

# Proposal to Develop Program of Multi-Benefit, Landscape Scale, Floodplain Enhancement Opportunity Actions within the Sacramento River Basin

## Introduction & Background

Sacramento River Basin water users and conservation partners have developed a portfolio of fish and wildlife-oriented floodplain enhancement opportunities to support the Newsom Administration and the State Water Board's goal to implement water quality objectives. This portfolio includes innovative habitat restoration and floodplain reactivation concepts that are intended to quickly improve and enhance fish and wildlife habitat by increasing opportunities for juvenile salmonid rearing and water onto the floodplains within the Sacramento River Basin to stimulate food production. These opportunity actions are anticipated to also support the proposed Water Resilience Portfolio and the Conservation Strategy of the Central Valley Flood Protection Plan 2017 Update.

Sacramento River Basin water users and conservation partners are proposing to 'kick-start' execution of this portfolio of opportunities through an accelerated actions effort which would rapidly develop a comprehensive program with an implementation strategy, schedule and cost estimates, so these accelerated actions can be completed promptly, efficiently, and effectively. This effort would involve Sacramento River Basin water users working closely and collaboratively with Local, State and Federal agencies, landowners, non-governmental organizations (NGOs), Native American tribal interests, and the public, to develop these opportunities under a single program with a 'landscape scale' vision over an 18-24-month period. Collectively, the early implementation projects envisioned under this program will improve habitat conditions for many species and advance actions to aid with their recovery. This program, and the scientific monitoring effort that will accompany it, will also begin the robust science program necessary to inform the decision-making and adaptive management essential to successful fish and wildlife recovery.

As shown in the attached figure, the program's geographical footprint for this portfolio of early implementation actions will be:

- East-side complex which would include the area east of the Sacramento River from the southern end of the Sutter Bypass northerly to the northern end of the Butte Sink.
- West-side complex which would include the lower Colusa Basin from Wallace Weir northerly past the Knights Landing Outfall Gates to Davis Weir including the expansive flooded footprint south and westerly of these channels.

The key elements of the program are:

- Identify and assemble key participants, and strengthen the partnerships needed to implement a successful early implementation program.
- Develop a strong, open, communication and engagement plan to facilitate stakeholder participation in the early implementation effort.
- Facilitate interagency coordination to aid implementation of the actions identified
- Document existing conditions and develop system models to evaluate and refine opportunity actions.
- Work with landowners early and often as a cornerstone of this program. The benefit of local knowledge, constraints and opportunities will increase the chance of developing timely and implementable solutions.
- Develop measurable criteria and testable hypotheses to guide program implementation and measure progress towards outcomes to facilitate learning and adaptive management.
- Develop and advance the opportunity actions which have already been identified at the existing diversion locations and within the wetland footprint of each focus area.
- Create, evaluate, and refine scenarios of combined system modifications, wetland footprint improvements, and associated operations.
- Evaluate a variety of land use types for applicability in helping achieve program goals. Land uses to be evaluated include, but are not limited to: farmland; hunting clubs, wildlife refuges, managed wetlands, etc.
- Provide technical resources to landowners for developing locally supported actions and impact mitigation solutions.
- Develop a program implementation strategy, timeline, and cost estimates, and propose financing options to complement and leverage local and State investments.
- Prepare a summary report documenting the early implementation action program.

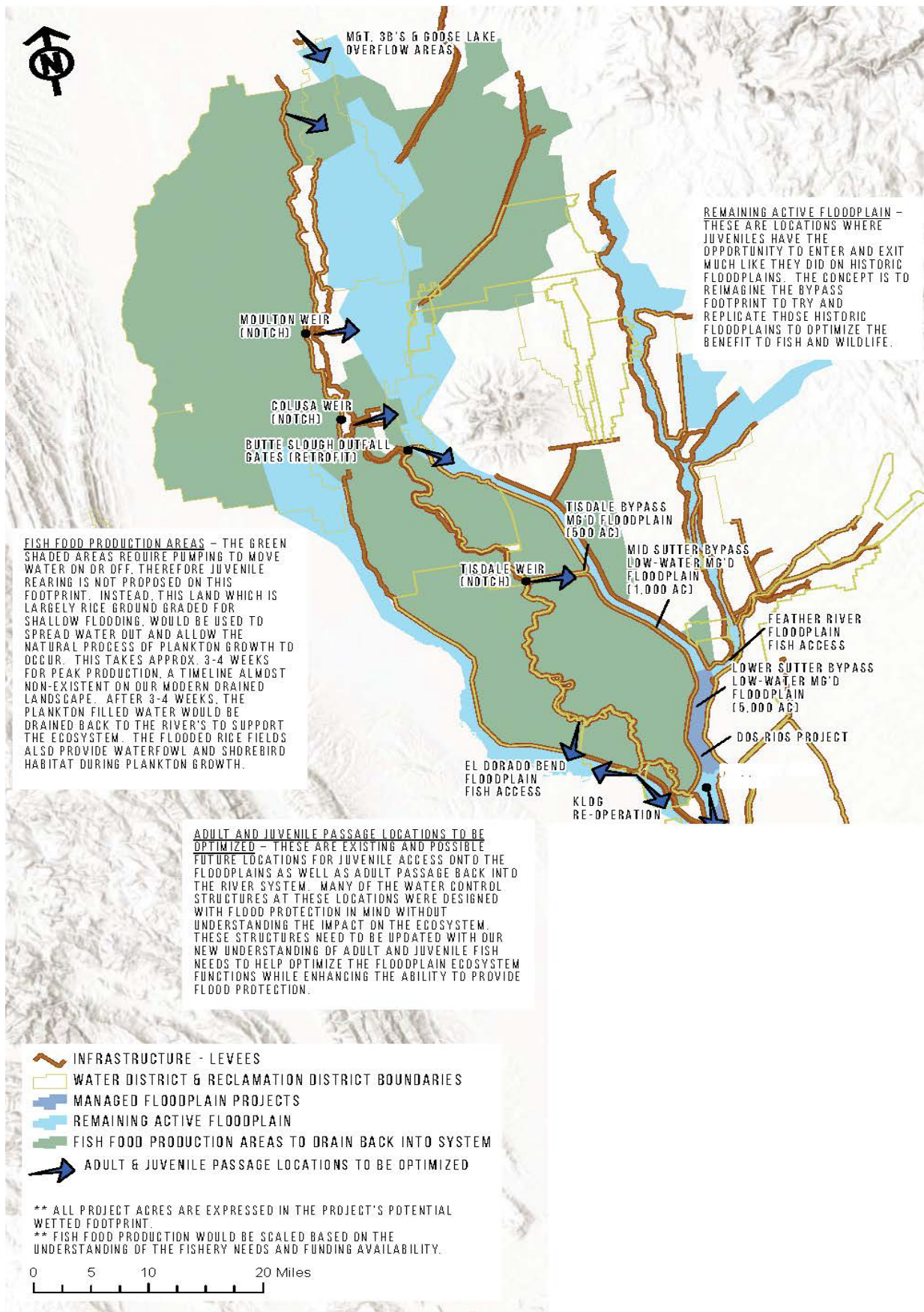


Figure 1: Areas of Focus

## Roles, and Responsibilities

Reclamation District 108 (RD108) will act as the Program Director for development of the early implementation action program. The Program Director, supported by a consultant team, will work with a Program Team made up of representatives from local landowner interests, local, state and Federal government agencies, tribal interests, and NGO representatives, to establish the program Goals and Objectives, and to shape and guide development of the early implementation action plan. The Program Director will also convene a Technical & Science Advisory Committee (TSAC) to provide technical and scientific support to the Program Team. The Technical & Science Advisory Committee will include technical and science experts from local, state and Federal government agencies, tribal interests, NGOs, and local landowner interests. The arrangements for NGO participation will be defined in Memorandums of Understanding executed with the Program Director. To create the technical and scientific data needed for program development, the Program Director will assemble a consultant team of public outreach specialists, hydrologists, hydraulic engineers, biologists, scientists, geomorphologists, regulatory and permitting experts, engineers, surveyors, and legal advisors. The consultant team will work at the direction of the Program Director.

## Scope of Work

The following is a description of the tasks necessary to develop the landscape scale early implementation program.

### Project Management

Provide administrative management of this effort required to successfully conduct the work herein. Specific project management activities would include (but not be limited to) the following: maintaining regular communication among the Program Director, Program Team and all stakeholders and participants; providing monthly progress reports for undertaken work; updating the Program Director and Program Team, as directed, on project status; developing a detailed work plan for the execution of this scope of work and other management procedures to ensure high-quality work products are delivered on schedule, within budget, and according to contract specified requirements.

#### Deliverables:

- Draft and final work plans
- Meetings/telephone coordination and/or briefings to Funder, Program Director and Program Team
- Email correspondence and meeting notes, as applicable
- Monthly detailed progress reports, defining activities by individual staff, meeting details including dates and attendees, delivered accompanying the monthly invoice.

### Communications and Engagement

Communications and engagement (C&E) activities are intended to be appropriately scoped and focused to fully engage stakeholders and secure their participation.. As such, C&E activities will vary based upon whether the C&E activity is to inform, to seek feedback and/or input, or to gain concurrence from one of these Groups. C&E activities for example may range from short, informal briefings as single agenda items at regular standing meetings, to facilitated meetings with the resource agencies to carefully gain input and concurrence on concepts under evaluation.

C&E activities are expected to include (but not be limited to) the following:

- Developing a comprehensive stakeholder list.
- Monthly meetings with the Program Team to solicit ideas/issues/concerns.
  - Small group meetings with key team members and landowners for each location.
- Monthly Technical team meetings.
  - Team includes Project Lead, consultant team lead(s), fishery agencies, NGO representation, flood agencies, landowner representative, local, state and Federal technical representatives.
- Developing project factsheets and video outreach materials that can be broadly disseminated, which describe the program's goals, focus and timeline.
- Planning, noticing, and facilitating meetings or workshops around the key milestones developed during the goal setting task, to solicit input on project concepts.

#### Deliverables:

- Stakeholder list.
- Draft and final C&E plan.
- Meeting notes and action lists.
- Project factsheets & Video outreach materials.
- PPT presentations.
- Stakeholder meeting agendas and summaries.

### Define Program Goals & Objectives

This task includes working with participants to define the Goals and Objectives of the program, and developing the measurable criteria and decision support tools to be used in guiding and evaluating development of the floodplain enhancement actions.

Participants will develop the Goals and Objectives by conducting the following:

- Synthesize key goals from existing 'habitat improvement plans', and identify and fill any perceived gaps.
- Identify objectives necessary to meet to achieve the program goals.
- Develop specific, measurable criteria for the type of habitat improvements the program aims to accomplish (i.e. depth, velocity, timing, duration, and frequency of duration).
- Develop decision support tools by asking stakeholders to describe the decisions they are tasked with making and the information they need to make those decisions. The decision support tools will be used to help integrate the multiple objectives associated with the various stakeholders groups.
- Describe scientific assumptions to be used in developing actions.
- Characterize and quantify the expected benefits to wetlands, floodplains, and wildlife and fisheries populations in the form of measurable criteria and testable hypotheses.
- Identify scientific uncertainties related to the program goals.

### Deliverables:

- Technical memorandum (TM) documenting Goals, & Objectives, and measurable criteria and decision support tool development.

### Existing Conditions Summary & Assessment; & Opportunities and Constraints Identification

An initial key step necessary to identify potential opportunity actions is defining the existing biological, ecological, hydrologic, and hydraulic conditions and processes within the floodplain landscape. Efforts under this task would include developing data and technical understanding of existing conditions to support the development and analysis of potential management actions and project alternatives. This includes but is not limited to technical work in the disciplines of restoration ecology, geomorphology, landscape architecture, aquatic and terrestrial biology, hydrology, hydraulics, civil engineering, and environmental compliance, to support alternatives development and analysis. Existing conditions will be described and summarized using available information whenever possible. Also, the Flood System Operations & Maintenance obligations will be described and summarized to help guide and inform the development and evaluation of potential physical and operational modifications to the flood management system.

To simulate water depth and water footprint across the program area, this scope of work includes the development of an existing conditions, 2-dimensional hydrodynamic and sediment transport model. This model will be an important tool since it will help to identify and prioritize areas of opportunity for landscape scale, floodplain reconnection and enhancement as well as identify the impacts. It will also aid in the development of alternatives to modify existing flood control structures, such as weirs, for fish passage.

The existing conditions assessment and model development will integrate and/or adapt readily available existing information models, data, and information as applicable. Where needed, new data collection may be required, including:

- Topography – newer topography data in areas of known change due to changes in land management and / or sedimentation will be used to update the CVFED 2008 data to reflect current conditions.
- Bathymetry – additional slough / canal bathymetry may be needed to augment available data.
- Stage and Flow – the measurement of continuous stage and flow data at multiple locations within the focus area is needed to augment sparse gage data, confirm canal capacity, and to develop a calibration data set for the hydrodynamic model.



- Sediment Measurements – concurrent with the measurement of stage and flow, suspended load measurements correlated to continuous turbidity along with bedload measurements are needed to develop a calibration data set for the sediment transport model.
- Inundation Mapping – concurrent with the measurement of stage and flow, satellite imagery will be collected at discrete times to document inundation patterns within the focus area(s) and to develop a calibration data set for the hydrodynamic model.
- Infrastructure Mapping – as informed by existing data and new data proposed above, mapping of the major conveyance features will be needed to describe baseline conditions and inform inundation patterns predicted by the hydrodynamic model.
- Vegetation and Habitat Assessment & Mapping – mapping and assessment of the major vegetation and habitat types within the focus areas is needed to describe baseline conditions and inform the identification of restoration opportunities. This mapping, as an update to the 2011 Central Valley Riparian Vegetation and Land Use, is proposed to be conducted through the use of existing vegetation and crop mapping data, aerial photographic interpretation, and limited field confirmation.

Once existing conditions have been defined, opportunities and constraints will be identified by conducting the following:

- Define existing conditions relevant to potential actions within the program area footprint.
- Identify potential projects that can be implemented in the near term that contribute achieving the Goals and Objectives.
- Characterize the expected benefits toward the Goals and Objectives related to wetlands, floodplains, and fisheries populations.
- Describe the existing infrastructure operations as they relate to action implementation.
- Identify potential impacts to landowners affected by the projects.

#### Deliverables:

- Technical memorandums describing existing conditions and the model output.
- Technical memorandums describing opportunities and constraints.
- Electronic modeling, analysis, and GIS files.

#### Develop Potential Multi-Benefit Actions & Implementation Alternatives

Working with the TAC and stakeholders, develop a suite of potential multi-benefit actions such as modifications to weirs to advance the objectives identified above and otherwise improve recruitment of juveniles and water onto the floodplain. To aid this alternative development process, landowners will be provided technical support to develop opportunities on their property that improve the floodplain goals and objectives as well as mitigate potential impacts to their property.

Opportunity locations within the East-side complex include the Sutter Bypass/Feather River confluence, Tisdale Weir, Butte Slough Outfall Gates, Colusa Weir, Moulton Weir, and the 3-Bs overflow areas. Opportunity locations within the West-side complex include the Knights Landing Outfall Gates and potential upstream structures that will be investigated. Opportunities within the floodplain also exist to improve existing infrastructure to reduce risk to fish and improve benefits to floodplain objectives.

Efforts under this task would involve:

- Outreach and engagement of landowners to identify opportunities on their properties.
- Develop an initial prioritization of potential projects and actions.
- Document the operations of each hydraulic control facility and the full extent of the opportunity potential to improve frequency and duration of juvenile recruitment and passage.
- Identify any “flaws in strategy” for each location such as adult passage and juvenile downstream mitigation issues, land management issues, etc.
- Utilize the decision support tools described above to help identify actions where multiple stakeholder objectives can be addressed in a cost-efficient and cooperative way.
- Develop 2-3 options for each location in sufficient detail to run modelling scenarios.
- Identify multi-benefit opportunities at each location including but not limited to improve wetlands management, flood improvements, groundwater recharge, other species benefits.

- Evaluate benefits using available tools, such as the Salmon Habitat quantification tool, as recommended by the TAC.
- Evaluate and identify project impacts, including potential impacts to the flood conveyance system.
- Define up to three (3) multi-benefit implementation alternatives that identify how potential multi-benefit actions could be implemented across the regional landscape.
- Evaluate the multi-benefit implementation alternatives against the guidance criteria described above.

Deliverables:

- Matrix of potential multi-benefit actions
- TM describing and analyzing the multi-benefit actions including benefits and impacts. The TM will also describe up to three (3) multi-benefit implementation alternatives.

Review, Evaluate & Refine Alternatives

Distribute the Alternatives technical memorandum to stakeholders and hold facilitated meetings with Stakeholder Groups to discuss, review and evaluate the integrated multi-benefit actions and implementation alternatives. The purpose of the meetings will be to consider the opportunities and constraints, costs, and benefits of the integrated multi-benefit actions. Based upon feedback received, the alternatives will be refined, remodeled, and reevaluated using the decision tools and guidance criteria described above.

Deliverables:

- Meeting participation
- Meeting notes.
- Updated TM with refined multi-benefit actions and alternatives.

Implementation Strategy

Working with the stakeholders, develop a strategy for the implementation of the preferred alternative(s). This will include:

- Property Owner Coordination Plan
- Property Owner risk reductions strategy
- Permitting & Regulatory strategy
- Financing Plan
- Action Implementation Sequencing Plan
- Long term Operations and Maintenance strategy

Deliverables:

- Meeting participation
- Meeting notes.
- Draft and final program implementation strategy report