

DRAFT MINUTES
Lower Feather River Corridor Management Plan
Work Group Meeting
Thursday, September 16, 2010 Meeting
AECOM Coastal Conference Room
Work Group Member Attendance

Name	Affiliation	Telephone #
Earl Nelson	FPCP Department of Water Resources	916-574-1244
Tony Danna	FMO Department of Water Resources	916-574-2738 916-531-2410 c
Debra Bishop	AECOM	916-414-5818
Erin Brehmer	DWR FPO	916-574-2236
John Carlon	River Partners	530-894-5401 x224
James Cornelius	Sutter Co. Resource Conservation District	530-674-1461
Steve Fordice	River District 784	530-742-0520
Terri Gaines	FESSRO Department of Water Resources	916-653-6520
Jennifer Hobbs	U.S. Fish and Wildlife Service	916-414-6541
Ryan Larson	U.S. Army Corps of Engineers	916-557-7568
Andrea Mauro	Central Valley Flood Protection Board staff	916-574-0332
Ron Melcer	FESSRO Department of Water Resources	916- 653-6963
Ray McDowell	DWR FESSRO	916-651-7192
Charles Rabamad	Department of Water Resources	916-574-2982
Scott Rice	Department of Water Resources	916-837-6415
Alicia Seesholtz	DWR – Feather River Program	916-376-9848
Gary Sprague	Nat. Oceanic & Atmospheric Admin.	916-930-3615
Helen Swagerty	River Partners	530-894-5401 x227
Jeffrey E. Twitchell	Levee District 1 & Yuba City Basin	916-631-4555
Matt Wacker	AECOM	916-266-4907
Tim Williamson	DFG – North Central Region	530-538-2236
Kent Zenobia	DWR FPO	916-574-2639

Minutes

Introductions

- Member introductions made around the table. Earl Nelson opened meeting!

Timeline and Task Order s

Phase I & II & III

- John Carlon- discussion on Hydraulic modeling and how it would be used in the river analysis.

Goals and Objectives Review

Goal 3-

- Rewording of Goal #3 needed to be similar to the FLOODSAFE goals.
- Objective a- Public Safety should be listed higher on the priority list. This objective only includes ecosystems and habitats so public safety is not included, but should be included. Perhaps, there should be another goal to included public safety. Instead, objective a) included the ideas of public safety. Public safety needs to be included in the vision statement somewhere, even if it may be implied, it needs to be stated. “Earl Nelson rewrote the purpose statement to include this phrasing.”
- Earl Nelson - restated the “encourage ecosystem restoration” the wording. Flood facility maintenance and construction portion of the goals reworded also.
- Terri Gaines – The Goal is close to the last goal and should stay consistent to the Central Valley Flood Protection Plan (CVFPP).
- Matt Wacker – Mentioned the importance of the two efforts staying consistent and that CVFPP is the larger regional plan for which the Feather CMP is a small portion. The duplication of work and products will be used by both plans including maps, hydraulic modeling and future maintenance responsibility. The task orders and scope of work will be very similar.

Work Group Subcommittee Reports

O&M Funding Subcommittee

- Paul Brunner – He had a meeting with Keith Swanson to discuss the O&M funding. It appears that a majority of the Lower Feather River Corridor is managed by DFG. DFG is not the primary maintenance agency. Compliance is the important portion of what is needed in the river corridor.

Keith Swanson said the plan needs to develop before we know what is needed. There are two actions needed.

1. First issue is the legal aspect of what can be done for O&M. The DWR lawyer, Nancy Finch, is in contact with TRLIA lawyers. They are discussing the maintenance responsibilities that should be included in the Lower Feather River CMP. The mitigation maintenance cost on the flood way could be shared by local and state. The cost for O&M is covered by TRLIA and while the off-site mitigation is a long term cost. Mitigation is bought by the project proponent at their expense.
 2. Second issue is the use of Bond money to pay for some maintenance work. You may build the project with Bond money, but who covers the maintenance expense. The Bond money can make it a long term success instead of a short term victory. There is a political decision needed in the long term by the Bond writers to write the maintenance cost into the Bond wording.
- John Carlon – Unfortunately these are different folks dealing with the maintenance of the work from the proponents of flood projects. Different purposes perhaps but same action to achieve our goals and objectives. Mostly DWR is getting the responsibility defined for the maintenance responsibility. Perhaps a zoning map of the different priority and responsible areas. Those with maintenance responsibility defined to DWR and those assigned to the local agency.
 - Earl Nelson – Bond dollars assigned for maintenance endowments will have to have wording in the actual bond. Propositions have that have wording in them. The FMO budget for maintenance is \$18 million. The amount of money needed to do long term maintenance would be a very large sum or percentage obligated for a long term. The obligated dollars could impact the total budget for a long time.
 - Paul Brunner – The more levee mileage under maintenance and the cost goes up with more miles. Bar graph of what is the cost and then the cost of new work, inflation and doing a better job. The job keeps growing.

Hydraulic Modeling Subcommittee

- Jeff Twitchell –Terri Gaines – wanted introduce Ray McDowell as her person on the subcommittee
Ray McDowell added to list
- Gary Hobgood – Meegan Nagy is the with the USACE - Corps

- John Carlon – Consistent delay with the other areas when the data is available. Don't get bogged down.
- Paul Brunner – MBK is involved with several contracts on going
- Ken Cumming – Coverage of the area is how much?
- Jeff Twitchell – Pointed out area size.
- Jeff Twitchell – adding setbacks to study area was discussed. Handout were given out and discussion followed on how to evaluate conditions, low flow modeling impacts, and the geographic area included in the system. The project area should be large enough to get all the area and the future areas included. We have good coverage with existing information already. The inclusion of adequate Sutter Bypass area was discussed. CVFPB hydraulic modeling on the Sutter Bypass and for the future Feather River use was discussed.
- John Carlon – what level of the hydraulic modeling is needed for the Sutter Bypass for CVFPB needs and for the Feather River needs. Are they compatible? Can the Feather River portion go to the confluence and not impact the Sutter Bypass or impact the Feather River?
- Earl Nelson – Sutter Bypass study deals with the roughness modeling on a relative level and will not be of the detail of the Feather River hydraulic modeling. We need coverage of 2 miles above and below the confluence or it will reduce the accuracy of the Feather River hydraulic study. We need to work cooperatively with CVFPB.
- Jeff Twitchell – Scope of CVFFB plan was pending and we should have more information soon. The CVFPB was doing developing the cost component and was calibrating the model last he heard. Our concern is the high velocity constriction points along the corridor channel. Also the grass swales within the channel.
- Ray McDowell – This can be done but the scope is still pending on CVPPB, but should be done by EOY. Stacy Cepello had said it should be started soon.
- John Carlon – The existing 1D model is already done. He felt the confluence is a backup area to the Feather River which should be a concern. The low velocity flow is the major factor for sediment issues.
- Jeff Twitchell – The downstream boundary cannot be an abrupt end or it will not cover the true nature of the hydraulic flow in the Feather River.
- John Carlon – It is not just a velocity issue alone.
- Jeff Twitchell – The variance can be accelerated with older data usage.

- Ray McDowell – There is a limited scope on the process. Has anyone else asked these questions? Where is the budget hold ups?
- Matt Wacker – The budget is on hold.
- Ray McDowell – You can cherry pick some of the tasks that can be done and avoid those things that are held up.
- Matt Wacker – If we cannot share data or information at this time, we should move forward with the interim product where we can.
- Jeff Twitchell – Next month we will work on moving the scope of work forward to something that can be accomplished within the budget woes.

Safe Harbor (*like*) Subcommittee

- Jeff Twitchell – There are immediate needs and some long term needs for a clear definition on how and what the Safe Harbor (*like*) Agreements will be developed. The Bear River is covered as part of the TRLIA setback in the area.
- Earl Nelson – Again the Objective of this process is to see if the current areas can be developed as mitigation areas for future maintenance work. We must define the current baseline elderberry bushes set a level. As long as additional plants are added to the inventory then those new plants represent a buffer to protect the species. Any future maintenance work that impacts elderberry plants above that core baseline elderberry population will not be viewed as an impact to the Lower Feather River elderberry plant population.
- Jeff Twitchell – LD1 has a proposal to use the Star Bend restoration project as a mitigation site.
- Earl Nelson – Elderberry mitigation sites could be added to that baseline population.
- Jeff Twitchell – Action Items: I need feedback from the Work Group. Next meeting of subcommittee will be prior to the Sept. 16 date.
- Paul Brunner - Offered these six items as areas to explore by the subcommittee:
 1. Species
 2. Data Gaps
 3. Potential area
 4. ID land ownerships
 5. Funding discussion
- Paul Brunner – Address our “Future Vision” for the Lower Feather River Corridor. A map of the area similar to a county planning map with certain zones identified as priority areas for specific

activities. (i.e. mitigation sites, sediment removal sites, recreation area, wildlife habitat, etc.) How do we decide where activity priorities are assigned and how do we decide which segments best service which purpose? Work Group consensus? Public opinion? Interest group or stakeholder polling? The hydraulic modeling should provide some guidance. The TRLIA 1600 acres is a good place to start. This land is very much a blank slate to start to be used for different purposes.

- John Carlon – The baseline data for the 5 MOU's for O'Connor Lakes Wildlife Area need to be expanded and used for other areas. There has been over 16 months of work on this area. There must be funding for maintaining these baseline species.
- Erin Brehmer – What data is available on existing species list, both plant and animal.
- Debra Bishop – Vegetation mapping with the CVFPP Chico riparian project. This data should be available as of March 2011, but the Lower Feather River portion may be sooner as it is the first phase of this project. The GIS information is existing for these habitat areas. The TRLIA mitigation is not included on Bear River.
- John Carlon – Tweaking of the vegetation map is still needed and then it will be ready for public release.

LD1 - Operation, Maintenance, Repair, Replacement, & Rehabilitation Agreement (OMRR&R) for Star Bend Setback.

- Operations and Maintenance manual needs approval for the Star Bend agreement. Working on the issues.
- John Carlon – A safe harbor (*like*) agreement is already in place in O'Connor Lakes Wildlife Area. This agreement needs to be written as a template and then expanded to other areas in the corridor. The Vic Fazio Yolo Wildlife Area uses similar agreements for their mitigation efforts.
- Jeff Twitchell – There is a difference between the O'Connor Lakes Wildlife Area and the other Feather River corridor areas.
- John Carlon – First mitigation must be established and then the maintenance operation plan is developed, not the other way around. The O'Connor Lakes agreement could be an example for the corridor.
- Jennifer Hobbs – We should be addressing the elderberry mitigation sites first.
- Terri Gaines – My understanding was that an agreement already existed somewhere.
- Jennifer Hobbs – O'Connor Lakes agreement is the only new ground added as a mitigation area.

- Jeff Twitchell – The timing is a problem on the Star Bend setback issues. O’Connor Lakes restoration area was happening at almost the same time. LD1 was not on board with the O’Connor Lakes restoration effort. It would have been easier if they had been.
- Kent Zenobia – The issue is before the Central Valley Flood Protection Board (Board) now and what is the question with the DWR. The maintenance work in the area needs to be done. What will happen if the budget gets cut and DWR is unable to do the maintenance work? Maintenance of the low flow grass swath should be a Board flow concern. Of course, the issue is that vegetation continues to grow regardless if the maintenance budget is cut.
- Jeff Twitchell – All of these questions raised are good questions that are posed before the Board and continue to be pending. I hope these will be resolved soon.
- Kent Zenobia – I do not understand the 20 acre versus the 30 acre question on the Star Bend setback.
- Jeff Twitchell - The future situation is still uncertain but the vegetation continues to grow. The existing 20 acres of planted elderberry plants could potentially be part of a 30 acre site transferred to the state for a future safe harbor (like) agreement.

Fifteen minutes Break.

Working Group Exercise – Design issues and possible projects

- **Grassland high-flow channel**
- Earl Nelson – Described a free flow grass channel of the corridor for normal high level flows.
- Gary Hobgood – These grasslands are good Swanson hawk habitat area. There are high maintenance areas to maintain the open grassland.
- John Carlon – I suggest that we let the hydraulic modeling identify the best possible areas for these grasslands to allow for reduced maintenance and facilitating flood flows for the future. The grass habitats are not only vegetation types that may address this issue. Our studies are showing that specific shrub species may also accomplish many of the same goals of grasslands while diversifying the wildlife habitats.
- Ken Cumming – The Oregon Grape (*Mahonia aquifolium*, *Berberidaceae*) is shrub type that has shown great potential as a solution to reduce flow issues. This species should be looked at for future vegetation plantings. It most likely was a past Northern California riparian vegetation type in the

Feather River area. Other low profile riparian plants need to be used in the open areas. We need to promote good flow and reduce flow issues through hydraulic planning. A park land ecosystem savanna type should be used for future modeling.

- Gary Hobgood – Beyond riparian areas, there are dry swell areas that can be covered with low resistance to flow vegetation types. The water table and soil types need to be the driver for these species selection.
- John Carlon – Colonization success rates and then successional trends over time need to be addressed for all species selections. The necessary resources to establish and maintain the species at the desired successional stage need to be addressed. Also, the time needed to allow the vegetation to grow into the desired successional stage. After the vegetation is established if it is not achieving the desired affect then we need the freedom to admit an error and remove the vegetation for public safety.
- Steve Fordice – Don't forget the agricultural process can establish and maintain a desired vegetation cover type, while the farmer does the maintenance work for DWR. This is a cost effective method to achieve many of the channel vegetation coverage goals.
- Earl Nelson – Agriculture is very flexible vegetation maintenance tool in some locations. Mostly on the private ownership lands. There is definite potential to expand these operations. These operations must support our future vision of the corridor.
- Debra Bishop & Terri Gaines – Both commented on the cumulative impact of several issues with agriculture and other corridor uses.
- Ken Cumming – The use of livestock and especially goats to help maintain the vegetation cover by mowing is a future alternative for vegetation control that can be cost effective. There already is some use in the Feather River diversion. Rather than one large operation, one or several small operation would be a good idea. Agriculture use in the corridor is a good idea. Continuous trimming and brush removal is costly using State mechanical methods.
- Paul Brunner – If the channel flow is working there is no cost effective reason to make changes. Some vegetation restoration or enhancement projects could be a hindrance, we need to study before we act on a proposal for restoration or removal.
- Earl Nelson – Approval of restoration projects are causing some stage elevation change. The Board will be against this operation. The Board is most concerned with maintaining channel flow to provide public safety needs.

- Paul Brunner – A couple of inches change in stream level is hard to define and even harder to defend as being a major issue in the design flow. The magnitude of subunit management of each river unit is an issue that we will not be able to address. Our grid of the river is too narrow and isolated. The bigger picture needs to be defined and then we can look at that issue on a site by site basis.
- Earl Nelson – The “1957” profile is outdated; the new setbacks have redefined the river corridor profile. We need to address the new freeboard created by the setbacks and determine the impact of river widening. Is the freeboard increased or reduced significantly? The question we need to resolve is how we address a situation when there is a reduction freeboard?
- Kent Zenobia – The Work Group should meet with the local stakeholders and tweak the maintenance process.
- John Carlon – The issues is bigger than just the local stakeholders, we must address the benefits to all Californians. When we address the State funds, public safety, and water supply concerns. Grassland areas are not going to impact freeboard if the river does not want the grassland there. Investing money to keep grasslands in a river channel that is constantly trying to remove that grassland is not cost effective. Limited funding is better used elsewhere. O’Connor Lakes restoration project was analyzed and the grassland project did increase roughness, though to a lesser extent.
- Paul Brunner – A riparian jungle was programmed into the TRLIA setback and flow analysis. Additional conveyance by widening the channel was not recorded into the 200 year flood levels. What is the additional conveyance with extra freeboard? The worst case scenario is the best choice to protect against flooding. We don’t know enough to micro-manage the potential flood flows.
- Jeff Twitchell – There is a bottleneck below Star Bend on the Lower Feather River that needs to be addressed.
- John Carlon – The public safety issue should be defined as reduced risk, not absolutely no risk.
- Jeff Twitchell – The answer lies in the amount of freeboard. By using the maximum historic flow and still providing some freeboard we should address most issues.
- Earl Nelson – The bottlenecks may decrease that freeboard. By reducing the roughness factor in the bottleneck we may increase the freeboard and not need to worry about the vegetation restoration projects.
- Paul Brunner– I think we can all agree we are moving in that direction.
- Kent Zenobia – What is the concern here? The difference of 1/10 of a foot?

- Len Marino – The Board is looking at flood risk reduction. The reduction amount is not as important as the modeling showing the minimum flood stage improving. The Board has expressed they are flexible on the given amount.
- Earl Nelson – How much freeboard is lost by any given project and what is allowed as a minimum appears to be undefined. Perhaps a future analyst of the cost to produce and maintain a minimum standard would be telling. Can the public taxpayer afford to pay the cost for a unit loss of freeboard? On the reverse side, can the public taxpayer afford the cost of lost riparian habitat?
- Work Group discussion continued: – Is grid management the best way to analyze the corridor? The understanding of the corridor management was to look at the entire stretch as the “big” picture. The adaptive management process of defining need, modifying and then adjusting based on observations is lost with this site specific grid concept.
- Kent Zenobia – Adaptive management is agreed upon in the Lower Feather River CMP, but we still need to accomplish flood safety while addressing the other efforts.
- Ken Cumming- Regarding the O’Connor Lakes area low flow project, the fish benefits are needed to cover the low flow during specific times of year only. The rest of the year there is no problem.
- Gary Hobgood – Riparian vegetation may be lost if you are not careful. Vegetation on long term versus short term inundated flood plains react differently. Also, the frequency of the flooding is important criteria too.
- Terri Gaines – The discussion here is the vegetation design issues. This is the fun part of corridor flow design and corridor management. First comes the species (both plant and animal) objectives, then the desired habitats defined and finally the project design is established.
- Earl Nelson – Hydraulic modeling will define where the desired habitats can occur within the corridor. The design will need to mimic the natural process that establish and maintain those desired new habitat areas.
- Terri Gaines – Again, first the species needs should be defined. What species are desired and habitat requirements are needed to maintain those species.
- Jeff Twitchell – Discussion on what we want the CMP to address with potentially more setback levees. Should the Work Group only address guidance on setback levees to resolve channel pinch points? Should we address specific guidance on where the pinch points are located and various methods to reduce the restriction within the channel?

- John Carlon – The CMP should address the existing situation as the hydraulic modeling defines it. Then the discussion should open it up to several potential solutions. The vegetation restoration and maintenance discussion would be included in the topic area.
- Debra Bishop – The CMP should address the transitory storage holding capacity of certain areas. What is the Work Group consideration and what needs to be discussed?
- Scott Rice – This is not an issue downstream maybe this is a concern by DWR?
- Earl Nelson – There has been an issue in Yolo County. What is the concern with potential future setbacks levees and transitory storage holding capacity?
- Terri Gaines – We need to be concerned with what can be resolved with the CMP in the given timeframe. I think certain issues can be mentioned in the conceptual plan for further study but cannot be resolved.
- Earl Nelson – The CMP can address future opportunities for the Lower Feather River and what cannot be addressed in the CMP.
- Terri Gaines – The timing of the hydraulic modeling is an important factor to what can be accomplished with the CMP.
- Earl Nelson – Our current time line is slightly out beyond 1 year.
- Terri Gaines – The Central Valley Flood Prevention Plan (CVFPP) is a high level plan covering a large area. The pieces of this Lower Feather River CMP should include reference to CVFPP as the bigger regional plan. What is the outline for this plan and what is the future adaptability of the Lower Feather River CMP?
- John Carlon – There is extensive reference and site specific information already done for this stretch of river. The TRLIA Setback Levee is already done and the information developed for this project is extensive. Given the existing situation and information available, how do we management this area now? This Work Group is the best collection of experts on the area and we should be able to move forward from this point towards a management plan.
- Kent Zenobia – The CMP project overlaps with so many of our established missions. Delegation of CMP development should lessen the development workload. The levee setbacks tools alone should be available from internal sources. The local levee maintaining agencies (LMA's) should take the lead on all concepts for levee design. This should be a multiple purposes effort.
- Earl Nelson – The CMP will address multiple goals, including: permitting issues, managing maintenance, restoration projects, etc.

- Debra Bishop – The setback levee are a structural issue. Are we looking at the CMP defining levee guidance for the future?
- Scott Rice – There is geotechnical engineering knowledge of existing levee is available in most urban areas. The rural areas are less known but should be reported on before the EOY. The full existing geotechnical reengineering report will be out next year.
- Earl Nelson – The poorest levees will need more reconditioning work done soon.
- Steve Fordice – The pumps in the TRLIA setback area were a lost economic revenue source for the counties benefit. The transitory storage payments brought income to Yuba County and the levee districts. The internal drainage issue caused a closed basin issue. The cost will be ten times the cost generated from the revenue loss. This change has caused a loss of gravity draining.

Discussion on Silt removal – Nelson Slough

- John Carlon – This issue of sediment build up is not only in the Feather River corridor but also the movement of sediment into the Sutter Bypass. The removal if the silt load is important to the continued river flow issues. The Nelson Slough is only one of perhaps several sites to allow the sediment to be dropped and removed by DWR.
- Earl Nelson – The use of these sediments in seepage berms has been discussed. Routine maintenance removal of these materials is being explored in this area or another area. How does DWR permit this removal is the bigger discussion.
- Ray McDowell – This sounds like a conceptual idea at this time and could be further defined by the hydraulic modeling.
- Discussion followed on the recreation enhancement efforts within the project area including: recreation trails, recreation maintenance efforts, management responsibilities, etc.
- Earl Nelson – The TRLIA gate issues and the maintenance discussion.
- Steve Fordice – The vandalism issues on RD784 has lead to increase management cost and the use of heavy equipment in the area to prevent increase use.
- John Carlon – We will need discussion on the Early Implementation Program (EIP) program, refuge issues and the future funding issues. Future funding of the law enforcement work that needs to be done to do maintenance management within the corridor. Does DWR contract any law enforcement with county sheriffs? The DWR does have a stake in reducing maintenance cost caused by unauthorized use on levees and vandalism. Is there any consideration for these impacts in the long run.

- Earl Nelson – The Department of Fish and Game does much of the law enforcement for the State in the area and these EIP projects are totally different.

Next meeting – October 21th is the next scheduled meeting.

Items listed for the next meeting:

- Recreation discussion added to next Meeting.
- Vegetation restorations - Star Bend Pinch Point
- Setback Levees: John Carlon & Earl Nelson discussed the hydraulic modeling and the 1957 profile. The minimum conveyance to stay below flood stage. The lower stage can increase conveyance. Development of this Flood Stage or the Ordinary Water Mark Policy should be presented in the Policy discussion of the CMP. Setback levees should be discussed at the local, regional, and statewide level for environmental interest consensus prior to more in depth studies.
- Email to some of the missing members the Exercise I. See below!
- Meeting ended with some members continuing to complete the Exercise I worksheet.

Working Group Priority Setting

Results of Exercise I and a description of Exercise II:

- The Delphi Process was discussed by Earl Nelson

August 19, 2010 - Exercise I

During the First Exercise the Work Group was asked to submit a list of:

What do you think will happen within the next 50 years in the Lower Feather River CMP study area?"

Responses = Over 200 events, conditions, or scenarios' (scenarios') were presented from the twenty Work Group members. By combining similar scenarios' the number was narrowed to 156 in the following ten categories:

- Anticipated conditions or event categories – (number in category)

1.	Agriculture	- 07
2.	Economic and Fiscal	- 11
3.	Environment	- 16
4.	Maintenance	- 11
5.	Public Safety	- 12
6.	Recreation	- 16
7.	Stream Flow Dynamics	- 14
8.	Social	- 22
9.	Vegetation	- 24
10.	<u>Wildlife</u>	- 23

156 = Total number of anticipated scenarios' (conditions or events)

September 19, 2010 - Exercise II

The Work Group was asked to rate the 156 scenarios as to significance, desirability, and the likelihood the scenario would happen, by selecting one of the following 3 choices for each category:

- a) Highly significant; very desirable; or very likely
- b) Somewhat significant; somewhat desirable; or somewhat likely
- c) Not significant; undesirable; or unlikely

Thursday, July 15, 2010 *Revised*

Purpose Statement:

The purpose of the Lower Feather River Corridor Management Plan (CMP) is to develop a integrated strategy and long-term vision for managing the river corridor between the Yuba River and the Sutter Bypass in a way that facilitates and promotes public safety with economic sustainability and compatibility in future land uses, flood protection system management, maintenance of flood control facilities, and the restoration and enhancement of ecosystem functions and habitats.

Goals and Objectives

Goal

- 1) Central Valley Flood Protection Board adoption of a long-term Lower Feather River Corridor Management Plan (CMP) by June 2011.

Objectives:

- a) Establish and facilitate a diverse working group consisting of industry experts and stakeholders, and a policy team to assist in formulating applicable policies. The Working Group will work together through coordination, collaboration and cooperative working relationships with all stakeholders and interested parties to develop a CMP.
- b) Assess the existing corridor and channel habitat, geomorphology (sediment transport and river meander), ownership, and associated land uses to identify how the channel and related flood plain can be better managed. Evaluation will include a three-prong opportunity and constraint analysis addressing flood operations and flood maintenance, ecosystem enhancement, and other multi-objective land use considerations.
- c) Review existing hydraulic and habitat function models and decision support systems to formulate and compare alternative management actions to improve public safety, habitat, and river channel conveyance.
- d) By March 2011 integrate the best management action alternatives into a cohesive set of management actions and policies to guide maintenance, flood protection system improvements, and land use decisions for adoption by the Central Valley Flood Protection Board.

Goal

- 2) Facilitate the necessary permitting for maintenance and new actions within the Study Area without compromising design flow capacity and levee integrity.

Objectives

- a) By December 2011, identify ways to make the environmental clearance and permitting processes more efficient while meeting state and federal safety standards and following state and federal environmental protection procedures.
- b) Take advantage of opportunities to use advance mitigation projects, mitigation banks with deductible credits, and programmatic permits as part of the planned strategy for simplifying permitting for flood maintenance and new actions.

Goal

- 3) Promote environmental stewardship and ecosystem functionality within the project area or per suggestion change to: (*Promote Ecosystem Functions - Incorporate flood management system improvements that integrate the recovery and restoration of key physical processes, self-sustaining ecological functions, native habitats, and species.*)

Objectives

- a) Establish ecosystem restoration projects in conjunction with flood facility maintenance activities such that adverse effects to public safety and existing ecosystem functions are fully avoided and minimized, and habitat conditions for listed species are improved and contribute toward species recovery. Increasing habitat quality substantially above previous baseline conditions is expected to result in ecosystem functionality which will allow flood facility maintenance to occur with minimal adverse effects to habitat.
- b) Develop flood facility maintenance Best Management Practices (BMPs) that fulfill flood system operation and maintenance obligations in a manner that preserves public safety while preserving ecosystem vitality and diversity.

Goal

- 4) Identify economic and recreational opportunities and constraints in the Study Area consistent with CMP goals and objectives.

Objectives

- a) Identify opportunities and constraints related to agricultural activities within the study area. Define conditions under which agriculture may be compatible with other study area land uses.
- b) Identify opportunities and constraints related to recreational activities within the project area. Define conditions under which recreation may be compatible with other study area land.