



**Central Valley Flood Protection Plan
Climate Change Scope Definition Work Group
Summary of Meeting #3 – October 7, 2009**

October 7, 2009, 9:00- 1:00pm

**Location: Bay Delta Room, MWH
3321 Power Inn Road, Suite 300, Sacramento**

MEETING ATTENDANCE

Present:

Name	Organization	Status
Curtis Alling	EDAW/AECOM	Team
Michael Anderson	Department of Water Resources (DWR)	DWR Lead
Debra Bishop	EDAW/AECOM	Team
Charlotte Chorneau	Center for Collaborative Policy (CCP)	Facilitation Support
Stephen Crooks	National Blue Ribbon Panel: Wetlands Restoration Greenhouse Gas Mitigation Emission Offset Protocol	Member
David Curtis	Carlton Engineers	Team
David Edwards	California Air Resources Board (ARB)	Member
Alexa La Plante	MWH	Team
Roger Lee	DWR, Central Valley Flood Protection Office (CVFPO)	CVFPO Representative
Elizabeth Patterson	DWR	Member
David Raff	U.S. Bureau of Reclamation(Reclamation)	Member
Mary Selkirk	CCP	Facilitator
Yung-Hsin Sun	MWH	Technical Lead, CVFMP Consultant Program Manager
Michael Tansey	Reclamation	Member
Susan Tatayon	The Nature Conservancy (TNC)	Member
Stu Townsley	U.S. Army Corp of Engineers (USACE)	Member
Robert Webb	National Ocean and Atmospheric Administration	Member

Absent:

Michael Dettinger	U.S. Geological Survey (USGS)	Member
Nay Seavy	PRBO Conservation Science	Member
Mark Schwartz	UC Davis	Member
Kelly Redmond	Western Regional Climate Center	Member
Terry Root	Stanford University	Member

Observers:

Tom Filler	DWR	Observer
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WORK GROUP HOMEWORK / ACTION ITEMS:

1. Members will begin filling out Worksheet #6 Related Climate Change Projects and Programs for Meeting #4.
2. Members will review the chapter 2.1 of the CCSDWG Summary Report- Key Aspects of CC that may Affect Flood Management and send comments to Alexa La Plante and Mike Anderson.

FUTURE MEETINGS SCHEDULE:

The Climate Change Scope Definition Work Group (CCSDWG) will meet four times total. Upcoming meeting schedule:

- Meeting #4 will be October 20th 9:00-1:00pm at MWH.

MEETING OBJECTIVES:

1. Finalize key aspects of climate change.
2. Finalize existing problems and challenges.
3. Generate first cut of climate change considerations.

SUMMARY:

POWERPOINTS AND DOCUMENTS REFERENCED IN THE SUMMARY ARE AVAILABLE ONLINE at www.water.ca.gov/cvfmfp

WELCOME AND GREETINGS:

Mary Selkirk, CCSDWG Facilitator, opened the third meeting of the CCSDWG and reviewed the objectives and agenda. Group members introduced themselves.

Finalize Existing Problems and Future Challenges/Opportunities

Ms. Selkirk asked the group to look at page 3.1 of the draft Climate Change Scope Definition Work Group Summary Report containing the Existing Problems, Future Challenges and Opportunities within the CVFPP Planning Area Related to Climate Change. The list of problem statements was generated in Meeting #2 of the CCSDWG. The work group was asked to revisit the list to help the planning team by putting the problem statements into some level of priority. Ms. Selkirk explained that the CCSDWG would go through the list and identify items as either (1) essential and can be fully addressed in this Plan (2) desirable – useful but not essential, cannot be fully addressed (3) beyond the scope of the 2012 Plan. Half of the participants was considered a majority.

Members asked what will happen to the problem statements that are identified as being out of scope. Yung-Hsin Sun, Technical Lead, explained that those statements might be adequate for other programs, and could be redirected. Other statements could be things that can be redirected and captured in the full considerations list of the 2012 Plan.

The CCSDWG worked through the list of the problem statements. Most of the edits made to the statements were combining and grouping like statements. Most of the statements reviewed were seen as essential. Notes were captured on the list as the discussion unfolded seen below:

Flood System Performance

- 1. There is a lack of resiliency, adaptability and flexibility in the flood control system due to the current configuration of infrastructure.
What is the definition of infrastructure? Does this include both soft and hard infrastructure? Both should be captured.
Essential = over half

- 2. Levee stability is more difficult to maintain due to impacts from sea level rise.
Essential= over half

Combine with levee stability

- 3. Flood system performance is more difficult to manage due to uncertainties in the intensity, duration and frequency of precipitation events.
How do we quantify and evaluate this? This statement is the driver for the first two bullets.
Essential = over half

- 4. The current flood forecast and warning system, including data monitoring components, may be inadequate in handling the changing climate.
There are a limited number of high elevation data gathering points and most are inadequate. Basic data is insufficient for forecasting. Link to emergency response.
 - Data Collection
 - Data Management
 - Emergency Response*Essential = over half*

- 5. Levee stability is more difficult to maintain due to land subsidence and the less stable levees will make it more difficult to provide for flood protection.
Combine with second bullet

- 6. Modification to levee heights or configurations will modify downstream or system-wide hydrographs.
Modifications are not necessarily always bad
Out of Scope

- 7. Current flood system operation rules may become less appropriate due to sea level rise and changing flood frequency, size and seasonality.
Combine with 3 and 4
Essential= over half

System Maintenance and Repairs

- 1. Current flood infrastructure operations and maintenance (O&M) practices do not provide for flood control system adaptation and resiliency to climate change impacts.
Are current O&M standards still adequate in light of climate change? Will there be a need for more frequent repair?
Combine with other bullets in this section

- 2. The frequency of flood infrastructure repairs may change with wetter, dryer, and warmer climate conditions. Changes in flood hydrology and other factors (e.g. vegetation, subsidence, sea level rise) may require increased maintenance funding.
- 3. More resources may be required for future flood management O&M with a fragmented system and increase demand on local reclamation agencies and levee maintaining agencies.

*New combined bullet of 1-3
Essential= over half*

- 4. Increased flood management O&M may be needed due to worsening interior drainage capabilities resulting from urban land development.
Move to land use

Habitat Quality, Quantity and Connectivity

- 1. Changing physical conditions due to climate change, such as increased water temperatures, may affect species habitat, including the status of ESA-listed species.
Combine the first two bullets
- 2. Changes in the quantity of cold water storage may result in a decrease in the quality and quantity of aquatic species habitat.
*Combination with 1
Essential= over half*
- 3. The separation of the floodplain and channel disrupts natural floodplain processes and resilience to climate change.
*Combine with bullet 6
Essential= over half*
- 4. Changes in the magnitude of streamflow from spring snowmelt may impact the establishment of riparian vegetation and the out-migration of juvenile salmonids.
*The CVFMP is a step toward integrated flood and water management in coordination with ecosystem stewardship – this should clarify that there are certain streams that this will affect and other times it will end at the reservoir.
Combine with the first and second bullet combination*
- 5. Loss of species and habitat will affect the ability of ecosystems to withstand climate-related shocks caused by drought, fire, and severe flood events.
Example of habitat fragmentation and connectivity – combine bullets 3,5, and 6
- 6. Habitat fragmentation changes how ecosystems respond to climate change.
- 7. Changes in ecosystems will affect local and regional microclimates and the production and distribution of water, which will, in turn, affect agriculture, commercial and sport fishing, recreation and tourism, and other California industries.
Over half = out of scope
- 8. Historical reference conditions *alone cannot provide a guide for future habitat function and diversity*

- Deleted
- 9. Levee building in response to sea level rise prevents habitat migration.
- 10. Increased stresses on the flood control system could exacerbate conflicts between providing for habitat protection and system operation.
combine 9 and 10
Essential = over half
- 11. It will likely become more difficult to have enough water to manage and establish wetlands with climate change impacts.
Link to increase stressors – combination of bullets 1 and 2
- Subsidence of land and sea level rise will make wetland restoration more difficult in the future.
Link to stressors combination of bullets 1 and 2

Policy and Institutional Issues

- 1. Conflicts among water supply management, flood system performance and maintenance, and water quality objectives will be exacerbated with climate change.
Essential = over half linked to the stressors above
- 2. Changes in flood characteristics may require changes in land use policy, new reservoir flood operations, and new storage requirements and may exacerbate tensions between the flood storage and water supply issues.
- How will climate change influence both the intensity and the frequency of floods and what are the consequences which is result.
- Define the level of acceptable risk in light of climate change and how local level policy makers should be making investment decisions.
- Need for education and a greater level of public information and having common shared understanding.
Essential= over half
- 3. Uncertainties in climate change will complicate future land use decisions. *with explanation*
Combine 2, 3, 4
- 4. Existing climate change adaption strategies at the local level are not necessarily coordinated so as not to further exacerbate problems due to climate change. Currently, there are several different potential policy directions that may conflict with each other.
- 5. *Traditional flood management projects and practices may increase GHG emissions.*
Essential = over half

Existing programs do not implement the states goal to reduce GHG emissions and thus does not provide the flexibility to adapting to CC.
- 6. Most current policy assumes that climate conditions will remain the same, and thus does not provide for flexibility in adapting to climate change.
Connected to 7

Uncertainty of the affects of future cc is not factored into flood management and land use and related investment decisions.

- 11. *Policies and analyses of floodplain development do not consider the full cost of projects, such as the potential need for removal of infrastructure. This should be internalized at the beginning of the process. This relates to 6 and 7 combination*
- 10. *Publicly funded infrastructure need to account for climate change vulnerability. Lifecycle costing*
- 7. Most assessment tools for investment decisions (cost benefit analysis tools etc.) assume that climate conditions will remain the same, and are not designed for multi-scenario analyses.
- 8. Future political considerations *or market forces* may/can override scientific recommendations.
Stand alone
Something to keep in mind not essential for this plan
- 9. Uncertain climate change impacts on flood hazards will complicate liability issues in the event of a damaging flood event.
- *Deleted*
- 12. The ability to balance water supplies for agriculture industries, and ecosystems will become more challenging.
Fold in to the first bullet

Water Supply/Demand and Quality

- Water demands from different sectors, such as agriculture and the environment, may change under climate change.
- There is concern about the possibility that prolonged drought episodes interrupted by flooding will enhance stormwater runoff and thus increase water quality impacts from pollutants in the watershed being carried by that runoff.
- Climate change aggravates the need for water temperature management.
- Changes in both hydrology and vegetation may result in changes in the stream sediment loads and sediment transport during flood events.
- Sea level rise will lead to deterioration of water quality in the Sacramento-San Joaquin Delta by increasing salinity levels, among other effects.
- The current system does not have the ability to regulate flows to meet both water supply and flood management objectives.
- It is uncertain at what level changing water demands for agriculture and M&I need to be balanced against water for ecosystem health, or to what extent these demands will change.

Level of Protection

- Changes in hydrology redefine the level of protection of flood infrastructure.
- Level of protection should be risk-based.

- The desired level of protection of flood infrastructure will carry a different meaning in light of climate change; LOP becomes a “moving target” in that it constantly changes as hydrology changes.
- Climate change may affect the ability of historical records to characterize level of protection and the economic response.
- Sea level rise may directly affect the level of protection of flood infrastructure situated in tidally influenced areas.

Land use

- *Unintended consequences and conflicts between land use policies and legislation and flood management related to climate change... Delete reference to SB375 E = over half with the revisions from the notes*
- Climate change may require more frequent revisions/updates of FEMA maps and affect the cost of projected flood damages.
mixed response – need more clarification – dealing with uncertainty
- *Urban encroachment and conversion of annually planted crops to permanent crops (e.g., orchards, vineyards) in floodplains will make it more difficult to adapt to climate change.*
- *Land use planning is fragmented among numerous cities and counties in the Central Valley, making regional floodplain protection more difficult. EJ issue nexus
Essential = over half*
- Sea level rise will further endanger Delta communities.
- *Land use decisions could exacerbate difficulties in maintaining water temperatures and quality under future climate-changed conditions.*
- *Climate change impacts may disproportionately affect disadvantaged communities of the State causing environmental justice concerns.*

Emergency Response and Post-flood Recovery

- Climate change may impact decisions on rebuilding floodplain (and other) communities.
- Climate change may change the magnitude and frequency of events requiring flood response.
- Current emergency response plans and agencies may not account for adequate resources (staff and budget) to manage the magnitude and frequency of events requiring flood response.
- Climate change may reduce the resiliency of ecosystems and agriculture for post-flood recovery.

Information and education

- It is difficult to communicate climate uncertainty to the public. Climate change uncertainties will require increased investment in research, flood mapping, and agency coordination to effectively improve the understanding of climate change and ability to convey that information to the public.

- In some cases, the public perception is that there are no problems related to climate change.

Mr. Sun explained that the next steps on the Existing Problems and Future Challenges and Opportunities list are that the technical team will synthesize the statements based on the input received from the CCSDWG and resend out to the group to be finalized at Meeting #4. He asked that comments on the list be sent to Alexa La Plante and Michael Anderson. Mr. Sun also mentioned his desire that the problems statements be linked to the reference list as a means of supporting the statements. Again recommendations for the reference list should be sent to Ms. La Plante and Mr. Anderson.

Finalize Key Aspects

Mr. Sun explained that beginning on page 2-1 of the Draft CCSDWG Summary Report are the Key Aspects of Climate Change that May Affect Flood Management. He explained that the second chapter of the draft report on the key aspects is now in a narrative as opposed to the previous iterations of the Mind Map. He explained that within the narrative there are cross references to distinguish interrelated aspects.

Ms. Selkirk asked the CCSDWG to review the section and decide if it had adequate descriptions and the right balance of aspects is represented. She explained that comments can be submitted to Alexa La Plante and an updated version will be presented on October 20th.

Edits Discussed:

One member suggested that the adaptation strategy should be explained and the metrics should be discussed: exposure, sensitivity and resilience. The goal is to reduce the chances of flooding (reducing exposure) and consequences of flooding (reducing sensitivity).

One member suggested that the draft report be reorganized putting the considerations checklist at the beginning as it will set the stage for the rest of the report. Putting the checklist in the front will be useful to local government staff and decision makers.

Another member suggested removing the language under 2.1 Key Aspects of Climate Change... contributing climate change primarily to the release of greenhouse gases. Members suggest being more general in that the climate change is occurring and the state is at risk and needs to react. The CCSDWG Summary Report should not focus on the science but rather on providing guidance in adaptation strategies.

Members suggested adding a section on mitigation strategies at the same level as adaptation strategies.

Next Steps

Ms. Selkirk asked CCSDWG members to begin filling out Worksheet #6 Related Climate Change Projects and Programs. She asked that members fill out the worksheet and either send it to Alexa La Plante or bring it to Meeting #4. The last meeting of the CCSDWG will focus on reviewing and finalizing the problem and challenges statements, as well as the key aspects list.

Meeting #4 will be Tuesday, October 20th from 9:00am – 1:00pm at MWH.

Lastly, Ms. Selkirk asked if CCSDWG members would be opposed to having their email published on the CVFMP Website in a PDF list of the CCSDWG members. One Member opposed all other members agreed.