



Urban Levee Design Criteria Public Workshop Workshop Summary

West Sacramento City Hall, West Sacramento
Tuesday, November 29, 2011, 9:00 am – 1:00 pm

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1. Welcome and Introductions

Rod Mayer, FloodSAFE Executive, California Department of Water Resources (DWR), welcomed meeting participants to the Urban Levee Design Criteria (ULDC) public review workshop. He noted that the draft ULDC document was designed in a collaborative process with group members from public agencies and private organizations.

SB5 requires a 200-year urban level of flood protection for levees by 2015, or within 36 months of the adoption of the Central Valley Flood Protection Plan (CVFPP). SB5 also charged DWR with developing the criteria to define what 200-year flood protection means. Over the past several years, DWR has released several versions of the ULDC. It will be required in the Central Valley, and will be voluntarily applicable throughout the entire state. Mr. Mayer reviewed significant changes and additions to the document, including new definitions and more information regarding the periodic review process. He noted that there has been another parallel effort for developing urban level of flood protection (ULOP) criteria, which has involved a stakeholder review process. However, there are significant implementation issues so work has been suspended on the ULOP and a DWR staff recommendation is being developed.

2. Agenda Review and Ground Rules

Meeting facilitator, Dorian Fougères, Center for Collaborative Policy, thanked the participants for their attendance. He noted that the meeting is also being webcast and that the presentation slides will be posted on the ULDC website. He reviewed the meeting ground rules and agenda, noting that written comments would be accepted until December 16, 2011.

3. Review and Discussion of Draft Material: Part 1

Collaboration and Drafting Process

Mr. Mayer noted that the ULDC work group has consisted of about two- dozen members from various agencies, most of which have focused their work on levee design in the Central Valley. Members have participated in several facilitated workgroup meetings. Some of the other members are also working on the ULOP. He thanked the group members for their participation, as well as the City of West Sacramento for use of their facilities.

Introduction

Mr. Mayer introduced the new items that had been added to the table of contents. The first section is the introduction, which explains what the document is meant to do. The document does not address how to meet environmental regulations and mitigation requirements, but does acknowledge that these issues are part of levee and flood projects.

Background

Section 5 provides some background and two commonly used approaches for determining design water surface elevation. These include the Federal Emergency Management Agency (FEMA) and United States Army Corps of Engineers (Corps) approach. In recent years, the Corps

has been advocating levee design to accommodate water at the top of the levee and DWR supports this.

Questions and Comments

- Butch Hodgkins, Central Valley Flood Protection Board (CVFPB), asked, “For those of us that will have to manage the system, you have two different approaches to determine a water surface elevation. What are we supposed to use for a design water surface elevation if we are trying to determine if a project has a hydraulic impact? What is the protocol?”
 - This document will not address hydraulic impacts. DWR is working on a policy to address it. This document will address how to determine if the levee is high enough for loading, seepage and stability.
- Ron Stork, Friends of the River, asked, “Design water surface elevation is presumably the basis for floodway capacity numbers -- cubic feet per second. I am curious how the board plans to determine floodway capacity. Does the board intend to revise their discharge capacity numbers for designated floodways as a result of what DWR is doing?”
 - Mr. Hodgkins, as a CVFPB board member, noted that they are currently not addressing that issue.
 - Mr. Stork acknowledged that this comment does not apply to the ULDC.

Guiding Principles

Mr. Mayer noted that this section is similar to what ILDC Version 4 contained. It is basic guidance and identifies where more specificity is needed. It builds on the Corps principles. Because frequently loaded levees are working more of the time, they should have additional guidance. The design should be based on the assumption that upstream levees will not fail. Sea level rise should also be considered.

For procedural principles, it is not wise to have a single engineer make the finding. DWR aims to make sure that nothing has been overlooked or miscalculated. This topic is addressed further in the appendix.

4. Review and Discussion of Draft Material: Part 2

Mr. Mayer provided an overview of the 22 subsections within the ULDC document. He pointed out the new additions since ILDC Version 4, noting that many of the sections have been expanded or modified. He also pointed out additional overarching changes to the document:

- Regarding the words “should” and “must”, there was a conscious effort made to clarify and define what they mean. “Should” is guidance and not mandatory, the engineer will not need to seek an exception. “Must” means that it is required.
- In Version 4, armoring and volume of overtopping was discussed. That was revisited, and the group was unable to come up with something that is more specific. If the levee isn’t high enough then you are going to have to go through the exception procedure.
- Additional technical criteria and guidance, including freeboard levees and super elevation, have been added.

Design Water Surface Elevation

Very little has changed in the Design Water Surface Elevation section. There is a height adjustment that suggests including super elevation. There has been some work done in regard to debris loading on bridges.

Minimum Top of Levee

In Version 4, Minimum Top of Levee was merged with Design Water Surface Elevation, but has since been given its own section. This is the minimum levee elevation that you have to have for the water to not go into the protected area.

Soil Sampling, Testing and Logging

This section was added based on DWR's experience from the Urban Levee Evaluations Project. Particular attention needs to be paid to soft soils.

Slope Stability for Intermittently Loaded Levees

A caveat has been added: if your hydraulic top of levee (HTOL) happens to be close to the design water surface elevation, then you do not have to check for stability of the HTOL.

Underseepage for Intermittently Loaded Levees

There have been no changes to this section.

Frequently Loaded Levees

The definition of a frequently loaded levee is a levee with water on it for more than 36 days out of the year. It should be noted that the seismic stability criteria is more stringent than before. There needs to be a seismic analysis, consideration for tsunamis and seiches, and post-earthquake remediation.

Questions and Comments

- Ron Stork, Friends of River, asked, "Do you define 'typical' summer and winter? Because 'typical' is not the same as 'average.' It should address 'typical' high water rather than 'average' high water, and there could be fairly significant differences."
 - Mr. Mayer noted that it did not address that, but that the work group would look at it further.
- Mike Bessette, HDR, asked if duration of loading was taken into account for the definition of frequently-loaded levees.
 - Mr. Mayer replied that it was not – if there was loading at all above the toe of the levee (even if short duration), the levee was considered loaded.
- Ali Porbaha, CVFPB, asked if there was data to show where the frequently-loaded levees are located.
 - Mr. Mayer responded that we do not, because there is a lack of gage data that makes mapping them difficult. The intent is that the frequently-loaded levee criteria cover urban levees in the Delta. People would need to do their own site-specific analyses if a levee type is in question.

Seismic Vulnerability

- Butch Hodgkins, CVFPB, asked, “On the 200-yr seismic event for levees that are not regularly wetted, are you saying these levees have to be designed to survive a 200-yr event? “
 - It is not required they survive, but a plan to repair the expected damage in a timely manner is required.
- Ron Heinzen, Kleinfelder Inc., asked, “If an agency is completing a finding, and there are no improvements needed and no reason to ask DWR for money, then it is up to just the engineer and the board. But if there is need for repair, then DWR might require review by an independent consulting board (ICB). Would the ICB require something more than a 200-year seismic event?”
 - DWR has programs that provide for repairs and improvement, and it specifically references the latest criteria. Right now it would look to ULDC, so there would be no justification for requiring more than 200-year seismic event.

Levee Geometry

Extra wide levees might not even need to meet the geometry guidance. Access roads have been addressed.

Erosion

Mr. Mayer noted that the erosion section now addresses potential erosion sites. If there is significant potential, design should proactively address that concern. Also, language on dispersive soils was added.

Right of Way

The section on Right of Way now contains some criteria as well goals. DWR wants to provide the ability to operate and expand the levee systems in the future as well as have the 20 feet beyond the landside levee toe. It would be too difficult to make a finding if there are already encroachments near the landside levee toe. There needs to be a realistic target schedule. The engineer should consider providing higher factors of safety. For future expansion, they would want to see no new structures.

Encroachments

The encroachments section was reworked slightly. If something is considered to be a high-hazard encroachment it must be removed or remediated. There should be a plan for permitting encroachments.

Penetrations

The penetrations section is typically pipe crossings and transportation structures. There have been issues with not knowing where some pipes are, therefore a study should be done.

Floodwalls, Retaining Walls and Closure Structures

There have been no changes to this section since Version 4.

Burrows

This is new to the ULDC. Corps guidance should be followed. If there are a lot of burrows, grouting and backfilling can be effective. With respect to levee dragging, if the levee is dragged then it should be done after the burrow is prepared. In short reaches permanent barriers could be constructed.

Levee Vegetation

The section on levee vegetation calls for life cycle management, and removal or remediation of unacceptable threats. There needs to be routine inspections as things change over time. Mature trees can stay and live out their life, and immature trees would need to be removed so over time there would be fewer and fewer trees. (Note: More extensive discussion is summarized below).

Wind Setup and Wave Runup

This section has not changed significantly. A number of additional guidance documents are available and encouraged for use.

Security

The security section has been greatly expanded. Brian Banning, Cal EMA, took the lead when dealing with the guidance. A security plan is required and the appointment of a security director is suggested. The levee maintaining agency should be working with the intelligence agency. Partnerships should be developed with citizens that live near the levee, similar to a neighborhood watch. Physical barriers should also be implemented.

Sea Level Rise

The Ocean Protection Council (OPC) has asked that their ranges be considered in the planning of any levee improvement projects. If the finding is going to last for 20 years, sea level rise needs to be factored into the design water surface elevation.

Emergency Actions

This section has not changed.

Levee Design Criteria Summary

This section summarizes criteria for intermittently loaded levees, as detailed in the preceding sections.

Questions and Comments

- Mr. Porbaha asked why the summary table for frequently-loaded levees does not have criteria for seepage or exit gradient.
 - Mr. Mayer replied that the frequently-loaded levee summary table only calls out additions or exceptions to the criteria for intermittently-loaded levees. Therefore, seepage or exit gradient criteria for frequently-loaded levees would be the same as for intermittently-loaded levees.
- Mr. Hodgkins asked, “You talked about how these are standards not only for design and construction but also operations and maintenance. Are they going to be incorporated into DWRs inspection criteria?”

- These standards apply to some levees that DWR would not be inspecting, but where they are inspecting, that is a valid point. There will be public review of these documents.

Focused Discussion of Right-of-Way

Mr. Mayer posed the following question to the group regarding the Right-of-Way section, “Does this currently proposed approach seem reasonable for the situations where it is challenging to get Right-of-Way on a short term?”

- Mr. Stork noted that it does seem reasonable. DWR also needs to look to the CVFPP that has recommendations for expansions – not just hypothetical but also planned expansions.
- Mr. Hodgkins asked that in regards to the 20-foot clear zone, how can a local government deprive a property owner of the use of the property?
 - The requirement states easement or fee title, but DWR would prefer fee title.
- Mr. Stork noted, in regard to width requirements and sea level rise, it would seem that in the not so distant future, your access routes would change and maybe the width would not be reasonable enough.
- John Maguire, San Joaquin County Department of Public Works, raised the legality issue of requiring a property owner to sell their clear zone at the time of sale.
 - There may be legal issues. Originally legal review suggested this was part of police powers. In Title 23, it requires a 20-foot clear zone. The best time to make the acquisition is at the point of sale, because they new property owner has not had the time to enjoy their property, therefore you are minimizing the hardships.
- Mr. Stork asked if the entire Right-of-Way section is still subject to the exception process.
 - There is the ability to get an exception.
- Mr. Hodgkins noted that under the long-term acquisition plan, you do not have the ability to use eminent domain to acquire property, and if you can do it over 50 years, it is uncertain how one would show public necessity. He suggested the need to think about how bad one wants that 10-foot easement in areas where there is an existing development.
 - Mr. Mayer agreed that this topic should be addressed further.
- Dave Shpak, City of West Sacramento, noted that it might be beneficial to talk about Right-of-Way and Security in terms of joint use. He also noted that increasing access would help with security.
 - Nothing precludes joint use, it is encouraged and there are plenty of projects that use it.
 - Brian Banning, Cal EMA, agreed that increased access to the levees would increase awareness, and help with security.
- Mr. Shpak asked for further clarification regarding the use of 20 feet instead of 15 feet of Right of Way.

- Mr. Reinhardt noted that they had chosen 20 feet to be consistent with Title 23 requirements. However, he agreed that 15 feet would be more convenient.
- Mr. Hodgkins said that there is an implication that with the standards that are being sponsored, they are giving up on PL 84-99. There will be a system where there are new and existing levees. It is important to work closely with the USACE.

Focused Discussion on Vegetation Management

Mr. Mayer posed the following questions to the group in regards to vegetation management:

1. Does the extent of the vegetation management zone, in short levees there are exceptions, where trimming thinning and life cycle management apply seem reasonable?
 2. What about unrestricted growth in this zone?
 3. What about the restriction on planting outside of the special planting berm?
- Ron Stork noted the Department of Fish and Game is concerned about the extent of the life cycle management zone where over time one ends up with more of a vegetation free zone. At the same time, one may actually have a levee design that relies on vegetation as part of erosion control. Presumably the objective is clearance on the waterside slope. These are going to be difficult circumstances to define them with simple rules. As far as unrestricted growth within the channel, there are operations and maintenance manuals for channel maintenance that exist.
 - Ray Costa noted that the ULDC is in conflict with the Corps vegetation requirements. At some point, an engineer is going to have to step up to the plate knowing its in conflict with the national flood control agency.
 - This will have to be dealt with to comply with FEMA. If they do not certify with Corps, this puts them in an awkward position.
 - Terri Rie, CVPFB, asked, “Has any research been done to determine what impacts the 5-foot trimming will have on the tree limbs overhanging the rivers and streams that provide food for the fish? I, speaking for myself, am concerned about the waterside tree trimming impacts on water temperature and shading needed for fish.”
 - Mr. Mayer replied that he is not sure, but the Corps may be taking input on the matter. The ULDC does not address environmental impacts or mitigation.
 - Mr. Shpak asked about specifications for root removal, and if DWR is thinking about including more extensive guidance for root removal.
 - The Corps will give us better answers. There needs to be more discussion about this topic.
 - Kelley Barker, DFG, noted, “The resource agencies have some major concerns with life cycle management, its impacts on the ecosystem, species and habitat and its ability to be permitted and mitigated in-kind.”
 - Kelley Barker also said, “In response to your third question: The resource agencies also have concerns about restricting planting to the planting berm as the berm will only provide habitat for some species (mainly fish). There needs to be some ability to increase riparian connectivity in the Central Valley so listed species are not further compromised and so no species become listed.”

- Mr. Stork noted that with two competing systems, the State needs to get it right. He noted added that they should not assume that the USACE vegetation policy that exists today is the same one that will exist in 5 years.

5. Review and Discussion of Draft Material: Part 3

Operation, Maintenance, Inspection, Monitoring and Remediation of Poor Performance

Mr. Mayer noted that for this section, DWR would like to see the Corps standards apply.

Attachment 1 – Draft Procedures

The city or county would make a finding. This finding needs to be based on substantial evidence in the record. The sequencing is different from Version 4: the civil engineer must address comments from an independent review panel before the document goes out for public review. Furthermore, if there has been degradation, the city or county must have a plan to address this, and issues need to be taken care of before the next 5-year review. If the finding applies to a specific area of land, then the engineer did the floodplain mapping study should be included in the peer review. There should also be some turn over for review panels.

Questions and Comments

- Ron Stork supported the peer review coming before the public review.
- Mr. Hodgkins felt that the biggest uncertainty is the question of climate change, and suggested putting something in the 5-year review, so the engineer looks at the changes that have been documented as far as sea level rise.
- Ms. Rie asked “for Non-Corps urban levee improvement projects, does the independent review panel need to be formed based on the criteria in EC 1165-2-209?”
- Mr. Maguire asked how an exception could be made that is different from the criteria with regard to Minimum top of Levee.
 - Mr. Mayer noted that there is nothing that precludes non-compliance with min top of levee. There is a procedure for exceptions if your levees does not meet the minimum requirements.
- Mr. Stork was concerned about a possible change in FEMA methods in the future.
 - Mr. Mayer stated that when DWR writes regulations, they are not allowed to write them so the actions of others can change them. If we say follow FEMA guidance, we have to say per this date so that we are locked in. So that is what we are doing here.
- Kelley Barker asked, “Section 7.16.7 says LCM is required. If LCM is not accepted by the USACE as an interim of permanent solution and levees fall out of PL84-99, will DWR still required LCM to be continued.
 - Mr. Mayer noted that their intention was to require LCM to be continued.

6. Next Steps

Mr. Mayer encouraged meeting participants to submit written comments by December 16. He also noted that the webcast would be available for viewing for about 90 days. A final version of the ULDC should be released early 2012.

7. List of In-Person Attendees

cc	NAME	ORGANIZATION
1	Josh Biggs	MWH Americas
2	Michael Bessette	City of West Sacramento
3	Jami Childress-Byers	Cal EMA
4	James Cornelius	Sutter County Resource Conservation District
5	Katie Cox	Center for Collaborative Policy, CSUS
6	David Ford	Ford Engineers
7	Dorian Fougères	Center for Collaborative Policy, CSUS
8	Jeremy Goldberg	DWR Legal
9	Ron Henizen	SJAFCA
10	Butch Hodgkins	CVFPB
11	Mike Inamine	Sutter Butte Flood Control Agency
12	Mary Jimenez	MWH
13	Dante Legaspi	AMEC Geomatrix
14	Steve Mahnke	DWR
15	John Maguire	San Joaquin County Public Works
16	Rod Mayer	DWR
17	Kenneth Myers	Brown and Caldwell
18	Ali Porbaha	CVFPB
19	Ric Reinhardt	MBK Engineers
20	Gonzalo Rodriguez	Brookfield Residential
21	Dave Shpak	City of West Sacramento
22	Ron Stork	Friends of the River
23	Yung-Hsin Sun	MWH
24	Joe Tootle	ENGEO

8. List of Webcast Attendees

#	NAME	ORGANIZATION
1	Denise Akins	County of Tulare Water Resources
2	Kelley Barker	CA Department of Fish and Game
3	Nikki Blomquist	DWR
4	Kimberly Brown	HDR Engineering
5	Norma Camacho	Ventura County Watershed Protection District
6	Jim Chapman	USDA-NRCS
7	Neal Conatser	County of Marin, Department of Public Works
8	Connie Ford	Sacramento County Water Resources
9	Chris Fritz	PBI
10	Jennifer Lida	DWR
11	Daniel Jabbour	HDR Engineering
12	Blake Johnson	HDR Engineering
13	Mick Klasson	Consultant
14	Jerry Lakeman	Fresno Metropolitan Flood Control District

#	NAME	ORGANIZATION
15	Darren Mack	SAGE
16	Kathy Mannion	RCRC
17	Martha (no last name provided)	Ventura County Watershed Protection District
18	Roger Narsim	Santa Clara Valley Water District
19	Anthony Quintrall	HDR Engineering
20	Teri Rie	CVFPB
21	Vin Rover	CBIA
22	Mark Seits	HDR Engineering
23	Emma Suarez	CVFPB
24	Suzanne Turek	CA Department of Fish and Game
25	Chien Wang	Alameda County Flood Control
26	Seth Wurzel	TRLIA & SBFCA
27	Vicky Zhang	HDR Engineering