

**From:** [Robert Pyke](#)  
**To:** [Delta Council Delta Plan Comments](#)  
**Cc:** [Isenberg, Phil@DeltaCouncil](#); [pj@patrick-johnston.com](#); [Fiorini, Randy](#); [Grindstaff, Joe@DeltaCouncil](#)  
**Subject:** Comments on Chapter 7 of Sixth Staff Draft  
**Date:** Tuesday, May 22, 2012 9:36:15 AM  
**Attachments:** [Pyke Cover Letter.pdf](#)  
[Pyke Comments on Chapter 7 of Sixth Staff Draft.pdf](#)

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... are attached.

On the subject of the Council's responsiveness to comments, Randy and Keith made an honest effort to address this at the recent meeting of the Contra Costa Council Water Task Force, at which I acknowledged the difficulty of the task, but the fact remains that I have never seen any direct or indirect response to my comments. Joe also made an appropriate comment in the press conference at which the Sixth Staff Draft was released: "Every comment was considered within the context of how it helped meet the coequal goals. Not one goal, which most comments addressed – but both goals, as required by legislation"; however, my comments have always been addressed to multiple goals. I will readily agree that my comments on the First Staff Draft were long and rambling but there was a reason for that. The Chairman had repeatedly asked that comments be submitted as early as possible rather than waiting for the last moment and I was trying to lay out some background that had not been covered, or had not been covered correctly, in the white papers. In spite of their length, I would urge you to go back and read those comments again. As I recall, I addressed all five functional areas of the Delta Plan and, although details were lacking, I think there was more of a "plan" in those comments than there is in the Sixth Staff Draft. There was also an admonition that you need to learn who to listen to. All "experts" are not equal. At the time some people thought that I was over-reacting to the inflammatory presentation that had been made to the Council by USGS personnel but I note that the Director of the USGS has now offered a formal apology for that presentation. I would be pleased to meet with Council members or staff to discuss both my previous comments and the attached comments as the Council members seek to turn the Sixth Staff Draft into their own document.

Regards,

Bob

Robert Pyke Ph.D., G.E.

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## **Robert Pyke, Consulting Engineer**

May 21, 2012

Mr. Phillip Isenberg  
Chairman, Delta Stewardship Council  
980 Ninth Street, Suite 1500  
Sacramento, California 95814

Dear Phil,

I am forwarding along with this letter formal comments on Chapter 7 of the Sixth Staff Draft of the Delta Plan, however, since I still cannot see any evidence that my previous comments to the Council have been read, let alone taken seriously, I am trying a new tack of posing a list of questions in the Socratic manner:

1. Do Delta levees afford a level of protection against more extreme floods and larger earthquakes that is commensurate with the value of the infrastructure that passes through the Delta and the value of the Delta as a place that houses agriculture, recreation and tourism, legacy communities, and a damaged but still valuable ecosystem?
2. Does the existing Delta levee system provide an adequate basis for dealing with possible more rapid sea level rise?
3. Is the following statement true: "Protected from flooding by levees, its islands are a critical resting place on the Pacific Flyway and its channels a transition zone for salmon on their way to the ocean or returning upstream to spawn"?
4. Is it true that the levees are the single most important feature in defining the current Delta, that they provide the basic landscape on which the current ecosystem is based, that they protect rich agricultural lands and legacy communities, that they make possible recreational and tourism opportunities for a growing regional population, that they protect critical infrastructure that has a replacement cost in the order of \$50 billion, and that for the foreseeable future they protect water conveyance to the export pumps in the South Delta?
5. Then why does the Sixth Staff Draft of the Delta Plan not include plans or recommendations for levee improvements that are required to more properly address the hazards posed by floods, earthquakes and sea level rise?

6. Is it not inconsistent that the Sixth Staff Draft includes inflammatory language and illustrations regarding the consequences of levee failures but no definitive recommendations on how to improve the levee system?
7. The DSC is not required by law to include all the recommendations of the Economic Sustainability Plan in the Delta Plan but it is required to consider them. Why does the Sixth Staff Draft simply ignore the two primary recommendations of the ESP regarding levee improvements? Why does the Sixth Staff draft recommend a three year study of issues that the ESP has largely put to rest already?
8. In this respect, is not Chapter 7 of the Sixth Staff Draft a triumph of bureaucracy over good engineering and economics and common-sense?

Sincerely,

A handwritten signature in black ink that reads "Bob". The letters are cursive and somewhat stylized.

Robert Pyke Ph.D., G.E.

## **Robert Pyke, Consulting Engineer**

### **Comments on Chapter 7 of the Sixth Staff Draft**

... and on references to levees and risk elsewhere in the document.

Overall comments:

This chapter is better written and edited than previous drafts but is still badly flawed. In particular there is a wild inconsistency between the exaggerated description of the threat to the levees posed by extreme floods, earthquakes and sea level rise in the early part of the chapter and the failure to come up with a plan to deal with these threats, such as that included in the Economic Sustainability Plan.

In fact, it would appear that the DSC staff have not read Chapter 5 and Appendices C, D and E of the Economic Sustainability Plan (ESP) nor the DWR Background Technical Memorandum – certainly they are not cited in the list of references as they should be - and it is not clear that they are aware that the proposed Framework for DWR Investments in Delta Integrated Flood Management has been withdrawn and is being re-written. The failure to adopt in full the recommendations on addressing the threats posed by extreme floods, earthquakes and possible sea level rise in the ESP is most surprising because they were reviewed and approved by a peer review panel assembled by the DSC's own Delta Science Program.

And, this chapter is also inconsistent with Chapter 5 of the Sixth Staff Draft which is very much improved as a result of incorporating many of the recommendations of the Economic Sustainability Plan. It is worth repeating part of the introduction to Chapter 5:

*This chapter describes the unique values that distinguish the Delta and make it a special region, and outlines the Council's five core strategies for protecting and enhancing these values:*

- ◆ *Designate the Delta as a special place worthy of national and state attention*
  - ◆ *Plan to protect the Delta's lands and communities*
  - ◆ *Maintain Delta agriculture as a primary land use, a food source, a key economic sector, and a way of life*
  - ◆ *Encourage recreation and tourism that allow visitors to enjoy and appreciate the Delta, and that contribute to its economy*
  - ◆ *Sustain a vital Delta economy that includes a mix of agriculture, tourism, recreation, commercial and other industries, and vital components of state and regional infrastructure*
- The policies and recommendations are proposed to carry out these strategies and are found at the end of the chapter. Protecting the Delta as a place also depends on the strategies to reduce flood and other risks to the Delta that are described in Chapter 7.*

But Chapter 7 does not even push for a minimum of 100-year flood protection, the PL 84-99 standard, throughout the Delta, let alone address the question of more extreme floods, earthquakes or possible sea level rise! Without the Delta levees the Delta as we know it would not exist. How can the Delta be protected and enhanced without a bold strategy to improve and maintain these levees?

Executive Summary – One good quote: “Protected from flooding by levees, its islands are a critical resting place on the Pacific Flyway and its channels a transition zone for salmon on their way to the ocean or returning upstream to spawn” – emphasizing that the current landscape of channels and islands formed by the levees is the basis for the current Delta ecosystem; and one lackluster assertion: “Reduces risk by requiring new development in and around the Delta to have adequate flood protection, protects and preserves floodplains, and promotes setback levees to increase habitat and reduce flood damage” – the first of these things is already required by some combination of the counties, the DPC and FEMA – the second is just hand-waving at this point. What about a definitive program to improve the levee system to better deal with extreme floods, earthquakes and possible sea level rise?

Chapter 1, p.22 – the estimates of increases in risk from DRMS Phase 1 are absurd and should be deleted. Formal review of DRMS Phase 1 approved the final methodology but not the numbers, even for 2005 conditions. Extrapolation to 2050 and 2100 assuming the same conditions as in 2005 ignores investments to date and future investments in levee improvements. These numbers have no place in a responsible document.

Page 246, Lines 28-33. This paragraph gives a false impression of the current risk of failure of Delta levees and ignores the significant improvements that have been made in recent years. The figure from the DWR Background Technical Memorandum that shows a slowing rate of failures could/should be used.

Page 248, Lines 14-20. The reference to overtopping failures over the last century is inappropriate. It is well known that there were many overtopping failures in the early years of the levee system. It is equally well-known that these have declined in recent years.

Page 248, Lines 23-26. The examples of levee damage due to liquefaction from other parts of the world where the levees are founded directly on young alluvium is not relevant to the Delta. Read the ESP and in particular Appendix E.

Page 248, Lines 31-32. The oft-cited probability of 62 percent of a magnitude 6.7 earthquake occurring before 2032 is likely a valid number but it applies to the Bay Area, not the Delta Region. Only a portion of that probability is attributed to the nearest major fault and even the Hayward fault is 45 km from the western end of Sherman Island.

Page 248, Lines 33-36 and Figure 7-2. This figure is taken from a propaganda piece and its use in a product of the Delta Stewardship Council is unseemly, to say the least. The modeling of salt water intrusion that is shown is likely valid but the assumption of 50 levee breaches and 20 flooded islands is excessively extreme. What is worse is that there is no mention of on-going studies being conducted by DWR that indicate that the Delta would likely flush out with fresh water within several months of just a disaster scenario.

Page 248, Lines 43-44. The estimate that a sunny-day failure might occur once every 9 years is preposterous. There has only been one such failure in the 30 years since 1982 when the current levee improvement programs were initiated. With improved maintenance and inspection this type of failure can be essentially eliminated.

Page 250, Lines 8-18. See the ESP for a more up-to-date treatment of the subsidence issue including a plot of elevations from the 2007 DWR LiDAR survey. It is particularly distressing that the staff continue to ignore thoughtful submissions to the Council on this and other topics by Gilbert Cosio.

Page 250, Lines 20-29. Calling attention to possible more rapid sea level rise and ARkStorms is fine but it would be more helpful if there were probabilities associated with these events. And throwing these things out without developing a plan to address them is inconsistent, to say the least.

Page 254, Lines 22-26. This is a welcome paragraph and the DSC new enthusiasm for coordinating the activities of other agencies is to be commended, but hopefully those activities will be based on factual assessments rather than the kind of hand-waving that is prevalent in this chapter.

Page 255, Lines 14-15. This entire section needs to be updated as the Urban Levee Design Criteria have now been published. It is inaccurate and contradictory with other parts of this chapter to say that "almost no levees in the Delta meet this standard because most Delta levees do not protect urban areas". While as a proportion of the total, the length of urban levees is relatively small, 122 miles out of 980 miles within the legal Delta, because of the relatively high value of the properties protected by these levees, they have a very significant impact on risk evaluations such as DRMS. However, because they are riverine levees that do not in general protect lands below sea level, they are not perhaps so critical to the protection and preservation of the Delta and therefore may not be a prime focus for the DSC.

Page 255, Lines 27-43. While this discussion is generally accurate, it omits mention of the fact that the Delta-specific PL 84-99 standard was an outgrowth of the Bulletin 192-82 standard

that was developed jointly by DWR and USACE and thus improving Delta levees to this kind of standard has been a goal the state and federal governments since 1982. To lamely say that "funding has been inadequate to attain this objective" ignores the fact that funds in line with the CALFED estimates were approved by the voters in Propositions 84 and 1E and that we would be closer to attaining this objective if those funds had been put to use more expeditiously.

Page 259, Lines 9-13. The discussion of the need for dredging is welcome and appropriate.

Page 260, Lines 17-19. "Prioritizing investment is necessary to ensure that limited public funds are expended responsibly for improvements that are critical to State interests, rather than simply applying one objective to all Delta levees regardless of priority". There is nothing wrong with this sentence as such but the emphasis on prioritization throughout this chapter is way out of proportion and it is over-ridden by the legislature's repeated directive to protect and enhance the Delta. Fussing about limited funds is not the way to solve the current problems of the Delta. Part of the job of the DSC is to raise the funds that are necessary to protect and enhance the Delta. The DWR Technical Background Memorandum, the ESP and especially the peer-review of the ESP all emphasize how the Delta levees act as a system and that the emphasis should be on the performance of the system, rather than on the probability of failure of a single island. It appears that the staff has not even read these documents and they have certainly not digested them. Of course decisions have to be made in any program where to begin and where to end but the DSC's obsession with prioritization is unproductive.

Page 259, Lines 24-27. "This Delta Plan outlines a process to prioritize State investments in levee operation, maintenance, and improvements in the Delta, including those set forth in RR P1. Although RR P1 describes actions to be conducted over the next few years, it is also important to prioritize interim actions while longer term guidelines are being established." Again, there is nothing wrong with this sentence as such. Clearly coordination with other entities on emergency preparedness, response and recovery, and with USACE, the CVFPB and DWR on needed improvements to project and urban levees will take time, but delays in moving forward on improving the lowland levees that are critical to the preservation of the Delta are neither necessary nor acceptable.

Page 260, Line 34 and ff. As previously noted the staff appear to be unaware that the ESP updated the previous island-by-island benefit-cost study that was conducted by Suddeth et al. as part of the PPIC studies and concluded that there are only four small islands for which investment to bring levees up to the PL 84-99 standard is questionable. Further, the ESP notes that levee improvements are even more cost effective than simple calculations suggest because levee improvements can provide multiple benefits, to reduce flood and earthquake risk, to protect conveyance through the Delta and to facilitate ecosystem restoration. The ESP

then went on to recommended that all Delta levees be brought up to the PL 84-99 standard as soon as possible, and that, because the levees act as a system and protect critical infrastructure in addition to preserving the Delta as a place, that most lowland levees and selected other levees should be further improved to a “fat levee” standard that provides increased robustness under flood and earthquake loadings, that prepares for more rapid sea level rise, and allows planting of vegetation on the water side of the levees in order to provide continuity of shaded riparian habitat . These concepts were supported by a peer-review panel assembled by the Delta Science Program! The Delta Plan should be taking this a step further to implementation, rather than rolling back the clock and conducting endless academic studies. To be sure, agreement on the “fat levee” standard and studies to determine exactly which levees should be improved to this standard will take some time, and an updated understanding of water surface elevations in the Delta, especially in the light of what the CVFPP might do, would be helpful, but the basic priorities are obvious, first for full compliance with the PL 84-99 standard, and then for further improvement to the “fat levee” standard. The highest priority has been and should remain the eight western islands and tracts (plus the reclamation of Franks Tract, which was formerly the ninth of the western islands and tracts. That is following by the islands that house major water, transportation and energy infrastructure. That includes the Mokelumne Aqueduct, the Contra Costa Water District intakes, the BNSF railroad, the PG&E gas storage field under McDonald Island, the Kinder Morgan liquid fuel pipelines, and state highways 4, 12 and 160. An impartial look at the question might not rate the levees in the South Delta that the urban water agencies have recently deemed to be critical to conveyance quite so highly, but if those agencies are ready to step up and contribute to the funding of levee improvements and Caltrans, for instance, is not, then those levees would move up the ladder.

Page 261, Lines 26-32. The recommendation for creating a regional flood management agency with fee assessment authority is consistent with the ESP and should be widely supported. The last sentence with regard to unencumbered bond funds is inconsistent with Page 259, Line 33 and with the data shown in the DWR Background Technical Memorandum. The true figure and an accurate accounting of how the Proposition 84 and 1E bond funds have been spent is difficult to ascertain but perhaps the DSC can pry this out of DWR?

Page 262. The discussion of reducing risk to people is generally appropriate but use of the term “floodplain” to apply to the Delta as a whole is questionable. The Delta is not a floodplain in the normal sense of that word and in FEMA terminology land protected by adequate levees is no longer in the floodplain. It might be better to reserve the word “floodplain” for active floodplains or proposals to create new floodplains as shown in Figure 7-6. Figure 7.6 is in fact an interesting figure that deserves more explanation and references to other parts of the overall document as appropriate. Figure 7.6 actually smack of “a plan” of some sort! However, Staten Island should be deleted from “floodplains to be protected from encroachment”. That

is a battle that has already been fought. Regardless of the land-use within them, the Staten Island levees are at present critical to conveyance of water to the South Delta pumps through the North and South Forks of the Mokelumne River and there is a pressing need not only to maintain those levees but also to dredge the channels.

Page 267. The discussion of liability concerns is much improved but leads to the wrong conclusion in the subsequent recommendation RR R9. The lessons from the Paterno Case should be that the State has inverse condemnation liability, without question for project levees and likely for all Delta levees also, and that inverse condemnation liability is difficult to defend - but not impossible to defend. An oddity of the doctrine of inverse condemnation is that it is harder to defend if the state government or its agents have an active program to improve whatever it is that has failed. But the solution is not to sit on one's hands. The solution is to have a well thought-out program of improvement that is implemented efficiently and fairly so that it not only reduces the risk of there being a failure but also demonstrates reasonable behavior. So, to have a program that is stop-start, is inefficient or exhibits inequitable allocation of state funds increases the state's inverse condemnation liability. A program that does the opposite of these things limits the state's inverse condemnation liability. That is the kind of program that the DSC needs to institute.

Page 268, RR R1 While there is nothing wrong with the recommendations on emergency preparedness and response, the DSC should also consider the recommendation in the ESP that responsibility for coordinating and funding emergency preparedness, response and recovery should be assumed by the same Delta region entity that assumes responsibility for raising and distributing funds for levee improvements. That entity, whether it be the DSC's proposed Delta Flood Risk Management Agency or some other entity, would then be in a position to make a rational allocation of funding to both levee improvements and to emergency preparedness, response and recovery.

Page 271, RR P1. As discussed above, the staff appears to be unaware that the ESP recently updated the island-by-island benefit cost analysis that was initiated by Suddeth et al. This policy needs to be entirely rewritten with an emphasis on speeding implementation of the levee recommendations contained in the ESP, rather than delaying them, which only increases the State's inverse condemnation liability. As presently worded this policy represents a triumph of bureaucracy over good engineering, economics and commonsense.

Page 276, RR R9. The DSC should seek outside legal opinion on this matter. With all due respect, the Office of the Attorney General has never understood the Paterno decision and it is most unlikely that inverse condemnation liability can be limited without amending the State constitution. The Federal government has basic immunity for other reasons.

Page 278, Lines 29-20. DWR has a current program to bring essentially all Delta levees up to the HMP non-standard. More relevant measures are the number of miles remaining to be upgraded to the PL 84-99 standard and the number of miles that have been further improved to the "fat levee" standard.