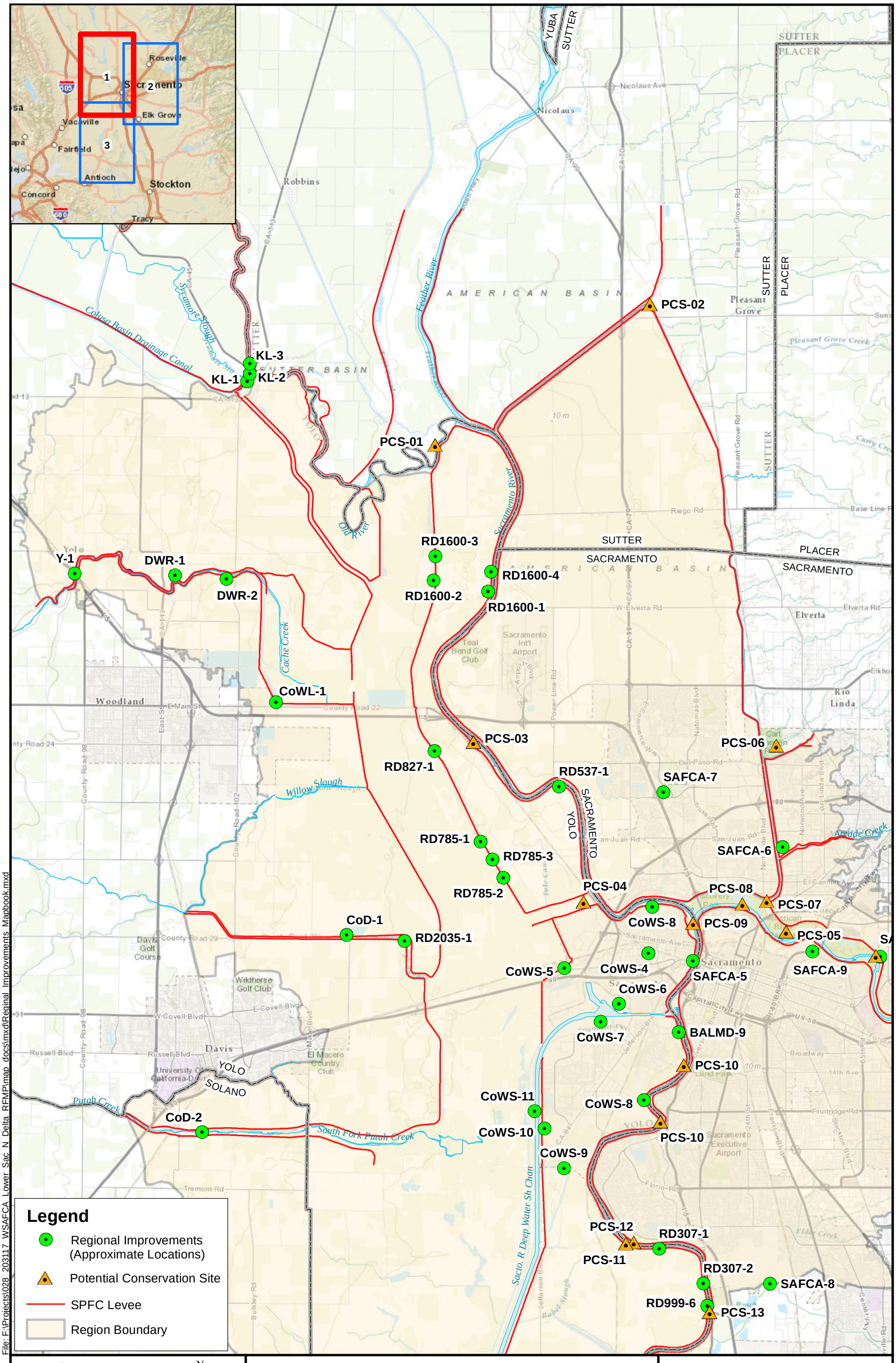
FLOOD Protect
PLANNING FOR ACTION
Lower Sacramento Delta North Region

www.floodprotectplan.com

July 2014

Regional Improvement Prioritization Criteria

Criteria	Possible Response	Explanation
Design Readiness	Pre-Feasibility	The improvement is early in its development. Design may only be 10% or less.
	Feasibility	The improvement is in the feasibility stage and may have only 30% or less level of design.
	Plans and Specifications under development	The improvement is partially designed or is a standard design that the LMA has performed many times, requiring less effort than a completely new design.
	Bid ready	The improvement's design is ready for the construction bid package.
Permitting Readiness	Not complete (complex requirements)	The permitting for the improvement is not complete. However, the required permitting is expected to be complex and require a significant level of effort from the LMA.
	Not complete (complex requirements) 408 permitting in progress	The permitting for the improvement is not complete and the 408 permitting is in progress. The required permitting is expected to be complex and require a significant level of effort from the LMA.
	Not complete (standard or simple requirements)	The permitting for the improvement is not complete. However, the required permitting is expected to be fairly simple or similar to other projects permitted by the LMA.
	Complete	The permitting is complete.
Funding Readiness	Local Funding Sources not Identified	Local funding sources for the LMA have not yet been identified.
	Local Funding Sources Under Development	Local funding sources have been identified, but not yet requested.
	Local Funding Source Secured	Local funding sources for the improvement have been requested and secured.
	Local Funding Source Secured and State Funding Requested	Local funding sources have been secured and State Funding has been requested by a measure such as a Grant Application.
	Local and State Funding Secured	Local and State funding has been secured for the project.
	Local and State Funding Secured and Federal Authorization	Local and State funding has been secured for the project and the project has been Federally authorized.


1
2
3
Roseville
Sacramento
Elk Grove
Vacaville
Fairfield
Antioch
Stockton
Concord
Tracy
YUBA
SUTTER
SUTTER
PLACER
Nicolaus-Ave
Nicolaus
Robbins
Feather River
AMERICAN BASIN
PCS-02
Pleasant Grove
Pleasant Grove Creek
SUTTER
PLACER
Colusa Basin Drainage Canal
Sycamore Slough
SUTTER BASIN
KL-3
KL-1
KL-2
PCS-01
Sacramento River
Riego-Rd
SUTTER
SACRAMENTO
PLACER
SACRAMENTO
AMERICAN BASIN
Y-1
DWR-1
DWR-2
RD1600-3
RD1600-2
RD1600-4
RD1600-1
Elverta
Elverta-Rd
Cache Creek
Teal Bend Golf Club
Sacramento Int'l Airport
CoWL-1
Woodland
Rio Linda
PCS-03
PCS-06
RD827-1
RD537-1
SAFCA-7
Willow Slough
SACRAMENTO
YOLO
RD785-1
RD785-3
RD785-2
SAFCA-6
Arcade Creek
PCS-04
PCS-08
PCS-07
CoD-1
CoWS-8
PCS-09
PCS-05
RD2035-1
Davis Golf Course
CoWS-5
CoWS-4
SAFCA-5
SAFCA-9
Wildhorse Golf Club
CoWS-6
CoWS-7
BALMD-9
PCS-10
Davis
YOLO
SOLANO
El Macero Country Club
Putah Creek
CoWS-11
CoWS-8
CoD-2
South Fork Putah Creek
CoWS-10
PCS-10
CoWS-9
Sacramento Executive Airport
Sacto. R Deep Water Sh Chan
PCS-12
RD307-1
PCS-11
RD307-2
SAFCA-8
RD999-6
PCS-13
Legend
Regional Improvements (Approximate Locations)
Potential Conservation Site
SPFC Levee
Region Boundary
1 " = 3 miles
0 0.75 1.5 3
Miles
N
Datum: NAD 83
Projection: CA (Teale) Albers meters
Zone: N/A
Sources: See Appendix for source data
Regional Flood Management Plan
1
Regional Improvements
Lower Sacramento/ Delta North Region
Prepared By: A. Arnold
Date: June 10, 2014
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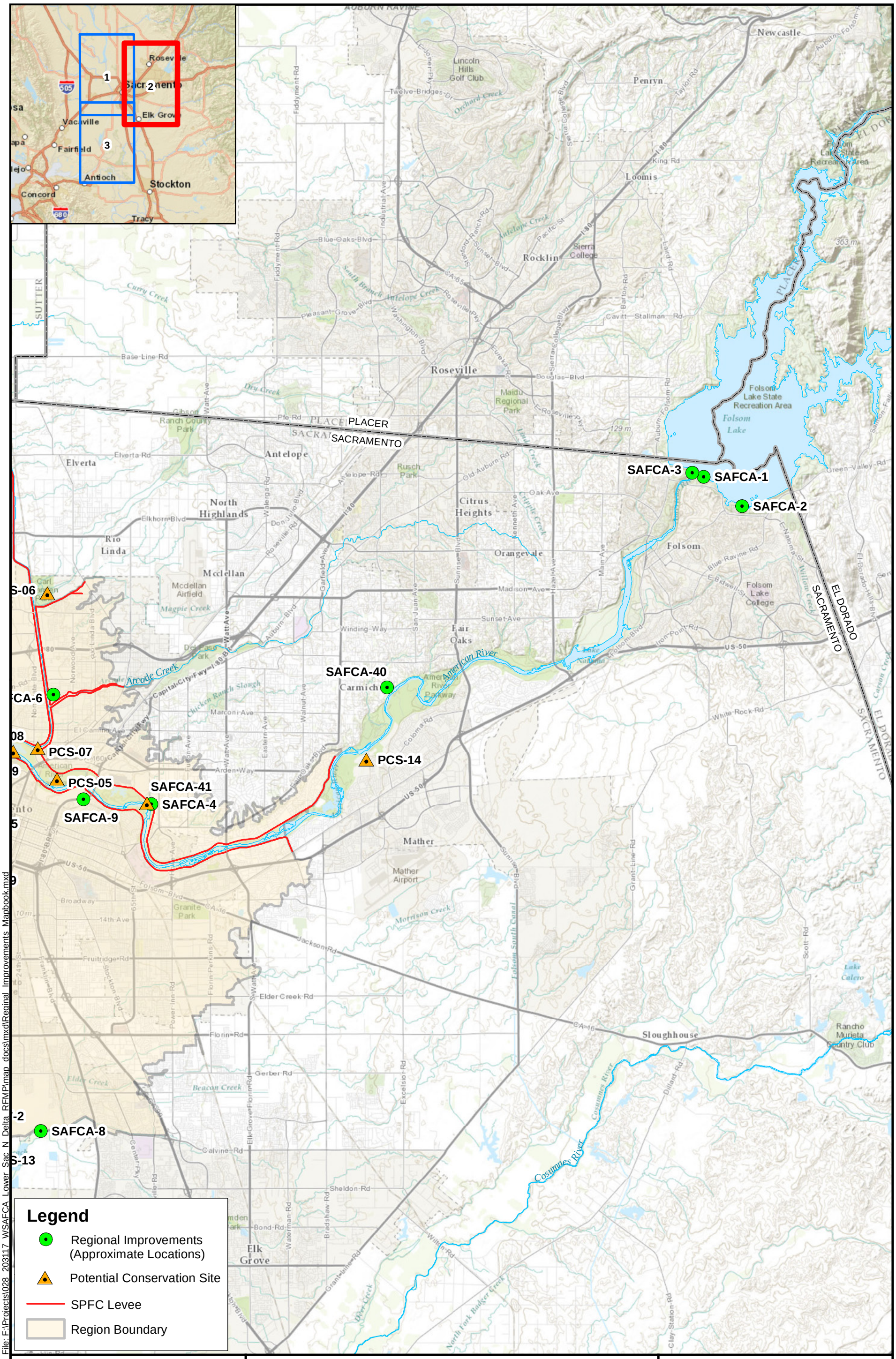
1
2
3
Roseville
Sacramento
Elk Grove
Vacaville
Fairfield
Antioch
Stockton
Concord
Tracy
Newcastle
Lincoln Hills Golf Club
Penryn
Loomis
Rocklin
Sierra College
Folsom Lake State Recreation Area
Folsom Lake
Roseville
Antelope
North Highlands
Citrus Heights
Orangevale
Folsom
Rio Linda
Mcclellan
Mcclellan Airfield
Fair Oaks
Carmichael
Mather
Mather Airport
Elk Grove
Sloughhouse
Rancho Murieta Country Club
Folsom Lake College
PLACER
SACRAMENTO
EL DORADO
SAFCA-1
SAFCA-2
SAFCA-3
SAFCA-4
SAFCA-6
SAFCA-8
SAFCA-9
SAFCA-40
SAFCA-41
PCS-05
PCS-06
PCS-07
PCS-08
PCS-14
PCS-13
American River
Arcade Creek
Dry Creek
Curry Creek
Antelope Creek
Magpie Creek
Beacon Creek
Elder Creek
Morrison Creek
Cosumnes River
Laguna Creek
Elk Grove Creek
Deer Creek
North Fork Badger Creek
Capital City Fwy
Legend
Regional Improvements (Approximate Locations)
Potential Conservation Site
SPFC Levee
Region Boundary
1 " = 3 miles
0 0.75 1.5 3 Miles
N
Datum: NAD 83
Projection: CA (Teale) Albers meters
Zone: N/A
Sources: See Appendix for source data
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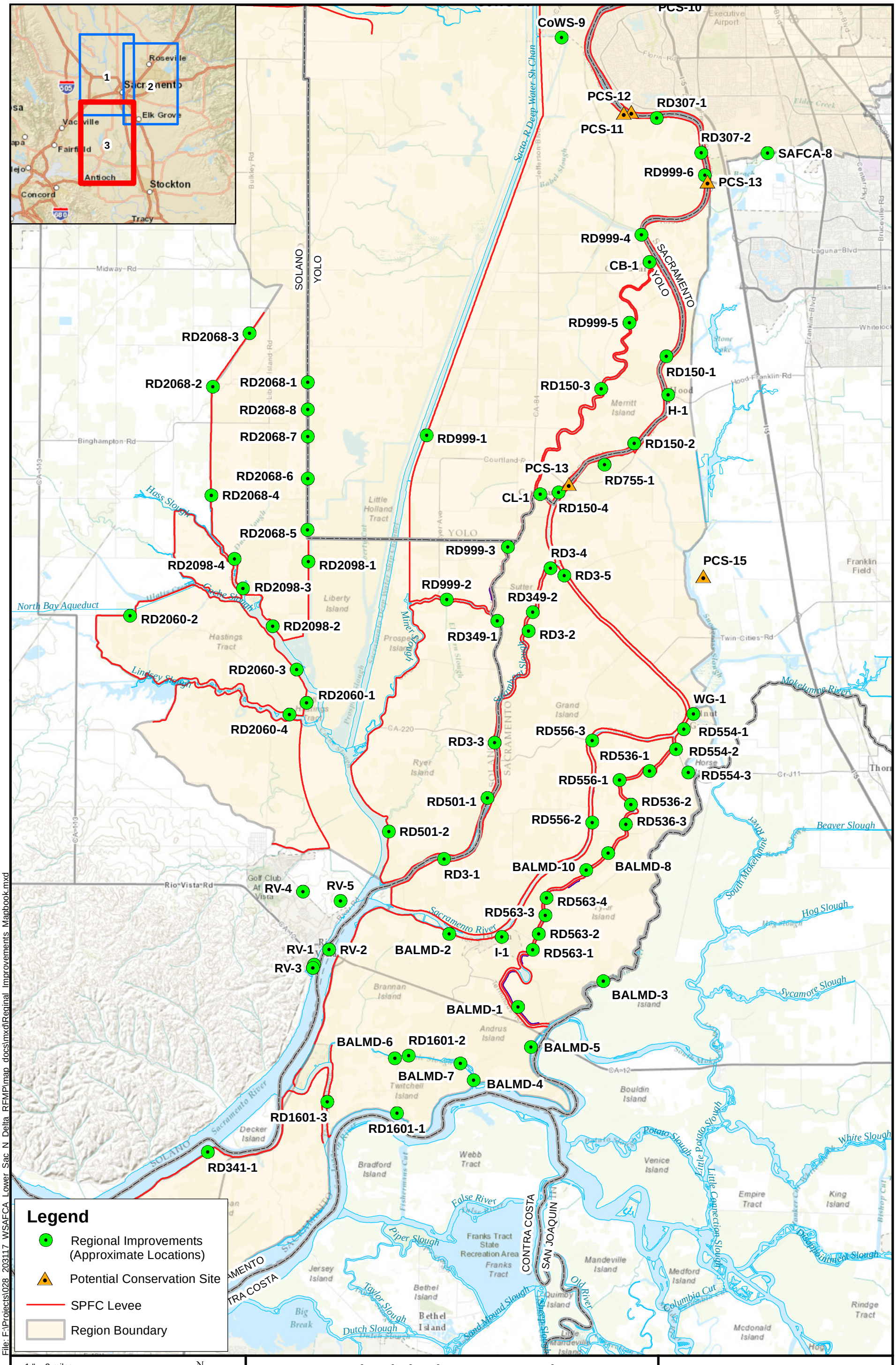
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PCS-10
PCS-12
PCS-11
RD307-1
RD307-2
SAFCA-8
RD999-6
PCS-13
RD999-4
CB-1
RD999-5
RD150-1
RD150-3
H-1
RD150-2
PCS-13
RD755-1
CL-1
RD150-4
RD999-1
RD2068-3
RD2068-2
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RD2068-6
RD2068-4
RD2068-5
RD999-3
RD3-4
RD3-5
PCS-15
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RD349-2
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RD3-2
RD2060-3
RD2060-1
RD2060-4
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RD554-1
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RD536-1
RD554-3
RD556-1
RD536-2
RD501-1
RD556-2
RD536-3
RD501-2
RD3-3
RD3-1
BALMD-10
BALMD-8
RV-4
RV-5
RD563-4
RD563-3
RD563-2
RD563-1
BALMD-2
I-1
RV-1
RV-2
RV-3
BALMD-3
BALMD-1
BALMD-6
RD1601-2
BALMD-5
BALMD-7
BALMD-4
RD1601-3
RD1601-1
RD341-1
Roseville
Sacramento
Elk Grove
Vacaville
Fairfield
Antioch
Stockton
Concord
Tracy
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SOLANO
YOLO
SACRAMENTO
CONTRA COSTA
SAN JOAQUIN
Sacramento River
Deep Water Ship Chan
North Bay Aqueduct
Hass Slough
Lindsey Slough
Cache Slough
Miner Slough
Sacramento River
Mokelumne River
Beaver Slough
Hog Slough
Sycamore Slough
South Mokelumne River
False River
Piper Slough
Dutch Slough
Taylor Slough
Sand Mound Slough
Old River
Potato Slough
Little Potato Slough
White Slough
Little Connection Slough
Columbia Cut
Disappointment Slough
Bishop Cut
Shag Slough
Duck Slough
Elk Slough
Sutter Slough
Steamboat Slough
Snodgrass Slough
Prospect Slough
Lindsey Slough
Cache Slough
Liberty Island
Hastings Tract
Ryer Island
Grand Island
Brannan Island
Andrus Island
Twitchell Island
Little Holland Tract
Prospect Island
Decker Island
Bradford Island
Webb Tract
Jersey Island
Bethel Island
Franks Tract State Recreation Area
Franks Tract
Venice Island
Mandeville Island
Medford Island
Quimby Island
Empire Tract
King Island
Rindge Tract
Mcdonald Island
Bouldin Island
Merritt Island
Wood Island
Horse Island
Executive Airport
Elkhorn Blvd
Florin Rd
I-5
Elder Creek
Laguna Blvd
Elk
Whitelock
Franklin Blvd
Hood Franklin Rd
Bruceville Rd
Gen Henry Pkwy
Franklin Field
Twin Cities Rd
Gr-J11
Thorn
Courtland
Rio Vista Rd
Golf Club At Vista
Midway Rd
Binghampton Rd
Lisbon Island Rd
Bulkley Rd
Jefferson Blvd
Babel Slough
CA-84
CA-160
CA-12
CA-220
CA-113
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Unique ID	Solution	Category	LMA	Description	Cost (2014 Dollar Value)	Design Readiness	Permitting Readiness	Funding Readiness	Multi Benefits
RV-1	Waterfront Floodwall and Public Access Project	Urban	City of Rio Vista	Highest priority improvement for the City is the development of the Waterfront Floodwall and Public Access Project. 2,500 LF concrete floodwall along the current shoreline of the Sac River and would also include construction of a promenade in the same area for public access.	$7,793,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RV-3	Edgewater Drive Improvements	Urban	City of Rio Vista	Construction of a permanent floodwall pump station to reduce flooding along Edgewater Drive. However, limited room and private property issues complicate matters.	TBD	Feasibility	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RV-4	Airport Drive Drainage Improvements	Urban	City of Rio Vista	Inadequate drainage during heavy storms at Church and Airport Road intersection. City would like to increase size of culverts and realign drainage ditches.	TBD	Feasibility	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RV-2	Highway 84 Closure Structure	Urban	Caltrans	Comparison between Highway 12 underpass stop logs or closure structure or a re-alignment/relocation of the Highway 12 crossing of the Sacramento River to prevent flood flows from flooding Highway 84.	$500,000	Feasibility	Not complete (complex requirements)	Local Funding Sources not Identified	Potential link to the RASP
RV-5	Mellin Levee Vegetation Control	Urban	Solano County Public Works	Levee vegetation management and DWR to determine if Mellin Levee is actually an SPFC levee.	TBD	Pre-Feasibility	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP

Unique ID	Solution	Category	LMA	Description	Cost (2014 Dollar Value)	Design Readiness	Permitting Readiness	Funding Readiness	Multi Benefits
RD501-1	Rock Slope Protection Project - Ryer Island	Rural	RD-501	Waterside slope protection quarry stone riprap. Develop existing riprap inventory to refine quantities. 3 year completion time.	$7,337,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Source Secured	Potential link to the RASP
RD501-2	Vegetation Control Project - Ryer Island	Rural	RD-501	Vegetation removal/thinning/trimming and mitigation from the levee slope and 15 feet from the levee toe. The goal of this project is to meet the Central Valley Flood Protection Plan Levee Vegetation Management Strategy criteria. 2 year completion time.	$3,927,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Source Secured	Potential link to the RASP
RD2068-2	Yolo Bypass Seepage Repair Project - Yolano	Rural	RD 2068	Rock and fill repair for serious seepage site along the Yolo Bypass; roughly 700 ft long.	$452,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Source Secured	Potential link to the RASP
RD2068-1	Yolo Bypass Waterside Enhancement Project - Yolano	Rural	RD 2068	Project would provide additional slope material (bypass side of levee) at a possible 10:1 or flatter slope. Providing protection from high water flood erosion, habitat friendly slopes, and includes a large enhancement and mitigation component. (Est. 1M tons of imported fill).	$6,821,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Ecosystem Restoration Contained in RD 2068 5 yr Plan
RD2060-1	Wright Cut Bank Protection Project - Hastings	Rural	RD-2060	Rehabilitation of 3,500 LF of waterside bank to withstand Yolo Bypass flood flows, and incorporate an enhanced lower waterside slope habitat area with possible riparian forest, scrub shrub, emergent/freshwater marsh to mitigate and enhance habitat values.	$3,100,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Ecosystem Restoration Contained in RD 2060 5 yr Plan
RD2060-2	Lindsey and Cache Slough Bank Protection Project - Hastings	Rural	RD-2060	Repair/Rehabilitation of multiple sites along 12,000 LF of lower sections closest to Yolo Bypass flows of Cache Slough and Lindsey Slough. Scaled down version of "Wright Cut Bank Protection Project."	$2,067,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Ecosystem Restoration Contained in RD 2060 5 yr Plan
RD2098-1	Cache Slough Stability Project	Rural	RD 2098	Construct a 60 LF stability protection project along Cache Slough at LM 5.9.	$35,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD2098-2	Cache Slough Freeboard Project	Rural	RD 2098	Freeboard deficiency due to subsidence. 100 LF crown repair along Cache Slough at LM 7.41.	$29,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD536-1	Lindsey Slough Seepage Repair Project - Egbert	Rural	RD-536	Seepage protection project 300 LF along the Lindsey Slough, LM 3.3 to 3.35. Project would consist of rock and fill.	$194,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD536-2	Lindsey Slough Bank Protection Project - Egbert	Rural	RD-536	Waterside Bank protection and Rehabilitation project 460 LF along the Lindsey Slough, LM 4.83 to 5.03.	$522,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD536-3	Lindsey Slough Stability Project - Egbert	Rural	RD-536	Levee Stability protection project 1,600 LF along the Lindsey Slough, LM 0.52 to 0.88.	$1,102,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP

Unique ID	Solution	Category	LMA	Description	Cost (2014 Dollar Value)	Design Readiness	Permitting Readiness	Funding Readiness	Multi Benefits
RD2068-3	Yolo Bypass West Levee Improvement Project - Yolano	Rural	RD 2068	Freeboard deficiency results in overtopping during high water events in the bypass combined with high winds and resulting wave fetch. 5 to 6 feet of freeboard is needed to assure no over topping.	TBD	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD2068-4	Yolo Bypass West Levee Erosion Repair Project – Yolano	Rural	RD 2068	Rock reinforcement at critical erosion site located between levee miles 3.2 and 5.5 on both sides of levee and at both bypass and landside toes.	TBD	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD2068-5	Back Levee Erosion Repair Project - Yolano	Rural	RD 2068	Rock armoring needs to be applied all along the toe of the irrigation canal side of the back levee.	TBD	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD2060-3	Cache Slough Bank Protection Project - Hastings	Rural	RD-2060	Waterside Bank protection and Rehabilitation project 2420 LF along Cache Slough at a serious erosion site, LM 1.3 to 2.23. Enhanced lower waterside slope habitat area with possible Riparian Forest, Scrub-Shrub, and emergent/freshwater marsh to mitigate or enhance the habitat value.	$2,744,000	Plans and Specifications Under Development	Not complete (complex requirements)	Local Funding Sources not Identified	Ecosystem Restoration
RD2060-4	Lindsey Slough Bank Protection Project - Hastings	Rural	RD-2060	Waterside Bank Protection and Rehabilitation project 750 LF between LM 2.43 to 2.45 and 4.29. Enhanced lower waterside slope habitat area with possible Riparian Forest, Scrub-Shrub, and emergent/freshwater marsh to mitigate or enhance the habitat value.	$850,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Ecosystem Restoration
RD2068-8	Yolo Bypass West Levee Interior Erosion Repair Project	Rural	RD 2068	Repair of erosion caused by interior drainainage from LM 3.2 to 5.5. Landside erosion protection features are needed to ensure toe stability and to avoid recurring landside slope and toe repairs.	TBD	Pre-Feasibility	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD2098-3	Yolo Bypass West Levee Erosion Repair - RD 2098	Rural	RD 2098	Repair of erosion caused by interior drainainage from LM 0.0 to 3.5. Landside erosion protection features are needed to ensure toe stability and to avoid recurring landside slope and toe repairs.	TBD	Pre-Feasibility	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD2098-4	Back Levee Erosion Repair Project - RD 2098	Rural	RD 2098	Rock armoring needs to be applied all along the toe of the irrigation canal side of the back levee	TBD	Pre-Feasibility	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD2068-6	Adoption into CWC 8361	Rural	RD 2068	Preferred Solution to funding long-term O&M requirements of the flood protection system is for the State to adopt RD 2068 levee system into the California Water Code Section 8361.	TBD	Pre-Feasibility	Not complete (complex requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD2068-7	Encroachment Removal and Enforcement	Rural	RD 2068	Monitoring and enforcement by CVFPB to remove or bring into compliance encroachments.	TBD	Pre-Feasibility	Not complete (complex requirements)	Local Funding Sources not Identified	Potential link to the RASP

Unique ID	Solution	Category	LMA	Description	Cost (2014 Dollar Value)	Design Readiness	Permitting Readiness	Funding Readiness	Multi Benefits
CoWS-8	Sacramento River West South Levee (Southport EIP)	Urban	City of W. Sac	3.6 mile combination of setback levee, adjacent levee, slope flattening, cutoff walls and landside seepage berms, with offset areas that are to be converted to floodplain and habitat restoration features.	$190,000,000	Plans and Specifications Under Development	Not complete (complex requirements) 408 permitting in progress	Local and State Funding Secured	Ecosystem Restoration
CoWS-10	Deep Water Ship Channel East Levee	Urban	City of W. Sac	Slope flattening, installation of cutoff wall and stabilization with revetment at each existing pump station location.	$6,141,000	Feasibility	Not complete (complex requirements)	Local Funding Source Secured	Potential link to the RASP
CoWS-11	Deep Water Ship Channel West Levee	Urban	City of W. Sac	11 miles of revetment, levee raise, slope flattening.	$144,814,000	Feasibility	Not complete (complex requirements)	Local Funding Source Secured	Potential link to the RASP
CoWS-4	Sacramento River West North Levee Balance of Reaches	Urban	City of W. Sac	Combination of cutoff walls (conventional and deep soil mixed) and raised levees, with waterside slope flattening.	$77,702,000	Feasibility	Not complete (complex requirements)	Local Funding Source Secured	Potential link to the RASP
CoWS-5	Yolo Bypass Levee	Urban	City of W. Sac	Stability berm and 2 miles of cutoff wall. Future Closure structures will be required for the I-80 crossing.	$51,531,000	Feasibility	Not complete (complex requirements)	Local Funding Source Secured	Potential link to the RASP
CoWS-6	Port North Levee	Urban	City of W. Sac	Floodwall oriented at an offset, internally, to the property line of the Port and would require two closure structures at the east end of the property.	$37,650,000	Feasibility	Not complete (complex requirements)	Local Funding Source Secured	Potential link to the RASP
CoWS-7	Port South Levee	Urban	City of W. Sac	Waterside slope flattening and a section of flood wall and a section of cutoff wall.	$9,049,000	Feasibility	Not complete (complex requirements)	Local Funding Source Secured	Potential link to the RASP
CoWS-9	South Cross Levee	Urban	City of W. Sac	Combination of slope flattening, short cutoff wall and an adjacent levee raise with an interior drainage system.	$11,684,000	Feasibility	Not complete (complex requirements)	Local Funding Source Secured	Potential link to the RASP
CoD-1	Wastewater Treatment Plant Flood Protection Measures	Urban	City of Davis	100-year flood protection measures during the upgrade of the WWTP to comply with NPDES permit requirements. Measures include floodwall or levee around the key facilities and the Willow Slough Bypass north levee would need to be raised along the project area. Key facilities are not entirely clear in permit and it may be possible to negotiate with the RWQCB to which facilities do or do not need protection.	$9,966,000	Feasibility	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Water Quality Contained in Davis WWTP TM 15 - Prelim. Design Report
CoD-2	Putah Creek Capacity Study	Urban	City of Davis	Existing capacity study of Putah Creek is needed to determine if it meets design flow objectives in current condition.	TBD	Pre-Feasibility	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Water Supply, Ecosystem Restoration
CoWL-1	City of Woodland Feasibility Study Alternatives Analysis	Urban	City of Woodland	Feasibility Study for identifying alternatives for flood risk reduction relating to levee construction.	TBD	Pre-Feasibility	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Ecosystem Restoration

Unique ID	Solution	Category	LMA	Description	Cost (2014 Dollar Value)	Design Readiness	Permitting Readiness	Funding Readiness	Multi Benefits
KL-2	Knights Landing Ridge Cut Repair	Small	Knights Landing Drainage District	The project is the repair of three non-urban levee sites along the Knights Landing Ridge Cut. The repair of these three sites would complete the levee rehabilitation identified as necessary to restore the District levee to their authorized level of flood protection.	$7,242,000	Bid Ready	Complete	Local Funding Sources not Identified	Potential link to the RASP
KL-3	Sacramento River Levee (sites 9, 10, and 11)	Small	Knights Landing Drainage District	Remediation work at three sites consisting of the installation of a soil/bentonite cutoff wall of various lengths and depths	TBD	Bid Ready	Not complete (complex requirements)	Local Funding Sources not Identified	Potential link to the RASP
KL-1	Knights Landing Feasibility Study	Small	Knights Landing Drainage District	The RFMP is pre-feasibility, and thus a feasibility study is a recommended course of action for the area. Potential solutions to be explored include Non-structural structure raising, a ring levee, fix-in-place of existing perimeter levees, and FEMA Zone D designation or a combination of those solutions.	TBD	Pre-Feasibility	Not complete (complex requirements)	Local Funding Sources not Identified	Potential link to the RASP
Y-1	Yolo Feasibility Study	Small	Yolo	The RFMP is pre-feasibility, and thus a feasibility study is a recommended course of action for the area. Potential solutions to be explored include Non-structural structure raising, a ring levee, fix-in-place of existing perimeter levees, and FEMA Zone D designation or a combination of those solutions.	TBD	Pre-Feasibility	Not complete (complex requirements)	Local Funding Sources not Identified	Potential link to the RASP
CB-1	Clarksburg Improvements Feasibility Study	Small	Clarksburg	The RFMP is pre-feasibility, and thus a feasibility study is a recommended course of action for the area. Potential solutions to be explored include Non-structural structure raising, a ring levee, fix-in-place of existing perimeter levees, and FEMA Zone D designation or a combination of those solutions.	TBD	Pre-Feasibility	Not complete (complex requirements)	Local Funding Sources not Identified	Potential link to the RASP

Unique ID	Solution	Category	LMA	Description	Cost (2014 Dollar Value)	Design Readiness	Permitting Readiness	Funding Readiness	Multi Benefits
RD785-3	Yolo Bypass Levee Flattening Project	Rural	RD 785	Project in coordination with RD 785. Details to be provided by RD 827.	TBD	Bid Ready	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD1600-1	Sacramento River Scour Hole Repair	Rural	RD 1600	8 Miles north of Road 117 and Old River, there are 3 large, deep scour holes, 8 ft off the water side levee toe that would need to be repaired to increase the levee stability.	TBD	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD1600-3	Yolo Bypass Bank Protection	Rural	RD 1600	On the Yolo bypass levee (Levee Segment 295), 3 miles south of the Freemont Weir 6,800 LF needs repair of erosion; requires gravel to improve access and repair 3:1 slope.	$7,679,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD1600-4	Vegetation Mitigation Management	Rural	RD 1600	DWR has 3 mitigation sites along the Sac. River on the waterside of the levees that require vegetation maintenance and gravel for the access road.	TBD	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD827-1	Yolo Bypass Stability Berm	Rural	RD 827	Single site along the Yolo Bypass, LM 0.3 to 0.5 about 110 LF requires a stability berm and is considered to be a serious stability problem.	$64,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD785-2	Yolo Bypass Bank Protection Project	Rural	RD 785	Bank protection project to repair a serious erosion site along the Yolo Bypass at LM 2.2 about 200 LF.	$227,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD2035-1	Willow Slough Bypass Stability Project	Rural	RD 2035	Serious stability site along Willow Slough Bypass about 100 LF that requires the construction of stability protection.	$58,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
DWR-1	Cache Creek Erosion/Bank Protection Project	Rural	DWR	DWR Maintenance Yard Rehabilitation of 4 critical erosion sites on Cache Creek, LM 2.54 to 5.58, 2.8 to 2.84, 3.86 to 3.95 and 4.13 to 4.27, about 1,600 LF.	$1,814,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD999-1	Sutter Slough Erosion Repair Project - Netherlands	Rural	RD 999	Erosion repairs along multiple sites with heavy vegetation that will need to be mitigated for. Estimated about 10,000 tons of rip rap quarry stone and 2,500 tons of imported fill will be used. 2 year completion time.	$775,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Ecosystem Restoration Contained in RD 999 5 yr Plan
RD999-3	Sacramento River Erosion Repair Project - Netherlands	Rural	RD 999	1,600 LF erosion repair south of the Clarksburg Marina. At one point was listed 'high' on USACE Sac Bank Project, but has since been reduced on the list. Estimated 35,000 tons of gravel and 40,000 tons of imported fill will be used. 3 year completion time.	$2,067,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Ecosystem Restoration Contained in RD 999 5 yr Plan
RD150-1	Elk Slough Bank Protection Project - Merrit Island	Rural	RD 150	Waterside Bank Protection and Rehabilitation project at four areas of Elk Slough. Enhanced lower waterside slope habitat area with possible Riparian Forest, Scrub-Shrub, and emergent/freshwater marsh to mitigate or enhance the habitat value. Estimated 120,000 to 160,000 tons of rip rap quarry stone and 50,000 tons of imported fill will be used. 3 year completion time.	$4,960,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Ecosystem Restoration Contained in RD 150 5 yr Plan

Unique ID	Solution	Category	LMA	Description	Cost (2014 Dollar Value)	Design Readiness	Permitting Readiness	Funding Readiness	Multi Benefits
RD999-2	Miner Slough Seepage Repair Project - Netherlands	Rural	RD 999	The construction of seepage control berms, drains or membranes along Miner Slough. Easement issues. Estimated 30,000 tons of gravel and 40,000 tons of imported fill. 3 year completion time.	$1,240,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD999-4	Elk Slough Feasibility Study Netherlands	Rural	RD 999	Evaluate existing levee conditions and habitat types and evaluate alternatives for improvements and sustainability. Large habitat corridor with valuable Riparian Forest and Shaded Riverine Aquatic habitat. 4 year completion time.	$775,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD999-6	Miner Slough Bank Protection Control - Netherlands	Rural	RD 999	Waterside Bank Protection and Rehabilitation project 400 LF LM 0.64. Enhanced lower waterside slope habitat area with possible Riparian Forest, Scrub-Shrub, and emergent/freshwater marsh to mitigate or enhance the habitat value.	$454,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Ecosystem Restoration
RD307-1	Rock Slope Protection Project - Lisbon	Rural	RD 307	Waterside slope protection quarry stone riprap. Develop existing riprap inventory to refine quantities. 3 year completion time.	$4,216,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD307-2	Vegetation Control Project - Lisbon	Rural	RD 307	Vegetation removal/thinning/trimming and mitigation from the levee slope and 15 feet from the levee toe. The goal of this project is to meet the Central Valley Flood Protection Plan Levee Vegetation Management Strategy criteria. 2 year completion time.	$378,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD999-5	Deep Water Ship Channel Stability Project - Netherlands	Rural	RD 999	2,640 LF Stability site LM 0.5 to 1.0 along the Deep Water Ship Channel and 500 LF Stability site from LM 1.8 to 1.9.	$1,822,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD150-3	Sacramento Rive Bank Protection Project - Merrit Island	Rural	RD 150	Waterside Bank Protection and Rehabilitation project at 4 sites, 1,200 LF, LM 2.04 to 2.16, 3.38, 3.48 and 4.58 to 4.65. Enhanced lower waterside slope habitat area with possible Riparian Forest, Scrub-Shrub, and emergent/freshwater marsh to mitigate or enhance the habitat value.	$1,361,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD150-4	Sacramento River Seepage Protection Project - Merrit Island	Rural	RD 150	275 LF Seepage protection project along the Sacramento River, from LM 5.9 to 5.95. Will consist of rock and fill to control seepage.	$178,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
DWR-2	Sacramento River Seepage Protection Project - Cache Creek	Rural	DWR	8,150 LF repair for multiple serous and critical seepage sites in Maintenance Area 9 that DWR plans to construct a seepage protection project along the Sacramento River to repair these locations. Project would consist of rock and fill to control the seepage. LM 10.7 to 18.1.	$5,264,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD1600-2	Yolo Bypass Levee Crown Repair	Rural	RD 1600	On the Yolo bypass levee, 2 miles south of the Fremont Weir and running for 2.3 miles the levee crown road needs an addition 5.-6 inches of base and gravel added to ensure safe driving during patrols in wet weather and high water events. Also landward side, the levee needs improved stability and additional soil to have a 3:1 slope.	$3,503,000	Plans and Specifications Under Development	Not complete (complex requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD785-1	Yolo Bypass Levee Improvements	Rural	RD 785	2 miles of the Yolo Bypass levee need repairs including rip rap and rock placed on the crown to allow for winter patrol access and emergency access.	$3,046,000	Plans and Specifications Under Development	Not complete (complex requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD537-1	Monument Bend Maintenance	Rural	RD 537/DWR/Yolo County	River side levee toe needs to be rebuilt along Old River Road and Monument Bend.	TBD	Feasibility	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP

Unique ID	Solution	Category	LMA	Description	Cost (2014 Dollar Value)	Design Readiness	Permitting Readiness	Funding Readiness	Multi Benefits
RD150-2	Elk Sough Bank Feasibility Study - Merrit Island	Rural	RD 150	Evaluate Elk Slough channel and adjacent levee features to define the geometry of the system, catalog all features, and assess possible alternatives that can sustain, enhance, and protect both the flood protection and ecosystem values. 3 year completion time.	$775,000	Plans and Specifications Under Development	Not complete (complex requirements)	Local Funding Sources not Identified	Ecosystem Restoration Contained in RD 150 5 yr Plan

Unique ID	Solution	Category	LMA	Description	Cost (2014 Dollar Value)	Design Readiness	Permitting Readiness	Funding Readiness	Multi Benefits
SAFCA-4	American River Levee Improvements	Urban	USACE/ SAFCA	Anticipatory erosion control program to protect the improved levees from failure due to erosion induced by sustained high flows in the river channel. Completed by 2030	$32,000,000	Bid Ready	Complete	Local & State Funding Secured and Federal Authorization	Potential link to the RASP
SAFCA-1	Folsom Dam JFP	Urban	USACE/ SAFCA	2007 Federally Authorized project consists of physical modifications to Folsom Dam and Reservoir that would improve efficiency and effectiveness of flood control operations and fed safety requirements. New Gated aux. spillway on a natural ridge east of the main dam. Includes concrete lined approach channel, discharge chute in the left abutment and enlargement of existing stilling basin, and installation of six submerged tainter gates. Initiated in 2010 and expected to be completed in spring of 2017	$161,000,000	Plans and Specification under development for remaining 10% (90% under construction)	Complete	Local & State Funding Secured and Federal Authorization	Potential link to the RASP
SAFCA-2	Folsom Dam Raise	Urban	USACE/ SAFCA	2007 Federally Authorized project, consists of raising Folsom Dam's earthen dikes and wing dams by 3.5 FT so as to equal the height of the Folsom's main dam and modifying the dam's five main spillway gates and three emergency spillway gates so as to allow dam operators to add approx. 40,000 acre-feet of additional surcharge storage. This is expected to being by USACE in 2018 and completed by 2022.	$150,000,000	Plans and Specifications Under Development	Complete	Local & State Funding Secured and Federal Authorization	Potential link to the RASP
SAFCA-8	South Sacramento Streams Group	Urban	USACE/ SAFCA	Authorized by Congress in 1999, the project includes levee, channel, and flood wall improvements along Morrison Creek and its tributaries generally west of Franklin Boulevard. Work is now substantially complete with only a series of floodwall improvements and a detention basin along Florin Creek remaining and is expected to be carried out by the end of 2014.	$15,000,000	Bid Ready	Not complete (standard or simple requirements)	Local & State Funding Secured and Federal Authorization	Potential link to the RASP
SAFCA-7	Natomas Levees	Urban	USACE/ SAFCA	Intended to address identified levee embankment and foundation stability issues as well as levee height deficiencies in the perimeter levee system protection the Natomas Basin east of the Sacramento River and north of the American River. Initiated by SAFCA in 2007 and to date roughly 50% of the project (approx. 18 miles) have been completed and it is anticipated that construction of the remainder will begin in 2016 and completed within 6 years. This includes 6 miles of the Sacramento River east levee, 2 miles of the American River north levee, 7 miles of the Natomas East Main Drainage Canal west levee and 3 miles of the Pleasant Grove Creek Canal west levee.	$700,000,000	• Plans and Specification under development for remaining 50% (50% under construction)	Not complete (complex requirements)	Local & State Funding Secured and Federal Authorization	Potential link to the RASP
SAFCA-40	Environmental Enhancements	Urban	USACE/ SAFCA	SAFCA flood risk reduction program also includes congressionally authorized environmental enhancements along the American River Parkway and at Folsom Dam. These projects reflect SAFCA's statutory mandate to carry out the Agency's flood control responsibilities in a manner that provides optimum protection to the environment.	TBD	Feasibility	Not complete (complex requirements)	Local Funding Source Secured and State Funding Requested	Ecosystem Restoration
SAFCA-5	Sacramento River Levee Improvements	Urban	USACE/ SAFCA	Sacramento River downstream of the mouth of the American River focus of substantial erosion control and seepage remediation efforts. Additional work will be needed to address levee embankment and foundation vulnerabilities which is likely to include construction of a combination of cutoff walls and relief wells over a distance of up to eight miles along various segments of the east levee between Freeport and Sutterville Road as well as remedial work to the floodwall between Interstate 50 and the Tower Bridge.	$600,000,000	Bid Ready	Not complete (complex requirements)	Local Funding Sources Under Development	Potential link to the RASP
SAFCA-3	Folsom Dam Flood Control Manual Update Project	Urban	USACE/ SAFCA	Congress has directed USACE to update the 1987 flood control manual so as to reflect the operation capacities created by Folsom Dam JFP and Folsom Dam Raise and to take advantage of the National Weather Service's improving ability to forecast extreme precipitation and runoff in the American River watershed. USACE is currently working with Reclamation, SAFCA, DWR and the CVFPB to prepare an updated flood control manual by the winter of 2017.	TBD	N/A	Not complete (complex requirements)	Local & State Funding Secured and Federal Authorization	Potential link to the RASP

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SAFCA-9	System Operation and Maintenance	Urban	USACE/ SAFCA	Long-term operation and maintenance Risk based program that will address levee vegetation and access issues consistent with the requirements of the NFIP and DWR's urban levee design criteria. Lower risk veg and encroachments will be monitored and addressed as part of long term System Wide Improvement Frameworks (SWIF's) developed by the local maintaining agencies.	TBD	Pre-Feasibility	Not complete (complex requirements)	Local Funding Source Secured and State Funding Requested	Ecosystem Restoration
SAFCA-6	North Sacramento Streams	Urban	USACE/ SAFCA	Located east of Natomas, contains several urbanized floodplains that are threatened by peak flood flows; Arcade Creek, Magpie Creek and the lower portion of the Natomas East Main Drainage Canal (NEMDC). Past improvements in the 1990's however recent preliminary embankment and foundation stability analyses indicate that up to four miles of additional improvement may be required along portions of the north and south levees of Arcade Creek and the east levee of NEMDC between Arcade Creek and Northgate Boulevard.	$150,000,000	Feasibility	Not complete (complex requirements)	Local Funding Sources Under Development	Potential link to the RASP
SAFCA-41	American River Levee Improvements (Erosion Control Component)	Urban	USACE/ SAFCA		$350,000,000	Pre-Feasibility	Not complete (complex requirements)	Local Funding Sources Under Development	Potential link to the RASP

Unique ID	Solution	Category	LMA	Description	Cost (2014 Dollar Value)	Design Readiness	Permitting Readiness	Funding Readiness	Multi Benefits
H-1	Hood Improvements Feasibility Study	Small	Hood	The RFMP is pre-feasibility, and thus a feasibility study is a recommended course of action for the area. Potential solutions to be explored include Non-structural structure raising, a ring levee, fix-in-place of existing perimeter levees, and FEMA Zone D designation or a combination of those solutions.	TBD	Pre-Feasibility	Not complete (complex requirements)	Local Funding Sources not Identified	Potential link to the RASP
CL-1	Courtland Improvements Feasibility Study	Small	Courtland	The RFMP is pre-feasibility, and thus a feasibility study is a recommended course of action for the area. Potential solutions to be explored include Non-structural structure raising, a ring levee, fix-in-place of existing perimeter levees, and FEMA Zone D designation or a combination of those solutions.	TBD	Pre-Feasibility	Not complete (complex requirements)	Local Funding Sources not Identified	Potential link to the RASP
WG-1	Walnut Grove Improvements Study	Small	Walnut Grove	The RFMP is pre-feasibility, and thus a feasibility study is a recommended course of action for the area. Potential solutions to be explored include Non-structural structure raising, a ring levee, fix-in-place of existing perimeter levees, and FEMA Zone D designation or a combination of those solutions.	TBD	Pre-Feasibility	Not complete (complex requirements)	Local Funding Sources not Identified	Potential link to the RASP
I-1	Isleton Improvements Feasibility Study	Small	Isleton	The RFMP is pre-feasibility, and thus a feasibility study is a recommended course of action for the area. Potential solutions to be explored include Non-structural structure raising, a ring levee, fix-in-place of existing perimeter levees, and FEMA Zone D designation or a combination of those solutions.	TBD	Pre-Feasibility	Not complete (complex requirements)	Local Funding Sources not Identified	Potential link to the RASP

Unique ID	Solution	Category	LMA	Description	Cost (2014 Dollar Value)	Design Readiness	Permitting Readiness	Funding Readiness	Multi Benefits
BALMD-1	Sacramento River Revetment and Shaded Riverine Aquatic (SRA) habitat Enhancement	Rural	BALMD	Rebuild the slope and create a stable foundation for an eco-berm and a SRA habitat bench.	$2,584,000	Bid Ready	Not complete (standard or simple requirements)	Local Funding Source Secured	Ecosystem Restoration Contained in BALMD 5 yr plan
RD554-1	Snodgrass Slough Landside Fill and Minor Crown Raising - Walnut Grove	Rural	RD-554	Two crucial long term goals maintain levee height and improve stability. Proposed projects include landside fill and minor crown-raising on the Snodgrass Slough levee.	$1,126,000	Bid Ready	Not complete (standard or simple requirements)	Local Funding Source Secured	Potential link to the RASP
RD563-1	Rock Slope Protection Project - Tyler Island	Rural	RD-563	Adding supplementary quarry stone riprap above the existing riprap to any portions of the waterside slope of the levee requiring additional rock slope protection. District must complete and submit riprap inventory to determine where this is necessary and to determine quantities and costs. Completion time of 1-year.	$841,000	Bid Ready	Not complete (standard or simple requirements)	Local Funding Source Secured	Potential link to the RASP
BALMD-3	Mokelumne River Stability Berm	Rural	BALMD	A stability berm, estimated to be approximately 80 feet wide by 5 feet high will be constructed along the landside toe of the levee.	$930,000	Bid Ready	Not complete (standard or simple requirements)	Local Funding Source Secured	Potential link to the RASP
BALMD-5	Mokelumne River Crown Raising	Rural	BALMD	Crown raising to occur to repair PL 94-99 deficiencies in the levee crown.	$517,000	Bid Ready	Not complete (standard or simple requirements)	Local Funding Source Secured	Potential link to the RASP
BALMD-6	Sevenmile Slough Stability Berm	Rural	BALMD	A stability berm, estimated to be approximately 60 feet wide by 5 feet high will be constructed along the landside toe of the levee.	$827,000	Bid Ready	Not complete (standard or simple requirements)	Local Funding Source Secured	Potential link to the RASP
RD3-1	Erosion/Bank Protection Project - Grand Island	Rural	RD-3	Rehabilitation of three sites on Steamboat Slough and two sites on the Sacramento River. Approx. 1,500 LF of eroding levee on the waterside of Steamboat Slough at LM 0.18 to 0.25, 0.92 to 0.97 and 1.04 to 1.08 and approx. 600 LF on the Sacramento River at LM 11.3 to 11.4 and 16.8 to 16.9. Imported fill and quarry stone est. at 5-10 tons per LF for the four large scour locations and 1-2 tons per LF for the last site. All sites that have vegetation impacts and in-water work will have on-site mitigation considered as the primary mitigation component for the repair. Completion time of 2-years.	$1,550,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Source Secured	Ecosystem Restoration Contained in RD 3 5 yr plan
RD3-4	Erosion/Bank Protection Project 2 - Grand Island	Rural	RD-3	Bank protection project on the Sacramento River and Steamboat Slough based on the District Trustees and engineer's knowledge of how the levee has performed and the District's knowledge of existing conditions at the southern end of the District.	$1,498,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Source Secured	Ecosystem Restoration Contained in RD 3 5 yr plan
RD1601-1	San Joaquin River Levee improvement Project	Rural	RD-1601	Several high-priority waterside embankments identified as having steep slopes that may be susceptible to deterioration with further slope erosion. Critical sites identified as sta 381+00, 456+00, 569+00 and 599+00. Repair should be initiated ASAP. Four seriously deficient high-priority areas on the landside have also been identified as having seepage problems; these sites are sta 615+50, 524+80 to 530+70, 510+00, and 450+30 to 452+30. Interim approach of extending levee landward and then excavate waterside to achieve a 2:1 slope and to provide a seepage berm on the landside. Medium priority sites identified as 365+00 to 627+79.01 which have landside stability issues would be addressed with a berm and setback levee. Low priority sites identified as 570+00 to 600+00 addressed as to raise the crown to elevation 11.5. Completion time of 10-years.	$121,519,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Source Secured	Ecosystem Restoration Contained in RD 1601 5 yr plan
RD3-2	Seepage Control Project - Grand Island	Rural	RD-3	Seepage control project on Steamboat Slough, between Stations 280+00 to 290+00. The project would consist of rock and fill to control the flow to the drainage pipes that will capture seepage and discharge in the lateral, and eventually into a district canal. Est. 40,000 tons of Fill and 35,000 tons of gravel. Completion time of 3-years.	$1,757,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Source Secured	Potential link to the RASP
RD3-5	Seepage Control Project 2 - Grand Island	Rural	RD-3	Critical seepage site located between LM 8.24 and 8.30 along the Sacramento River, with a total rehabilitated length of 300 LF which consists of rock and fill placement to control seepage.	$194,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Source Secured	Potential link to the RASP

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RD554-2	Snodgrass Slough Road and Old Walnut Grove Road Crown Raising - Walnut Grove	Rural	RD-554	Two crucial long term goals maintain levee height and improve stability. Proposed projects include crown-raising on the Snodgrass Slough Road and Old Walnut Grove Road.	$103,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Source Secured	Potential link to the RASP
RD554-3	Fill of Former Tyler Island Slough along Old Walnut Grove Road - Walnut Grove	Rural	RD-554	Two crucial long term goals maintain levee height and improve stability. Proposed projects include fill of the former Tyler Island Slough along Old Walnut Grove Road.	$275,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Source Secured	Potential link to the RASP
RD563-2	HMP Levee Improvement Project - Tyler Island	Rural	RD-563	Bring portions of the levee currently below the HMP Criteria to six inches above the PL 84-99 Standard. Will include portions of the levee that meet the HMP Criteria, but do not meet the design template for this project that are in close proximity to stretches that do not meet the HMP Standards. Total length of improvements is 6,507 LF. Completion time of 1-year.	$728,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Source Secured	Potential link to the RASP
RD563-3	PL 84-99 Levee Improvement Project - Tyler Island	Rural	RD-563	After the entire levee meets or exceeds the HMP Criteria, the District will bring any remaining portions of levee below the PL 84-99 Standard to six inches above the PL 84-99 Standard. Divided into several phases as funding is available. Est. Total length of additional improvements of 64,054 LF. Completion time of 2-year.	$15,122,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Source Secured	Potential link to the RASP
BALMD-4	Mokelumne River French Drain	Rural	BALMD	The existing toe ditch will be removed. A drain will be placed in the existing irrigation ditch and toe ditch will be replaced with a French drain and slope drainage blanket.	$258,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Source Secured	Potential link to the RASP
BALMD-7	Sevenmile Slough French Drain	Rural	BALMD	The existing toe ditch will be removed. A drain will be placed in the existing irrigation ditch and toe ditch will be replaced with a French drain and slope drainage blanket.	$413,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Source Secured	Potential link to the RASP
BALMD-8	Georgiana Slough French Drain	Rural	BALMD	The existing to ditch will be filled with gravel and an 8” diameter drain line placed in the lowered existing ditch and a drainage blanket will be constructed on the levee slope. If necessary, a new irrigation ditch will be placed away from the toe to separate functions.	$2,067,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Source Secured	Potential link to the RASP
RD1601-2	Sevenmile Slough Crown Raising to HMP Project	Rural	RD-1601	Bring portions of the levee currently below the HMP Criteria above the PL 84-99 Standard. Would not likely be initiated until the San Joaquin River Levee Improvement Project is complete.	$22,331,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Source Secured	Potential link to the RASP
BALMD-2	Dredge Material Rehandling Site Habitat Bank Development	Rural	BALMD	Develop tidal marsh, shrub upland, and tree upland habitat in a portion of a dredge disposal site for mitigation for current and future projects and allow for future habitat expansion.	TBD	Bid Ready	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Ecosystem Restoration
RD1601-3	Threemile Slough Bank Protection Project	Rural	RD-1601	Large bank protection project along Threemile Slough to protect erosion and seepage sites and rehabilitate the waterside bank and incorporate an enhanced lower waterside slope habitat area with possible Riparian Forest, Scrub-Shrub, and emergent/freshwater marsh features to mitigate for loss of habitat and enhance the habitat value along the slough. Erosion protection will be 1,320 LF from LM 1.09 to 1.1 and seepage protection will be 2,500 LF from LM 1.5 to 1.95.	$4,332,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Ecosystem Restoration
RD755-1	Sacramento River Seepage Repair Project - Randall	Rural	RD-755	4,000 LF repair for multiple seepage sites that can be repaired through construction of a seepage protection project along the Sacramento River which would consist of rock and fill to control the seepage. LM 0.1 to 0.9.	$2,583,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD349-1	Sutter Slough Seepage Repair Project - Sutter Island	Rural	RD-349	Two critical seepage sites that would be repaired with the construction of a seepage protection project along Sutter Slough which would consist of 1,000 LF of rock and fill to control seepage. LM 0.04 and 3.01 to 3.05.	$646,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP

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RD349-2	Steamboat Slough Bank Protection Project - Sutter Island	Rural	RD-349	Two erosion sites along Steamboat Slough that can be improved through the construction of a bank protection project along Cache Slough which will rehabilitate 300 LF of the waterside bank from LM 1.3 to 1.4 and 2.5.	$340,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD3-3	Encroachment Modification Project - Grand Island	Rural	RD-3	Encroachment modification just north of the Ryde Hotel where the main pumping plant connects to the drainage canal along Highway 220. Project will consist of Environmental documentation, permitting, design, mitigation, construction, and enhancement components and est. 200 tons of riprap quarry stone, 500 tons of gravel and 10,000 tons of fill.	$2,635,000	Pre-Feasibility	Not complete (standard or simple requirements)	Local Funding Source Secured	Potential link to the RASP
RD563-4	Vegetation Maintenance and Removal Project - Tyler Island	Rural	RD-563	Vegetation removal/thinning/trimming and mitigation from the levee slope and 15 feet from the levee toe. The goal of this project is to meet the Central Valley Flood Protection Plan Levee Vegetation Management Strategy criteria. 1-year completion time.	$1,481,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD556-1	Sacramento River Seepage Repair Project - Upper Andrus	Rural	RD-556	Critical seepage site that would be repaired with the construction of a seepage protection project along the Sacramento River that would be 1950 LF from LM 3.58 to 3.95 that would consist of rock and fill to control seepage.	$1,259,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD556-2	Georgiana Slough Stability Project - Upper Andrus	Rural	RD-556	4 stability sites that would be repaired through the construction of a stability protection project along Georgiana Slough roughly 1720 LF, LM 1.8 to 4.9.	$998,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD556-3	Sacramento River Bank Protection Project - Upper Andrus	Rural	RD-556	2 erosion sites that would be improved through the construction of a bank protection project along that Sacramento River Slough, rehabilitated length of 1,700 LF, LM 0.31 to 3.25.	$1,928,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
BALMD-9	Sacramento River Bank Protection Project	Rural	BALMD	Bank protection project LM 3 to 7, Rehabilitated Length of 2,145 LF.	$2,432,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
BALMD-10	Georgiana Slough Bank Protection	Rural	BALMD	Bank protection project on Sta. 17+00 to Sta. 24+00, rehabilitated length of 700 LF.	$794,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP
RD341-1	Sacramento River Bank Protection Project - Sherman Island	Rural	RD-341	4 erosion sites along the Sacramento River that can be improved through the construction of a bank protection project along Cache Slough which will rehabilitate the waterside bank from levee mile 4.12 to 6.09, 1,994 LF.	$2,261,000	Plans and Specifications Under Development	Not complete (standard or simple requirements)	Local Funding Sources not Identified	Potential link to the RASP

Appendix C

Financial Plan

Appendix C - Financial Plan

Lower Sacramento/Delta North Regional Flood Management Plan

FLOOD Protect
PLANNING FOR ACTION
Lower Sacramento Delta North Region

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July 2014

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Abbreviations and Acronyms

BALMD	Brannan-Andrus Levee Maintenance District
BCR	Benefits of Cost Ratio
BW-12	The Biggert-Waters Flood Insurance Reform Act of 2012
CalTrans LAP	California Department of Transportation Local Assistance Procedures
CDIAC	California Debt and Investment Advisory Commission
CEQA	California Environmental Quality Act
CRPP	California River Parkways Program
CSP	Conservation Strategy Program
CVFPB	Central Valley Flood Protection Board
CVFPP	Central Valley Flood Protection Plan
CWC	California Water Code
DLS	Delta Levees Subventions
DSP	Delta Special Project
DWR	California Department of Water Resources
EIP	Early Implementation Project
FAR	Floor Area Ratio
FCS	Flood Conservation Strategy
FEMA	Federal Emergency Management Agency
FMA	Flood Mitigation Assistance
FSC	Flood System Conservation
FSRP	Flood System Repair Project
GRR	General Reevaluation Report
HFIAA	Homeowner Flood Insurance Affordability Act of 2013
HMP	Hazard Mitigation Plan
IRWM	Integrated Regional Water Management
JFP	Folsom Dam Joint Federal Project
JPA	Joint Powers Authority
KLRDD	Knights Landing Ridge Drainage District

LMA	Local Maintaining Agency
MSA	Metropolitan Statistical Area
NFIP	National Flood Insurance Program
O&M	Operations & Maintenance
PDM	Pre-Disaster Mitigation
PPIC	Public Policy Institute of California
RD	Reclamation District
Region	Lower Sacramento/Delta North Region
RFMP	Regional Flood Risk Management Plan
SAFCA	Sacramento Area Flood Control Agency
SJAFCA	San Joaquin Area Flood Control Agency
SBFCA	Sutter Butte Flood Control Agency
SRACFRR	Small Community Flood Risk Reduction
SFHA	Special Flood Hazard Area
SPFC	State Plan of Flood Control
SRBPP	Sacramento River Bank Protection Project
SRFCP	Sacramento River Flood Control Project
SSIA	State Systemwide Investment Approach
SWFRR	Systemwide Flood Risk Reduction
TRLIA	Three Rivers Levee Improvement Authority
UFRR	Urban Flood Risk Reduction
USACE	U. S. Army Corps of Engineers
WRDA	Water Resource and Development Acts
WSAFCA	West Sacramento Area Flood Control Agency
WSLIP	West Sacramento Levee Improvements Program

1.0 Financial Plan

1.1 Purpose

The purpose of this appendix is to provide financial planning information that can be utilized by local communities to develop a financial strategy to advance flood risk reduction projects. The financial plan appendix provides important regional economic information that should be considered when determining the capacity of a community to pay for flood risk reduction improvements. A screening-level analysis of the ability of local agencies to pay for projects, and suggestions on existing programs that could fund improvements is provided by county. A discussion of constraints on funding, the capacity of local communities, and other factors affecting local financing are highlighted within the appendix. Recommendations for possible strategic actions are provided to advance flood risk reduction efforts within a larger regional context.

1.2 Regional Economic Profile

1.2.1 Counties in the Flood Region

The Lower Sacramento/Delta North Region is located at the nexus of four counties: Sacramento, Yolo, Solano, and Sutter (Flood Region Counties). As shown in Table C-1, Flood Region Counties account for about six percent of the California's population and households. These counties have wide-ranging population densities compared to statewide average density of 246 people per mile. This range reflects the diversity of development intensities within the Sacramento Region, which is characterized by its agricultural heritage, its role as the State Capitol, and rapid urbanization over the last 50 years, which has also resulted in an increasingly diversification economic base.

Table C- 1. Population/Household Overview (2013)

Area	Population (2013)		Housing Units (2013)		Population Density	
	Number [1]	%	Number [2]	%	Per Sq. Mile [3]	% of CA
State of California	37,966,000	100%	13,786,000	100%	239	100%
Flood Region Counties						
Sacramento County	1,446,000	3.81%	560,000	4.06%	1,471	615%
Solano County	418,000	1.10%	154,000	1.12%	503	210%
Sutter County	96,000	0.25%	34,000	0.25%	157	66%
Yolo County	206,000	0.54%	75,000	0.54%	198	83%
Total	2,166,000	5.71%	823,000	5.97%	2,329	974%

Prepared by New Economics & Advisory

[1] California Department of Finance Table E-1 Population Estimates January 1, 2013.

[2] California Department of Finance Table E-5 Pop/Housing Estimates January 1, 2013.

[3] California Department of Finance Updated April 1, 2010 Population Density 1010 Census.

1.2.2 Flood Region Population and Household Overview

The Flood Region itself contains a portion of each of the Flood Region Counties—5% of Sutter County, 12% of Solano County, 27% of Sacramento County, and 30% of Yolo County[1].

About 17,500 acres of the Flood Region are located at the southern tip of Sutter County, along Highway 99 from the County border to the Natomas levee. This land is currently utilized as farmland, including rice and field crops and a few complementary agricultural-industrial businesses, including Teichert, Holt, Sysco, and Atlas Compressors.

Roughly 72,400 acres of the Flood Region are located within Solano County. This particular portion is mostly characterized as "Prime farmland" and crosses three agricultural regions: Dixon Ridge (tomatoes, alfalfa, and safflower), Elmira/Maine Prairie (alfalfa, corn, wheat), and Ryer Island (field crops, grapes, orchards)[2]. The City of Rio Vista is also within this area. Beyond the Flood Region boundaries, Solano County's territory extends substantially farther west, including several urban areas (e.g. Vacaville, Fairfield) distant from the Flood Region.

Approximately 167,400 Flood Region acres are located in Sacramento County, including the City of Sacramento, City of Isleton, and select portions of unincorporated Sacramento County. One large unincorporated area is the Northwest Planning Area, (formerly known as the Natomas Vision Area), a 24,000-acre area northwest of the City of Sacramento. Existing uses primarily include open space/habitat preservation, farming, and the Sacramento International Airport. Other unincorporated areas include some territory east of the City of Sacramento along Highway 99 and Highway 50, which are mostly developed.

The remaining 194,300 acres of the Flood Region lie within Yolo County. This area includes the City of West Sacramento, the rural community of Knights Landing, and a significant portion of the Yolo Bypass, an area designed to protect local communities from flooding that also contains multiple wildlife areas and compatible farming activities.

Two urbanized areas within the Flood Region, Sacramento and West Sacramento, account for roughly 85% of total Flood Region population and households. Small portions of the City of Woodland and the City of Davis are also located within the Flood Region. Small, rural communities include Yolo, Knights Landing and Clarksburg in Yolo County, as well as Hood, Courtland, Walnut Grove, and the larger community of Isleton in Sacramento County (Table C-2). The remainder of the area includes unincorporated areas of the four Flood Region Counties.

[1] *County acreage data provided by HDR via email, April 15, 2014.*

[2] *Solano County 2008 General Plan Agricultural Element, pages AG17-24. This document synthesizes select findings and farming regions identified in "Future of Solano County Agriculture: Final Report and Recommendations" published December 14, 2007 by UC Davis Agricultural Issues Center. (http://aic.ucdavis.edu/solano/4.Recommendations.pdf)*

Table C- 2. Flood Region Population/Household Overview (2013)

	Population		Housing Units	
Area	2013 [1]	% of Flood Region	2013 [1]	% of Flood Region
Flood Region	611,247 [2]	100%	252,522 [2]	100.00%
SAFCA/WSAFCA Communities				
City of Sacramento	473,509 [3]	77.47%	191,380 [3]	75.79%
City of West Sacramento	50,460 [3]	8.26%	18,979 [3]	7.52%
South Sutter County	N/A	N/A	N/A	N/A
Northwest Planning Area Sac County	N/A	N/A	N/A	N/A
Total	523,969	85.72%	210,359	83.30%
Remainder Area Communities	-		-	
City of Rio Vista (Solano County)	7,599 [3]	1.24%	4,000 [3]	1.58%
City of Isleton (Sacramento County)	815 [3]	0.13%	425 [3]	0.17%
Yolo, CDP (Yolo County)	450 [4]	0.07%	164 [4]	0.06%
Clarksburg CDP (Yolo County)	418 [4]	0.07%	219 [4]	0.09%
Hood CDP (Sacramento County)	271 [4]	0.04%	74 [4]	0.03%
Courtland CDP (Sacramento County)	355 [4]	0.06%	147 [4]	0.06%
Walnut Grove CDP (Sacramento County)	1,542 [4]	0.25%	647 [4]	0.26%
Knights Landing CDP (Yolo County)	995 [4]	0.16%	380 [4]	0.15%
Unincorp. Sacramento County	N/A	N/A	N/A	N/A
Total [5]	12,445	2.04%	6,056	2.40%
Remainder Area				
City of Davis	66,471 [3]	10.87%	25,973 [3]	10.29%
City of Woodland	56,908 [3]	9.31%	19,964 [3]	7.91%
Total	123,379	20.18%	45,937	18.19%

Prepared by New Economics & Advisory

[1] Ca. Dept. of Finance Table E-1 Pop. Estimates January 1, 2013, as of 05/01/13.

[2] 2014 data, provided by the California Department of Water Resources, April 2014.

[3] Ca. DOF 1/1/13 E-5, City-County Pop/Housing Estimates total Housing Units.

[4] 2008-2012 American Community Survey 5 Year estimates, American Fact Finder.

[5] Excludes other Flood Region portions of unincorporated Sacramento, Yolo, Sutter, and Solano Counties. Data for remainder areas not available.

1.2.3 Flood Region Economic Drivers

Employment patterns in the Flood Region can be understood by evaluating the concentration of jobs by sector for the Sacramento- Arden Arcade- Roseville Metropolitan Statistical Area (Sacramento MSA), compared to California as a whole. For purposes of economic development, a concentration level of 1.20 or greater generally indicates that a region is "specialized" in that particular sector. A level of 0.80 to 1.20 suggests that the region's level is commensurate with the statewide average for that sector, and a level of 0.80 or less suggests that a region may have insufficient levels in the sector. As shown in Table C-3, as of 2010 the Sacramento MSA enjoyed a relatively high job concentration

in Construction and State & Local Government; by 2040 the Sacramento MSA is expected to remain specialized in these two sectors, but also become specialized in Management & Enterprises and Health Care & Social Assistance. A similar evaluation of private businesses by sector as of 2009 suggests that the Sacramento MSA is specialized in Construction businesses, but is likely underrepresented in several other sectors, including Manufacturing; Wholesale Trade; Information; and, Arts, Recreation & Recreation businesses.

Table C- 3. Employment by Industry (2010, 2040)

Item	2010				2040			
	California	Sac-Arden Arcade-Roseville MSA		Sac MSA as a % of CA	California	Sac-Arden Arcade-Roseville MSA		Sac MSA as a % of CA
	% Total	Number	% Total		% Total	Number	% Total	
Total Jobs, 2010 (in thousands)		*(in thousands)*				*(in thousands)*		
Construction	4%	60	5%	122%	4%	92	5%	120%
Management & Enterprises	1%	12	1%	101%	1%	23	1%	121%
Health Care & Social Assist	9%	108	10%	103%	10%	233	13%	128%
State & Local Government	11%	230	20%	189%	9%	281	16%	178%
Other Industries [1]	75%	720	64%	85%	75%	1,140	64%	85%
TOTAL	100%	1,130	100%	NA	100%	1,768	100%	NA

Prepared by New Economics & Advisory

[1] Includes all other industry sectors.

Source: Woods & Poole Economics 2012 State Profile, Woods & Poole Economics, Inc.

Government entities and healthcare organizations are the predominant large employers within Flood Region Counties. Of the largest 20 employers, 17 are public or non-profit entities (e.g. the State of California, higher education institutions, and healthcare providers); the three largest private employers are Intel, Raley's, and Hewlett Packard (Table C-4).

Table C- 4. Major Employers

Employer	Location	Estimated Employees	Employer	Location	Estimated Employees
State of California [1]	Sac. Co.	69,469	San Juan Unif. Sch. Dist. [1]	Carmichael	4,700
Travis Air Force Base [2]	Fairfield	14,353	Kaiser Permanente, Vallejo [2]	Vallejo	3,906
Univ. of California, Davis [1]	Davis	12,639	Kaiser Permanente [1]	Placer Co.	3,860
Sacramento County [1]	Sacramento	10,634	Sacramento City of [1]	Sacramento	3,831
UC Davis Health System [1]	Sacramento	9,985	Raley's, various locations [1]	Sac. Co.	3,592
Sutter Health	Sacramento	6,507	Sac. City Unif. Sch. Dist. [1]	Sacramento	3,320
Intel Corporation [1]	Folsom	6,000	Hewlett Packard Co. [1]	Roseville	3,200
Dignity Health [1]	Rancho Cordova	5,756	Los Rios Comm. College Dist. [1]	Sacramento	3,147
U.S. Government [1]	Sac. Co.	5,750	Calif. State Univ., Sac. [1]	Sacramento	3,023
Kaiser Permanente [1]	Sac. Co.	5,696			
Elk Grove Unif. Sch. Dist. [1]	Elk Grove	5,535			

Bolded signifies presence within Flood Region boundaries.
Prepared by New Economics & Advisory
[1] Sacramento Business Journal Book of Lists, June 7, 2013.
[2] Daily Republic Travis, Kaiser top employers in County April 14, 2013.
[3] Sacramento Business Journal Book of Lists January 13, 2012.

Commercial market rents, primarily tracked by major brokerage entities, also remain a cost-effective alternative to the Bay Area, which enjoys a larger and more diverse set of economic activity but also a higher cost of living and doing business (Table C-5). Research on existing rural communities revealed a lack of any established commercial nodes that can provide "market" insights about commercial performance in those areas.

Table C- 5. Commercial Lease Rates

Area	Asking Lease Rates ($/Sq. Ft./Mo.)		
	Retail	Office	Industrial
	Direct NNN	*Full-service*	*NNN*
Bay Area	*N/A*	$4.25 [1]	$0.60 [2]
Sacramento Region	$1.46	$1.66	$0.43
Flood Region Submarkets [3]			
Sacramento Central City	-	$2.11	$0.50
Sacramento Suburban East	$1.75	$1.50	-
Sacramento Suburban North	$1.69	$1.73	$0.45
Sacramento Suburban South	$1.31	$1.13	$0.46
West Sacramento	$1.99	$1.49	$0.45
Woodland (Flood Region portion)	-	-	$0.28

Prepared by New Economics & Advisory
[1] Reflects San Francisco Peninsula Market, as of 2013 Q3.
[2] Reflects 2012 Q3 for Tri-Valley market.
[3] Figures may reflect weighted average of multiple sub-markets. All data 2014 Q1.
Sources: CBRE Market Research Reports. A Loopnet search in April, 2014 yielded no results for rural communities within the Flood Region.

1.2.4 Flood Region Socioeconomic Characteristics

The distribution of household incomes in Flood Region communities suggest that urbanized areas are similar to California as a whole or have a greater proportion of higher-income households. In contrast, rural communities are mixed—some have a greater proportion of higher-income households while others have a greater proportion on lower-income households (Table C-6).

Table C- 6. Households by Income Category

Community	Median HH Income	% of HH by Income Category, 2008-2012			
		$0 - $74,999	$75,000 - $149,999	$150,000 or more	Total
California	$61,400	67%	25%	8%	100%
Flood Region					
Flood Region: Urbanized Areas					
Davis	$61,535	56%	27%	17%	100%
Woodland	$55,139	64%	27%	9%	100%
West Sacramento	$54,179	65%	27%	9%	100%
Sacramento City	$50,661	69%	24%	8%	100%
Flood Region: Rural Communities					
Walnut Grove CDP	$44,875	58%	19%	23%	100%
Courtland CDP	$70,893	59%	31%	10%	100%
Clarksburg CDP	$42,474	72%	19%	9%	100%
Isleton	$31,875	85%	11%	4%	100%
Knights Landing CDP	$43,417	77%	21%	2%	100%
Hood CDP	$60,556	59%	41%	0%	100%

Prepared by New Economics & Advisory

Source: 2008-2012 Five-Year Estimates American Community Survey, American Fact Finder.

Table C-7 provides a summary of recent economic data available for the State and Flood Region boundaries. Compared to California the Flood Region exhibits higher unemployment rates, lower household incomes, and similar educational levels.

Table C- 7. Key Socioeconomic Indicators

Item	2013	
	California	Flood Region
Economic Indicators		
Unemployment Rate [1]	8.5%	10.2%
Median Household Income [2]	$58,724	$45,982
Educational Attainment		
Less than High School - Some College	37%	40%
Associates/Bachelor's Degree	48%	48%
Graduate Degree	14%	12%
Total	100%	100%

Prepared by New Economics & Advisory

[1] EDD December 2013.

[2] Claritas data provided by DWR, April 2014. Reflects 2013 data.

Furthermore, the Flood Region contains pockets of areas classified as Disadvantaged Communities (areas with a Median Income at 80% or below the Statewide Median Income as of 2010 Census data). These areas include the City of Rio Vista, Walnut Grove, Clarksburg, Isleton, Yolo and Knights Landing. While the City of West Sacramento as a whole is not a disadvantaged community, the portion of the city north of the Port is considered a disadvantaged community. These areas, shown in Table C-8, would be eligible, under current funding criteria, for higher State cost sharing under certain funding programs funded by Propositions 1E and 84.

Table C- 8. Disadvantaged Communities within the Flood Region

Community	Households	Median Household Income	MHI as % of California
California	248,530	$61,400	
Flood Region			
Flood Region: Urbanized Areas			
Davis	25,973	$61,535	100%
Woodland	19,964	$55,139	90%
West Sacramento	18,979	$54,179	88%
Sacramento City	191,380	$50661	83%
Rio Vista	4,000	$35,833	58%
Flood Region: Small Communities			
Walnut Grove CDP	647	$44,875	73%
Courtland CDP	147	$70,893	115%
Clarksburg CDP	219	$42,474	69%
Isleton	425	$31,875	52%
Knights Landing CDP	380	$43,417	71%
Hood CDP	74	$60,556	99%
Yolo CDP	139	$27,891	45%

[1] Weighted Average Median Household Income

Source: DWR Disadvantaged Community Mapping Tool (http://www.water.ca.gov/irwm/grants/resourceslinks.cfm) accessed 01-08-2014.
Source: U.S. Census Bureau, 2012 American Community Survey

1.2.5 Future Growth Prospects

The California State Department of Finance projects that the state's population will grow, on average, by less than one percent annually through 2020 and 2035. While the same level of demographic and employment data is not available at a sub-county level, projection data created by the regional metropolitan planning organizations, Woods and Poole, and the California Department of Finance provide insight into the potential level of growth anticipated by those organizations for their planning purposes. Table C-9 summarizes that the Flood Region is anticipated to grow as follows:

Table C- 9. Potential Growth (Through 2040)

Item	Residential Units		Jobs	
	Amount	%	Amount	%
SAFCA/WSAFCA Communities				
Year: 2013	210,359		318,735	
Year: 2035	296,318		416,672	
Resulting Avg. Annual Growth Rate	1.57%		1.00%	
Projected: 2040	320,314		437,868	
Growth: 2013 - 2040	109,955	97%	119,133	99%
Remainder Area Communities				
Year: 2013	16,753		2,131	
Year: 2035	20,016		2,718	
Resulting Avg. Annual Growth Rate	1.52%		0.98%	
Projected: 2040	20,016		2,856	
Growth: 2013 - 2040	3,263	3%	725	1%
Total Flood Region Growth 2013-2040	113,217	100%	119,858	100%

Prepared by New Economics & Advisory
Sources: City/County General Plans, Metropolitan Planning Organizations

The SAFCA/WSAFCA area is expected to have approximately 110,000 additional housing units (1.57% average annual growth) and 120,000 more jobs by 2040 (1.00% average annual growth). This growth reflects about 97 percent of the residential growth and about 99 percent of the job growth anticipated to occur within the Flood Region. This growth is based on projections from the Council of Governments through 2035 and extended by five years to reach 2040.

The remaining areas, including Rio Vista, small portions of Woodland, Davis, existing rural communities, and unincorporated areas of Sacramento County along Highway 50 and Highway 99, are anticipated to increase by only 3,300 housing units (1.52% average annual growth) and less than 1,000 jobs (0.98% average annual growth).

These indicators provide an insight into the expected demand for new housing and commercial development. While new development creates new impacts associated with the demand for flood risk mitigation, (by virtue of increases the consequences of a flood), new residential and commercial development could also provide additional resources to fund future improvements and services.

1.2.6 Housing Growth

Approximately 97% of new housing development in the Flood Region through 2020 and 2040 is expected to occur in the SAFCA/WSAFCA area, which includes Sacramento and West Sacramento, southern Sutter County, and the Northwest Planning Area in Sacramento County. Table C-10 contains a list of known proposed and planned projects in the Flood Region, with their corresponding land use plans and development status to the extent information has been made publicly available. These projects serve to illustrate the scale and nature of new development that could potentially occur within the next 1-2 real estate cycles.

Future housing development in these areas can be characterized by the following dynamics:

City of Sacramento

Sacramento has a limited number of areas that can accommodate large-scale, suburban-style development—namely the South Area and North Natomas-- that the Region has historically relied upon to sustain growth. Sacramento is also attempting to stimulate infill development and is processing multiple projects of various sizes Downtown, in the 65th Street Area, East Sacramento, and Land Park.

City of West Sacramento

This city has large-scale growth potential in the Southport Framework Plan, as well as modest infill potential in the Washington Specific Plan Area, significant infill potential in the Bridge District, and, farther into the future, additional potential within the Pioneer Bluff area.

Sacramento County—Northwest Planning Area

Sacramento County is considering extension of the Urban Services Boundary within the Northwest Planning Area. At this time, it is unclear what scale of new development could occur in this area and whether future development will occur within the existing unincorporated area or would be annexed into the City of Sacramento.

Sutter County Southern Area

This area, located within Reclamation District 1000 and the Sacramento Area Flood Control Area, has one major project—Sutter Pointe—which is expected to develop over 17,000 new residential units.

Sacramento County Eastern and Southern Areas

These unincorporated areas within the Flood Region are mostly developed at suburban densities. There is limited potential for additional large-scale growth in these areas.

Rural Communities

The Sacramento Area Council of Governments projects nominal growth for existing rural communities.

Table C- 10. Select Approved, Proposed and Planned Projects

Jurisdiction (Flood Region Boundaries Only)	Residential	Commercial Sq. Ft.	
	Units	BP/Ind	Commercial
SAFCA/WSAFCA Communities			
County of Sacramento			
Approved Projects, Not Yet Built: Metro Airpark [1]	N/A	N/A	N/A
Planned Project: Northwest Master Plan (aka "Joint Vision Area") [2]	20,000	N/A	N/A
City of Sacramento [3]			
Approved Projects, Not Yet Built	6,000	3,276,000	1,125,000
Approved Specific Plans/Master Plans Not Yet Built	32,000	8,864,000	4,389,000
Planned Projects	10,000	7,924,000	3,184,000
West Sacramento			
Approved Projects, Remaining Capacity			
Southport Framework Plan Remaining to be Developed [4]	7,465	1,057,200	860,000
The Rivers	570	0	0
Approved Projects, Not Yet Built			
Bridge District	3,600		2,800,000
Washington Specific Plan	1,143	1,304,050	123,200
Proposed Projects (Active Application)	0	0	0
Planned Projects (three annexation proposals) [5]	1,500	3,960,000	3,960,000
South Sutter County			
Sutter Pointe Specific Plan	14,500	42,300,000	N/A
Total SAFCA/WSAFCA	96,778	68,685,250	16,441,200
REMAINDER AREA Communities			
City of Woodland - No Major Planned Future Projects in Flood Region [6]	0	0	0
Commerce Annexation Project		3,176,000	20,000
Gateway Center Expansion - Proposed Retail Annexation		100,000	525,000
Davis Planned Project: Nishi Property	0	500,000	0
City of Rio Vista - No Major Planned Future Projects in Flood Region [7]	0	0	0
Unincorporated Sac County - No Major Planned Future Projects in Flood Region			
Total Remainder Area	0	3,776,000	545,000

Prepared by New Economics & Advisory.

[1] Metro Airpark is an approved project with final map and would not be subject to new fees.

[2] Rough estimate. No formal land use plans have been developed for this area. Total assumed development could be in the range of 12,500 acres per the Natomas Basin Conservancy.

[3] Approved projects which are partially under construction are not counted here. Assumes these projects will be built out by the time Flood Region flood control improvements are constructed or funded.

[4] City of West Sacramento General Plan Update 2008. Projects include River Park, The Rivers, River Pointe Marketplace, Southport Business Park, Stone Lock, Triangle, Vina Del Lago and Yarborough.

[5] Planned non-residential projects are currently estimated to comprise 606 acres; for purposes of this analysis, New Economics developed rounded square footage estimates by applying a floor-area-ratio of 0.30 and assigned 50% to BP/Ind and 50% to Commercial uses.

[6] City of Woodland General Plan Land Use Designation. Portion in flood region is designated as Public Service and Urban Reserve.

[7] Information provided by City of Rio Vista Planning Department.

1.2.7 Employment Growth

Approximately 99% of Flood Region job growth is expected to occur within the SAFCA/WSAFCA areas. Future commercial development in these areas can be characterized as follows:

The City of Sacramento adopted its Five-Year 2013 Economic Development Strategy in May of 2013. The City 2013 Economic Development Strategy seeks to pursue opportunities to accelerate the creation of jobs that contribute to a sustainable economic base. The City's strategy comprises a series of goals, objectives, and actions, including: investing in Life Sciences and Health Care, Clean Technology and Energy, Post-Secondary Education, and Agriculture Hub and R&D. This strategy is consistent with the larger Sacramento Region's Next Economy Plan. Longer term overall job growth, (through 2035), is expected to occur throughout the City, with the largest concentrations anticipated to occur in the Central City, North Natomas, Fruitridge/Broadway and the South Area.

The City of West Sacramento has established itself as a diversified employer within the Region, including: manufacturing and technology businesses within the city's industrial parks, as well as major employers such as CalStrs, Raley's corporate headquarters and IKEA. Going forward, the City intends to pursue additional business development opportunities in these sectors.

Job growth in unincorporated Sacramento County is likely to include any additional airport expansion and the development of MetroAirpark, which is anticipated to include a combination of light manufacturing, distribution, airport-related industrial, commercial/R&D, and other commercial offices and hotels amounting to about 35,000 new jobs. However, as noted in Table C-10, this Project has been approved and has received a final map.

Sutter Pointe, in southern Sutter County, is expected to add 40 million square feet of commercial/industrial space at project buildout.

Remaining rural communities beyond the SAFCA/WSAFCA are currently anticipated to experience nominal commercial growth.

1.2.8 Regional Economic Profile Findings

Finding 1

The Flood Region is located at the nexus of four counties and includes a wide range of development, including agriculture, open space, suburban and urban residential communities, and job centers. The geography of the Flood Region includes several different types of communities whose economic settings differ substantially.

Finding 2

Urban communities, (Sacramento and West Sacramento), account for approximately 85% of Flood Region population and households; the balance includes unincorporated suburban areas, small rural communities, and sparsely populated farming areas.

Finding 3

Sacramento and West Sacramento are characterized by their rapid growth, increasingly diverse economic base, and median household incomes that are similar or greater than California as a whole.

Finding 4

Rural communities, which account for less than one percent of existing Flood Region population and households, are less economically diverse and have variable household income patterns. Further, these communities are anticipated to experience nominal growth by 2040. Some rural communities have a relatively large share of high-income households while others have a relatively large share of

low-income households. Nonetheless, the local metropolitan planning agency does not forecast any significant growth for these areas.

Finding 5

Based on existing planning documentation, nearly all of the Flood Region's residential and commercial growth is expected to occur within the SAFCA/WSAFCA territory. This territory includes the cities of Sacramento and West Sacramento, as well as the Northwest Planning Area (including Metro Airpark), and southern Sutter County (including Sutter Pointe).

1.3 Funding Sources

In general, funding for Flood Risk Management efforts comes from three sources; federal, state and local governments. California's Flood Future report (Attachment I: Finance Strategies) provides an excellent overview of the general funding regime currently being utilized to enhance California's flood system. The attachment also identifies and describes many of the funding and financing mechanisms available to local agencies to fund flood management infrastructure and services.

1.3.1 Recent and Ongoing Federal Funding Efforts

The USACE has current, ongoing and recently completed studies of flood risk and potential improvements in the Area. These study efforts could ultimately lead to additional federal funding through congressional authorizations in Water Resource and Development Acts (WRDA) or federal crediting for locally advanced and completed flood risk reduction improvements. Ongoing flood risk evaluation and study efforts in the Flood Region are shown in Table C-11.

Table C- 11. Recent and On-going federal studies

Name	Description	Non-Federal Sponsor(s)
Central Valley Integrated Flood Management Study [3]	A high-level watershed study to identify and evaluate systemwide issues and perform reconnaissance studies of CVFPP initiatives in the Sacramento River basin.	CVFPB
Sacramento River Bank Protection Project Phase II – III	A programmatic bank protection program repairing erosion sites on the SRFCP.	CVFPB
Sacramento River Flood Control System Evaluation Phase III	This project includes the installation of slurry cutoff walls in existing levees along the west side of the Sacramento River and remediation of existing levees along the east side of the Knights Landing Ridge Cut for flood protection in the Sacramento Mid-Valley area.	CVFPB
Lower Cache Creek Feasibility Study	Defines flood related problems and opportunities, and evaluates a full range of alternatives to recommend a plan to reduce flood risk within the City of Woodland and unincorporated areas of Yolo County.	CVFPB, City of Woodland
Folsom Dam Joint Federal Project	Improves the ability to manage large flood events by allowing more water to be safely released earlier in a storm event and leaving more storage capacity in the reservoir to hold back the peak inflow when it arrives.	SAFCA
American River Common Features	Improves and raises levees on the American River to reduce flood risk to the City of Sacramento.	SAFCA
West Sacramento General Reevaluation Report	A study for flood protection in the West Sacramento area. Alternative improvements to the city's levee system are under study.	WSAFCA
South Sacramento County Streams Project	Provides improved flood protection to south Sacramento through increasing the capacity of Morrison, Elder, and Unionhouse Creeks and increasing protection to the Sacramento Regional Wastewater Treatment Plant.	SAFCA
Delta Islands and Levees Feasibility [1]	Addresses a variety of critical issues in the Delta including ecosystem restoration and flood risk management.	DWR
CALFED Levee Stability	Prioritizes levee projects and presents the Corps' long-term strategy for Delta levees while providing guidance for Congress to direct the Corps to participate in the improvement of specific Delta Levees.	DWR
Long Term Management Strategy for Dredged Material in the Delta	To improve operational efficiency and coordination in the discharge of the collective and individual agency decision making responsibilities resulting in approved dredging and dredge material management actions in the Delta.	State Water Resources Control Board

1.3.2 Securing Federal Funding

The process for garnering federal funding for flood risk reduction projects requires that a federal interest in the project be identified. Federal interest has generally been identified and evaluated within feasibility studies prepared by the United States Army Corps of Engineers (USACE), which evaluate various criteria and generally emphasize the flood damage-reduction benefits associated with a specific project. The Cities of Sacramento, West Sacramento, and Woodland are partnering with the Central Valley Flood Protection Board (CVFPB) and the USACE to advance feasibility studies or have authorized projects under construction. The only two urban areas within the flood region that do not have an ongoing federal study or authorized project are the Cities of Davis and Rio Vista. The small communities and rural areas generally lack the necessary benefits to justify a significant federal interest. There are active studies in the Delta and the Sacramento River Bank Protection project is an authorized project that has continued to secure on-going appropriations. The Sacramento River Bank project authorization provides funding for critical erosion sites for the Sacramento River Flood Control Project.

3 Study formulated to support CVFPP.

The urban areas in the region have had a great deal of success in securing federal funding. Some of the major projects that have received federal funding include the Folsom Joint Federal Project, the American Rivers Common Features Project, the North Area Local Project, South Sacramento Streams Group, and the West Sacramento Project. Given the constrains of the current approach for evaluating and garnering federal investment for projects, coupled with waning federal budgets and forecasted federal expenditures, continuing to secure significant federal investment in the region will likely become more difficult in the future. Furthermore, the evaluation, project identification and appropriation process for projects is protracted, expensive and can lead to higher project costs that may, in some cases, not be in the best economic interest of local project proponents.

1.3.3 State Funding

In the near term, the State plans to utilize the remaining Proposition 1E bonds authorized through June 2016 to fund projects consistent with the Central Valley Flood Protection Plan (CVFPP) adopted in July 2012. Within the CVFPP, the State identified that remaining bond funds are not sufficient to meet all of the flood protection goals, and identified a need for flood risk reduction within the Central Valley.[4] Additional bond authorizations will be needed to meet the goals identified in the CVFPP.[5] As part of ongoing CVFPP planning process, over the next few years, the State will be identifying how it will address the future role it will play in securing funding for identified improvements and working to develop a sustainable funding source to meet the long term demands for flood management infrastructure. The State Legislature will play a significant role, with respect to how State and local funding can be generated within the region, as it considers legislation associated with planned updates to the CVFPP and the associated financing/funding plan recommendations.

Other policy efforts that could generate future State funding include the recommendations presented within the Governor's Water Action Plan. These recommendations include: providing support and expanding funding for Integrated Water Management Planning and Projects, creating incentives for multi-benefit projects, providing assistance to disadvantaged communities, prioritizing funding to reduce flood risk and improve flood response. In addition to recommendations that could direct State funding to the region, the Governor's Water Action Plan also identified recommendations that could make it easier to generate local funding including removing barriers to local and regional funding for water projects. One of the key concepts in the Water Action Plan is that the administration will develop a water financing strategy that leverages various sources of water-related project funding and proposes options for eliminating funding barriers, including barriers to co-funding multi-benefit projects.

Table C-12 through Table C-16 provide a breakdown of the programs that are currently and expected to be available to local agencies to assist with funding the projects and programs identified within this RFMP. The typical cost share percentages for these programs is listed, however, these cost sharing percentages can vary widely based upon type of project and project specific attributes.

4 The CVFPP identified costs to implement the State Systemwide Investment Approach between $14 to $17 Billion. The California's Flood Futures Report identified costs to upwards of $50 billion statewide.

5 2012 Central Valley Flood Protection Plan, Page 4-38 to 4-40.

Table C- 12. FEMA Funding Programs

Agency	Program Name (Acronym)	Program Summary	Status	Who is Eligible to Apply	Cost Share Range
FEMA	Flood Mitigation Assistance (FMA)	The FMA program is a grant program that provides funding to States, Territories, Tribal entities and communities to assist in their efforts to reduce or eliminate the risk of repetitive flood damage to buildings and structures insurable under the National Flood Insurance Program (NFIP).	FEMA	Native American tribal governments (Federally recognized), State governments, City or township governments, County governments	Varies 75%-100%
FEMA	Pre-Disaster Mitigation (PDM)	The PDM Grant Program is designed to assist States, Territories, Indian Tribal governments, and local communities to implement a sustained pre-disaster natural hazard mitigation program to reduce overall risk to the population and structures from future hazard events, while also reducing reliance on Federal funding from future disasters.	FEMA	Native American tribal governments (Federally recognized), State governments, City or township governments, County governments	75% 90% for small impoverished communities

Table C- 13. California Natural Resource Agency Funding Programs

Agency	Program Name (Acronym)	Program Summary	Status	Who is Eligible to Apply	Cost Share Range
State-California Natural Resource Agency	California River Parkways Program (CRPP)	The Proposition 50 California River Parkways Grant Program in the Resources Agency is a competitive grant program for river parkways projects. Eligible projects must provide public access or be a component of a larger parkway plan that provides public access. In addition, projects must meet two of the following conditions: 1.) Provide compatible recreational opportunities including trails for strolling, hiking, bicycling, and equestrian uses along rivers and streams. 2.) Protect, improve, or restore riverine or riparian habitat, including benefits to wildlife habitat and water quality. 3.) Maintain or restore the open-space character of lands along rivers and streams so that they are compatible with periodic flooding as part of a flood management plan or project. 4.) Convert existing developed riverfront land into uses consistent with river parkways. 5.) Provide facilities to support or interpret river or stream restoration or other conservation activities.	California Natural Resource Agency	Public Agencies and California Nonprofit Organizations	TBD

Table C- 14. California DWR Funding Programs

Agency	Program Name (Acronym)	Program Summary	Status	Who is Eligible to Apply	Cost Share Range
State DWR	Early Implementation Program (EIP)	Fund "ready," no regrets Projects for State Plan of Flood Control Facilities in Urban areas in advance of adoption of the Central Valley Flood Protection Plan. These funds will be for: (a) repair, rehabilitation, reconstruction or replacement of levees, weirs, bypasses and facilities of the State Plan of Flood Control and (b) improving or adding facilities to the State Plan of Flood Control to increase levels of flood protection for Urban Areas.	Phasing Out	Eligible applications are local public agencies or Joint Powers Authority	50% to 90%
State DWR	Small, Rural, and Agricultural Community Flood Risk Reduction (SRACFRR)	Projects to reduce flood risk in small, rural, and agricultural communities in the Central Valley. Funds support non-routine O&M, O&M plan updates, evaluations, feasibility studies, design, and construction of proactive repairs to flood control facilities of the SPFC and appurtenant non-project levees.	Future	Local agencies: evaluate SPFC facilities must protect small and rural communities in the Central Valley designated by the CVFPP to have a High or Moderate-High Flood Threat Level.	50 to 90%
State DWR	System Wide Flood Risk Reduction (SWFRR)	Implement recommendations of Basin-wide Feasibility Studies	Future	Eligible applications are local public agencies or Joint Powers Authority	Up to 100%
State DWR	Urban Flood Risk Reduction (UFRR)	Levee repair or improvement projects within the Central Valley that are located within the urban area and are State Plan of Flood Control facilities.	Future	Eligible applications are local public agencies or Joint Powers Authority	50 to 90%
State DWR	Flood System Repair Projects (FSRP)	Evaluate (feasibility), design, and construct repairs of non-urban SPFC Facility (levees, channels, structures, etc.) deficiencies	Starting Up	Eligible applications are local public agencies or Joint Powers Authority	50% to 90%
State DWR	Delta Levees Subventions (DLS)	Cost share program for the maintenance and rehabilitation of non-project and eligible project levees in the Delta. The Subventions Program is authorized by California Water Code Sections 12980 et seq., and is managed by DWR. The Central Valley Flood Protection Board (Board) reviews and approves DWR's recommendations and enters into agreements with local agencies to reimburse eligible costs of levee maintenance and rehabilitation.	Ongoing	LMA's within the Primary and Secondary Zones of the Legal Delta.	Up to 75%
State FESSRO	Delta Special Projects (DSP)	Cost share grant program for levee maintaining agencies in the Delta to rehabilitate non-project and eligible project levees. The program was established by the California Legislature under SB 34, SB 1065, and AB 360. The intent of Legislature, as stated in the Water Code, is to preserve the Delta as much as it exists at the present time.	Ongoing	LMA's within the Primary and Secondary Zones of the Legal Delta and limited areas within the Suisun Marsh.	75% to 95% Up to 100% for Habitat Projects

Table C- 15. California IRWM Funding Programs

Agency	Program Name (Acronym)	Program Summary	Status	Who is Eligible to Apply	Cost Share Range
State IRWM	Integrated Regional Water Management (IRWM)	Grant funds for development and revisions of IRWM Plans, and implementation of projects in IRWM Plans. Goals of Projects: to assist local public agencies to meet long-term water management needs of the State, including the delivery of safe drinking water, flood risk reduction, and protection of water quality and the environment.	Ongoing	Applicant must be a local public agency or nonprofit representing an accepted IRWM Region. Other IRWM partners may access funds through their own agreements with the applicant/grantee.	Up to 75%

Table C- 16. USACE Funding Programs

Agency	Program Name (Acronym)	Program Summary	Status	Who is Eligible to Apply	Cost Share Range
USACE/State	USACE/CVFPB Civil Works Projects (USACE CW)	If a feasibility study is completed a Chiefs Report is provided to congress. If congress authorizes the chief's report a local agency can advance a project with the USACE upon securing federal appropriations.	Ongoing	CVFPB with a local Sponsor	35% Split between CVFPB and local Sponsor
USACE/State	USACE/CVFPB Feasibility Studies (USACE FS)	The objective of preparing a feasibility report is to identify the recommended plan: project scope, economic benefit, and an accurate cost and schedule baseline identified with potential project risks. Analysis of specific design alternatives, selection of a final recommended technical design solution, and development of confident cost estimates, schedule products, and risk identification are part of project formulation.	Ongoing	CVFPB with a local Sponsor	50% USACE 50% State State and Locals Split 50%
USACE	Sacramento River Bank Protection Project (SRBPP)	Originally authorized by Section 203 of the Flood Control Act of 1960, the Sacramento River Bank Protection Project is a long-term flood risk management project designed to enhance public safety and help protect property along the Sacramento River and its tributaries.	Ongoing	Project Levees authorized in the SRFCP	0%

1.3.4 Local Funding

The cities, counties, Local Maintaining Agencies and the regional flood management agencies have played a significant part in funding the local share of flood management improvements and operations and maintenance. Funding by local agencies within the region is limited due to constitutional and statutory constraints to the way local governments can fund and finance capital improvements and services. As noted previously, Attachment I to California's Flood Future Report provides a detailed description of funding mechanisms available to local agencies to fund flood management improvements.

In general, revenues for flood management within the Region are generated from property-based taxes, fees and assessments. In California, a local agency's ability to provide ongoing services and invest in its infrastructure is limited by voter-approved initiatives, such as Proposition 13 (1978) (limiting property tax increases), Proposition 218 (1996) (requiring voter approval for new assessments), and Proposition 26 (2010) (redefining many fees as taxes). The impacts of institutional and legal constraints associated with raising local funding for flood infrastructure and services is

described in great detail in the Public Policy Institute of California's report, "*Paying for Water in California"* March 2014. The following Table C-17 provides a summary of the local funding methods used by many agencies in California and the Region to fund flood management improvements and services. The table describes the general uses of the funding source and the attributes and applicability of the mechanism for flood management. In addition to these sources, many local agencies supplement funding for flood work, specifically through enterprise revenues related to storm water management and general fund revenues.

Table C- 17. Summary of Potential Funding Mechanisms

Funding Attribute							Pro/Con		
Item	Use	Voter Approval	Benefit Test	Bonds Allowed	Funding Period	Entity	Pro	Con	Note
Enterprise Revenues									
Utility User Fees/Taxes	O&M/ Capital Improvements	50% by Property Assessed	Yes	Yes	Long-Term	Varies	Would be broad based applying to all parcels. Depending upon service provided, could be exempt from Prop 218 balloting process. (Solely flood management would not apply.)	Might require enabling legislation for the specific district. Prop 218 would apply.	
Sales Tax Measure	O&M/ Capital Improvements as Approved	2/3	No	Yes	As Authorized	Cities or Counties	Flexible if approved.	Difficult to approve and limited to amount over Statewide sales tax rate.	
Assessment Districts [1]									
Various Water Code Sections	O&M/ Capital Improvements	50% by Property Assessed	Yes	No	Long-Term	Reclamation & Levee Districts	Simple Majority Approval, Ongoing Funding Source	Applicability of Prop 218 - Must Show Benefit	Used to fund maintenance or capital works. Through other authority, can be used to finance improvements.
Benefit Assessment District Act of 1982	O&M/ Capital Improvements	50% of Property Assessed	Yes	No	Long-Term	Flexible	Simple Majority Approval, Ongoing Funding Source	Must Show Benefit Improvements/Services must be within the Boundary	Could provide some reimbursement of Advance Funding
Municipal Improvement District Act of 1913/1915	Capital Improvements	50% of Property Assessed	Yes	Yes	Long-Term	Flexible	Simple Majority Approval, Ongoing Funding Source	Must Show Benefit Improvements/Services must be within the Boundary	Could provide some reimbursement of Advance Funding
Geological Hazard Abatement Districts (GHAD)	O&M/ Capital Improvements	50% of Property Assessed	Yes	Yes	Long-Term	Independent District	Broad scope of works, locally autonomous, Simple Majority Approval, Ongoing Funding Source. Certain exemptions from review under CEQA apply.	Must prepare Plan of Control. Creates new independent entity with organizational responsibility (similar to JPA), Prop 218 applies with respect to assessments levied.	As independent entity could be alternative to JPA. Can fund reserves.
Community Facilities Districts [1]	O&M/ Capital Improvements	2/3's (See Note)	No	Yes	Long-Term	Flexible	Benefit not Needed, Flexible in Forming District, Improvements located anywhere	2/3 Approval Difficult to Obtain	Voting requirements change depending on presence of registered voters within boundary.
Development Impact Fees	Capital Improvements	NA	Yes	NA	Long-Term	County & City (Land Use Agencies)	Implemented by Agency Action in Short Time Period	-Must Show Benefit -Development Feasibility Issues -Only works if area of flood management Benefit is slated for Development	Could provide some reimbursement of Advance Funding
Advance Funding [2]	Planning & Capital Improvements	NA	NA	NA	Short-Term	N/A	Can cover upfront planning/operations costs	Limited/Uncertain Availability	Could be subject to reimbursement from various sources over time.

1.4 Regional Specific Funding Strategies

Each Area within the region has its own unique combination of federal, state and local sources. The following section provides high-level discussion about possible funding opportunities for urban, small communities and rural areas within the Flood Region. In order to characterize funding capacity for identified projects six different categories were developed to characterize a local agency's ability to complete projects listed in the regional plan. The categories are as follows:

- **No Local Funding Source Identified:** An agency does not have a local funding source and no actions are currently being taken to secure a local funding source to fund the identified project.
- **Local Funding Source Under Development:** An agency does not have a local funding source, but the agency is actively planning to secure a local funding source for the identified project.
- **Local Funding Source Secured:** An agency has secured a local funding source for the identified project.
- **Local Funding Source Secured and State Funding Requested:** An agency has secured a local funding source for the identified project and has been coordinating with the State to secure funding.
- **Local and State Funding Secured:** An agency has secured a local funding source for the identified project and has secured a commitment from the State either through an appropriation, commitment letter, or contract to fund the project.
- **Local & State Funding Secured and Federal Authorization:** An agency has or can expect to have an authorized federal project and has secured federal appropriations.

The projects are further classified by their near term ability to pay for identified improvements. The near term ability to pay is defined as, "being able to complete identified improvements within the next seven years." The near term ability to pay was classified as High, Medium, or Low. Projects that do not have an identified local funding source or are not currently developing a funding stream were classified as low.

1.4.1 Solano County Specific Funding

The following discussion provides a high level discussion about possible funding opportunities for Solano counties urban and rural areas within the Flood Region.

1.4.1.1 Solano County Urban Areas

The City of Rio Vista is the only urban area located within the Flood Region in Solano County. The City of Rio Vista does not currently have an active federal study. Securing federal authorization and subsequent appropriations under the USACE Civil works program would be very challenging given the size of the community. The City of Rio Vista would be best served by working with the State and the regional partners to identify an acceptable solution to provide flood protection to the City. The City should consider partnering with the other urban areas within the region to advance improvements as part of a larger integrated regional project.

Table C- 18. Caltrans Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Highway 84 Closure Structure	$500,000	Local Funding Sources not Identified	UFRR Caltrans LAP	50 to 90% Unknown	Low

Table C- 19. City of Rio Vista Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Airport Drive Drainage Improvements	-	Local Funding Sources not Identified	FEMA-PDM	75% to 90%	Low
Edgewater Drive Improvements	-	Local Funding Sources not Identified	UFRR FEMA-FMA	50 to 90% Up to 100%	Low
Waterfront Floodwall and Public Access Project	$7,793,000	Local Funding Sources not Identified	UFRR CRPP	50 to 90% Up to 100%	Low

Table C- 20. Solano County Public Works Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Mellin Levee Vegetation Control	-	Local Funding Sources not Identified	SRACFRR FSRP DSP	50 to 90% 50 to 90% Up to 100%	High High High

1.4.1.2 Solano County Small Communities

There are no Solano County small communities within the Region.

1.4.1.3 Solano County Rural Areas

The following tables describe potential funding opportunities for Local Maintaining Agencies (LMA's) in the rural areas of Solano County. The information is generally organized from north to south: Reclamation District (RD) 2068, RD 2098, RD 2104, RD 2060, RD 536, and RD 501. The financial capacity of the rural RD's is generally similar. Each of the RD's have existing O&M assessment districts that fund internal drainage and levee maintenance activities. The following tables list projects identified through the regional planning process and potential funding programs, that could be used to leverage local funding sources to complete identified improvements. The annual budgets and levee miles that are maintained by each LMA are listed (when available) in DWR's annual report "Inspection and Local Maintaining Agency Report of the Central Valley State-Federal Flood Protection System" which is available on the Department of Water Resources California Data Exchange Center site.

Districts located within the Yolo Bypass will have more opportunities to develop multi-benefit projects and possibly leverage other State funding sources to complete levee improvements. RD 2068 is an example of a district that has been able to leverage other funding sources to implement integrated projects that have resulted in flood risk reduction improvements.

Table C- 21. RD 2068 Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Yolo Bypass Waterside Enhancement Project - Yolano	$6,821,000	Local Funding Sources not Identified	SRACFRR IRWM	50 to 90% 75% to 100%	Low
Yolo Bypass Seepage Repair Project - Yolano	$452,000	Local Funding Source Secured	SRACFRR FSRP DSP	50 to 90% 50 to 90% Up to 100%	High High High
Yolo Bypass West Levee Improvement Project - Yolano	-	Local Funding Sources not Identified	SRACFRR DSP	50 to 90% Up to 100%	Low Low
Yolo Bypass West Levee Erosion Repair Project – Yolano	-	Local Funding Sources not Identified	SRACFRR FSRP DSP USACE-Sac Bank	50 to 90% 50 to 90% Up to 100% 100%	Low Low Low High
Back Levee Erosion Repair Project - Yolano	-	Local Funding Sources not Identified	SRACFRR FSRP DSP	50 to 90% 50 to 90% Up to 100%	High High High
Adoption into CWC 8361	-	Local Funding Sources not Identified	N/A	N/A	N/A
Encroachment Removal and Enforcement	-	Local Funding Sources not Identified	SRACFRR	50 to 90%	Low
Yolo Bypass West Levee Interior Erosion Repair Project	-	Local Funding Sources not Identified	SRACFRR FSRP DSP	50 to 90% 50 to 90% Up to 100%	High High High

Table C- 22. RD 2098 Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Cache Slough Stability Project	$35,000	Local Funding Sources not Identified	SRACFRR FSRP DSP	50 to 90% 50 to 90% Up to 100%	Low Low Low
Cache Slough Freeboard Project	$27,217	Local Funding Sources not Identified	SRACFRR FSRP DSP	50 to 90% 50 to 90% Up to 100%	Low Low Low
Yolo Bypass West Levee Erosion Repair - RD 2098	-	Local Funding Sources not Identified	SRACFRR FSRP DSP	50 to 90% 50 to 90% Up to 100%	Low Low Low
Back Levee Erosion Repair Project - RD 2098	-	Local Funding Sources not Identified	SRACFRR FSRP DSP	50 to 90% 50 to 90% Up to 100%	Low Low Low

Table C- 23. RD-2060 Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Wright Cut Bank Protection Project - Hastings	$3,100,000	Local Funding Sources not Identified	SRACFRR FSRP DSP CSP	50 to 90% 50 to 90% Up to 100% Up to 100%	Low Low Low Low
Lindsey and Cache Slough Bank Protection Project - Hastings	$2,067,000	Local Funding Sources not Identified	SRACFRR FSRP DSP	50 to 90% 50 to 90% Up to 100%	Low Low Low
Cache Slough Bank Protection Project – Hastings	$2,744,000	Local Funding Sources not Identified	SRACFRR FSRP DSP CSP	50 to 90% 50 to 90% Up to 100% Up to 100%	Low Low Low Low
Lindsey Slough Bank Protection Project - Hastings	$850,000	Local Funding Sources not Identified	SRACFRR FSRP DSP CSP	50 to 90% 50 to 90% Up to 100% Up to 100%	Low Low Low Low

Table C- 24. RD-501 Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Rock Slop Protection Project – Ryer Island	$7,100,000	Local Funding Source Secured	SRACFRR DSP USACE-Sac Bank	50 to 90% Up to 100% 100%	Low Low High
Vegetation Control Project – Ryer Island	$3,800,000	Local Funding Source Secured	DLS	Up to 75%	High

Table C- 25. RD-536 Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Lindsey Slough Seepage Repair Project - Egbert	$194,000	Local Funding Sources not Identified	SRACFRR FSRP DSP USACE-Sac Bank	50 to 90% 50 to 90% Up to 100% 100%	Low Low Low High
Lindsey Slough Bank Protection Project - Egbert	$522,000	Local Funding Sources not Identified	SRACFRR FSRP DSP USACE-Sac Bank	50 to 90% 50 to 90% Up to 100% 100%	Low Low Low High
Lindsey Slough Stability Project - Egbert	$1,102,000	Local Funding Sources not Identified	SRACFRR FSRP DSP	50 to 90% 50 to 90% Up to 100%	Low Low Low

1.4.2 Yolo County Specific Funding

The following provides a high level discussion about possible funding opportunities for Yolo County's urban, small communities and rural areas within the Flood Region.

1.4.2.1 Yolo County Urban Areas

The cities of West Sacramento, Woodland, and Davis are located within the Flood Region in Yolo County. The cities of West Sacramento and Woodland have active federal studies. It is unlikely that the West Sacramento Project will be included in the Water Resource Development Act Bill, currently under consideration for congressional authorization in 2014. The City of Woodlands' feasibility study is not in a position to be considered for authorization. The City of Davis is not pursuing a federal study and it is unlikely that a significant federal interest would be identified for the localized flooding issues within the City of Davis.

Table C- 26. City of Davis Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Wastewater Treatment Plant Flood Protection Measures	$9,966,000	Local Funding Sources not Identified	UFRR	50 to 90%	Low
Putah Creek Capacity Study	-	Local Funding Sources not Identified	UFRR	50 to 90%	Low

WSAFCA's goal is to achieve a minimum 200-year level of flood protection for the City. In support of this goal WSAFCA has developed multiple local funding sources including, a sales tax measure passed by the City, a benefit assessment district and development fee. WSAFCA has secured State appropriations and executed funding agreements for design and construction of four projects under the State's Early Implementation program. Construction is complete for the I street Bridge, CHP Academy, and the Rivers projects. The Southport project is currently under design and being partially funded by the State under a design funding agreement. WSAFCA is partnering with the USACE and the CVFPB to advance the West Sacramento Project Feasibility Study. The completed Feasibility study will establish the federal interest in the West Sacramento Levee improvement Program (WSLIP). The goal of the WSLIP is to provide the entire City with a minimum 200-year level of urban flood protection.

Table C- 27. City of West Sacramento Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Sacramento River West South Levee	$190,000,000	Local and State Funding Secured	EIP	50% to 90%	High
Deep Water Ship Channel East Levee	$6,141,000	Local Funding Source Secured	UFRR USACE Civil Works	50% to 90% 3.5% to 24.5%	Medium
Deep Water Ship Channel West Levee	$144,814,000	Local Funding Source Secured	USACE Civil Works	3.5% to 24.5%	Low
Sacramento River West North Levee Balance of Reaches	$77,702,000	Local Funding Source Secured	UFRR	50% to 90%	High
Yolo Bypass	$51,531,000	Local Funding Source Secured	UFRR USACE Civil Works	50% to 90% 3.5% to 24.5%	Medium
Port North Levee	$37,650,000	Local Funding Source Secured	USACE Civil Works	3.5% to 24.5%	Low
Port South Levee	$9,049,000	Local Funding Source Secured	USACE Civil Works	3.5% to 24.5%	Low
South Cross Levee	$11,684,000	Local Funding Source Secured	USACE Civil Works	3.5% to 24.5%	Low

The City of Woodland is actively partnering with the State and the USACE to advance a feasibility study that will establish the federal interest in flood risk reduction improvements. The City of Woodland is in the early stages of developing a local funding source to match State and federal funding.

Table C- 28. City of Woodland Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
City of Woodland Feasibility Study Alternatives Analysis	-	Local Funding Source Under Development	UFRR	50 to 90%	Low

1.4.2.2 Yolo County Small Communities

The following tables describe potential funding opportunities for small communities in Yolo County. The small communities in Yolo County include: Knights Landing, Yolo, and Clarksburg. The financial capacity of the small communities in Yolo County is limited. All of the small communities in Yolo County are classified as disadvantaged communities and have between 140 to 380 households. The limited number of beneficiaries combined with lower median household income make securing an adequate assessment to advance flood risk reduction challenging.

Table C- 29. Knights Landing Drainage District Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Knights Landing Feasibility Study	-	Local Funding Sources not Identified	SRACFRR	50% to 90%	Low
Knights Landing Ridge Cut Repair	$7,242,000	Local Funding Sources not Identified	EIP	50% to 90%	High
Sacramento River Levee (sites 9, 10, and 11)	-	Local Funding Sources Identified	FSRP	50% to 90%	High

Table C- 30. Yolo Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Yolo Feasibility Study	-	Local Funding Sources not Identified	SRACFRR	50 to 90%	Low

Table C- 31. Clarksburg Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Clarksburg Improvements Feasibility Study	-	Local Funding Sources not Identified	SRACFRR	50% to 90%	Low

1.4.2.3 Yolo County Rural Areas

The following tables describe potential funding opportunities for LMAs in the rural areas of Yolo County. The sections are generally organized from north to south: Elkhorn (RD 1600, RD 827, RD 785, and RD 537), RD 2035, DWR Maintenance Areas, RD 999 and RD 150. The financial capacity of the rural RD's is similar. Each of the RD's have existing O&M assessment districts that fund internal drainage and levee maintenance activities. The following tables list the projects identified through the regional planning process and potential funding programs that could be used to leverage local funding sources to complete improvements. The annual budgets and levee miles that are maintained by each LMA are listed (when available) in DWR's annual report "Inspection and Local Maintaining Agency Report of the Central Valley State-Federal Flood Protection System" which is available on the Department of Water Resources California Data Exchange Center site.

Table C- 32. RD 1600 Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Sacramento River Scour Hole Repair	-	Local Funding Sources not Identified	SRACFRR FSRP	50 to 90% 50 to 90%	Low
Yolo Bypass Bank Protection	$7,679,000	Local Funding Sources not Identified	SRACFRR FSRP	50 to 90% 50 to 90%	Low
Yolo Bypass Levee Crown Repair	$3,503,000	Local Funding Sources not Identified	SRACFRR FSRP	50 to 90% 50 to 90%	Low
Vegetation Mitigation Management	-	Local Funding Sources not Identified	O&M Activity	0%	No

Table C- 33. RD 827 Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Yolo Bypass Stability Berm	$64,000	Local Funding Sources not Identified	SRACFRR FSRP	50 to 90% 50 to 90%	Low

Table C- 34. RD 307 – Lisbon Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Rock Slope Protection Project - Lisbon	$4,216,000	Local Funding Sources not Identified	SRACFRR FSRP USACE-Sac Bank	50 to 90% 50 to 90% 100%	Low Low High
Vegetation Control Project - Lisbon	$378,000	Local Funding Sources not Identified	O&M Activity	0%	No

Table C- 35. RD 785 Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Yolo Bypass Levee Improvements	$3,046,000	Local Funding Sources not Identified	SRACFRR FSRP USACE-Sac Bank	50 to 90% 50 to 90% 100%	Low Low High
Yolo Bypass Bank Protection Project	$227,000	Local Funding Sources not Identified	SRACFRR FSRP USACE-Sac Bank	50 to 90% 50 to 90% 100%	Low Low High
Yolo Bypass Levee Flattening Project	-	Local Funding Sources not Identified	SRACFRR FSRP USACE-Sac Bank	50 to 90% 50 to 90% 100%	Low Low High

Table C- 36. RD 537/DWR/Yolo County Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Monument Bend Maintenance	-	Local Funding Sources not Identified	SRACFRR FSRP USACE-Sac Bank	50 to 90% 50 to 90% 100%	Low Low High

Table C- 37. RD 2035 Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Willow Slough Bypass Stability Project	$58,000	Local Funding Sources not Identified	SRACFRR FSRP	50 to 90% 50 to 90%	Low

Table C- 38. DWR Maintenance Area Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Cache Creek Erosion/Bank Protection Project	$1,814,000	Local Funding Sources not Identified	FSRP USACE-Sac Bank	50% to 90% 100%	High High

Table C- 39. RD 999 – Netherlands Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Sutter Slough Erosion Repair Project - Netherlands	$775,000	Local Funding Sources not Identified	SRACFRR FSRP USACE-Sac Bank	50 to 90% 50 to 90% 100%	Low Low High
Miner Slough Seepage Repair Project - Netherlands	$1,240,000	Local Funding Sources not Identified	SRACFRR DSP	50 to 90% Up to 100%	Low Low
Sacramento River Erosion Repair Project - Netherlands	$2,067,000	Local Funding Sources not Identified	SRACFRR FSRP USACE-Sac Bank	50 to 90% 50 to 90% 100%	Low Low High
Elk Slough Feasibility Study - Netherlands	$775,000	Local Funding Sources not Identified	SRACFRR DSP CVFSCFS	50 to 90% Up to 100% Up to 100%	Low
Deep Water Ship Channel Stability Project - Netherlands	$1,718,836	Local Funding Sources not Identified	SRACFRR FSRP	50 to 90% 50 to 90%	Low Low
Miner Slough Bank Protection Control - Netherlands	$428,000	Local Funding Sources not Identified	SRACFRR DSP CVFSCFS	50 to 90% Up to 100% Up to 100%	Low

Table C- 40. RD 150 – Merrit Island Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Elk Slough Bank Protection Project - Merrit Island	$4,960,000	Local Funding Sources not Identified	SRACFRR FSRP DSP CVFSCFS	50 to 90% 50 to 90% Up to 100% Up to 100%	Low Low
Elk Sough Bank Feasibility Study - Merrit Island	$775,000	Local Funding Sources not Identified	SRACFRR FSRP DSP CVFSCFS	50 to 90% 50 to 90% Up to 100% Up to 100%	Low
Sacramento River Bank Protection Project - Merrit Island	$1,361,000	Local Funding Sources not Identified	SRACFRR FSRP DSP CVFSCFS USACE-Sac Bank	50 to 90% 50 to 90% Up to 100% Up to 100% 100%	Low
Sacramento River Seepage Protection Project - Merrit Island	$178,000	Local Funding Sources not Identified	SRACFRR FSRP DSP CVFSCFS	50 to 90% 50 to 90% Up to 100% Up to 100%	Low

1.4.3 Sacramento County Specific Funding

The following discussion provides a high level discussion about possible funding opportunities for Sacramento counties urban, small community and rural areas within the Flood Region.

1.4.3.1 Sacramento County Urban Areas

SAFCA's goal is to achieve a minimum 200-year level of flood protection for the urban areas within the Joint Powers Authority's (JPA) boundaries. SAFCA's approach is to meet FEMA's 100-year flood

protection requirements as quickly as possible while laying the groundwork to achieve the State's 200-year urban level of flood protection requirements over time. In support of this goal, SAFCA has developed a consolidated capital benefit assessment district and a development impact fee.

SAFCA has federally authorized projects and continues to successfully secure annual federal appropriations to advance the Folsom JFP and other authorized projects and studies. The Natomas Basin project is expected to secure federal authorization in 2014. SAFCA partnered with the State to advance levee improvements under the State's EIP program in Natomas. SAFCA secured Section 104 credit for work advanced in the Natomas Basin and SAFCA is actively working to secure federal credit from the USACE to offset the local share of authorized improvements.

SAFCA initiated the Levee Certification project in 2013 and identified areas within the JPA boundaries that do not meet the FEMA 100-year flood protection requirement. SAFCA is advancing the Levee Certification Project with the goal of bringing levees outside of the Natomas Basin up to the FEMA 100-year protection standard.

SAFCA is also partnering with the USACE and the CVFPB to advance the Common Features GRR that will evaluate options in meeting the 200-year urban level of flood protection standard. The completed GRR study will establish the federal interest in the Common Features Project.

Table C- 41. SAFCA Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Folsom Dam JFP	$161,000,000	Local & State Funding Secured and Federal Authorization	USACE Civil Works	10.5%	High
Folsom Dam Raise	$150,000,000	Local & State Funding Secured and Federal Authorization	USACE Civil Works	10.5%	High
Folsom Dam Flood Control Manual Update Project	-	Local & State Funding Secured and Federal Authorization	USACE Civil Works	10.5%	High
American River Levee Improvements	$32,000,000	Local & State Funding Secured and Federal Authorization	USACE Civil Works	10.5%	High
American River Levee Improvements (Erosion Control Component)	$350,000,000	Local Funding Sources Under Development	USACE Civil Works	10.5%	High
Environmental Enhancements	-	Local Funding Source Secured and State Funding Requested	FCS		High
Sacramento River Levee Improvements	$600,000,000	Local Funding Sources Under Development	UFRR	70%	High
North Sacramento Streams	$150,000,000	Local Funding Sources Under Development	UFRR	70%	High
Natomas Levees	$700,000,000	Local & State Funding Secured and Federal Authorization	UFRR USACE Civil Works	70% 5% (LERRD's)	High
South Sacramento Streams Group	TBD	Local funding source identified	USACE Civil Works	10.5%	High
System Operation and Maintenance	-	Local funding source identified	No Program Identified	0.0%	High

1.4.3.2 Sacramento County Small Communities

The following sections estimate the financial capacity of small communities in Sacramento County. The small communities in Sacramento County include: Hood, Courtland, East Walnut Grove, West Walnut Grove, Locke, and Isleton. The financial capacity of the small communities is limited. Most of the small communities are classified as disadvantaged communities and have between 70 to 650 households. The limited number of beneficiaries combined with lower median household income would make securing an assessment to advance flood risk reduction challenging. While Courtland and Hood are not classified as disadvantaged communities, they have a limited number of residences, which limits their ability to raise funding through property assessments.

Table C- 42. Hood Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Hood Improvements Feasibility Study	-	Local Funding Sources not Identified	SRACFRR	50% to 90%	Low

Table C- 43. Courtland Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Courtland Improvements Feasibility Study	-	Local Funding Sources not Identified	SRACFRR	50% to 90%	Low

Table C- 44. West Walnut Grove, East Walnut Grove, and Locke Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Walnut Grove Improvements Study	-	Local Funding Sources not Identified	SRACFRR	50% to 90%	Low

Table C- 45. Isleton Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Isleton Improvements Feasibility Study	-	Local Funding Sources not Identified	SRACFRR	50% to 90%	Low

1.4.3.3 Sacramento Rural Areas

The following tables describe potential funding opportunities for LMA's in the rural areas of Sacramento County. The sections are generally organized from north to south: DWR Maintenance Area 9, RD 755, RD 349, RD 3, RD 554, RD 563, RD 556, BALMD, RD 1601, and RD 341.

The financial capacity of the rural LMA's is generally similar except for the State maintenance area. Each of the LMA's have existing O&M assessment districts that fund internal drainage and levee maintenance activities. The State maintenance area can raise funding without a proposition 218 election. This makes it much easier for the State to generate adequate funding to maintain levees. The following tables list the projects identified through the regional planning process and potential funding programs that could be used to leverage local funding sources to complete improvements. The annual budgets and levee miles that are maintained by each LMA are listed (when available) in DWR's annual report "Inspection and Local Maintaining Agency Report of the Central Valley State-Federal Flood Protection System," which is available on the Department of Water Resources California Data Exchange Center site.

Table C- 46. DWR Maintenance Area 9 Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Sacramento River Seepage Protection Project - Cache Creek	$5,264,000	Local Funding Sources not Identified	SRACFRR	50% to 90%	High

Table C- 47. RD-755 Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Sacramento River Seepage Repair Project - Randall	$2,583,000	Local Funding Sources not Identified	SRACFRR DSP	50 to 90% Up to 95%	No No

Table C- 48. RD-349 Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Sutter Slough Seepage Repair Project - Sutter Island	$646,000	Local Funding Sources not Identified	SRACFRR DSP USACE-Sac Bank	50 to 90% Up to 95% 100%	No No Yes
Steamboat Slough Bank Protection Project - Sutter Island	$340,000	Local Funding Sources not Identified	SRACFRR DSP USACE-Sac Bank	50 to 90% Up to 95% 100%	No No Yes

Table C- 49. RD-3 Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Erosion/Bank Protection Project - Grand Island	$1,550,000	Local Funding Source Secured	SRACFRR DSP USACE-Sac Bank	50 to 90% Up to 95% 100%	Yes Yes Yes
Seepage Control Project - Grand Island	$1,757,000	Local Funding Source Secured	SRACFRR DSP	50 to 90% Up to 95%	Yes Yes
Encroachment Modification Project - Grand Island	$2,635,000	Local Funding Source Secured	SRACFRR DSP	50 to 90% Up to 95%	Yes Yes
Erosion/Bank Protection Project 2 - Grand Island	$1,498,000	Local Funding Source Secured	SRACFRR DSP USACE-Sac Bank	50 to 90% Up to 95% 100%	Yes Yes Yes
Seepage Control Project 2 - Grand Island	$194,000	Local Funding Source Secured	SRACFRR DSP		Yes Yes

Table C- 50. RD-554 Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Snodgrass Slough Landside Fill and Minor Crown Raising - Walnut Grove	$1,126,000	Local Funding Source Secured	SRACFRR DSP	50 to 90% Up to 95%	Yes Yes
Snodgrass Slough Road and Old Walnut Grove Road Crown Raising - Walnut Grove	$103,000	Local Funding Source Secured	SRACFRR DSP	50 to 90% Up to 95%	Yes Yes
Fill of Former Tyler Island Slough along Old Walnut Grove Road - Walnut Grove	$275,000	Local Funding Source Secured	SRACFRR DSP	50 to 90% Up to 95%	Yes Yes

Table C- 51. RD-563 Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Rock Slope Protection Project - Tyler Island	$841,000	Local Funding Source Secured	SRACFRR DSP Subventions	50 to 90% Up to 95% Up to 75%	Yes Yes Yes
HMP Levee Improvement Project - Tyler Island	$728,000	Local Funding Source Secured	SRACFRR DSP	50 to 90% Up to 95%	Yes Yes
PL 84-99 Levee Improvement Project - Tyler Island	$15,122,000	Local Funding Source Secured	SRACFRR DSP	50 to 90% Up to 95%	Yes Yes
Vegetation Maintenance and Removal Project - Tyler Island	$1,481,000	Local Funding Sources not Identified	Subventions	Up to 75%	No

Table C- 52. RD-556 Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Sacramento River Bank Protection Project - Upper Andrus	$1,928,000	Local Funding Sources not Identified	SRACFRR DSP USACE-Sac Bank	50 to 90% Up to 95% 100%	No No Yes
Georgiana Slough Stability Project - Upper Andrus	$998,000	Local Funding Sources not Identified	SRACFRR DSP	50 to 90% Up to 95%	No No
Sacramento River Seepage Repair Project - Upper Andrus	$1,259,000	Local Funding Sources not Identified	SRACFRR DSP	50 to 90% Up to 95%	No No

Table C- 53. BALMD Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Sacramento River Revetment and Shaded Riverine Aquatic (SRA) habitat Enhancement	$2,584,000	Local Funding Source Secured	SRACFRR DSP USACE - Sac Bank FSC	50 to 90% Up to 95% 100% Up to 100%	Yes Yes Yes Yes
Dredge Material Remanding Site Habitat Bank Development	-	Local Funding Sources not Identified	SRACFRR DSP FSC	50 to 90% Up to 100% Up to 100%	No Yes Yes
Mokelumne River Stability Berm	$930,000	Local Funding Source Secured	SRACFRR DSP	50 to 90% Up to 95%	Yes Yes
Mokelumne River French Drain	$258,000	Local Funding Source Secured	SRACFRR DSP	50 to 90% Up to 95%	Yes Yes
Mokelumne River Crown Raising	$517,000	Local Funding Source Secured	SRACFRR DSP	50 to 90% Up to 95%	Yes Yes
Sevenmile Slough Stability Berm	$827,000	Local Funding Source Secured	SRACFRR DSP	50 to 90% Up to 95%	Yes Yes
Sevenmile Slough French Drain	$4013,000	Local Funding Source Secured	SRACFRR DSP	50 to 90% Up to 95%	Yes Yes
Georgiana Slough French Drain	$2,067,000	Local Funding Source Secured	SRACFRR DSP	50 to 90% Up to 95%	Yes Yes
Sacramento River Bank Protection Project	$2,432,000	Local Funding Sources not Identified	SRACFRR DSP USACE - Sac Bank	50 to 90% Up to 95% 100%	Yes Yes Yes
Georgiana Slough Bank Protection	$794,000	Local Funding Sources not Identified	SRACFRR DSP USACE - Sac Bank	50 to 90% Up to 95% 100%	No No Yes

Table C- 54. RD-1601 Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
San Joaquin River Levee improvement Project	$121,519,000	Local Funding Source Secured	SRACFRR DSP	50 to 90% Up to 95%	Yes Yes
Sevenmile Slough Crown Raising to HMP Project	$22,331,000	Local Funding Source Secured	SRACFRR DSP	50 to 90% Up to 95%	Yes Yes
Threemile Slough Bank Protection Project	$4,332,000	Local Funding Sources not Identified	SRACFRR DSP	50 to 90% Up to 95%	Yes Yes

Table C- 55. RD-341 Improvements

Solution	Cost Information	Funding Readiness	Funding Programs	Cost Share Range	Near-Term Ability to Pay
Sacramento River Bank Protection Project - Sherman Island	$2,261,000	Local Funding Sources not Identified	SRACFRR DSP USACE-Sac Bank	50 to 90% Up to 95% 100%	Yes Yes Yes

1.5 Constraints on Funding Capacity and Related Issues

1.5.1 Summary of Findings from Past Reports

The State and USACE prepared the Flood Futures report as part of the Statewide Flood Management Planning Program effort. The report provides a historical estimate of the funding provided by local, State, and federal governments for flood management projects. The report discusses constraints that local agencies have in securing funding. Specifically, the report mentions constraints associated with Propositions 13 and 218 that have made it more challenging for local maintaining agencies to raise funding for flood risk reduction improvement projects. Constraints from Proposition 218 and 13 have been well documented by the State and were highlighted as an issue in DWR's January 2005 White Paper "Responding to California's Flood Crisis."

The Public Policy Institute of California's (PPIC) report "*Paying for Water in California*" argues that services for flood, storm water, and ecosystem are frustrated by legal and institutional barriers to secure adequate funding. The report reiterates the State's position regarding local funding constraints associated with Propositions 13 and 218. The PPIC report cites the 2012 Biggart Waters Act, federal legislation focused on implementing actuarial insurance rates, as a policy level decision that would potentially increase a community's willingness to pay for flood risk reduction projects. Communities with large enough tax bases and economical project costs can choose to tax their property to construct flood risk reduction projects. While transitioning to actuarial flood insurance rates could increase the amount of assessment that a property owner would be willing to pay there are limits. These issues are discussed in more detail below.

1.5.2 Tax Rate and Infrastructure Burden Considerations

In order to consider an area's ability to generate additional taxes and assessment, the uses of taxing capacity for all infrastructure and services should be considered. The California Debt and Investment Advisory Commission (CDIAC) promulgates guidelines with respect to land secured financing including the use of assessments and Mello-Roos. CDIAC's Mello-Roos Guidelines (1991) suggest that jurisdictions should integrate Mello-Roos financing into the land use regulatory framework. Local governments should do this so that there is a process for coordinating the use of land secured financing. The concern is that, in the absence of coordinated planning, taxpayers could be vulnerable to onerous overlapping tax burdens imposed by a multitude of local governments that may provide services to the same group of taxpayers. This issue is analogous to the ongoing efforts associated with planning for the future of flood management infrastructure. To the extent that there are a multitude of planning efforts all developing concurrent funding and financing strategies, these efforts should be coordinated to ensure that there is sufficient funding capacity available from the identified beneficiaries.

A reasonable land secured financing would be supported by property tax burdens that would not exceed 2% of the market value of the improved property. Some jurisdictions limit this amount to only 1.8%. Assuming a median home price in the flood region of approximately $300,000. At a 2.0% limit, after leaving a conservative 1.1% for current ad valorem overlapping debt, the median home could only support an additional $2,400 of annual taxes to fund all other annual infrastructure and service costs within the reasonable financing limit. It would be unreasonable to assume that all of the remaining tax limit could be captured to finance and fund additional flood management infrastructure and services.

Furthermore, the approval processes for additional taxes and assessments governed by Proposition 218 presents significant challenges to local jurisdictions. This further erodes at the ability to capture available funding capacity.

As more detailed plans for funding services and infrastructure are developed, a coordinated approach must be made to ensure that the funding capacity for infrastructure is not preempted by other entities and that the financing goals and policies of the region's jurisdictions are reflective of their priorities. Coordination with State led efforts to fund system-wide improvements will also need to take place to ensure that any proposals for funding State programs, such as a central valley-wide or regional assessment, do not pre-empt locally led efforts and priorities and recognize the contributions of regions that have already passed flood based assessments.

1.5.3 FEMA Flood Insurance – Pricing Mechanism

Flood risk reduction projects have a unique pricing mechanism in the Federal Emergency Management Agencies (FEMA) National Flood Insurance Program (NFIP). The potential for being mapped into a 100-year flood plain provides communities with a metric to make informed decisions to determine if it would be less expensive to pay for flood insurance or tax themselves to pursue construction of flood improvements.

The NFIP established the 100-year flood as the threshold for determining if structures with federally guaranteed mortgages are required to purchase flood insurance. Currently, the NFIP makes flood insurance available to structures located within participating communities at subsidized rates. However, federal legislation passed in 2012 (The Biggert-Waters Flood Insurance Reform Act of 2012 or "BW-12") was intended to make flood premiums more representative of the actual risk posed from flooding (the actuarial rate). While recent legislation signed into law in March 2014 (the Homeowner Flood Insurance Affordability Act of 2013 or "HFIAA") makes modifications to BW-12 with respect to current subsidized insurance rates, initial guidance provided by FEMA indicates that flood insurance premiums will still be increasing.

The federal government's decision to move toward actuarial rates provides a direct linkage between the cost of insurance and structural flood risk reduction improvements. Because the vast majority of homes within the US are financed with federally guaranteed mortgages that require flood insurance, in the face of 100-year flood risk, the cost of mitigation cannot be escaped by the homeowner. Simply put, a homeowner with a home located in a floodplain will face a cost, either a flood insurance premium cost, or a cost to demonstrate that their property should not have been mapped within the 100-year floodplain, or a cost to construct structural flood risk reduction improvements that provide a minimum 100-year level of protection. It is reasonable to assume that a practical homeowner would prefer the lesser of these costs. In the case of many communities within the Central Valley of California located within deep floodplains expensive structural levee improvement projects are required to meet the FEMA 100-year standard.

There are, however, limits to direct correlation of flood insurance rates and the ability of a local community to tax itself. The direct linkage is easily complicated by many identifiable factors including:

- For large, coordinated structural levee improvement projects, typically a property tax increase is needed in order to finance the local cost share of the project cost. Because such projects take many years to complete, homeowners could be forced to pay both the high cost of flood insurance while the flood risk remains, as well as the annual tax needed to construct the improvements. As a result, homeowners will typically not be in favor of taxing themselves for the full amount of any long term savings.

- Land-based financing funds many critical services within local communities and these services are competing for limited funding. For areas where existing taxes and assessments on properties are

already perceived as high, additional taxing capacity for flood improvements would be limited and compete against other services required by the community.

- As discussed above in Tax Rate and Infrastructure Burden Considerations, some communities within California have adopted policies consistent with recommendations from the California Debt and Investment Advisory Commission (CDIAC). Not only will increased flood assessments compete with other services but the magnitude of a local flood assessment must also fit within the adopted polices of local communities that are attempting to efficiently manage debt within the context of State policies and guidelines.

- If future flood insurance rates exceed a homeowner's ability pay the cost of their taxes, mortgage and flood insurance, no additional assessment capacity would exist to fund flood management projects.

- Flood insurance rates do provide a starting point for a community to make an informed decision about how much they would be willing to pay to fund flood improvements. However, a project-specific rate study coupled with a well-planned and executed strategic public outreach campaign are also required to assess and determine a communities willingness and ability to pay additional taxes or assessments for flood management. Ultimately, flood insurance is just one of many factors to be taken into consideration.

1.5.4 FEMA Agricultural Zone

A significant portion of agricultural lands in California's Central Valley are not protected by levees constructed to modern standards. In order for states like California to continue to sustain a robust agricultural economy and discourage urbanization of these rural areas, changes are needed to the NFIP that will promote the sustainability of agriculture in the floodplain. MapMod and RiskMAP have, or will, map most of the agricultural areas in the Central Valley into a special flood hazard area (SFHA). The rural communities that occupy these floodplains lack the financial ability to cost-effectively improve their levee systems to meet FEMA's 100-year certification criteria. The restrictions on development in an SFHA, while effectively curbing residential development in the floodplain, do not provide the flexibility needed to sustain the current vibrant agricultural economy that is critical to California's Central Valley. These strict regulations have rendered financially infeasible and/or unattainable the reinvestment in agricultural operation facilities, commercial facilities in support of agriculture, equipment repair facilities, livestock and crop processing facilities, housing for agricultural operators or temporary farm workers. These regulations could also affect the ability of agricultural operations to rely on collateralizing (with the Commodity Credit Corporation) grain stored in the floodplain.

The existing Zone D, which is applied to areas with an indeterminate risk, might be properly applied to agricultural zones with high levels of protection, even if the areas cannot be certified as out of the 100-year flood plain. The Zone D designation allow for new structures to be constructed. However, additional investigation of how rates would be calculated would be required.

To resolve this issue and ensure that an appropriate level of flood risk is achieved along with the financial capability of the area, the State should support the Region's efforts for flood insurance reform ensuring that the agricultural use of the area is sustainable and allowing for the existing vibrant agricultural economy to thrive.

1.5.5 Constraints on Federal Funding

The USACE has historically been a major contributor to investment in flood risk reduction infrastructure in California. The USACE is faced with more demands for building and maintaining its projects than available federal funding allows (Stern & Carter, 2011). It is estimated the USACE has a backlog of authorized projects higher than $62 billion. However, some of the backlogged appropriations are related

to projects that are unlikely to be constructed, as throughout the nation they are not competitive when compared against other projects.

There are many factors contributing to the growth of the USACE backlog. Authorizations have outpaced appropriations, aging infrastructure requires more significant financial investments, and escalation of construction related costs have all contributed to increasing the backlog of authorized projects. Table C-56 was developed from the fiscal year 2015 federal budget and shows that the USACE civil works budget is shrinking and future projections suggest that recent cuts to the civil works budget are intended to be permanent with only modest annual increases. The USACE civil works budget is projected to be about $4.5 to $5.0 billion over the next five years. Looking back at federal budget over the past 5 years would suggest that less than 50% of the USACE budget is utilized for construction activities that would reduce the total backlog of authorized projects. When adjustments for inflation are considered, the real value of USACE construction appropriations have been shown to be flat for the last 20 years and the projected budget for the next 10 years suggests that trend will continue.

Securing federal funding for large flood risk reduction projects will continue to become more competitive. In the past, funding for authorized projects has relied heavily on prioritizing appropriations based on a projects Benefit to Cost Ratio (BCR). This approach limits federal investments to areas that can achieve a very robust BCR and generally these projects would be in urban areas, where significant benefits exist. In FY 2010 budget requests, the administration required ongoing flood management projects to generally have a BCR greater than 2.5, and for new start projects the minimum BCR was generally 3.2. While the BCR's for projects vary each year, the competition for limited federal funding also increases as authorizations continue to outpace appropriations.

Table C- 56. USACE Annual Budget Projections and Percent Reduction in Backlog

Report	Actual	Enacted	Requested	Out Years								
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Corps of Engineers	$8.1	$5.5	$4.5	$4.7	$4.7	$4.9	$5.0	$5.1	$5.2	$5.3	$5.4	$5.6
Percent Change per year		-32%	-18%	4%	0%	4%	2%	2%	2%	2%	2%	4%
Estimated Construction (Retiring Backlog)		$2.8	$2.3	$2.4	$2.4	$2.5	$2.5	$2.6	$2.6	$2.7	$2.7	$2.8
Percent of Backlog ($60 Bil)		4.6%	3.8%	3.9%	3.9%	4.1%	4.2%	4.3%	4.3%	4.4%	4.5%	4.7%
Percent of Backlog ($80 Bil)		3.4%	2.8%	2.9%	2.9%	3.1%	3.1%	3.2%	3.3%	3.3%	3.4%	3.5%

Source: Federal Budget FY 13-14 and annual budget reports

1.5.6 State Funding Incentives

The State is developing a suite of programs to provide funding to urban areas, small communities, rural areas, and for system-wide improvements. The State has been extremely successful under its existing Early Implementation Program with the development of financial incentives to create objective based outcomes that support the goals of the CVFPP. Developing appropriate incentives that encourage local communities to implement flood risk reduction projects consistent with the CVFPP goals is one of the most powerful tools available to the State. Examples of current incentives include: increased cost share for projects that protect State facilities, creation of open space, habitat, and recreation opportunities, construction of setback levees, and protection of disadvantaged communities. For instance, it can be politically challenging to implement setback levees and system improvement projects. However, when a community can make a strong case that advancing these types of projects will allow a local agency to leverage limited local funding and increase the amount of flood risk reduction that can be implemented it can garner support from a community. Developing incentives that encourage local communities to meet the objectives of the CVFPP will result in local communities formulating projects that are acceptable to the community and will advance the objectives of the CVFPP.

1.5.7 Local, State, and Federal Funding Percentages

A number of different estimates have been released that attempt to describe the different cost percentages paid by the locals, State and Federal government. Estimates of historic percentages were provided in the PPIC report, *Paying for Water in California*, and the Flood Futures Report. The CVFPP provided an estimate of future percentages assumed for implementation of the State System-wide Investment Approach (SSIA). Table C-57 compares estimates of historical percentages paid by local, State, and the Federal government to the estimates provided in the CVFPP. When comparing the historic percentages paid to the estimates in the CVFPP it is clear that significant State and federal funding will be required to complete work under the CVFPP. Reliance on the Federal government to contribute up to 46% of the costs to complete the CVFPP is not likely given historic federal contributions and constraints on federal funding. When considering the legal and institutional constraints on raising local funding and securing significant federal funding it is not clear if implementation of the CVFPP as currently defined can be achieved without significant State funding support.

Table C- 57. Historic and Projected Cost Shares to Complete Flood Risk Reduction Projects

Report	Local	State	Federal	Total
PPIC Report "Paying for Water in California"	62%	27%	12%	100%
Flood Futures Report (2000 to 2010)	72%	12%	17%	100%
CVFPP SSIA Potential Cost Sharing by Agency	8%	46%	46%	100%

1.6 Local Funding Capacity

1.6.1 Assessment Capacity and Land Based Funding Approach

In order to characterize the capacity for flood management assessment within different areas in the region, an evaluation of existing typical assessments for flood management was performed. This approach is simply used as an indicator for the capacity for direct assessment charges for flood management within the region.

A survey of 12 recent flood management improvement and service assessments was conducted throughout the California Central Valley, to determine the typical assessment rates imposed in recent years. Table C-58 provides a range of typical assessment rate ranges for various land uses subject to these flood management assessments.

The sampled districts are of differing sizes (in terms of number of parcels impacted), have differing approaches and methodologies for the apportionment of benefit and have differing budgets associated with the improvements and services being provided. As a result, the rates and average assessments vary significantly. However, the one thing these districts have in common is that they have all been recently imposed and subject to a Proposition 218 property owner balloting processes. The districts have had similar input from property owners on their imposition. Given this, the rates shown in Table C-58 could be interpreted as an indicator to the typical limits that property owners are willing to pay for similar services given single question put forth on a ballot presented to them.

Table C- 58. Typical Annual Assessment Rates

Land Use Category	Annual Assessment Rate Range			
	Unit	min	max	Typical
Residential [1]	*Per Unit*	*$25*	$301	$123
Industrial (Per 1,000 SF) [2]	Per 1,000 SF	$4	$334	$79
Rural/Agriculture (Per Acre)	Per Acre	$1	$22	$8
Commercial (Per 1,000 SF) [3]	Per 1,000 SF	$14	$320	$96
Government (Per 1,000 SF) [3]	Per 1,000 SF	$1	$232	$81

[1] Includes both typical Single Family units (assumed to be 1,500 SF on 1/4 Acre of Land flooded to 5').

[2] A Floor Area Ratio (FAR) of .25 is assumed for typical Industrial land, assumption assumes flooding to 5'.

[3] A FAR of .4 is assumed for typical Commercial & Governmental land, assumption assumes flooding to 5'.

Source: SAFCA, SJAFCA, SBFCA, RD 10, RD 17, RD 2103, RD 1001, WSAFCA, TRLIA, KLRDD & MLC

The existing Single Family residential assessment rate can be used as a proxy for determining the ability to increase the assessment. Anecdotal evidence suggests that it is typically the single family residential assessments that control the outcome of Proposition 218 assessment ballot proceedings. This is because the balloting process is controlled only by ballots that are received by the close the period (the required public hearing). Because the returns are higher in this category of assessment, the residential property usually controls the outcome of the election.

1.6.2 New Development Funding

As discussed previously, several of the Flood Region's sub-areas have approved and planned the identified development projects. The cities of Sacramento and West Sacramento have Development Impact Programs already in place to generate money to fund flood management improvements. The fee programs are meant to offset the costs of future improvements and will allow the agencies to manage the residual risk associated with increasing expected annual damages, as new development occurs within the cities.

1.6.3 Operations and Maintenance Funding

The ability to adequately operate and maintain the levee system varies within the region. DWR has documented the cost and extent of levees maintained and each LMA's O&M costs in the annual "Inspection and Local Maintaining Agency Report." A review of the information within the annual DWR inspections report suggests that levee maintenance in rural areas generally varies from $5,000 to $15,000 per mile and for urban areas the cost generally varies from $20,000 to $60,000 per mile.

The mission of many LMA's is both internal drainage and levee maintenance. The O&M cost per mile can vary based on the scope of activities performed by and LMA, local maintenance practices, and restrictions on securing adequate funding to properly maintain levees. While understanding the annual costs associated with an LMA's O&M practices per mile is important, performance-based metrics would be required to make a determination of the minimum or average cost per levee mile required to meet current State and federal standards. This analysis could be performed with existing levee inspection data collected by the State and USACE.

1.6.4 Other Non-Local Funding Sources

Opportunities exist for local agencies to leverage funding from Non-Governmental Organizations for projects that have components or features that align with the interest of those agencies. Opportunities for funding could include funding for environmental restoration and agricultural easement acquisition.

Environmental enhancement and open space projects that are funded by the NGO's could lead to opportunities to leverage additional State funding for flood risk reduction projects to the extent the combined multi-benefit projects align with certain objective criteria for State Funding resulting in supplemental cost sharing. As local project proponents evaluate available funding options for projects, agencies should look for opportunities to combine or add features to projects that combine funding sources and that ultimately result in the lowest net local cost. The amount of funding through NGO's is limited and would likely be used to target costs that would increase the multi-benefit nature of integrated projects.

1.6.5 Local Funding Capacity Summary

Given the existing constraints of local jurisdictions to generate additional local funding for improvements and services (O&M), namely Propositions 13 and 218, the two most feasible ways for local jurisdictions to generate funding are from self-imposed taxes and assessments and development impact fees. A project-specific rate study would be required in order to determine the relative remaining local funding capacity. The goal of the rate study would be to determine how much funding capacity could be reasonably expected and provide an estimate of remaining capacity to impose additional assessment and fees upon a benefit area to support construction of a project.

1.6.6 Urban Areas

Urban areas in the region generally require capitally intensive flood risk reduction projects to provide a minimum 200-year level of urban protection. The Cities of Sacramento and West Sacramento have already secured local funding streams and are actively advancing flood risk reduction improvements in partnership with the State and the USACE. The cities of Sacramento and West Sacramento have active USACE studies and have successfully partnered with the USACE in the past to implement flood risk reduction projects. The City of Woodland has an active study with the USACE and they have recently initiated coordination with the State of California to advance feasibility study efforts. The cities of Davis and Rio Vista do not have active studies with the USACE and have not partnered with the State to advance flood risk reduction improvements. Densely populated urban areas have a higher capacity to secure local funding sources as a larger property base exists to spread the costs of a capital intensive flood risk reduction project.

1.6.7 Small Communities

Small communities will have the most difficult time funding flood risk reduction projects. Smaller communities tend to lack the benefits required to justify a federal investment in flood risk reduction. This is generally due to the high cost of implementing projects combined with much lower land owner basis to spread a local assessment. The cost to perform operations and maintenance for some of the improvements could be challenging even if construction of the flood risk reduction project were fully funded by the State.

Small communities will require a significant amount of State funding in order to achieve a minimum 100-year level of protection as stated in the CVFPP. The economic justification for implementing capitally intensive flood risk reduction projects to protect small communities is very limited. In addition, the financial capability of a small community to raise enough funding to match State programs is restricted. Small communities that can economically achieve a minimum 100-yr. level of protection may benefit from coordinating with larger regional projects.

Small communities and rural areas would benefit greatly from modifications to FEMA floodplain designations that would limit growth but allow for the existence of legacy communities within the 100-year flood zone.

1.6.8 Rural Areas

Rural areas have limited financial capability to fund construction and many of the reclamation districts have found that their historical operations and maintenance activities are no longer adequate to maintain aging levees.

Rural districts have a limited ability to raise funds to implement flood management. Many of the districts with the legal Delta rely on the State of California flood subvention programs to offset the costs associated with maintenance activities. Districts protected by Project levees can secure federal funding through the Sacramento River Bank Protection Program (SRBPP). The SRBPP does not require a local cost share. The sites identified for repair under the Sacramento bank program are ranked based on the severity of the erosion deficiency and annual appropriations are limited. Districts that have the financial capability to implement flood management or habitat projects can secure funding through the Delta Levee Special Projects. A district must be located within the legal Delta to secure funding under Delta Levee Special Projects. The intent of the State Flood System Repair Program is to be proactive and to assist LMA's in preventing existing problems from becoming critical, thus reducing repair costs and enhancing the long-term sustainability of O&M programs. Districts located within the Yolo Bypass will have more opportunities to develop multi-objective projects and possibly leverage other State funding sources to complete levee improvements.

1.7 Funding Strategies

1.7.1 Federal Funding Strategy

State and local agencies within the region should strategically target federal investments in flood risk reduction projects. It is not likely that the federal government will eventually pay for up to 46% of the improvements required to complete the CVFPP. The lack of adequate appropriations to keep pace with project authorizations, USACE maintenance responsibilities for aging infrastructure, combined with increasing competition will require State and local agencies to formulate regional multi-benefit solutions that can compete nationally for federal funding. The USACE refers to large regional projects of interest as "Mega-projects." Multi-benefit mega-projects will be more successful at competing nationally for limited federal funding. The Folsom Joint Federal Project is an example of a multi-benefit, Mega-Project that has had great success garnering federal support.

The USACE budget is developed along business lines (navigation, flood, eco-system, etc.) and increasingly relies on performance-based metrics to prioritize funding within each business line. One of the most important metrics is the ability of a local USACE district to expend federal appropriations to demonstrate capacity and progress. The State and locals should work to formulate an investment strategy that attempts to maintain the regions success in securing significant federal appropriations. In some instances, this may require that the State and locals agree to make targeted investments to ensure that the region can continue demonstrate the ability to spend federal appropriations and demonstrate progress.

The passage of a 2014 WRDA Bill will provide the Region with the ability to secure additional federal appropriations, but it will also increase demand nationally. The flood region will need to develop a regional coordinated approach to position the State and local agencies to continue the historic success in securing federal appropriations.

1.7.2 State Funding Strategy

In the near term, local agencies that have secured a local funding source should work within the context of existing State funding programs to advance flood risk reduction efforts within the region. If a local community wants to advance flood risk reduction work they should coordinate with the State to determine what programs are best suited to complete work identified within this regional plan.

Local agencies should work with the State to identify opportunities to leverage funding across programs when the goals of both programs can be advanced under an integrated solution. Development of regional, multi-benefit projects will increase the chances of securing limited federal funding and may allow local agencies to secure funding from multiple State programs. This approach will allow local agencies to further leverage limited local funding and advance flood risk reduction projects.

In order to implement the CVFPP the State of California will need to partner with local agencies to fill funding gaps acknowledging the funding constraints of local and federal. Acknowledging local and federal funding constraints will allow the State to reassess its financial and implementation strategy within the context of the goals of the CVFPP. This may result in an increased reliance on State funding. This outcome is consistent with recent court rulings regarding the State's liability related to flood damages. The DWR report *Responding to California's Flood Crisis* (State of California, 2005) states, "Central Valley's growing population is pushing new housing developments and job centers into areas that are particularly vulnerable to flooding. Yet, in recent years, funding to maintain and upgrade the flood protection infrastructure has sharply declined. Compounding these challenges is a recent court ruling, Paterno v. State of California, which held the state liable for flood-related damages caused by a levee failure. Together, these factors have created a ticking time-bomb for flood management in California." Given that flood-related liability rests with the State, increased investment in flood risk reduction can help manage the exposure to the State taxpayers.

Local agencies should work with the State to formulate projects that are technically sound while also being politically and socially acceptable to the local communities. The State should acknowledge that development of large flood risk reduction projects will require local support and project formulation must take into consideration, not just the engineering and economic consideration, but the critical importance of developing solutions that are politically and socially viable. To that end, formulation of financial incentives that support the goals and objectives of the CVFPP will allow local agencies to develop projects that meet both the goals of the CVFPP and a community.

The State should consider supporting local agencies in developing local funding streams early in the life cycle of a flood risk reduction project. Local agencies that are successful in securing a local funding source will be in a better position to partner with the State to implement flood risk reduction projects. The State could accomplish this by cost sharing in the development of local funding sources.

1.8 Conclusions & Recommendations

Recent studies and reports providing analysis, commentary, and policy recommendations related to funding flood management have had a common theme emphasizing the importance of creating sufficient and sustainable funding sources to manage flood risk over time. DWR's California Flood Futures Report identifies existing funding constraints and presents recommendations for actions that could lead to new funding sources. PPIC's *Paying for Water in California* identifies and describes those same constraints with respect to local funding and presents recommendations that would help local entities address the funding gaps identified within the report. Ultimately, creating a sustainable and politically actionable funding source for flood management will require some action by the State legislature to change the current constitutional and statutory constraints on raising new revenue. The State and DWR should explore the following recommendations, some of which could be implemented in the near term. In the long term, the State should continue efforts to implement recommendations made in recent studies focusing on long term stable funding for flood management.

Recommendation 1: The State should support a suite of projects that, together, provide multiple benefits for flood management, water supply, and the environment. The State is advancing regional planning at the local level to identify projects that are prioritized locally and have regional support. Projects that are prioritized highly will be presented to federal, State, and local decision makers. Funding for a suite of

projects with regional support that advance flood risk reduction, water supply and the environment should be considered a high priority by the State.

Recommendation 2: The State and locals should work together to formulate a multi-benefit "mega-project" that would improve the ability to maintain significant federal appropriations over time. This approach will need to take into consideration the institutional constraints the USACE will face in implementing projects and strategic investments should be made by the local and State to ensure that the USACE district is positioned to be successful in spending appropriations and demonstrating progress.

Recommendation 3: Local agencies should work with the State to align the incentives within funding programs to the goals and objectives outlined in the CVFPP. In many cases providing local agencies with more favorable cost sharing and crediting provisions will help position the State to secure limited federal funding and maintain historic federal appropriations in the region. Increasing the amount of federal funding available will allow for limited State and local funding to be applied to small communities and rural areas that will face significant financial challenges in meeting the goals established in the CVFPP.

Proposition 1E requires the State to "Secure the maximum feasible amounts of federal and local matching funds to fund disaster preparedness and flood prevention projects in order to ensure prudent and cost-effective use of these funds to the extent that this does not prohibit timely implementation of this article." The interpretation of this section of Proposition 1E should be evaluated in the larger context of the State's objectives and should be reflected in the State's financial strategy with a realistic understanding of the constraints of both federal and local funding. The interpretation that the State should work to maximize the amount of local funding could undermine the State's ability to secure a significant amount of federal funding. Maximizing the amount of federal funding may require that the State provide local agencies with favorable cost sharing and crediting provisions under State funding programs.

Recommendation 4: In the rural agricultural areas within the Region, where the economic profile is predominately characterized by its rural and agricultural setting and the capacity to fund additional flood risk projects is constrained in some cases, the most economical and financially feasible way to manage the flood risk may not be to construct additional improvements. Where a specific set of improvements primarily benefits an agricultural land use and a supporting community; local, State and Federal interests may conclude that the benefits of structural improvements do not outweigh the costs. To resolve this issue, and to ensure that an appropriate level of flood risk is achieved in concert with the financial capability of the area, the State should support the Region's efforts for flood insurance reform ensuring that the agricultural use of the area is sustainable and allowing for the existing vibrant agricultural economy to thrive. [6]

Recommendation 5: The State should consider providing funding to evaluate and implement new local funding mechanisms to generate the local cost share of projects consistent with the SSIA. The State has made it a clear priority to maximize the value of its investment by leveraging non-State funding sources. Directly funding efforts to establish new funding sources at the local level is consistent with this priority. The upfront costs associated with evaluating new projects, developing financing plans and implementing new funding mechanisms (within the current legal framework) presents a significant hurdle to many local entities. As the State is currently developing new programs, which will provide funding for feasibility studies as a component of this effort, funding for financing plan implementation should also be included.

Recommendation 6: The State should continue to explore regional, basin or valley-wide funding districts that ensure that all beneficiaries of the flood management infrastructure pay. Any district should recognize the nexus of the flood management system to other essential public services such as safety, water supply and quality, recreation, and environmental protection. The current approach governed by

[6] *The specific actions related to a FEMA Agricultural Zone designation are further described within section 1.5.4.*

Proposition 218 makes it too onerous to implement such a district at the local level. As a result, the current approach, which links the properties that receive special benefit to those within a district that will pay for the cost of the work performed, ignores the interconnectedness of the flood management system. A valley-wide or regional assessment would need to be imposed not only on lands within a defined floodplain but also (i) on lands that drain into that floodplain, (ii) lands that would be in the 100-year floodplain absent flood management works, and (iii) potentially on lands that benefit from the lack of disruption that flood management seeks to offer.

Recommendation 7: In the context of NFIP reform and rising flood insurance rates, the State could explore alternative flood or hazard insurance programs that could satisfy both federal lending requirements, as well as provide structural mitigation to reduce risk. Various proposals have been discussed and questions arise whether such a program at a State level, absent heavy subsidy, could result in lower overall costs and more manageable constraints. However, one key aspect to a supportable and more sustainable program would be to ensure those required to purchase insurance represent all those properties that could potentially bear a cost as a result of a flood loss. This would include all those beneficiaries as discussed above.

1.9 Financial Plan References

American River Flood Control District. FY 2013/14 Budget.

Association of Bay Area Governments (ABAG). 2020 and 2035 projections extracted from 2040 Projections.

California Natural Resources, California Department of Food & Agriculture and California Environmental Protection Agency. California Water Action Plan. January 22, 2014.

California Department of Finance. Website: http://www.dof.ca.gov/research/demographic/reports/estimates/e-1/documents/E-1_2013_Internet_Version.xls. Table E-1: Population Estimates for Cities, Counties, and the State, January 1, 2012 and 2013, accessed January 2014.

http://www.dof.ca.gov/research/demographic/reports/estimates/e-5/2011-20/documents/E-5_2013_Internet_Version.xls. Table E-5: Population and Housing Estimates for Cities, Counties and the State, January 2011-2013, accessed January 2014.

http://www.dof.ca.gov/research/demographic/state_census_data_center/census_2010/documents/2010Census_DemoProfile2.xls. Table 2: Land Area, Population and Population Density, April 1, 2010 Incorporated Cities and Census Designated Places (CDP) by County in California, accessed January 2014.

http://www.dof.ca.gov/research/demographic/state_census_data_center/census_2010/documents/2010Census_DemoProfile4.xls. Table 4a: Persons by Relationship, April 1, 2010 Incorporated Cities and Census Designated Places (CDP) by County in California, accessed January 2014.

CBRE. 2013. Market Research Report: San Francisco Peninsula Market. 2013 Q3.

CBRE. 2013. Market Research Reports: Tri-Valley Market, 2012 Q3.

City of Davis. Planning Department. Telephone and e-mail discussions regarding planned and proposed projects. April 2014.

City of Rio Vista. Planning Department. Telephone and e-mail discussions regarding planned and proposed projects. April 2014.

City of Sacramento. Planning Department. Telephone and e-mail discussions regarding planned and proposed projects. April 2014.

City of West Sacramento. Planning Department. Telephone and e-mail discussions regarding planned and proposed projects. April 2014.

City of Woodland. Planning Department. Telephone and e-mail discussions regarding planned and proposed projects. April 2014.

Colliers International. 2013. Commercial Real Estate Listings 3Q 2013. Website: http://www.colliers.com/en-us/insights/market-news/2013-global-office-market-midyear-report#.U2KDX1zyFZg, accessed January 2014.

County of Sacramento. Planning Department. Telephone and e-mail discussions regarding planned and proposed projects. April 2014.

County of Sutter. Planning Department. Telephone and e-mail discussions regarding planned and proposed projects. April 2014.

Downey Brand. Proposal for Revisions to California's Central Valley Flood Control System. December 1, 2004

DWR. Flood Warnings: Responding to California's Flood Crisis. January 2005

DWR. 2013. Claritas data Median Household Income for California and the Flood Region and Unemployment Rate for the Flood Region. April 2014.

DWR. 2013. Educational Attainment for California and the Flood Region. April 2014.

DWR. 2013. Population and Housing Estimates. Disadvantaged Community Mapping Tool. Website: http://water.ca.gov/irwm/grants/resourceslinks.cfm, accessed January 2014.

Eberling, Barry. 2014. "Travis, Kaiser top employers in County" August 26, 2012.

FloodSAFE California and USACE. California Flood Future: Recommendations for Managing the State's Flood Risk, Attachment I: Finance Strategies. April 2013.

Kjeldsen, Sinnock & Neudeck, Inc. Reclamation District No. 17 Mossdale Track Assessment Engineer's Report. May 15, 2008

Natomas Basin Conservancy. 2014. E-mail correspondence with City staff. April 2014.

Nielson/Claritas. 2013. Median Household Income Estimates, Flood Region. Provided via California Department of Water Resources. April 2014.

Parsons Brinkerhoff. Final Engineer's Report, Sacramento Area Flood Control Agency Consolidated Capital Assessment District, Prepared for Sacramento Area Flood Control Agency. April 19, 2007.

Parsons Brinkerhoff. Final Engineer's Report, Sacramento Area Flood Control Agency Natomas Basin Local Assessment District, Prepared for Sacramento Area Flood Control Agency. April 28, 2011.

Public Policy Institute of California. Paying for Water in California. March 2014.

Sacramento Area Council of Governments – SACOG. 2010. MTP/SCS 2035, Appendix E-3 Land Use Forecast Background Documentation. Website: http://www.sacog.org/2035/mtpscs/, accessed January 2014.

Sacramento Business Journal. Book of Lists, January 13, 2012.

Sacramento Business Journal. Book of Lists, June 7, 2013.

SCI Consulting Group. Final Engineer's Report, Reclamation District No. 10 Levee and Flood Control Facilities Assessment District, Reclamation District No. 10. June 2013.

SCI Consulting Group. Final Engineer's Report, Reclamation District No. 1001 Levee and Flood Control Facilities Maintenance and Repair Assessment, Reclamation District No. 1001. February 2014.

Seth Wurzel Consulting and Kjeldsen, Sinnock & Neudeck, Inc. Final Engineer's Report, Smith Canal Area Assessment District, Prepared for San Joaquin Are Flood Control Agency. July 10, 2013.

State of California Employment Development Department. News Release 13-90. California Unemployment Rate. December 20, 2013.
Website: http://www.edd.ca.gov/about_edd/pdf/urate201312.pdf accessed April 2014.

U.S. Census Bureau. 2012. American Community Survey – American Fact Finder. 2008-2012 5-Year Estimates. Median Household Income.
Website. http://factfinder2.census.gov/faces/nav/jsf/pages/community_facts.xhtml, accessed January 2014.

Woods & Poole. 2011. State Profile, 2012. Woods & Poole Economics, Inc.