32317 Questionaire.pdf

32317 - Project Description.pdf

32317 - Attachment 1.pdf

32317 - Attachment 2.pdf

32317 - Attachment 3.pdf

32317 - Attachment 4.pdf

32317 - Attachment 5 - cbec.pdf

32317 - Attachment 5 - Consero Solutions.pdf

32317 - Attachment 5 - Douglas Environmental.pdf

32317 - Attachment 6.pdf

32317 - Monitoring and Assessment Plan.pdf

32317 - Scientific Merit - Conceptual Model.pdf

32317 - Project Maps.pdf

PIN 32317 - Yolo Bypass Westside Tributaries Flow Monitoring Project - ASSIGNED

Application

Application Overview

RFP Title: CDFW - Prop. 1, Watershed Restoration & Delta Water Quality and Ecosystem Restoration Grant Programs

Submitting Organization: Consero Solutions

Submitting Organization Division:

Project Title: Yolo Bypass Westside Tributaries Flow Monitoring Project

Project Description: Yolo County and the University of California, Davis Center for Watershed Sciences, propose to work with cbec ecoengineering to collect important data on four westside tributaries to the Yolo Bypass: Putah Creek, Cache Creek, Knights Landing Ridge Cut Canal, and Willow Slough Bypass. Westside tributary inflows play an important role in Yolo Bypass inundation, so understanding the timing and magnitude of inflows is needed to determine their relative influence compared to larger inflows from the Fremont and Sacramento Weirs. Better data are needed to synthesize past and future hydrology datasets for the purposes of modeling existing conditions and future management scenarios.

Water System ID:

District Office:

APPLICANT DETAILS

Applicant Organization: Yolo County

Applicant Organization Division: County Administrator

Applicant Address: 625 Court St Room 202 , Woodland , CA - 95695

PROJECT LOCATION

Latitude : 38.590310 **Longitude:** -121.730230

Watershed:

County: Yolo

Responsible Regional Water Board:

PROJECT BUDGET

Funds Requested($): 331,148.00

Local Cost Match($): 15,095.00

Total Budget($): 346,243.00

Funding Program	Applied	Amount Recommended by

		State Water Board
Delta Water Quality and Ecosystem Restoration Grant Program	Yes	$0.00
Watershed Restoration Grant Program	No	$0.00

Project Management Role	First Name	Last Name	Phone	Fax	Email
Project Director: Authorized Representative	Cindy	Tuttle			
Project Manager: Day to day contact	Petrea	Marchand			

Applicant Information

Name:
Yolo County

Division:
County Administrator

Address:
625 Court St Room 202 Woodland, CA , 95695

Legislative Information	Primary	Additional District(s)
Senate District	03	
Assembly District	04	
US Congressional District	03	02,

Dow nload all Pre Submission Attachments

Questionnaire - Phase 1

Section 1: Summary Information

1.1 Mailing Address of Project Director

Provide street address, city, state and zip code (or P.O. Box) of the Project Director, who will serve as the signatory. If project is funded, agreement will be sent to this address for signature.

Answer:

1.2 Mailing Address of Project Manager

Provide street address, city, state and zip code (or P.O. Box) for mailing address of Project Manager, who will serve as the point of contact for the project.

Answer: Petrea Marchand
President
Consero Solutions
231 G Street, Suite 21
Davis, CA 95616

1.3 Organization Type

Select which organizational type the applicant falls under. If applicant does not fall under a listed category, the applicant is not an eligible entity.

1. Public Agency

2. Nonprofit Organization

3. Public Utility*

4. Mutual Water Company*

5. Federally Recognized Indian Tribe

6. State Indian Tribe listed on the Native American Heritage Commission's California Tribal Consultation List

***Public utilities and mutual water companies must describe a clear and definite public purpose and benefit to the customers of the water system. Please provide additional information in the box below.**

Answer: l 1

Answer:

1.4 Nonprofit Organization

Is the applicant qualified to do business in California and qualified under Section 501(c)(3)? If yes, provide 501(c)(3) nonprofit organization number.

Answer:

Answer:

1.5 Additional Information for Water Suppliers

Select the appropriate choice from the box below. See Section 3.1 of the Solicitation for more information.

Answer: l Not Applicable

1.6 Mitigation

Is the proposed project required mitigation or is it to be used for mitigation under laws such as CEQA, NEPA, CESA, ESA, CWA, or other pertinent laws and regulations, or a permit issued by any local, state or federal agency? If yes, project is ineligible.

Answer: l No

Section 2: Project Integration Information

2.1 Implement Actions of the California Water Action Plan

Does the project implement actions in the CWAP? If yes, identify those actions.

Answer: I Yes

Answer: The Yolo Bypass Westside Tributaries Flow Monitoring Project implements the following action in the California Water Action Plan (CWAP):

"3. Achieve the Co-Equal Goals for the Delta" (CWAP p. 7)

As part of this action, the CWAP contains the following language:

"Begin Implementation of the Delta Plan -- The administration directs all of its relevant agencies to fully participate in the Implementation Committee of the Delta Plan established by the Delta Stewardship Council and to work with the Delta Science Program, the Interagency Ecological Program, and others to implement the Delta Science Plan to enhance water and natural resource policy and management decisions." (CWAP p. 8)

As described later in this application, the Yolo Bypass Westside Tributaries Flow Monitoring Project is consistent with the implementation of the Delta Science Plan. Yolo County consulted with the Delta Stewardship Council to ensure the correct interpretation of the action in the Delta Science Plan and is working with the California Department of Water Resources to coordinate collection of this data. Yolo County therefore believes the project will also help to implement the CWAP action listed above.

2.2 Applicable Solicitation Priority(ies)

Check all appropriate boxes that apply to the project:

1. **Improve Water Quality or Contribute to the Improvement of Water Quality (non-CWAP Action)**
2. **Habitat Restoration, Conservation, and Enhancement (CWAP Action or California EcoRestore)**
3. **Scientific Studies and Assessments to Support Implementation of the Delta Science Plan (CWAP Action)**

Answer: I 3

2.3 Proposal Category

Choose the proposal category:

1. **Planning**
2. **Implementation**
3. **Acquisition**
4. **Scientific Studies, Monitoring, and Assessment**

Answer: I 4

2.4 Project Readiness

Project/construction start date:

Answer: 03/16/2016

Project/construction end date:

Answer: 03/16/2019

2.5 Consistency with and Implementation of Other Plans

Does the project have consistency with and implementation of other plans (e.g., existing conservation, restoration, recovery plans, or other relevant local, state, or federal plans or policies)? Copies of the plan(s) must be available upon request.

If yes, identify the plan(s) (use the following format: author, year, title, organization, city, state.) and associated action(s):

Answer: l Yes

Answer: Delta Stewardship Council, 2013, Delta Plan, Sacramento, CA.

(See above description of the California Water Action Plan)

Yolo Basin Foundation, cbec, Consero Solutions, Douglas Environmental. 2014. Yolo Bypass Drainage and Water Infrastructure Study. Prepared for Yolo County. Woodland, CA.

The study identifies collection of the information proposed for the Yolo Bypass Westside Tributaries Flow Monitoring Project as Recommended Project #12.

William Fleeenor, Phd. 2015. Yolo Bypass Salmonid Habitat Restoration and Fish Passage Hydrodynamic Modeling Draft Report. UC Davis Center for Watershed Sciences, Davis, CA.

Dr. Fleenor's report identifies weaknesses in the TUFLOW hydrodynamic model developed for the Yolo Bypass. The weaknesses include "1) the complete lack of measured data for Putah Creek and Willow Slough; 2) the errors associated with calculating boundary conditions of Knights Landing Ridge Cut, Cache Slough, Feather and Sacramento Rivers, and Sutter Bypass." The Yolo Bypass Westside Tributaries Flow Monitoring Project will help to remedy these identified weaknesses with a model that the California Department of Water Resources and the U.S. Bureau of Reclamation intend to use for the EIR/EIS to implement Reasonable and Prudent Alternatives 1.6 and 1.7 in the 2009 National Marine Fisheries Service (NMFS) Biological Opinion and Conference Opinion on the Long-term Operation of the Central Valley Project and State Valley Project.

2.6 Project Area Covered by Integrated Regional Water Management Plan (IRWM)

Is the project area covered by an Integrated Regional Water Management Plan?

If yes, identify Plan and relevant project.

Answer: I No

Answer:

2.7 Coordination with the California Conservation Corps and Certified Local Corps

Has consultation occurred with the California Conservation Corps and Certified Local Corps? Unless otherwise exempted (i.e., projects that only involve planning or acquisition), applicants that fail to consult with the CCC will not be eligible to receive CDFW Proposition 1 funding. Attach Completed Corps Consultation Review Document in Attachments Tab.

Answer: I Yes

2.8 Application to Other Grant Programs

Has the proposal been submitted to another grant program for this project (i.e., that would fund the same project components applied for in this application)? If yes, identify program name(s).

Answer: I Yes

Answer: Wildlife Conservation Board Stream Flow Enhancement Program.

Section 3: Project Location Information

3.1 Project Location Information

Provide exact project location information, including the following:

1. **Address;**
2. **Latitude/Longitude (NAD83, use multiple coordinates if necessary);**
3. **USGS 7.5-minute quadrangle(s);**
4. **Township;**
5. **Range; and**
6. **Section.**

For projects with multiple sites, provide this information for each site. Also provide a brief description of what the coordinates refer to, such as the downstream end of the project reach.

Answer: Ridge Cut Slough
(38°47'36.6"N, 121°43'31.6"W)
Address: 42010 California 113, Woodland, CA 95776
USGS quadrangle: Knights Landing
Section/Town/Range: S14, T11N, R2E

CCSB Overflow and Outfall
(38°40'58"N, 121°40'19"W) & (38°40'43"N,121°40'18"W)
Address: County Road 22, Woodland, CA 95776
USGS quadrangle: Greys Bend
Section/Town/Range: S30, T10N, R3E

Willow Slough Bypass
(38°35'24.84"N, 121°43'41.05"W)
Address: County Road 29, Davis, CA 95616
USGS quadrangle: Davis
Section/Town/Range: S26, T9N, R2E (d/s of bridge)

Putah Creek
(38°31'01.46"N, 121°45'25.03"W)
Address: 9075 Old Davis Rd, Dixon, CA 95620
USGS quadrangle: Meritt
Section/Town/Range: S33, T8N, R2E

3.2 Project Maps

Include both a location and project specific map. The project specific map should include clearly delineated project boundaries on an appropriately scaled, USGS (or equivalent) 7.5 minute contoured topographic quadrangle map. For watershed level planning proposals, provide a map scale that is appropriate. Aerial photos do not satisfy this requirement. All maps must be labeled with project title, applicant name, USGS quadrangle name, and be positioned so that relevant map information such as stream names, towns, main roads, water bodies, etc. are not obscured.

Upload project map(s) on the Attachments tab.

3.3 Site Description

Provide the physical description of terrain and land cover type(s).

Answer: Flows will be monitored from bridges and existing gauges on creeks, therefore the description of terrain and land cover is not applicable. The following is a brief description of the monitoring sites:

Knights Landing Ridge Cut flow monitoring will augment existing DWR flow monitoring efforts. Flow monitoring by the cbec and UC Davis team will be from Highway 113 bridge.

Cache Creek Settling Basin flow monitoring will augment USGS flow monitoring efforts by providing the USGS funds to continue their existing flow monitoring program for DWR.

Willow Slough Bypass flow monitoring involves establishing a new telemetered stage gauge at County Road 102 within the right of way near the bridge. Flow monitoring will be from the County Road 102 bridge.

Putah Creek flow monitoring will augment existing Solano County Water Agency stage and low flow monitoring efforts. Higher flows will be measured from: a) below the Putah Diversion Dam; and b) from the Old Davis Road

3.4 County(ies)

Check the appropriate box of the county or counties in which the project will occur.

Answer: I

Counties continued.

Answer: I

Counties continued.

Answer: I

Counties continued.

Answer: I

Counties continued.

Answer: I

Counties continued.

Answer: I Yolo

3.5 Driving Directions

Provide driving directions from nearest freeway, city, town, or major landmark.

Answer: From: Superior Court of California, County of Yolo
725 Court Street, Woodland, CA 95695

To: Ridge Cut Slough

Head east on Court St toward 3rd St - 200 ft.
Turn left at the 1st cross street onto 3rd St - 0.4 mile
Turn right at the 3rd cross street onto Beamer St - 2.3 miles
Turn left onto Co Hwy E8/Co Rd 102 - 7.5 miles
Continue onto CA-113 N - 0.1 mile
After crossing the bridge, the destination is immediately on the right.

To: Cache Creek Settling Basin Overflow and Outfall

Head east on Court St toward 3rd St - 0.1 mile
Turn right at the 2nd cross street onto 4th St - 472 ft
Turn left onto Main St - 1.2 miles
Continue straight onto E Main S - 2.0 miles
Continue onto County Rd 22 - 2.0 miles
Turn left - 0.4 mile
After crossing the railroad tracks, the destination is on the right.

To: Willow Slough Bypass

Head east on Court St toward 3rd St - 0.3 mile
Turn right onto East St - 1.1 miles
Turn left onto E Gibson Rd - 2.0 miles
Turn right onto Co Hwy E8/Co Rd 102 - 5.0 miles
Turn left onto Co Rd 29 - 0.1 mile
The destination is on the left.

To: Putah Creek

Head east on Court St toward 3rd St - 0.1 mile
Turn right at the 2nd cross street onto 4th St - 472 ft
Turn left onto Main St - 0.9 mile
Turn right onto the California 113 S ramp to Davis - 0.4 mile
Merge onto CA-113 S - 9.8 miles
Take exit 26B for Interstate 80 E toward Sacramento - 0.8 miles
Keep right, follow signs for U C Davis - 0.3 mile
Turn right onto Old Davis Rd - 0.8 mile
After crossing Putah Creek, the destination will be on the left.

3.6 Waterbody and Watershed

If applicable, provide the name of the waterbody where the project will occur, the tributary (any watercourse that flows into a body of water), and the watershed name (e.g., Sacramento River, etc.).

Waterbody:

Answer: Cache Creek, Willow Slough, Knights Landing Ridge Cut, and Putah Creek

Tributary to:

Answer: Yolo Bypass and Sacramento River

Watershed Name:

Answer: Cache Creek, Putah Creek, Colusa Basin (Knights Landing Ridge Cut)

3.7 Is Project Located in Close Proximity to an Existing Restoration

Project

Is the project Contiguous or Adjacent to an Existing Restoration Project?

If yes, explain (include distance).

Answer: l No

Answer: The monitoring locations are not located near any known habitat restoration projects, although the results of the monitoring may help with the development of proposed restoration projects in the Yolo Bypass. The Putah Creek Restoration Project within the Yolo Bypass Wildlife Area (YBWA) is 8 miles downstream of the Putah monitoring location at Old Davis Road, however. This project intends to realign Putah Creek through the YBWA to improve fish passage and create tidal and floodplain habitats.

3.8 Project Area Ownership

Check the appropriate box(es) identifying ownership of the land where the project will occur (or will require access to enter). Please provide the name of all land owners in the box below.

"Not applicable" may apply to watershed level planning proposals only.

Answer: l Not Applicable

Answer: All monitoring will be conducted from places with public access.

Section 4: Conflict of Interest

4.1 Applicant

Identify members of the applicant's team who:
Wrote the proposal;
Will be performing the work listed in the proposal;
Or who will benefit financially if the proposal is funded.

Answer: Petrea Marchand, Consero Solutions
Chris Campbell, cbec, inc. ecoengineering
Chris Bowles, cbec, inc. ecoengineering
William Fleenor, UC Davis Center for Watershed Sciences
Doug Brown, Douglas Environmental

4.2 Subcontractors

Identify subcontractors who:
Will perform some work listed in the proposal;

Will benefit financially if the proposal is funded.
Include name(s) and organization(s).

Answer: cbec ecoengineering
Consero Solutions
UC Davis Center for Watershed Sciences
Douglas Environmental

4.3 Others

Identify other individuals that helped with proposal development (e.g., reviewing drafts or providing critical suggestions or ideas contained within the proposal). These individuals may include agency staff. List the name(s) and organization(s) of any individuals who were consulted during proposal development.

Answer: Amy Gabriel, Consero Solutions
Manny Bahia, California Department of Water Resources
Karen Enstrom, California Department of Water Resources
David Van Rijn, U.S. Bureau of Reclamation
Janice Pinero, U.S. Bureau of Reclamation
Thomas Pate, Solano County Water Agency
Armando Robledo, U.S. Geological Survey
Daniel Huang, Delta Stewardship Council

Section 5: Qualifications and Experience of Applicant and Professionals

5.1 Project Team

List project team's qualifications and experience that directly apply to the proposed tasks.

Separate curriculum vitae/resumes for key personnel may be uploaded on the Attachment tab (two pages maximum per person).

Answer: Chris Campbell and Chris Bowles with cbec ecoengineering, based in West Sacramento, has been working in Yolo County and the Yolo Bypass for over a decade. cbec specializes in eco engineering for the water resources industry. They focus on floodplain and channel management, fluvial and tidal wetland rehabilitation, and green urban stormwater. cbec specializes in floodplain and channel management and have worked diligently in recent years to develop multi-objective, holistic, and sustainable solutions to floodplain and channel management, including working for multiple clients to move Yolo Bypass proposals forward.

Petrea Marchand worked with Yolo County to complete the Yolo Bypass Drainage and Water Infrastructure Study, as well as managed the two independent reviews of the MIKE-21 and TUFLOW hydrodynamic model in the Yolo Bypass. She has extensive experience working with local stakeholders in the Yolo Bypass and will assist with project management, public outreach, and development of the data sharing proposal.

Researcher William Fleenor holds an appointment in the Civil and Environmental Engineering Department of the University of California, Davis. Dr. Fleenor uses field data collection and

computer models to examine how physical properties of water influence water quality in rivers, lakes, reservoirs and esturaries. From water temperature of reservoir releases to water chemistry in stratified water systems, hydrodynamics play a large part in the resulting water quality. Dr. Fleenor develops and uses models to examine hydrodynamic influences in lakes, reservoirs and estuaries. He is a co-author on the 2007 UC Davis-Public Policy Institute of California report, "Envisioning Futures for the Sacramento-San Joaquin Delta," and the 2008 "Comparing Futures of the Sacramento-San Joaquin Delta."

Mr. Brown owns Douglas Environmental, an environmental consulting, planning, and resource management firm located in Sacramento, CA. He has a diverse background preparing planning and environmental compliance documents throughout California and Nevada, specializing in land use planning and CEQA/NEPA compliance. He has over 25 years of professional experience with specific expertise regarding the complex regulatory environment within the Sacramento-San Joaquin Delta. He was the lead author for the Delta Protection Commission on their Resource Management Plan update, prepared the Primary Zone Study for the DPC, and is currently Yolo County's Delta Liaison. He has worked on projects ranging from wind energy facilities to landfill expansions in the Suisun Marsh, and is currently preparing a Habitat Mitigation Plan for a landfill expansion in the Central Valley.

5.2 Previous Projects

List previous projects (funded by CDFW or others) and give examples of similar work.

Answer: Yolo Bypass Monitoring (MWD) - measured stage and flow at multiple locations throughout the Yolo Bypass during different time periods, as well as coordinated aerial photo surveys during flood conditions, all to develop data sets to be used in the development of various hydrodynamic models of the Yolo Bypass, to include the USBR/DWR TUFLOW model supporting the BiOP alternatives analysis.

Southport Levee Setback Monitoring (DWR) - measured flow and sediment at multiple locations within the Sacramento River between I Street and Freeport Bridge to inform the development of a calibrated 2D sediment transport model that was used to understand baseline conditions and refine levee setback options.

Lower Putah Creek Restoration Project (YBF via DFW ERP grant) - measured stage and flow at multiple locations along Putah Creek within the YBWA during WY 2013 wet season (Dec 2012 through Jul 2013) and low flow drought conditions (Jan 2015)

Prospect Island Tidal Restoration Project (DWR) - measured velocity and flow with a boat mounted ADCP at multiple locations in Miner Slough and existing breaches on Shag Slough and Cache Slough to inform model calibration and breach design.

Lower Feather River Corridor Management Plan (DWR) - measured stage and flow at multiple locations bounding Shanghai Rapids following episodic failure of part of the Modesto Formation forming the rapids, which was important for establishing baseline monitoring data as well as informing the habitat functions for the corridor as Shanghai Rapids behaves like grade control for lower flows.

5.3 Licensed Professional

Is a licensed professional needed? If so, select appropriate option, provide license number, affiliation, and contact information (phone and email address).

Answer: l Yes

Name:

Answer: Christopher Bowles, Ph.D.

License number:

Answer: No. 76898

Affiliation:

Answer: Professional Civil Engineer, CA

Contact Information (Phone/E-mail):

Answer: c.bowles@cbecoeng.com
(916) 231-6052

If no, provide justification for that determination:

Answer:

5.4 Licensed Professionals Qualifications and Experience

List licensed professionals qualifications and experience. Please specify which licensed professionals(s) will be providing direct oversight on the project (if applicable):

Answer: Dr. Bowles is Civil Engineer specializing in hydraulics, hydrology, geomorphology, water resources, water quality and environmental restoration. He has more than twenty years of project management experience on a wide variety of large multi-disciplinary, multi-stakeholder projects such as floodplain restoration, sediment studies, watershed hydrology, water quality, river and wetland restoration in California, Nevada, Washington, Oregon, and Florida, and overseas, including projects in the UK and Central America. Sixteen of these years have been spent in practice in the US. His technical expertise spans the range of hydraulic and hydrologic modeling (HEC software and a wide variety of 1D, 2D and 3D hydraulic models), geomorphology, GIS and field data collection (topographic and bathymetric surveying, water quality monitoring, flow gauging and sediment transport measurements). Prior to specializing in environmental hydrology, Dr. Bowles worked initially as a land surveyor and latterly as a site construction supervisor.

5.5 Capacity

Describe project team's capacity to perform the proposed tasks.

Answer: Two staff and/or students will be stationed per location. The team will monitor a minimum of 4 storm events per year, maximum of 8 events if budget permits. There will be 8 people on the ground at any one time, at multiple sites. cbec has sufficient capacity to perform these tasks.

Section 6: Community Support and Collaboration

6.1 Evidence of Public and Institutional Support

Briefly describe if the project has public and institutional support, at the local, regional, or larger scale. Briefly describe evidence of that support, for example have stakeholders provided funds, in-kind contributions (i.e., administrative/technical services, labor, materials, equipment, etc.), partnerships, etc.:

Letters of support may also be uploaded on the Attachment tab.

Answer: The Yolo Bypass Westside Tributaries Flow Monitoring Project will collect flow data that have been independently identified as important to collect in three separate studies, the 2001 Yolo Bypass Management Strategy, the 2014 Yolo Bypass Drainage and Infrastructure Study and the 2015 Review of the Yolo Bypass Salmonid Habitat Restoration and Fish Passage Hydrodynamic Modeling Draft Report.

Yolo County has committed $15,000 of inkind support for this project. The UC Davis Center for Watershed Sciences, the California Department of Water Resources, the U.S. Bureau of Reclamation, and the Yolo Basin Foundation have all submitted letters of support (see attached).

6.2 Stakeholders

Briefly describe efforts to include stakeholders in project planning, design, outreach/education, implementation, monitoring, maintenance, etc.

Answer: Yolo County completed an extensive public outreach process for the Yolo Bypass Drainage and Water Infrastructure Study, which included meeting with the majority of landowners, farmers and wetlands managers in the Yolo Bypass and seeking input on the selection and priority order of the 12 projects listed in the study, including the Westside Tributaries Flow Monitoring Project. In addition to Yolo County, the Yolo Basin Foundation, the U.S. Bureau of Reclamation, and the California Department of Water Resources support this project (see attached support letters). The project team also consulted with the Delta Stewardship Council to help determine consistency with the Delta Science Plan.

The project team will work with the U.S. Geological Survey, Solano County Water Agency, the U.S. Bureau of Reclamation, the Delta Stewardship Council, and the California Department of Water Resources to complete a monitoring plan and coordinate data sharing after data is collected.

6.3 Disadvantaged Community

Will the project occur in a Disadvantaged Community as defined in CWC Section 79505.5(a)?

Answer: l No

Will the project benefit a Disadvantaged Community?

If yes, describe benefits(s).

Answer: l No

Answer: Not applicable

Section 7: Project Statement

7.1 Introduction

Briefly describe the history, background and overview of the project. This should include the following information:

Describe history of the project, including all phases completed to date (including funding sources), the current phase for which funding is being requested, and plans for future project phases.

Include how the project will address the priorities of this Solicitation as well as other planning documents.

Answer: Yolo County and the University of California, Davis Center for Watershed Sciences, hereafter known as "Partners", propose to work with cbec ecoengineering to collect important data on four westside tributaries to the Yolo Bypass: Putah Creek, Cache Creek, Knights Landing Ridge Cut Canal, and Willow Slough Bypass. This data are important to inform development of state and federal proposals to increase the frequency and duration of inundation in the Yolo Bypass for fish habitat, as well as to accurately assess impacts on existing uses in the Yolo Bypass, such as agriculture, wetlands, and other terrestrial species habitat important to the implementation of the Yolo Habitat Conservation Plan/Natural Community Conservation Plan (Yolo HCP/NCCP). While some data has been collected in the past on the westside tributaries to the Yolo Bypass, recent studies have recommended addressing existing data gaps related to westside tributary flow. As part of this grant, Yolo County also proposes to work with local, state, and federal agencies to develop a system to reliably and securely share data among agencies involved in identifying solutions to Yolo Bypass issues.

The Yolo Bypass Westside Tributaries Flow Monitoring Project is consistent with the solicitation priority: Scientific Studies and Assessments to Support Implementation of the Delta Science Plan. This data collection and flow monitoring project supports the implementation of the Delta Science Plan through Adaptive Management and Building Infrastructure, actions 3 and 4 in the Plan. The westside tributary data collection is also consistent with the California Water Action Plan, specifically the following action: "Achieve the Co-Equal Goals for the Delta".

7.2 Project Description - Purpose and Implementation

Include a detailed project description that can serve as a statement of work for a grant agreement. Include the rationale for project need, a description of the objectives and how the proposed approach addresses those objectives. Describe how the project is technically feasible. Describe the means by which each element of the project will be implemented (e.g., methods/techniques used, materials and equipment, etc.). If permits are to be obtained for a proposed project, a complete description of the permits needed and the application status must be included. If applicable, provide the basis for the use of new or innovative technology or practices.

Upload Project Description on Attachments tab. The Project Description can be a maximum of ten pages.

7.3 Project Outcomes - Diversity and Significance of the Benefits

Describe the project's multiple benefits and the objectives related to those multiple benefits. Where feasible, the objectives should be measureable and quantifiable. Provide analysis and documentation to demonstrate the likelihood that the multiple benefits will be realized and their significance (e.g., climate change response actions, drought preparedness, integrated flood management, protection or improvement of water quality, use and reuse water more efficiently, expand environmental stewardship, increase habitat for threatened and endangered species, reduce species survival stressors).

Answer: The Yolo Bypass Westside Tributaries Flow Monitoring Project will support the development of multiple benefit projects in the Yolo Bypass, such as integrated proposals to achieve flood management and ecosystem restoration goals. Since the westside tributary data is a key input to hydrodynamic models used to inform decisions related to Yolo Bypass proposals, improving the data will improve the information available to decision makers regarding potential project alternatives. The Yolo Bypass Westside Tributaries Flow Monitoring Project's outcomes can be measured by three metrics: 1) timely completion of annual monitoring efforts; 2) the development of a datasharing proposal within one year; and 3) use of the data by state, federal, and local agencies or other stakeholders working to evaluate alternatives to achieve multiple objectives in the Yolo Bypass.

7.4 Project Organization and Management

Describe how the project will be organized in terms of staffing levels, supervision, administration of tasks, project oversight, auditing, planning sessions, etc. Identify all applicant staff to be funded and their specific roles in the project. Also describe how the project will be fiscally managed, outline subcontracted work, and all personnel services included in the budget.

Answer: Yolo County will serve as the project manager for the Yolo Bypass Westside Tributaries Flow Monitoring Project, and will also administer the grant. Yolo County will subcontract cbec ecoengineering and the UC Davis Center for Watershed Science for data collection services and evaluation of the 2001 Yolo Bypass Management Strategy approach. Yolo County will contract with Consero Solutions and Douglas Environmental for project management assistance and to develop the data sharing proposal in coordination with UC Davis Center for Watershed Sciences and state and federal agencies. The following staff will be funded:

Jennifer Lee, Yolo County, contract administration and financial management

Cindy Tuttle, Yolo County, project management

Petrea Marchand, Consero Solutions, project management and data sharing proposal

Doug Brown, Douglas Environmental, project management and data sharing proposal

William Fleenor, UC Davis Center for Watershed Sciences, data collection and analysis data sharing proposal

Chris Campbell, cbec, data collection and analysis

Chris Bowles, cbec, data collection and analysis

7.5 Project Deliverables

Describe all project deliverables. Periodic progress reports and a final report must be included as deliverables. Project deliverables should correlate to the tasks described above and be identified in the Schedule and List of Deliverables in Section 8.

Final reporting for Scientific Studies, Monitoring and Assessment projects must include a synthesis of all findings and provide conclusions on hypotheses tested, as well as recommendations for resource management and further investigations related to the research subject area. The deliverables will include a draft manuscript in a format suitable for publication in a scientific peer-reviewed journal.

Answer: The Yolo Bypass Westside Tributaries Flow Monitoring Project will result in the following deliverables:

Subcontractor Selection and Scope of Work
Budget Update
Progress Reports
Annual Report
Draft Final Report
Final Report
Close-Out Summary Report
Knights Landing Ridge Cut Monitoring Data
Putah Creek Monitoring Data
Willow Slough Monitoring Data
Cache Creek Settling Basin Monitoring Data
Draft Data Sharing Proposal
Final Data Sharing Proposal
Evaluation of 2001 Yolo Bypass Management Strategy approach for estimating Yolo Bypass inflow from Ridge Cut, included in draft and final report
Evaluation of 2001 Yolo Bypass Management Strategy approach for estimating Yolo Bypass inflow from Cache Creek, included in draft and final report
Evaluation of 2001 Yolo Bypass Management Strategy approach for estimating Yolo Bypass inflow from Putah Creek, included in draft and final report
Evaluation of 2001 Yolo Bypass Management Strategy approach for estimating Yolo Bypass inflow from Willow Slough Bypass, included in draft and final report
Establishment of Willow Slough Bypass gauge

7.6 Scientific Merit - Scientific Basis and Enhance Scientific Understanding

Describe background and scientific basis based on the best available science. Identify the proposed methods, approaches, and technology for the project. Explain how project is timely and important, and is justified relative to existing knowledge.

Identify key scientific uncertainties and how the project will fill important information gaps. Describe if

the project will generate novel information, methodologies, or approaches.

Planning, Implementation, and Scientific Studies, Monitoring, and Assessment projects must include a conceptual model that clearly explains the underlying basis of the knowledge that will support the proposed work. Conceptual models can be presented either graphically or as narrative. The conceptual model should reference the pertinent scientific literature. Describe how the conceptual model will be integrated into the project design. The conceptual model must be revisited in the project's final report.

Upload Scientific Merit on the Attachments tab.

7.7 Land Tenure/Site Control

Applicants for projects conducting on-the-ground work must submit documentation showing that they have adequate tenure to, and site control of, the properties to be improved or restored for a minimum of 25 years. Proof of adequate land tenure includes, but is not necessarily limited to:

- **Fee title ownership.**
- **An easement or license agreement.**
- **Other agreement between the applicant and the fee title owner, or the owner of an easement on the property, sufficient to give the applicant adequate site control for the purposes of the project and long-term management.**
- **For projects involving multiple landowners, all landowners or an appointed designee must provide written permission to complete the project.**

When an applicant does not have tenure at the time of proposal submission, but intends to establish tenure via an agreement that will be signed upon grant authorization, the applicant must upload a template copy of the proposed agreement, memorandum of understanding (MOU), or permission form on the Attachments tab.

7.8 Durability of Investment

Implementation and Acquisition projects should generally be maintained for a minimum of 25 years, unless CDFW permits otherwise. Using the Attachments tab, upload a copy of the proposed long-term management and maintenance plan which includes the project's adaptive management strategies.

7.9 Climate Change Considerations

Describe how climate change has been taken into account in the proposal. Applicants should describe anticipated climatic changes and resulting impacts to the project area, and how the proposed actions will help the system to adapt or respond to these changes. Applicants should also address how future climate conditions might affect the benefits provided by the project in the long-term.

Answer: Better information about the frequency and duration of inundation in the Yolo Bypass will lead to better decisions about future projects in the bypass that attempt to improve fish habitat and assess the impacts of existing uses in the bypass. By understanding flood patterns from these tributaries, Yolo County and other project stakeholders can more accurately anticipate the effect climate changes will have in the Yolo Bypass and therefore pursue more appropriate projects that address these issues.

7.10 Performance Measures

Identify specific performance measures designed to assess progress towards achieving the objectives using Attachment 1 - Performance Measures Table on the Attachments tab. The performance measures should be linked to the objectives defined above in Section 7.2 and 7.3. Differentiate between those results that are expected to occur within the term of the grant versus those that will require additional time.

7.11 Monitoring and Assessment

Describe the approach for monitoring, assessing, and reporting the compliance and effectiveness of the project, which is consistent with the project's objectives. The monitoring design should directly link to the performance measures identified in Attachment 1 - Performance Measures Table.

The monitoring plan shall include the following elements: what will be monitored, monitoring objectives, clearly stated assessment questions, the specific metrics that will be measured and the methods / protocol(s) that will be used, linkages to relevant conceptual model(s), the timeframe and frequency of monitoring, including pre- and post-project monitoring, the spatial scope of the monitoring effort, quality assurance/quality control procedures, compliance with all permit requirements for monitoring activities (e.g., Scientific Collecting Permits), description of relationships to existing monitoring efforts, and how the resulting data will be analyzed, interpreted and reported.

Standardized approaches should be incorporated into the monitoring design, where applicable. Where feasible, describe approaches to leverage existing monitoring efforts or produce data that can be readily integrated with such efforts. Applicants pursuing Implementation or Scientific Studies, Monitoring, & Assessment projects should identify opportunities to extend the monitoring beyond the grant term (e.g., by using standardized, readily replicated monitoring and evaluation processes; leveraging on-going monitoring programs; and building partnerships capable of attracting funding from multiple sources over time).

For planning grants, describe baseline monitoring that has been, or will be, conducted in order to support project evaluation during and following implementation. If not feasible based on characteristics of the proposed project, provide justification.

Upload Monitoring & Assessment Plan on the Attachments tab.

7.12 Data Management and Access

Describe how data and other information generated by the project will be handled, stored, and shared (i.e., disseminated to the public, participants, stakeholders, and the State). Where appropriate, describe data management activities that support incorporation of project data and information into statewide data systems. If applicable, discuss integration of data into the State Water Resources Control Board's California Environmental Data Exchange Network (CEDEN) or Groundwater Ambient Monitoring Assessment (GAMA) Program.

Answer: Yolo County, cbec and UC Davis will initially store the data locally. Yolo County will provide the data to state and federal agencies, as well as other local agencies, in the designated format as well as the designated data network.

Yolo County will work with UC Davis, cbec, and state and federal agencies to develop a data sharing proposal for distribution of the data collected as a result of this grant, as well as other data relevant to proposed projects in the Yolo Bypass. Yolo County will work with UC Davis to seek stakeholder input on this proposal and will work with state and federal agencies to identify funding to implement the final proposal.

7.13 Literature Cited

Include a list of literature referenced in the proposal. Upload Literature Cited on the Attachments tab.

Section 8: Schedule and List of Deliverables

Provide estimated completion dates for all Tasks and Deliverables identified in Section 7.2 (Project Description - Purpose and Implementation) and Section 7.5 (Project Deliverables) using Attachment 2 - Schedule and List of Deliverables . Upload completed document to Attachments Tab. Grants will be executed approximately six months from award and typical grant terms will be three years. Schedules should include project management and identify quarterly submission of progress reports and invoices. If permits are to be obtained for a proposed project, a timeline for obtaining them must be included in the Schedule and List of Deliverables. Completion dates for tasks must allow for final reporting and cannot fall on last day of grant term.

Section 9: Plans, Permits, Landowner Access, and Environmental Compliance

9.1 Delta Stewardship Council - Delta Plan Consistency

Does the project occur, in whole or in part, within the boundaries of the Delta or Suisun Marsh, meet the other necessary conditions in order to be deemed a covered action (CWC §85057.5), therefore requiring consistency with the Delta Plan?

If yes, describe approach to ensuring consistency with the applicable Delta Plan policies.

Answer: I No

Answer: The project is not within the boundaries of the Delta, but is important to the implementation of the Delta Plan because the Yolo Bypass is specifically mentioned as a Recommended Area for Prioritization and Implementation of Habitat Restoration Projects. The Plan recommends enhancing "the ability of the Yolo Bypass to flood more frequently to provide more opportunities for migrating fish, especially Chinook salmon, to use this system as a migration corridor that is rich in cover and food" (Delta Plan, pg. 152). The Yolo Bypass Westside Tributaries Flow Monitoring project is consistent with the Delta Plan because the project will collect information identified in peer reviewed studies as important to comprehensively evaluate fish habitat proposals in the Yolo Bypass.

9.2 Water Conservation and Efficiency Program

Pursuant to Governor Brown's April 2014 Executive Order, recipients of funding for future projects that

impact water resources, including groundwater resources must have appropriate water conservation and efficiency programs in place in response to persistent drought conditions (refer to Section 3.16 of the Solicitation). Applicants must verify that their organization has a water conservation and efficiency program in place; however, it does not need to be submitted with the proposal.

Does the applicant's organization have a Water Conservation and Efficiency Program?

Answer: I Yes

9.3 Landowners Granting Access for Project

Provide Landowner information to show permission to access land in which project will occur on, or access will be needed.

Please include the following information: Name, Address, and Phone Number.

Answer: All monitoring will take place from locations with public access.

9.4 Water Rights for Project

If water will be diverted in any way, provide water rights and permit number associated with that right.

If Post-1914 permit, provide Water Rights permit number and upload a copy of the permit on the Attachments tab.

Answer: I Not Applicable

Answer:

9.5 Environmental Compliance

Identify all federal, state, and local permits for the project and their status using Attachment 3 - Environmental Compliance Checklist.

Upload completed document using Attachments tab.

CEQA Information

Projects that receive funding shall comply with all applicable laws and regulations, including the California Environmental Quality Act (CEQA).

9.6 CEQA Compliance

If the project meets the definition of a "project" in Public Resources Code Section 21065, identify the

Lead Agency, contact person, and the justification for why the lead agency was selected.

Lead Agency:

Answer: N/A

Contact Person:

Answer: N/A

Address:

Answer: N/A

Phone Number:

Answer: N/A

Justification:

Answer: N/A

9.7 CEQA Documentation

Select the type of CEQA documentation to be prepared.

Answer: I Not Applicable

9.8 CEQA Status

Describe the status of the CEQA documents, expected date of completion, and Initial Study if applicable.

Answer: N/A

9.9 CEQA Document Name

Has the CEQA document been completed?

If yes, provide the name of the document and the State Clearinghouse number. Upload a copy of the documentation on the Attachments tab.

Answer: I No

Document Name:

Answer: N/A

State Clearinghouse Number:

Answer: N/A

Section 10: Project Budget

10.1 Line Item Budget

Upload Attachment 4 - Applicant Budget and, if applicable, Attachment 5 - Subcontract Budget for each proposed subcontractor (do not upload additional sheets for subcontractor's subcontractors) on the Attachments tab.

10.2 Budget Justification

Provide a budget break down by task. The tasks should be consistent with Section 7.2 (Project Description, Purpose and Implementation). Describe which line items will be included under each task, and how the line items will be utilized. Describe what is included in each line item that is not self-explanatory [e.g., materials, or equipment (as defined in the CDFW General Grant Provisions)].

Answer: The line items on the Applicant Budget for equipment and operating expenses are included within Tasks 3-5. Project management is subcontracted to Douglas Environmental and Consero Solutions, as is a portion of development of the datasharing proposal. cbec ecoengineering will conduct the remainder of the tasks.

Task 1: Project Management and Administration ($20,243)

Task 2: Reports (part of monitoring costs, Tasks 3-5)

Task 3: Knights Landing Ridge Cut (KLRC) Monitoring ($60,000)

Task 4: Putah Creek Monitoring ($120,000)

Task 5: Willow Slough Monitoring ($60,000)

Task 6: Cache Creek Settling Basin monitoring ($25,000)

Task 7: Data sharing proposal ($20,000)

Task 8: Evaluation of 2001 Yolo Bypass Management Strategy approach: KLRC ($5,000)

Task 9: Evaluation of 2001 Yolo Bypass Management Strategy approach: Cache Creek ($10,000)

Task 10: Evaluation of 2011 Yolo Bypass Management Strategy approach: Putah Creek ($5,000)

Task 11: Evaluation of 2011 Yolo Bypass Management Strategy approach: Willow Slough Bypass ($5,000)

Task 12: Establishment of Willow Slough Bypass gage ($15,000)

10.3 Construction Component Costs

For construction projects only, provide a breakdown of construction costs by component of the project. For example, identify construction costs at each project site, or if there are distinctly separate components of the project provide costs of each separate component.

Answer: Not applicable because it is a scientific monitoring and assessment project.

10.4 Indirect Charges Justification

Explain the methodology used to determine indirect rate and provide detailed calculations in support of the indirect charge rate.

Answer: Yolo County will not be charging indirect costs.

Cost Share

To be eligible, cost share must be applied directly to the project and spent during the grant term. Where applicable, cost share agreements or funding assurances will be required prior to grant execution.

10.5 Fund Sources and Cost Share

Upload Attachment 6 - Fund Sources and Cost Share on the Attachments tab. To be considered eligible, cost share must be used to support the proposed project, must be spent during the proposed project term, and must be secured prior to grant award.

10.6 Cost Share Funding

Describe how the cost share funding identified in Attachment 6 will be used in the project (i.e., which project components will the cost share support?):

Answer: The cost share funding will be used for project management and contract administration, as well as editing of draft and final reports.

10.7 Cost Share Funding- Secured

Describe the degree to which the cost share funding identified in Attachment 6 is secured (i.e., proposal submitted, grant executed, grant awarded, etc.). In instances where cost share has not been secured, provide anticipated date by which funding will be secured:

Answer: The cost share funding identified in the proposal is secured because it is provided by Yolo County from the General Fund.

Certification And Submission Statement
Please read before signing and submitting application.

I certify under penalty of perjury:

- The information entered on behalf of Applicant Organization is true and complete to the best of my knowledge;
- I am an employee of or a consultant for the Applicant Organization authorized to submit the application on behalf of the Applicant Organization; and
- I understand that any false, incomplete or incorrect statements may result in the disqualification of this application.

By signing this application, I waive any and all rights to privacy and confidentiality of the proposal on behalf of the applicant, to the extent provided in this RFP.

Submission By: conserosolutions **Submitter Initials:** PRM **Submission Date:** 9/15/2015 7:18:31 PM

YOLO BYPASS WESTSIDE TRIBUTARIES FLOW MONITORING PROJECT DESCRIPTION

SEPTEMBER 16, 2015

INTRODUCTION

Yolo County and the University of California, Davis Center for Watershed Sciences, hereafter known as "Partners", propose to work with cbec ecoengineering to collect important data on four westside tributaries to the Yolo Bypass: Putah Creek, Cache Creek, Knights Landing Ridge Cut Canal, and Willow Slough Bypass. The partners will work with the U.S. Geological Survey (USGS), U.S. Bureau of Reclamation (USBR), California Department of Water Resources (DWR), Solano County Water Agency (SCWA), and other state, federal, and local agencies in the Yolo Bypass to coordinate data collection and ensure applicability with ongoing Yolo Bypass modeling efforts, including development of the TUFLOW model for the Yolo Bypass. This data are important to inform development of state and federal proposals to increase the frequency and duration of inundation in the Yolo Bypass for fish habitat, as well as to accurately assess impacts on existing uses in the Yolo Bypass, such as agriculture, wetlands, and other terrestrial species habitat important to the implementation of the Yolo Habitat Conservation Plan/Natural Community Conservation Plan (Yolo HCP/NCCP). While some data has been collected in the past on the westside tributaries to the Yolo Bypass, recent studies have recommended addressing existing data gaps related to westside tributary flow. As part of this grant, Yolo County also proposes to work with local, state, and federal agencies to develop a system to reliably and securely share data among agencies involved in identifying solutions to Yolo Bypass issues.

BACKGROUND & RATIONALE

Westside tributary inflows play an important role in Yolo Bypass inundation, so understanding the timing and magnitude of inflows is needed to determine their relative influence compared to larger inflows from the Fremont and Sacramento Weirs. Better data are needed to synthesize past and future hydrology datasets for the purposes of modeling existing conditions and future management scenarios. This information is needed, for example, as an input to the TUFLOW hydrodynamic model for the Yolo Bypass, currently used by the California Department of Water Resources and the U.S. Bureau of Reclamation to estimate inundation footprints for proposed projects to increase the frequency and duration of flooding in the Yolo Bypass for juvenile salmon and other fish species. The magnitude, frequency, duration, timing, depth, area, and rate of change of floodplain inundation are all critical parameters to understand thoroughly. The County proposes to fill in the existing data gaps found in the westside tributary monitoring data for Knights Landing Ridge Cut, Cache Creek Settling Basin, Willow Slough Bypass and the Putah Creek. Yolo County first identified the need for this additional data in the 2014 *Yolo Bypass Drainage and Water Infrastructure Study*, a study conducted in coordination with local stakeholders.

CONSISTENCY WITH SOLICITATION PRIORITIES

The Yolo Bypass Westside Tributaries Flow Monitoring Project is consistent with the solicitation priority: Scientific Studies and Assessments to Support Implementation of the Delta Science Plan. This data collection and flow monitoring project supports the implementation of the Delta Science Plan as follows:

Action #3: Adaptive Management (Pg.22)

3.2 A *Watershed-level Water Management Framework* will provide principles for adaptive management to enhance water management actions at the watershed level (e.g., reservoir operations) to better achieve integrated management objectives. The Delta Science Program will work with ongoing water management efforts such as the Long-term Operations Biological Opinions RPA Implementation and the Collaborative Science and Adaptive Management Program and its Collaborative Adaptive Management Team (CSAMP/CAMT) to develop the Watershed-level Water Management Framework and to identify technical investigations to undertake.

The Yolo Bypass Westside Tributaries Flow Monitoring Project will assist with technical investigations necessary for implementation of the Reasonable and Prudent Alternatives (RPAs) for the Long-term Operations Biological Opinions references in 3.2, particularly RPA 1.6 and 1.7 associated with the Yolo Bypass. The project will address data gaps identified in multiple studies as important to improve the reliability and accuracy of the TUFLOW hydrodynamic model for the Yolo Byapss. Since the TUFLOW model provides input data to the Yolo Bypass agricultural impacts model and the fish benefits model, the collection of this data will have significant benefits to development of proposals to meet RPA integrated management objectives.

Action #4: Building Infrastructure (Pg.28)

The Delta Reform Act and the Delta Plan require the use of “best available science” in decision-making that affects the achievement of the coequal goals. The dynamic nature of the scientific enterprise should be recognized and mechanisms for including new knowledge or the latest data should be built into the process where appropriate. The Delta Science Plan pursues science that enables discovery and continuously improves and adds to the body of scientific knowledge. In a complex system like the Delta, hypotheses often take the form of conceptual models which can then be applied and tested through analyses and computer models. Models need data that come from research and monitoring results.

4.1 Funding research in the Delta is done by universities, federal, State, and local agencies, and private and nonprofit organizations. It ranges in scale from foundational (e.g., analyzing the diet of California clapper rails) to broad (e.g., developing linked models that provide information on discharge, flow paths, and other ecosystem attributes). It is important, however, that research in the Delta address short-term management needs (e.g., what kinds of flow patterns are needed?), fill gaps in knowledge, and develop long-term comprehensive understanding of the Delta ecosystem (e.g., are the cumulative interactions between shallow tidal habitat, invasive species, climate change, and contaminants on the productivity of tidal marshes?). To provide a more comprehensive understanding, research should address immediate needs and the development of understanding of future conditions.

The Yolo Bypass Westside Tributaries Flow Monitoring Project will address an immediate need to fill a gap in knowledge related to flows of tributaries into the Yolo Bypass. As described in this proposal, there are existing gaps in flow data for the four westside tributaries to the Yolo Bypass. This information is necessary to improve the inputs to the TUFLOW hydrodynamic model for the Yolo Bypass, which is a short-term management need because the U.S. Bureau of Reclamation and the California Department of Water Resources are currently preparing and EIR/EIS to evaluate Yolo Bypass alternatives based on the TUFLOW model and other models

that use the TUFLOW model results as inputs.

CONSISTENCY WITH THE CALIFORNIA WATER ACTION PLAN

The westside tributary data collection is also consistent with the California Water Action Plan, which “directs all of its relevant agencies to fully participate in the Implementation Committee of the Delta Plan established by the Delta Stewardship Council and to work with the Delta Science Program, the Interagency Ecological Program, and others to implement the Delta Science Plan to enhance water and natural resource policy and management decisions.” (CWAP, Pg. 8).

OBJECTIVES & FEASIBILITY

The project will fill in data gaps in Yolo Bypass westside tributary monitoring data, as informed by recommendations identified in the 2014 *Yolo Bypass Drainage and Water Infrastructure Study* and more recent information, as well as develop a proposal to reliably and securely share available data among state, federal, and local agencies working to develop solutions to Yolo Bypass issues. The following is needed to advance the westside tributary monitoring efforts to 1) improve our understanding of historic hydrologic datasets to strengthen their reliability, and 2) establish future hydrologic datasets that are reliable and robust:

Knights Landing Ridge Cut: Since December 2006, the Department of Water Resources (DWR) has monitored the Knights Landing Ridge Cut. The highest flows measured on the Ridge Cut since 2006 are 1,700 cfs, but the capacity of the Ridge Cut is ten times greater than 1,700 cfs. Assuming DWR continues to maintain this gauging station, the Partners will coordinate with DWR to perform high flow measurements from Highway 113 bridge using a tethered Acoustic Doppler Current Profiler (ADCP) to measure flows and extend the rating curve at this location to accurately predict inflows into the Yolo Bypass. Monitoring will cost approximately $20,000 annually or $60,000 for three years. In addition, the Partners will revisit the 2001 *Yolo Bypass Management Strategy* approach for estimating inflow into the Yolo Bypass from the Colusa Basin via the Ridge Cut to improve the historic hydrologic dataset pre December 2006. The cost to redefine this tool is approximately $5,000.

Total request for this monitoring location is $65,000.

Cache Creek: The Cache Creek Settling Basin, both inflow and outflow during the storm season, is monitored by the USGS under an annual contract renewal with DWR as part of DWR's continuing efforts to understand mercury and sediment trap efficiency within the Settling Basin. The Partners will coordinate with the USGS and DWR to perform high flow measurements at the overflow weir using a tethered ADCP connected to a tag line to verify the original USACE design rating curve currently in use. In addition, the Partners will revisit the Yolo Bypass Management Strategy approach for estimating inflow into the Yolo Bypass from the Settling Basin by developing a tool to account for storage and attenuation as flows are routed through the Settling Basin and into the Yolo Bypass. The cost of this tool is approximately $10,000. The cost to perform high flow measurements at the overflow weir and verify the original USACE design rating curve currently in use is approximately $25,000.

Total request for this monitoring location is $35,000.

Willow Slough Bypass: The USGS monitors the Willow Slough Bypass at County Road 102 and County Road 29 as a "partial-record station" with field measurements of stage and discharge for flows less than 500 cfs. Per initial coordination with the USGS and following

USGS guidelines, the Partners will install a telemetered monitoring station to record stage and manually collect discharge using a tethered ADCP. The Partners will also perform high flow measurements using a tethered ADCP from the bridge to create a rating curve at this location to create a continuous record of flow. Station setup will cost approximately $15,000 in materials and labor and monitoring will cost approximately $20,000 annually or $60,000 for three years. Once data has been collected for several years, the assumptions from the Yolo Bypass Management Strategy approach can be validated and potentially modified at a cost of approximately $5,000.

Total request for this monitoring location is $80,000.

Putah Creek: SCWA has been monitoring stage and low flows (i.e., less than 100 cfs) at multiple locations along Putah Creek from the Putah Diversion Dam to Los Rios Check Dam. SCWA's monitoring stations typically include telemetered stage with no immediate plans to discontinue monitoring as these stations are needed to inform real time water management. It is recommended that two of these stations be rated for higher flows (e.g., just downstream of Putah Diversion Dam and near Interstate 80) for historical verification of the Yolo Bypass Management Strategy approach and for use in developing a hydrologic dataset to inform future modeling efforts. The Partners will coordinate with SCWA to perform high flow measurements a) just below Putah Diversion Dam using a tethered ADCP connected to a tag line and b) near Interstate 80 at Old Davis Road bridge using a tethered ADCP. Monitoring will cost approximately $20,000 annually per location or a total of $120,000 for three years of monitoring. Validation of the *Yolo Bypass Management Strategy* approach can be performed at a cost of approximately $5,000.

Total request for this monitoring location is $125,000.

Data Sharing: The Partners will work with the University of California, Davis and state, federal and local agencies to develop a proposal to share Yolo Bypass data in a secure and reliable manner. The Partners will incorporate edits from interested stakeholders and use the proposal as the basis for future grant applications to facilitate data sharing.

Total request for this proposal is $20,000.

Project Management:

Total request for project management is $21, 243.

METHODS & TECHNIQUES

Stage Measurements

Willow Slough Bypass at County Road 102 is the only location as part of this monitoring plan were continuous stage measurements will be acquired via permanent installation of a new gaging station. The gaging station will be designed, installed, and maintained per USGS guidelines and data quality protocols (Sauer & Turnipseed, 2010) to meet an accuracy standard of ±0.01 feet or 0.2 percent of the effective stage. The gage station will include an instrument shelter, submersible pressure transducer, and electronic data collection platform. Telemetry at the gaging station will provide near real-time stage data as well as other instrument information.

Flow Measurements

Velocity and flow measurements will be made using a tethered Acoustic Doppler Current Profiler (ADCP) following USGS guidelines and data quality protocols (Mueller & Wagner, 2009). A Teledyne RDI RiverRay ADCP secured in an Oceanscience Riverboat (or similar setup) will be used to measure 3D velocities in automatically sized bins for depths greater than 0.3 meters. Where possible, the ADCP unit will be integrated with a Trimble Global Navigation Satellite System (GNSS) Real-Time Kinematic (RTK) Global Positioning System (GPS) receiver (or compatible receiver) to provide survey grade horizontal and vertical positioning to minimize errors with the ADCP bottom tracking routine during moving bed conditions. If site conditions are not conducive to RTK-GPS integration (e.g., heavy riparian cover obscuring satellite line of site), the USGS Loop Correction procedure will be used to compensate for moving bed conditions at the measurement location to provide discharge corrections. The Teledyne RDI WinRiver II software running on a Panasonic CF-31 Toughbook (or similar setup) will be used for ADCP setup, data collection, discharge calculations, data post processing, and data quality review in the field and in the office. Prior to the start of each day, the instrument will be configured and pre-measurement field procedures were performed (i.e., compass calibration, water temperature and salinity checks).

DATA QUALITY CONTROL

During data collection, field notes and observations will be recorded. At the gaging station, staff plate readings will be taken along with a measurement of the water surface elevation to calibrate the water level readings to an accepted vertical datum (i.e., NAVD 88) based on established NGS vertical control. Staff plates will be read during subsequent downloads to verify the accuracy of the gage calibration as well as to check for equipment errors for the duration of deployment.

During flow measurements, transect information will be recorded on standardized datasheets, data quality will be reviewed in real-time, and critical data quality problems will be noted. During post processing in the office, the field notes will be compared to velocity and flow data for verification. This verification includes review of configuration and setup files, comparisons between field notes and electronic files, and visual inspection of the velocity profiles for missing/invalid ensembles, velocity ambiguities, beam intensity inconsistencies, and ADCP speed irregularities. Also, because a Global Positioning System Fix Data (GGA) output string was being used real-time by WinRiver II, the quality of the GPS signal was reviewed and the positioning data was corrected, as necessary, following ASCII export. If RTK-GPS is used for real-time positions, the quality of the GPS signal will also reviewed.

PROJECT OUTCOMES

The Yolo Bypass Westside Tributaries Flow Monitoring Project will support the development of multiple benefit projects in the Yolo Bypass, such as integrated proposals to achieve flood management and ecosystem restoration goals. Since the westside tributary data is a key input to hydrodynamic models used to inform decisions related to Yolo Bypass proposals, improving the data will improve the information available to decision makers regarding potential project alternatives. The Yolo Bypass Westside Tributaries Flow Monitoring Project's outcomes can be measured by three metrics: 1) timely completion of annual monitoring efforts; 2) the development of a datasharing proposal within one year; and 3) use of the data by state, federal, and local agencies or other stakeholders working to evaluate alternatives to achieve multiple

objectives in the Yolo Bypass.

PROJECT ORGANIZATION & MANAGEMENT

Yolo County will serve as the project manager for the Yolo Bypass Westside Tributaries Flow Monitoring Project, and will also administer the grant. Yolo County will subcontract cbec ecoengineering and the UC Davis Center for Watershed Science for data collection services and evaluation of the *2001 Yolo Bypass Management Strategy* approach. Yolo County will contract with Consero Solutions and Douglas Environmental for project management assistance and to develop the data sharing proposal in coordination with UC Davis Center for Watershed Sciences and state and federal agencies. The following staff will be funded:

- Jennifer Lee, Yolo County – contract administration and financial management
- Cindy Tuttle, Yolo County – project management
- Petrea Marchand, Consero Solutions – project management and data sharing proposal
- Doug Brown, Douglas Environmental – project management and data sharing proposal
- William Fleenor, UC Davis Center for Watershed Sciences – data collection and analysis data sharing proposal
- Chris Campbell, cbec – data collection and analysis
- Chris Bowles, cbec – data collection and analysis

PROJECT DELIVERABLES

The Yolo Bypass Westside Tributaries Flow Monitoring Project will result in the following deliverables:

- Project Management and Administration
    - Invoices
    - Subcontractor Selection and Scope of Work
    - Budget Update
- Reports
    - Progress Reports
    - Annual Report
    - Draft Final Report
    - Final Report
    - Close-Out Summary Report
- Knights Landing Ridge Cut Monitoring Data
- Putah Creek Monitoring Data
- Willow Slough Monitoring Data
- Cache Creek Settling Basin Monitoring Data
- Data Sharing Proposal
    - Draft Proposal
    - Final Proposal
- Evaluation of 2001 *Yolo Bypass Management Strategy* approach for estimating Yolo Bypass inflow from Ridge Cut
    - Included in draft and final report
- Evaluation of 2001 *Yolo Bypass Management Strategy* approach for estimating Yolo Bypass inflow from Cache Creek
    - Included in draft and final report

- Evaluation of 2001 *Yolo Bypass Management Strategy* approach for estimating Yolo Bypass inflow from Putah Creek
    - Included in draft and final report
- Evaluation of 2001 *Yolo Bypass Management Strategy* approach for estimating Yolo Bypass inflow from Willow Slough Bypass
    - Included in draft and final report
- Establishment of Willow Slough Bypass gauge
    - Install gaging station

Attachment 1 – Performance Measures Table

Using the Performance Measures Table, identify performance measures designed to assess progress towards achieving the project's objectives. The performance measures should be linked to the objectives defined in Section 7.2 and 7.3 of the application. Differentiate between those results that are expected to occur within the term of the grant versus those that will require additional time. At least some of the performance measures must be feasible to meet during the term of the grant (e.g., can be met within 1-2 years post-implementation). Applicants may need to complete multiple Performance Measures Tables depending on what types of objectives are proposed.

Project Objective(s)	1. Manage project to meet deadlines and budget 2. Complete reports on time 3. Complete Knights Landing Ridge Cut monitoring 4. Complete Putah Creek monitoring 5. Complete Willow Slough monitoring 6. Complete Cache Creek Settling Basin monitoring 7. Complete data sharing proposal 8. Evaluate 2001 *Yolo Bypass Management Strategy* approach for estimating Yolo Bypass inflow from: Ridge Cut, Cache Creek, Putah Creek, and Willow Slough Bypass 9. Establish Willow Slough Bypass gauge

Project Output Performance Measures	• Objective #1:
	  ○ Quarterly progress and semi-annual budget reports
	• Objective #2:
	  ○ Complete progress reports within 30 days after the end of each quarter following Agreement execution
	  ○ Complete annual reports by 9/30/15 of every year, beginning 2017
	  ○ Complete draft and final reports by January and February 2019
	• Objective #3:
	  ○ Complete monitoring four times every

Attachment 1 – Performance Measures Table

	year, from 2016-17 to 2018-19
	• Objective #4:
	  ○ Complete monitoring four times every year, from 2016-17 to 2018-19
	• Objective #5:
	  ○ Complete monitoring four times every year, from 2016-17 to 2018-19
	• Objective #6 to be completed:
	  ○ Four times every year, from 2016-17 to 2018-19
	• Objective #7:
	  ○ Complete draft and final reports in December 2017 and December 2018
	• Objective #8 to be completed:
	  ○ Complete draft and final reports by January/February 2019
	• Objective #9 to be completed:
	  ○ Install gage by September 2016 (prior to the first wet season)

Project Outcome Performance Measures	• For Objective #1:
	  ○ Invoices
	  ○ Subcontractor Selection and Scope of Work
	  ○ Budget Update
	• For Objective #2:
	  ○ Progress Reports
	  ○ Annual Report
	  ○ Draft Final Report
	• For Objective #3:
	  ○ Monitoring Data
	• For Objective #4:
	  ○ Monitoring Data
	• For Objective #5:
	  ○ Monitoring Data

Attachment 1 – Performance Measures Table

	• For Objective #6:
	  ○ Monitoring Data
	• For Objective #7:
	  ○ Draft Proposal
	  ○ Final Proposal
	• For Objective #8:
	  ○ Included in draft and final report
	• For Objective #9:
	  ○ Install gaging station

Measurement Tools and Methods	• Install a gaging station on Willow Slough Bypass designed per USGS guidelines (Saur & Turnipseed, 2010) and consisting of an instrument shelter, submersible pressure transducer, and electronic data collection platform with telemetry. • Collect flow measurements with an Acoustic Doppler Current Profiler (ADCP) per USGS guidelines (Mueller & Wagner, 2009) using a tethered boat and Real-Time Kinematic (RTK) Global Positioning System (GPS) integration where possible. • Develop Standard Operating Procedures (SOPs) to standardize data collection, processing, and data quality. • Implement rigorous data quality control procedures while in the field and in the office to ensure data reliability. • Coordinate with respective agencies (DWR, SCWA, USGS) for input on monitoring plan to maximize return on monitoring efforts.

Attachment 2 – Schedule and List of Deliverables

Provide estimated completion dates for all Tasks and Deliverables identified in Section 7.2 (Project Description – Purpose and Implementation) and Section 7.5 (Project Deliverables). Grants will be executed approximately six months from award and typical grant terms will be three years. Schedules should include project management and identify quarterly submission of progress reports and invoices. If permits are to be obtained for a proposed project, a timeline for obtaining them must be included in the Schedule and List of Deliverables. Completion dates for tasks must allow for final reporting and cannot fall on last day of grant term.

Task No.	Task Title	Deliverables and Key Project Milestones	Estimated Completion Dates
1	Project Management and Administration	• Invoices • Subcontractor Selection and Scope of Work • Budget Update	• Quarterly • June 2016 • Semi-annual (included with progress report)
2	Reports	• Progress Reports • Annual Report • Draft Final Report • Final Report • Close-Out Summary Report	• Due within 30 days after the end of each quarter following Agreement execution. • Due on September 30th of each year starting in 2017 • January 2019 • February 2019 • February 2019
3	Knights Landing Ridge Cut Monitoring	Monitoring data	• 10/1/16-6/30/17 • 10/1/17-6/30/18 • 10/1/18-1/30/19
4	Putah Creek Monitoring	Monitoring data	• 10/1/16-6/30/17 • 10/1/17-6/30/18 • 10/1/18-1/30/19
5	Willow Slough Monitoring	Monitoring data	• 10/1/16-6/30/17 • 10/1/17-6/30/18 • 10/1/18-1/30/19

Attachment 2 – Schedule and List of Deliverables

6	Cache Creek Settling Basin Monitoring	Monitoring data	• 10/1/16-6/30/17 • 10/1/17-6/30/18 • 10/1/18-1/30/19
7	Data Sharing Proposal	• Draft • Final	• December 2017 • December 2018
8	Evaluation of 2001 *Yolo Bypass Management Strategy* approach for estimating Yolo Bypass inflow from Ridge Cut	• Included in draft and final report	• January/February 2019
9	Evaluation of 2001 *Yolo Bypass Management Strategy* approach for estimating Yolo Bypass inflow from Cache Creek	• Included in draft and final report	• January/February 2019
10	Evaluation of 2001 *Yolo Bypass Management Strategy* approach for estimating Yolo Bypass inflow from Putah Creek	• Included in draft and final report	• January/February 2019
11	Evaluation of 2001 *Yolo Bypass Management Strategy* approach for estimating Yolo Bypass inflow from Willow Slough Bypass	• Included in draft and final report	• January/February 2019
12	Establishment of Willow Slough Bypass gauge	• Install gauging station	• September 2016 (prior to the first wet season)

Attachment 2 – Schedule and List of Deliverables

Attachment 3 – Environmental Compliance Checklist

Permitting Agency	Type of Requirements	Required	Applied	Acquired	Date Anticipated/ Received
FEDERAL AGENCIES:					
U.S. Army Corps of Engineers	Clean Water Act Section 404 Permit	☐	☐	☐	**N/A**
U.S. Army Corps of Engineers	Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403)	☐	☐	☐	**N/A**
U.S Fish and Wildlife Service	Biological Opinion (Section 7 Endangered Species Act)	☐	☐	☐	**N/A**
NOAA Fisheries	Biological Opinion (Section 7 Endangered Species Act)	☐	☐	☐	**N/A**
STATE AGENCIES:					
CA. Dept. of Fish and Wildlife	Lake or Streambed Alteration Agreement (Section 1600)	☐	☐	☐	**N/A**
CA. Dept. of Fish and Wildlife	Incidental Take Permit, or Consistency Determination (CESA)	☐	☐	☐	**N/A**
CA. Dept. of Fish and Wildlife	Habitat Restoration and Enhancement Act of 2014 (AB 2193)	☐	☐	☐	**N/A**

Attachment 3 – Environmental Compliance Checklist

Permitting Agency	Type of Requirements	Required	Applied	Acquired	Date Anticipated/ Received
CA. Dept. of Transportation	Encroachment Permit	☐	☐	☐	**N/A**
CA. Coastal Commission	Letter of Consistency	☐	☐	☐	**N/A**
State Water Resources Control Board	401 General Water Quality Certification for Small Habitat Restoration Projects	☐	☐	☐	**N/A**
Regional Water Quality Control Board	401 Water Quality Certification of Waste Discharge Requirement	☐	☐	☐	**N/A**
State Water Resources Control Board	Construction Activities Storm Water General Permit	☐	☐	☐	**N/A**
Central Valley Flood Protection Board	Permission to Encroach on Waterways within Designated Floodways	☐	☐	☐	**N/A**
Local and Regional Planning Agencies:					
City/County	Grading Permit	☐	☐	☐	**N/A**
City/County	Environmental Health Department	☐	☐	☐	**N/A**
City/County	Road Use Permits	☐	☐	☐	**N/A**

Attachment 3 – Environmental Compliance Checklist

Permitting Agency	Type of Requirements	Required	Applied	Acquired	Date Anticipated/ Received
Tahoe Regional Planning Agency	Any Relevant Permit	☐	☐	☐	**N/A**
Local Resource Conservation District	Consultation	☐	☐	☐	**N/A**
Flood Control Districts	Floodway & Hydrological Analysis	☐	☐	☐	**N/A**
Other(s) (List):		☐	☐	☐	**N/A**

Attachment 4 - Applicant Budget			
Yolo Bypass Westside Tributaries Flow Monitoring Project			
A. PERSONNEL SERVICES			
Level of Staff	**Hours**	**Rate**	**Total Project Cost**
Manager of Intergovernmental Relations	70.00	$ 100.00	$ 7,000
Analyst	70.00	$ 42.79	$ 2,995
Subtotal Personnel Services			$ 9,995
Staff Benefits @ %		0.00%	$ -
TOTAL PERSONNEL SERVICES			**$ 9,995**
B. OPERATING EXPENSES: GENERAL			
Items (units)	**Number of Units**	**Cost per Unit**	**Total Project Cost**
Travel - mileage	9100.00	$ 0.58	$ 5,233
Travel - car rental	52.00	$ 100.00	$ 5,200
Subtotal Operating Expenses: General			**$ 10,433**
C. OPERATING EXPENSES: SUBCONTRACTORS			
cbec ecoengineering, inc.			########
Consero Solutions			$ 20,125
Douglas Environmental			$ 5,050
Subtotal Operating Expenses: Subcontractors			**########**
D. OPERATING EXPENSES: EQUIPMENT			
See General Grant Provisions for definitions of electronic and purchased equipment definitions.			
Willow Slough Bypass Gaging Station Equipment	1.00	#########	$ 10,000
Acoustic Doppler Current Proflier Use Fee	52.00	$ 450.00	$ 23,400
RTK-GPS Use Fee	52.00	$ 375.00	$ 19,500
Subtotal Operating Expenses: Equipment			**$ 52,900**
TOTAL OPERATING EXPENSES			**########**
E. SUBTOTALS & INDIRECT COSTS			
SUBTOTAL A + B (Personnel Services + Operating Expenses: General)			$ 20,428
SUBTOTAL C (Operating Expenses: Subcontractors)			########
SUBTOTAL D (Operating Expenses: Equipment)			$ 52,900
Requested Indirect Charge Rate (max.20%) @ % (Indirect Charges cannot be applied to subcontracts or equipment)		0.00%	$ -
TOTAL INDIRECT CHARGES			$ -
D. GRAND TOTAL			**########**

Attachment 5 - Subcontract Budget			
Yolo Bypass Westside Tributaries Flow Monitoring Project			
cbec ecoengineering, inc.			
Note: A separate subcontract budget sheet must be included for each subcontractor.			
A. PERSONNEL SERVICES			
Level of Staff	**Hours**	**Rate**	**Total Project Cost**
President	20.00	$ 210.00	$ 4,200
Director	138.00	$ 200.00	$ 27,600
Senior Eco-Hydrologist I	120.00	$ 160.00	$ 19,200
Eco-Hydrologist II	636.00	$ 145.00	$ 92,220
Eco-Hydrologist I	804.00	$ 130.00	$ 104,520
Subtotal Personnel Services	1718.00		$ 247,740
Staff Benefits @ %		0.00%	$ -
TOTAL PERSONNEL SERVICES			**$ 247,740**
B. OPERATING EXPENSES: GENERAL			
Items (units)	**Number of Units**	**Cost per Unit**	**Total Project Cost**
Travel - Mileage	9100.00	$ 0.575	$ 5,233
Travel - Car Rental	52.00	$ 100.00	$ 5,200
See General Grant Provisions for applicable travel reimbursement rates			
<Insert or delete line items as needed>	0.00	$ -	$ -
Subtotal Operating Expenses: General			**$ 10,433**
C. OPERATING EXPENSES: SUBCONTRACTORS			
Subtotal Operating Expenses: Subcontractors			**$ -**
D. OPERATING EXPENSES: EQUIPMENT			
See General Grant Provisions for definitions of electronic and purchased equipment definitions.			
Willow Slough Bypass Gaging Station Equipment	1.00	$ 10,000.00	$ 10,000
Acoustic Doppler Current Profiler Use Fee	52.00	$ 450.00	$ 23,400
RTK-GPS Use Fee	52.00	$ 375.00	$ 19,500
Subtotal Operating Expenses: Equipment			**$ 52,900**
TOTAL OPERATING EXPENSES			**$ 311,073**
E. SUBTOTALS & INDIRECT COSTS			
SUBTOTAL A + B (Personnel Services + Operating Expenses: General)			$ 258,173
SUBTOTAL C (Operating Expenses: Subcontractors)			$ -
SUBTOTAL D (Operating Expenses: Equipment)			$ 52,900
Requested Indirect Charge Rate (max.20%) @ % (Indirect Charges cannot be applied to subcontracts or equipment)		0.00%	$ -
TOTAL INDIRECT CHARGES			$ -
D. GRAND TOTAL			**$ 311,073**

Attachment 5 - Subcontract Budget			
Yolo Bypass Westside Tributaries Flow Monitoring Project			
Consero Solutions			
Note: A separate subcontract budget sheet must be included for each subcontractor.			
A. PERSONNEL SERVICES			
Level of Staff	**Hours**	**Rate**	**Total Project Cost**
President	45.00	#######	$ 6,750
Executive Associate	125.00	$ 85.00	$ 10,625
Research Associate	30.00	$ 65.00	$ 1,950
Subtotal Personnel Services			$ 19,325
Staff Benefits @ %		0.00%	$ -
TOTAL PERSONNEL SERVICES			**$ 19,325**
B. OPERATING EXPENSES: GENERAL			
Items (units)	**Number of Units**	**Cost per Unit**	**Total Project Cost**
Travel - Mileage	1403.00	$ 0.57	$ 800
Subtotal Operating Expenses: General			**$ 800**
C. OPERATING EXPENSES: SUBCONTRACTORS			
N/A			$ -
Subtotal Operating Expenses: Subcontractors			**$ -**
D. OPERATING EXPENSES: EQUIPMENT *See General Grant Provisions for definitions of electronic and purchased equipment definitions.*			
N/A			$ -
Subtotal Operating Expenses: Equipment			**$ -**
TOTAL OPERATING EXPENSES			**$ 20,125**
E. SUBTOTALS & INDIRECT COSTS			
SUBTOTAL A + B (Personnel Services + Operating Expenses: General)			$ 20,125
SUBTOTAL C (Operating Expenses: Subcontractors)			$ -
SUBTOTAL D (Operating Expenses: Equipment)			$ -
Requested Indirect Charge Rate (max.20%) @ % (Indirect Charges cannot be applied to subcontracts or equipment)		0.00%	$ -
TOTAL INDIRECT CHARGES			$ -
D. GRAND TOTAL			**$ 20,125**

Attachment 5 - Subcontract Budget			
Yolo Bypass Westside Tributaries Flow Monitoring Project			
Douglas Environmental			
Note: A separate subcontract budget sheet must be included for each subcontractor.			
A. PERSONNEL SERVICES			
Level of Staff	**Hours**	**Rate**	**Total Project Cost**
President	25.50	#######	$ 4,335
Subtotal Personnel Services			$ 4,335
Staff Benefits @ %		0.00%	$ -
TOTAL PERSONNEL SERVICES			**$ 4,335**
B. OPERATING EXPENSES: GENERAL			
Items (units)	**Number of Units**	**Cost per Unit**	**Total Project Cost**
Travel - Mileage	360.00	$ 0.57	$ 205
Subtotal Operating Expenses: General			**$ 205**
C. OPERATING EXPENSES: SUBCONTRACTORS			
Subcontractor 1 Name			$ -
Subcontractor 2 Name			$ -
<Insert or delete line items as needed>			$ -
Subtotal Operating Expenses: Subcontractors			**$ -**
D. OPERATING EXPENSES: EQUIPMENT *See General Grant Provisions for definitions of electronic and purchased equipment definitions.*			
<Insert or delete line items as needed>			$ -
<Insert or delete line items as needed>			$ -
Subtotal Operating Expenses: Equipment			**$ -**
TOTAL OPERATING EXPENSES			**$ 4,540**
E. SUBTOTALS & INDIRECT COSTS			
SUBTOTAL A + B (Personnel Services + Operating Expenses: General)			$ 4,540
SUBTOTAL C (Operating Expenses: Subcontractors)			$ -
SUBTOTAL D (Operating Expenses: Equipment)			$ -
Requested Indirect Charge Rate (max.20%) @ % (Indirect Charges cannot be applied to subcontracts or equipment)		10.00%	$ 454.02
TOTAL INDIRECT CHARGES			$ 454.02
D. GRAND TOTAL			**$ 4,994**

Attachment 6 - Fund Sources and Cost Share Sheet			
To be considered eligible, cost share must be used to support the proposed project, must be spent during the proposed project term, and must be secured prior to grant award.			
Yolo Bypass Westside Tributaries Flow Monitoring Project			
Source of Funds	**Cash**	**In-Kind (If Applicable)**	**Total**
CDFW Restoration Grant Program (see Project Budget)	$ -	$ -	$ -
Applicant	$ -	$ -	$ -
Other State Agency (insert additional rows as needed by Agency Name and funding source)	$ -	$ -	$ -
Federal (insert additional rows as needed by Agency Name and funding source)	$ -	$ -	$ -
Other(s): Yolo County	$ 5,100	$ 9,995	$ 15,095
Total Project Cost	$ 5,100	$ 9,995	$ 15,095

7.11 Monitoring and Assessment

The Yolo Bypass Westside Tributaries Flow Monitoring Project builds on years of existing flow monitoring efforts in the Yolo Bypass and will be conducted in coordination with the agencies that currently conduct or oversee flow monitoring, such as the U.S. Geological Survey (USGS), the California Department of Water Resources (DWR), the Delta Stewardship Council (DSC), the U.S. Bureau of Reclamation (USBOR) and the Solano County Water Agency (SCWA). The monitoring and assessment plan is consistent with the project's performance measures.

What Will Be Monitored

The project team will monitor compliance with the project's objectives, which are to complete three years of monitoring of four westside tributaries to the Yolo Bypass, complete an evaluation of the 2001 Yolo Bypass Management Strategy approach for estimating westside tributary flows, establish a Willow Slough Bypass gage, and complete grant reporting requirements.

Monitoring Objectives

As discussed elsewhere in this application, the monitoring is needed to fill data gaps in knowledge about westside tributary flows to the Yolo Bypass identified in peer-reviewed studies, including the 2001 *Yolo Bypass Management Strategy*, the 2014 *Yolo Bypass Drainage and Water Infrastructure Study*, and the 2015 *Review of Yolo Bypass Salmonid Habitat Restoration And Fish Passage Hydrodynamic Modeling Draft Report*.

Assessment Questions

Were interested local, state and federal agencies consulted in development of the monitoring plan?
Was the Willow Slough gage installed on time?
Was the monitoring completed on time? How many times was monitoring conducted each year?
Was the evaluation of the *Yolo Bypass Management Strategy* approach completed?
Were the reports completed on time?
`

Methods/Protocols & Quality Control Procedures

- Install a gaging station on Willow Slough Bypass designed per USGS guidelines (Sauer & Turnipseed, 2010) and consisting of an instrument shelter, submersible pressure transducer, and electronic data collection platform with telemetry.
- Collect flow measurements with an Acoustic Doppler Current Profiler (ADCP) per USGS guidelines (Mueller & Wagner, 2009) using a tethered boat and Real-Time Kinematic (RTK) Global Positioning System (GPS) integration where possible.
- Develop Standard Operating Procedures (SOPs) to standardize data collection, processing, and data quality.
- Implement rigorous data quality control procedures while in the field and in the office to ensure data reliability.
- Coordinate with respective agencies (DSC, CDFW, USBOR, DWR, SCWA, USGS) for input on monitoring plan to maximize return on monitoring efforts.

- Report regularly to CDFW, USBOR, DWR, SCWA and USGS on monitoring results

The project team will conduct flow monitoring on the four westside tributaries (Cache Creek, Putah Creek, Willow Slough, and the Knights Landing Ridge Cut) every year between October and June, with the exception of the final grant year. Monitoring in the final grant year will take place between October and January to provide sufficient time to complete the draft and final reports within the three-year timeframe for completion. The project team will deliver the annual report to summarize monitoring activities by September 30th following the year the monitoring took place. If monitoring takes place between October 2016 and June 2017, for example, the project team will deliver the annual report by September 30, 2017.

The project team will utilize the standard protocols described above to complete the flow monitoring, which will allow the DWR, USGS, and SCWA to continue monitoring after the grant ends if funding is available. Regardless of whether flow monitoring continues, the data will provide valuable information regarding westside tributary flows that was not previously available to decision makers working on Yolo Bypass habitat restoration projects. The project team will also build a partnership with DSC, USBOR, DWR, USGS, UC Davis, and SCWA through the development of a datasharing proposal for all Yolo Bypass data relevant to development of habitat restoration projects, not just the monitoring data collected through this grant. This partnership will result in multiple opportunities to submit strong grant applications to continue collection of flow monitoring or other data to inform Yolo Bypass decisions.

Linkage to Conceptual Model, Frequency of Monitoring & Relationship to Other Monitoring Efforts

The conceptual model for flow monitoring (see Scientific Merit Attachment – Conceptual Model) includes high flow monitoring at five locations on the four Yolo Bypass westside tributaries, one of which includes establishing a permanent gaging station. During each storm season, two staff per measurement location will be deployed to measure flow for a minimum of four and a maximum of eight storm events during each of the three years. Given similar rainfall-runoff response on each of the westside tributaries, up to ten staff could be deployed during any given storm.

Knights Landing Ridge Cut (KLRC): KLRC is currently monitored by the DWR since December 2006. The highest flows measured on KLRC since 2006 are 1,700 cfs, but the capacity of KLRC is approximately ten times greater than 1,700 cfs. Assuming DWR continues to maintain this gauging station, the project team will coordinate with DWR to perform high flow measurements from Highway 113 bridge using a tethered Acoustic Doppler Current Profiler (ADCP) to measure flows and extend the rating curve at this location to accurately predict inflows into the Yolo Bypass.

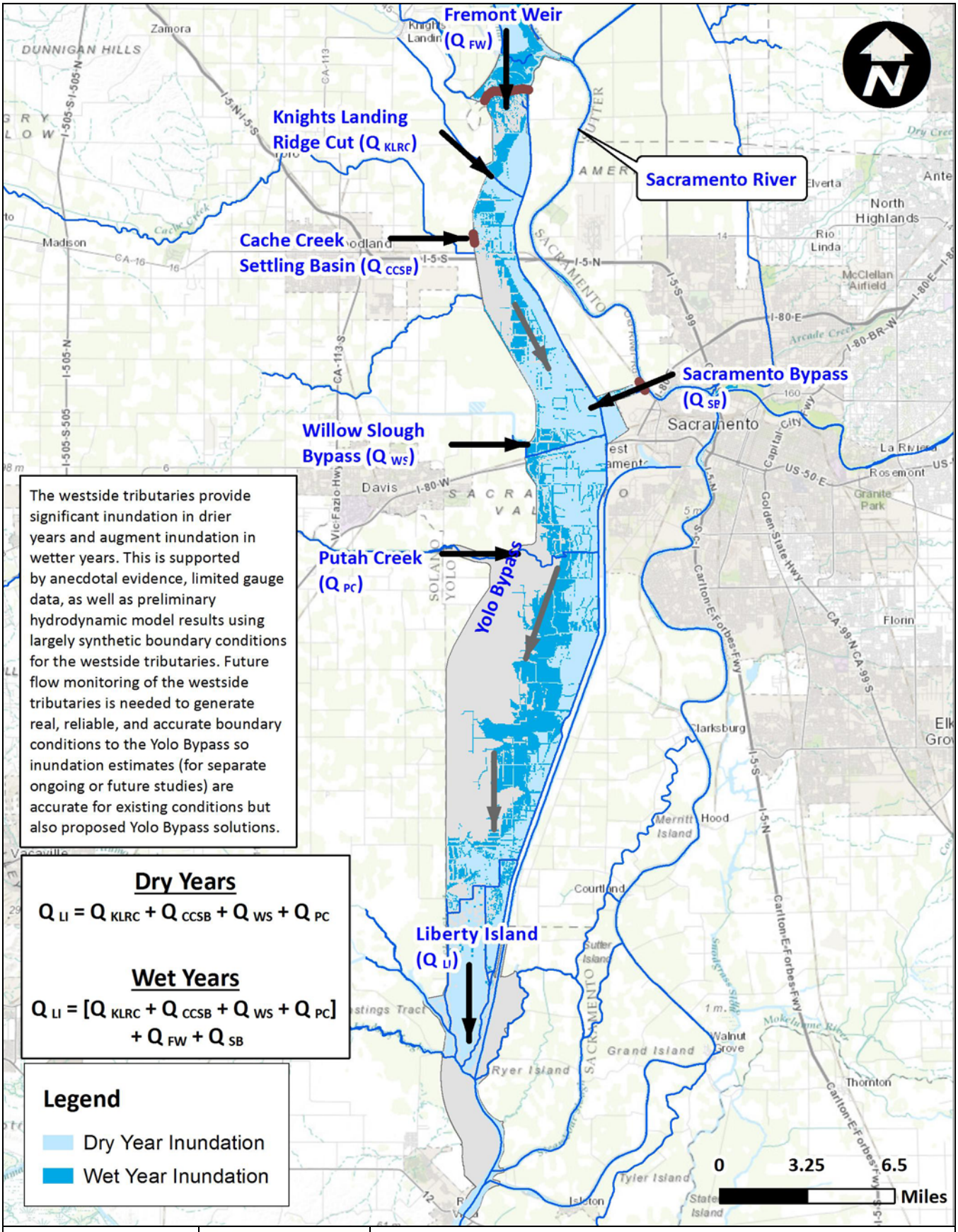
Cache Creek Settling Basin (CCSB): CCSB inflow and outflow is monitored by the USGS during the storm season under an annual contract renewal with DWR as part of DWR's continuing efforts to understand mercury and sediment trap efficiency within the CCSB. If for any reason there should be a lapse in contract renewal, a contingency is included here to cover one year of monitoring by the USGS for CCSB outflow. If there is not a lapse in contract renewal, the project team will coordinate with the USGS and DWR to perform high flow measurements at the overflow weir using a tethered ADCP connected to a tag line to verify the original USACE design rating curve currently in use.

Willow Slough Bypass (WSB): The USGS monitors WSB at County Road 102 as a "partial-record station" meaning that field measurements of stage and discharge are only recorded for flows less than 500 cfs and a rating curve has not been developed. In coordination with the USGS and following USGS guidelines, the project team will permanently install a telemetered monitoring station within the right of way of County Road 102 near the bridge to create a continuous stage record for the full range of flows possible. The Partners will also perform high flow measurements using a tethered ADCP from the bridge to create a rating curve at this location to create a continuous record of flow.

Putah Creek (PC): SCWA has been monitoring stage and low flows (i.e., less than 100 cfs) at multiple locations along Putah Creek from the Putah Diversion Dam to Los Rios Check Dam since 2008. SCWA's monitoring stations typically include telemetered stage with plans to continue future low flow monitoring at these stations to inform real time water management focusing on minimum flow requirements as part of the Putah Creek Accord. Two of these stations, which are critical to verifying current approaches for estimating historic flows into the Yolo Bypass, will be rated for higher flows given that current flow ratings are only valid up to 100 cfs. The project team will coordinate with SCWA to perform high flow measurements a) just below Putah Diversion Dam using a tethered ADCP connected to a tag line and b) near Interstate 80 at Old Davis Road bridge using a tethered ADCP.

Analysis, Interpretation & Reporting of Data

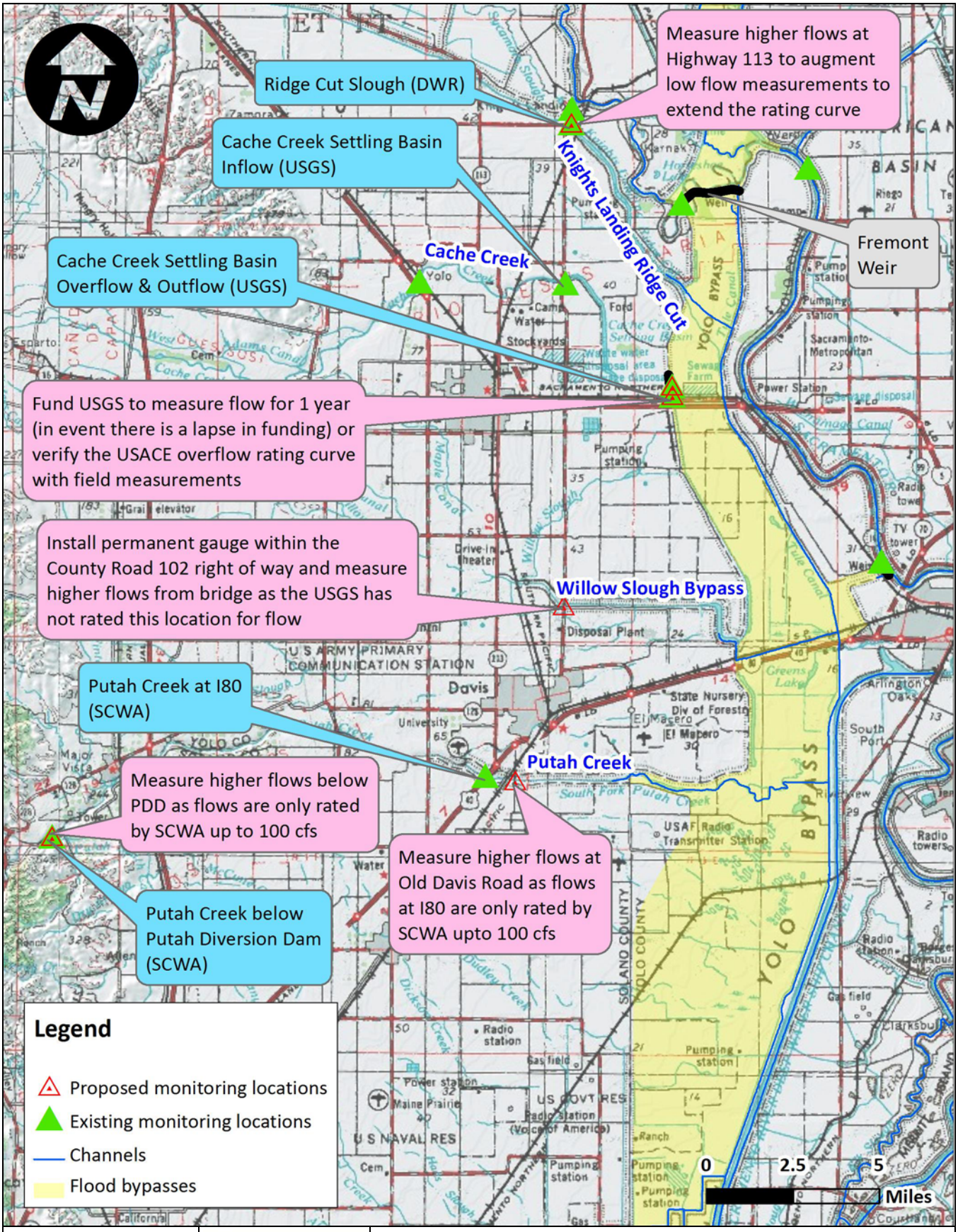
In addition to proposing a data sharing strategy as part of the grant, the project team will provide the data to all relevant state, federal, and local agencies. The data can be used to improve the inputs to the TUFLOW model, currently in use for the EIS/EIR to implement Reasonable and Prudent Alternatives related to the Yolo Bypass for the National Marine Fisheries Service's Biological Opinion for the Long-Term Operations of the Central Valley Project and State Water Project. The project team will also analyze and interpret the data in the annual reports provided to CDFW, as well as the draft and final reports.



Notes:	cbec eco engineering	*Yolo Bypass Westside Tributaries Flow Monitoring* **Conceptual Model for Yolo Bypass Inundation**		
		Proposal No. 15-76	Created By: SP	**Figure 2**

Conceptual Model Integration

The Conceptual Model for Yolo Bypass Inundation assumes that the westside tributaries provide the only source of significant inundation in drier years and augment inundation in wetter years by pre-wetting the Yolo Bypass and/or extending inundation on recession. This conceptual model is supported by anedotal evidence, limited gauge data, as well as preliminary hydrodynamic model results using largely synthetic boundary conditions for the westside tributaries. To confirm that the westside tributaries provide significant baseline inundation in the Yolo Bypass (i.e., depth, duration, frequency), and given known inadequacies in the existing flow monitoring efforts, the conceptual model was used to inform the design of the proposed flow monitoring plan. Future flow monitoring of the westside tributaries is needed to generate real, reliable, and accurate boundary conditions to the Yolo Bypass so inundation estimates (for separate ongoing and future studies) are accurate for existing conditions but also for proposed management solutions in the Yolo Bypass.



Notes:	cbec eco engineering	*Yolo Bypass Westside Tributaries Flow Monitoring* **Monitoring Locations**		
		Proposal No. 15-76	Created By: SP	**Figure 1**

Fig_1_Monitoring_Locs.docx
9/11/2015