



**Central Valley Flood Protection Plan  
Climate Change Scope Definition Work Group  
Summary of Meeting #1 – August 26, 2009**

**August 26, 2009, 10:00am – 3:00pm**

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

**MEETING ATTENDANCE:**

**Present:**

<b>Name</b>	<b>Organization</b>	<b>Status</b>
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
Michael Dettinger	U.S. Geological Survey (USGS)	Member
David Edwards	California Air Resources Board (ARB)	Member
Gary Hester	DWR	Central Valley Flood Management Program (CVFMP) Program Manager
Alexa La Plante	MWH	Team
Erin Mullin	DWR, Central Valley Flood Protection Office (CVFPO)	CVFPO Representative
Elizabeth Patterson	Solano County Water Agency Board	Member
David Raff	U.S. Bureau of Reclamation(Reclamation)	Member
Kelly Redmond	Western Regional Climate Center	Member
Mark Schwartz	UC Davis	Member
Mary Selkirk	CCP	Facilitator
Yung-Hsin Sun	MWH	Technical Lead, CVFMP Consultatnt 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:**

Robert Columbro	Shingle Springs Band of Miwok Indians	Member
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Terry Root	Stanford University	Member
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**Observers:**

Tia Taylor	National Weather Service Intern	Observer
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**WORK GROUP HOMEWORK / ACTION ITEMS:**

1. Charlotte Chorneau, CCP, will send out Doodle scheduling poll to the Team and Members to help schedule future meetings.
2. A list of definitions of considerations will be drafted based on meeting notes and discussion.
3. All Work Group participants were asked to provide feedback on the reference list.
4. Michael Tansey, Reclamation, will follow up to see if a similar reference list is available from the Bureau of Reclamation.

**FUTURE MEETINGS SCHEDULE:**

Staff will coordinate with all Climate Change Scope Definition Work Group (CCSDWG) Members to schedule all future work group meetings. Future meetings will be half day sessions, held in Sacramento with remote access options able for those outside of the area. The Center will send out a Doodle scheduling poll to help ensure future meeting dates will work for the greatest number of Members.

**MEETING OBJECTIVES:**

1. Confirm group charter, schedule and membership
2. Clarify relationship of work group to the larger FloodSAFE effort and other work groups
3. Generate and prioritize key climate change topics that will affect integrated flood management
4. Initial discussion of existing problems and expected flood management challenges related to climate change

**SUMMARY:**

POWERPOINTS AND DOCUMENTS REFERENCED IN THE SUMMARY ARE AVAILABLE ONLINE at [www.water.ca.gov/cvfmp](http://www.water.ca.gov/cvfmp)

**WELCOME AND GREETINGS**

Michael Anderson, DWR Lead, welcomed the group to the first of four meetings on climate change as it relates to the Central Valley Flood Protection Plan (CVFPP).

**OPENING REMARKS**

Gary Hester, CVFMP Program Manager, thanked participants for volunteering for this important work. He noted the importance of climate change in improving flood management systems and explained that the work done in this work group will be rolled into the overall effort under way in developing and writing the CVFPP. Mr. Hester acknowledged the importance of this effort for DWR.

## **OVERVIEW: FloodSAFE AND THE CVFPP**

Yung-Hsin Sun, MWH Technical Lead, provided a PowerPoint presentation of the FloodSAFE program, the CVFPP, and the context in which the Work Group will be working. Mr. Sun emphasized the role of the CCSDWG at this stage of the CVFPP is to identify factors in Climate Change that the CVFPP should address. The presentation explained the overall CVFPP process including the five regional work groups and three other topical work groups which will all be developing content for the Regional Conditions Summary Report (RCSR), the first deliverable of the CVFPP effort. This first stage of work groups will meet over the next 7-8 weeks then additional work groups will be formed to determine recommended actions. The presentation explained the different levels of engagement that are available including forums, work groups, document review, interest based groups, briefings and coordination, website and information sharing. Facilitator, Mary Selkirk, mentioned that the CCSDWG Team presented to the CA Water Plan Climate Change Technical Advisory Group (CCTAG) in July to gain their input on the charter, focus and deliverables for the CCSDWG.

### Discussion:

One member asked if there is a defined feedback loop from the CCSDWG to the other work groups and to the RCSR. Public outreach and awareness is going to be critical to a successful effort. Another member agreed and expressed hope that the CVFPP effort learns lessons from the Comprehensive Study and does outreach to local communities.

- The feedback process is still being defined and developed; past experiences are being built upon and considered in the design of this effort. Erin Mullin, DWR CVFPO Representative, mentioned that this is precisely the type of feedback staff is looking for from the work groups.

## **CCSD Work Group Charter and Review of Focus and Deliverables, Q & A**

Ms. Selkirk walked participants through the CCSDWG Charter, drawing emphasis to the Work Group Focus and Charge & Deliverables. She noted the limited scope of work for the CCSDWG, which focuses largely on modifying and updating existing draft lists, and then prioritizing the factors on the lists. Ms. Selkirk reminded the CCSDWG that the three other concurrent Scope Definition Work Groups (Environmental Stewardship, Levee Performance, and Operations and Maintenance), would cover some of the same topics. The challenge will be to recognize the overlapping nature of these topics while comprehensively addressing Climate Change factors. Mr. Sun mentioned that the CCSDWG will be disbanded before the release of the RCSR, however the report will be available online for review and comment and the Work Group will be encouraged to review the synthesis of their work when it is released. He also explained that the main deliverable of the CCSDWG will be in the form of an expanded bullet list of considerations, as well as a reference list.

Climate Change Scope Definition Work Group Focus Areas:

1. What are the key aspects of climate change that would affect the integrated flood management and should be covered in the 2012 plan?
2. What are the primary categories of existing problems and expected future challenges related to climate change within the study area?
3. What are the climate change considerations that should be addressed when working on integrated flood management within the 2012 plan?
4. What are the key climate change studies and adaptation planning that the Central Valley Flood Protection Plan should coordinate with?
5. What are the uncertainties associated with climate change that may affect the flood management planning and considerations for other resource areas?

## Climate Change Scope Definition Work Group Deliverables:

1. List and define the key topic areas of climate change that would affect integrated flood management and should be covered in the 2012 Central Valley Flood Protection Plan to create a successful plan. Prioritize the list into 3 levels of importance (essential, important, nice to have).
2. List and describe the primary categories of existing problems and expected future challenges related to climate change within the CVFPP project area. Additional details about the identified problems and future challenges will be developed and captured in the Regional Conditions Work Groups.
3. Develop a comprehensive list of available documents to use as reference material related to climate change problems, opportunities, and standards.
4. Develop a check list of climate change considerations that should be addressed in integrated flood management within the CVFPP. This check list may include a list of principles for considering management actions related to levee performance.
5. Develop a list of other climate change studies and adaptation planning that the CVFPP Development Team should become familiar with and coordinate with regularly.

## Work Sheet 1: Key Aspects of Climate Change

Ms. Selkirk asked participants to consider the following question: What are the key aspects of climate change that would affect integrated flood management? Considerations were grouped into the following categories: physical processes ecosystem response, socio-economics, management policy and adaptation strategies, key uncertainties and other. Ms. Selkirk designed a mind map in order to record the conversation. Participants were asked to share their input and state under what category their considerations should be placed on the map. Mr. Sun mentioned that the period of analysis is to year 2050. Steve Crooks, National Blue Ribbon Panel: Wetlands Restoration Greenhouse Gas Mitigation Emission Offset Protocol, explained that for climate change the CCSDWG should be aware of a longer time horizon. Michael Dettinger, USGS, mentioned that 2050 is a good time period to look at because climate change projects tend to remain relatively similar up to 2050 and then begin to diverge.

### Management Policy and Adaptation Strategies Considerations

- Investment decisions process (in where to spend tax dollars – how to decide what actions to take in terms of strategies and infrastructure).
- Action now should not preclude future adaption.
- Integration with community climate planning including, land use planning and future growth, coordination with SB 375 which mandates planning take into consideration resource planning.
- Should be science-based.
- Atmosphere of evolving knowledge is not fixed, experts are constantly refining what they thought to be true. There needs to be flexibility to adjust to changing knowledge base.
- Management actions need to be taken given there is uncertainty.
- Mitigation planning should be coordinated with adaptation planning. Mitigation in terms of trying to reduce the root cause such as GHG reduction.
- Periodic monitoring to measure how decisions are affecting the system.
- An awareness of the public perception of climate change, how this is communicated to the public, and how it is address this in the broader forums.
- Response to multiple other stressors such as economic, land use, population planning.
- Explicit and developed feedback loops.
- Endangered Species Act (ESA) compliance.
- Having a plan ready for when something bad occurs (adaption) and designing the plan for the most likely event. This could be an emergency preparedness plan.
- Risk of paralysis.

### **Socio-Economic Considerations**

- Population.
- Locational issue.
- Environmental Justice (EJ) issues in the Central Valley (CV) and other areas. Response to EJ issues and making sure there are not disproportional effects on different populations.
- Community sustainability: Ensure a good upstanding of the sustainability of the communities in floodplains and deserts. Have some sense of how long these communities will be able to remain in their locations.
- Consider how climate change is going to affect economic inputs to Gross Domestic Product (GDP), including big ticket items such as the agricultural economy.
- Effects on cost of food, cost of water, and cost of insurance, as well as increased water conflicts (increased cost of uncertainty).
- Look at the big picture and what the affects of climate change will be globally, as well as the affects of other projects and initiatives.
- Impacts from green technology.
- Competition for public revenue.
- Dilemma of spending twice because of failed first attempts (the public tends to go from the cheaper action and underestimate the cost because of the resistance to the real cost).
- Demand for water is throughout the system both environmental water, and for agriculture.
- Evaporation and transpiration and how to manage the land – this fits between socio-economic and physical processes.

### **Key Uncertainty Considerations**

- Which science model should be used?
- Risk of paralysis.
- What can be done to be resilient?
- System level – nested responses, cascades, thresholds, non-linearity and alternate states.
- Changing frame of reference.
- Accepted level of flood risk (also a policy issue). This connects to public buy-in because this will be a conversation to have with the public.
- Changes to groundwater.
- Backwater affects (consequence of sea level rise).
- Future policy and economic and instruments, such as carbon and nitrogen trading.
- Attribution issue.
- New technology development.
- Changes to precipitation.

### **Physical Process Considerations**

- Not a question of “if” but “when” – should planning be for the end game or incremental?
- Changes to: (applying both to space and time)
  - Erosion
  - Soil and velocity
  - Precipitation patterns including, frequency, rain vs. snow (type) and seasonality.
  - Atmospheric water vapor
  - Temperature
  - Moisture and run off
  - Sea level raise
  - Flood mechanisms and changing flood plains and flood plain maps
  - Ecosystem vegetation
  - Water supply

- Water quality (flood and quality of runoff)
- Increased drought.
- Wide spread melting of snow and ice.
- Special distribution – regional variability
- Fiscal response to these changes
- Relationship to other hazards, such as fire and earthquake.
- Vetting the science and how to decide on the science and the approach?

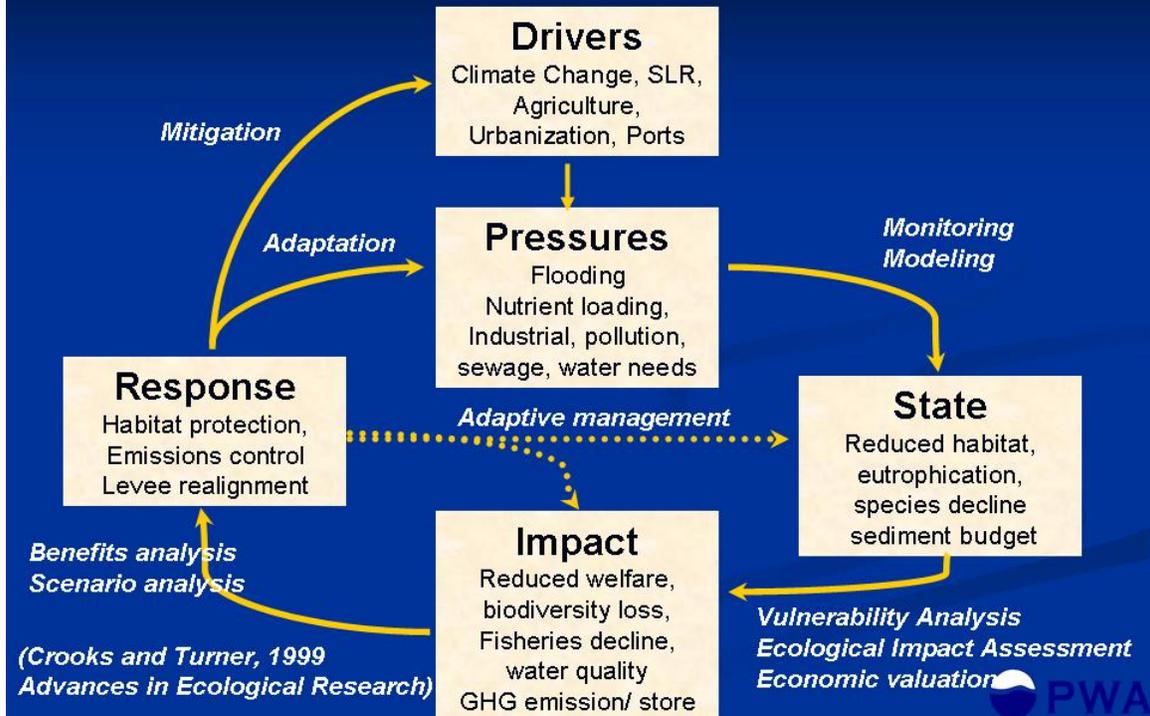
#### **Ecosystem Response Considerations**

- Capacity to respond to multiple stressors.
- Fire risk.
- Sediment accumulation.
- Changes in terrestrial vegetation.
- Ecosystems can be dramatically changed and the ecology will be changed. Be aware that the CVFPP is not managing to changes in ecosystem but to something else.
- Loss of habitat.
- Scale, which will inform how to manage the system.
- Temperature and aquatic habitat.
- Reservoir releases.
- Climate change will alter the trade off between water resource and flood management thus changing priorities of water.
- Increased demand of water.
- Availability of land for relocation of species – due to fire, or sea level rise.
- Increased habitat fragmentation, solutions should try to accommodate connected habitat.
- More species trade-offs.
- Political liability.
- Regulatory compliance.
- Timing of things such as, blooming periods and relationships to insects.
- Changes to aquatic habitat, such as fish populations.
- Potential for agricultural land ecosystem uses in addition to agriculture uses. Consider implications of land use decisions.
- Agricultural land protection and management for its own resource as well as economic value.

#### **Need for Public Buy-In Considerations**

- Belief systems.

# Sustainable Management



## Discussion:

The **above** chart as suggested as a way to organize the information collected in the brainstorm exercise, keeping in mind that the words would change.

- Members asked what the distinction is between driver and pressure. Answer: the drivers are the large scale shaping of the way things are changing while the pressures are measurements of what is changing and the response to the system.
- One member mentioned that instead of “urbanization” the chart if adapted for the CCSDWG should use the term “population”, for consistency in term use with the Delta Vision process.

## Prioritizing

Ms. Selkirk handed out colored dots to participants. She explained that green dots represent considerations that are essential to the CVFPP, blue dots are considerations that are highly desirable but not essential and that red dots are considerations that are outside of the scope of the CVFPP. Each participant was given six dots of each color and asked to place dots on the mind map to indicate their priorities. Participants could only place one dot per consideration.

Considerations that were identified as essential and desirable:

- Increased fragmentation – opportunities for land acquisition
- Changes to habitat, vegetation, fire, sedimentation, and species distribution
- Changes in precipitation – seasonality, frequency, intensity and runoff
- Changes to erosion, sedimentation and velocity
- Regional changes: special and temperature
- Changes in salinity
- Need for public buy in

- Increased demand for water
- Population, land use – environmental justice, disproportionate effects on different populations
- Agricultural protection and management – potential for agricultural land for economic uses
- Investment decisions
- Integration with local climate change planning – land use and coordination with SB 375
- Linking mitigation planning and adaptation
- Changes in water resource use and flood management
- Changes to groundwater and subsidence
- Level of acceptable risk
- Future policy and economic instruments

Considerations identified as outside of the scope:

- Changes in salinity
- Impacts from green technology
- New technology development
- Cost of implications and cost of: insurance, flood, water
- ESA compliance and changes to ESA
- Which scenario(s) to use

Discussion:

Ms. Selkirk reviewed the areas with high populations of blue and red dots and asked if participants were surprised by any of the ratings.

- The challenge with this exercise is that everyone has a different definition of the considerations. Shared meaning on the definitions will be essential for the CCSDWG.
- Some members found it difficult to separate the objective of the integrated flood management plan from affects of climate change at large.
- Many of the uncertainty considerations received blue dots. Participants explained that uncertainties have to be carried along in order to make decisions. Statements need to explain the level of certainty and make that transparent.
- Many red dots were placed on ESA compliance under Management Policy and Adaptation Strategies Considerations. Participants explained that for a 2012 Plan ESA compliance is not something that needs to be addressed.
  - The consideration was suggested so that the issue would be acknowledged.
  - One of the critical aspects of ESA compliance will be temperature change and should be explicitly acknowledged.
  - One member suggested the term should be regulatory constraints rather than specifically ESA.
- Ecosystem response and the changes in terrestrial and aquatic vegetation were rated as a high priority and should not be lost. Choosing a scenario is not a top priority to him because it is directly related to the uncertainty and he felt it was dangerous to recommend a certain scenario.
- Cost, new technologies and considerations of which scenario to use all received low priority ratings. There are other avenues to quantifying costs such in the AB 32 Scoping Plan, and thus did not feel it was a good use of this group's time.
- The group recognized that additional definitions for the Mind map items to better prioritization and discussion. There are a lot of connections among items in major categories.

## **Work Sheet 2: Existing Problems and Future Challenges Related to Climate Change**

Ms. Selkirk divided participants into two groups to discuss the following question:

What are existing problems, future challenges and opportunities related to climate change within the study area? How are these identified problems, future challenges and opportunities related, if any?

<b>Problems</b>	<b>Challenges</b>
Delta Levee Instability	Sea Level Raise
Level of protection designated	Changes in hydrology
River levee instability	Future growth
Land use incursions	Increased flooding and loss of adaptability
Current land use planning	
Uncoordinated agency policies and processes	Layers of ill-defined requirements at the local level
Patchwork of local authorities	Fragmentation of land users
Competition regarding water operations management (resources vs. other uses)	<ul style="list-style-type: none"> <li>- Warmer water</li> <li>- Changes in timing and volume</li> <li>- Storage and storage requirements</li> <li>- In channel storage and flood plain management</li> </ul>
Valley-wide floods vs. local responses	Gets worse
Declining health of riparian habitats	<ul style="list-style-type: none"> <li>- Ecosystem services will diminish</li> <li>- Gradual reduction of resiliency: how to plan</li> </ul>
Stresses on agriculture resources	Declining resiliency of agriculture
Irreversible commitments and decisions made now with future impacts that might change	<ul style="list-style-type: none"> <li>- Incorporate flexibility to adapt to challenges (factor in uncertainty)</li> <li>- Flexibility in investment and management decisions</li> </ul>
Funding for flood management comes from development	Sustainable funding for flood management that is not response-driven more proactive
Inadequate operations and maintenance for waterways – O&M are constraining and outdated	O&M with system perspective as well as specific to waterway and local system
No mandate for agency coordination	<ul style="list-style-type: none"> <li>- AB 857 – integrated state decision making. Developing a standard</li> <li>- Develop collaborative process for implementing meaningful flood management policy</li> </ul>
Inadequate channel capacity and levee system, aging infrastructure	<ul style="list-style-type: none"> <li>- Developing management alternatives to accommodate limitations in infrastructure</li> <li>- Land use decisions</li> </ul>
Inadequate flood management policy (not integrated)	Develop multi-objective based management
No state agency (oversight) to govern land use decisions (i.e. Jones Bill)	
No sustainable way to adopt infrastructure to changing conditions	Transition from a project-based perspective to system-based
Disconnected/fragmented habitat	Find ways to incorporate it into floodplain management

Ms. Selkirk explained that the group will return to this discussion of problems, challenges and future opportunities in the CCSDWG's next meeting.

## Reference List

Ms. Selkirk mentioned that one of the main deliverables of the CCSDWG is a reference list. Alexa La Plante, MWH, is working on a draft of the reference list which will be sent out to members by the end of the week. For homework, members were asked to provide feedback on reference materials that they are familiar with as well as provide additional references that should be included on the list. The group was asked to provide their input on what references should absolutely be paid attention to, and to alert staff to the considerations or possible shortcomings of studies that are listed.

- Mr. Townsley mentioned that Reclamation is developing a similar list. Mr. Tansey offered to check on this and get back to the group.

## Next Steps

In closing, Ms. Selkirk asked participants for feedback on the format of the meeting and what worked and what could be improved upon. Overall, participants felt the format and pace was good for generating discussion.

- Members suggested that the CCSDWG should include participants from resource agencies.

A Doodle scheduling poll will be sent out to help schedule the remaining three meetings of the CCSDWG.