



May 27, 2011

Phillip Isenberg, Chairman
Delta Stewardship Council
980 9th Street, Suite 1500
Sacramento, CA 95814

Dear Chair Isenberg, Council, and Staff,

Recent flooding in the Midwest highlights three points for California that must be considered while drafting the Delta Plan: 1) Large floods are inevitable and more frequent than we previously anticipated; 2) Mismanagement of rivers and floodplains increases damages associated with large floods; and 3) Floodways and bypasses can save lives, towns, and billions of dollars.

The Mississippi River and Tributaries Project utilized all four spillways and bypasses this month to divert floodwaters away from urban areas and into less developed ones. Developed by the Corps of Engineers after the Great Flood of 1927, this plan saved thousands of lives, billions of dollars, jobs, and industry.

The Corps had great insight 80 years ago when they designated floodways both along the Mississippi River and in California's Central Valley. For decades, the Yolo Bypass has reduced the flooding that once plagued Sacramento by diverting floodwaters away from the city and into less developed lands. To reduce damage from future floods and to restore the environment, we must expand on this system of flood bypasses.

American Rivers compliments Council and Staff on the preparation of Draft Three of the Delta Plan and appreciates the opportunity to comment. American Rivers is committed to protecting and restoring rivers for the benefit of human and natural communities that depend on them. We offer the following comments with respect to Chapter 7 and 9 of the Third Draft Delta Plan. We previously provided comments on risk reduction elements that were not adequately addressed in Draft Three.

Respectfully,

Jessica Ludy
Associate Director Flood Management

John Cain
Director Central Valley Flood Management

I. Floodplain and Floodway Protection (page 88)

The only way to significantly reduce risk in the Delta is to give rivers room to safely flood by expanding the bypass system in the Delta and Central Valley. American Rivers has submitted comments on the first Draft that identified areas that should be analyzed and we are happy to work with Staff to explore these limited and necessary opportunities further.

Climate change projects larger and more frequent floods in California, and the USGS ARkStorm Report¹ projects an estimated \$78 billion in property damages in Delta Counties alone with a repeat of the Great flood of 1862.

1) An introductory problem statement (page 88) should read:

Problem Statement: *Larger and more frequent floods in California and the Central Valley are imminent and the current conveyance system is not large enough to safely convey existing or future flood events.*

The associated policy should read:

RR PX: *The Delta Stewardship Council shall work with organizations to designate areas for protection intended to expand floodways and bypasses to increase conveyance capacity and reduce flood risk.*

2) The existing Policy **RR P2** (page 89, line 3) should be amended to read:

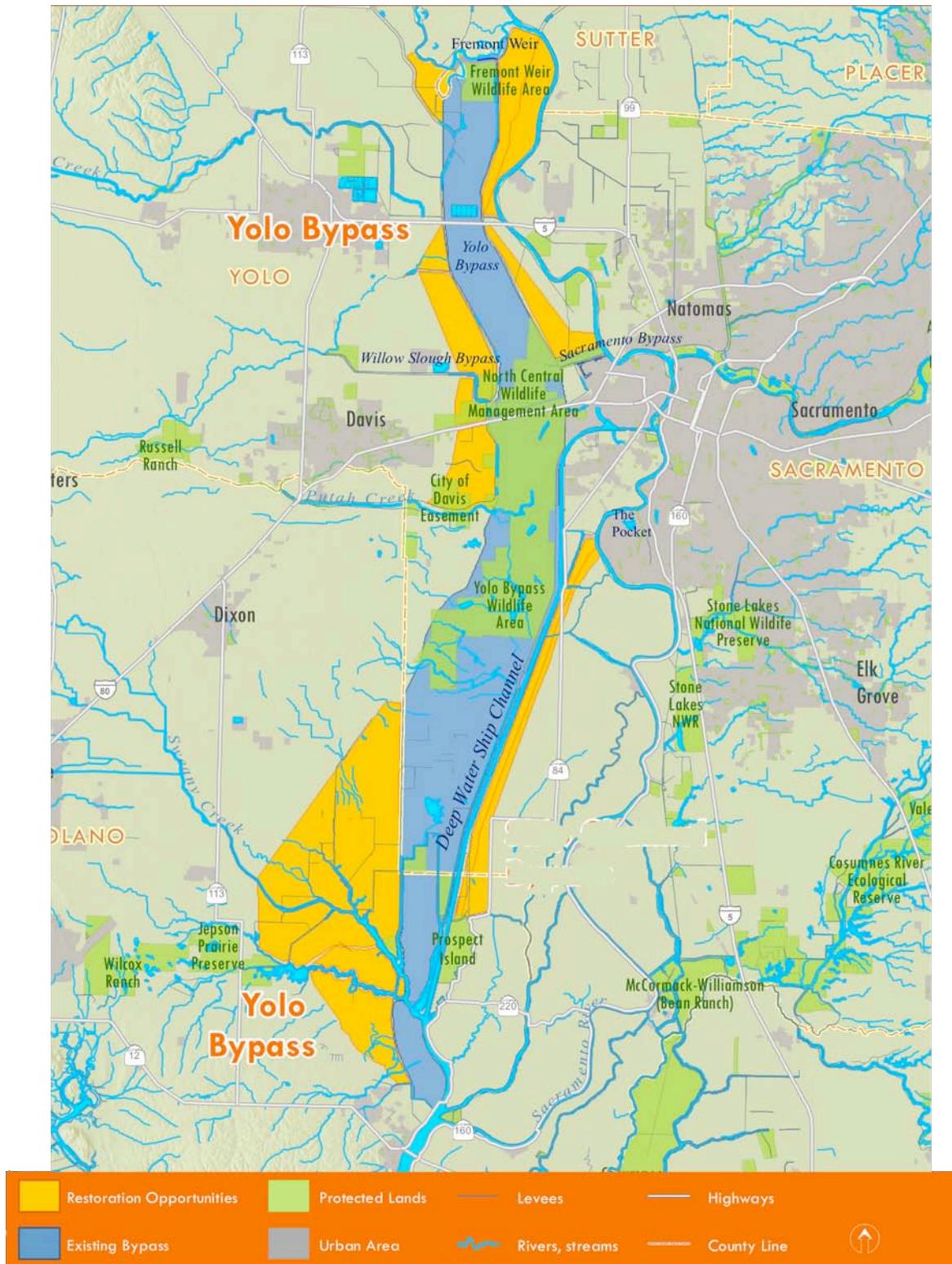
RR P2: *Existing or potential value of floodways or potential floodways (as designated by the Delta Stewardship Council) shall not be encroached up on or diminished without mitigating for potential or future flood flows.*

3) Further comments with respect to Policy **RR P3**, (page 89, lines 9-11):

This description does not include any new area designated for protection, as all areas in the Yolo Bypass are already under a flood easement that precludes encroachments. There are however, undeveloped agricultural areas adjacent both sides of the Yolo bypass (attachment) that should be protected for future expansion of the Yolo Bypass to reduce flood risk and restore ecosystem. The attached map shows areas that are suitable for floodway and bypass expansion.

¹ United States Geological Survey. 2011. Overview of the Ark Storm Scenario. Accessible: <http://pubs.usgs.gov/of/2010/1312/>

The existing Policy **RR P3** should be amended to include areas identified in yellow below.



II. Delta Levee Design Criteria (page 89)

The plan provides a discussion on the development of standards and we offer one specific comment.

Page 90, line 30 states, “*This standard generally does not address seismic stability.*” This standard never addresses seismic stability, and to the best of our knowledge, FEMA has not yet established criteria for meeting seismic stability.

The discussion would benefit from explicit detail behind the development of these standards—particularly with respect to public safety. While it is not the responsibility of Council to overhaul the National Flood Insurance Program (NFIP), it is critical that Council acknowledge what they accept as “safe enough” (and why) for both Delta residents and State interests.

As the findings state, standards were established to make levees and ‘protected’ lands eligible for rehabilitation funds or to permit development behind the levee. The findings should make explicit, however that *standards were not based on safety*. To understand this, it helps to consider the development of the National Flood Insurance Program.

The NFIP’s 100-year standard was developed as an insurance standard, not as a safety standard. The NFIP was established to reduce federal expenditures for disaster assistance and flood control. This could be accomplished by minimizing new development in floodways and providing subsidized insurance to those *already living in floodprone areas*² that could not otherwise receive flood insurance due to adverse selection³.

The unintended consequence is that the 1% chance *insurance* standard shifted to a defacto 1% chance *safety* standard. As such, when land behind 100-year levees is “removed” from regulatory floodplains via construction of a certified levee, communities incorrectly perceive it as safe for development. **The Delta Stewardship Council should not repeat this mistake.**

The recent draft of the US Army Corps of Engineers National Committee on Levee Safety⁴ report states that the 1% annual chance standard was not developed with public safety in mind, and therefore does not represent what “experts” believe constitutes an “acceptable level of risk.” This is particularly true in the Delta where levee protected floodplains are subject to deep inundation.

² Federal Emergency Management Agency. (2002). National Flood Insurance Program Description. Accessible: <http://www.fema.gov/library/viewRecord.do?id=1480ncy>

³ US Government Office of Accountability. (2008). “FEMA’s Rate Setting Process Warrants Attention. (Report to Ranging Member on Banking, Housing, and Urban Affairs. Accessible: <http://www.fema.gov/library/viewRecord.do?id=1480>

⁴ National Committee on Levee Safety. (2011). The Importance of Flood Insurance. Accessible: http://www.nfrmp.us/ncls/docs/Updated_Flood_Insurance_04February11.pdf National Committee on Levee Safety

While California has increased urban protection standards to the 0.5% annual chance or “200-year flood,” this new standard lacks a risk-based rationale. A risk-based rationale would mean higher safety standards in areas that are at greater risk from flooding. In the Delta, this would be in deep floodplains with urban development, for example. Here, expected consequences (the other half of the “risk equation”) would be greater than in less developed areas or on higher ground because less dense development and shallower inundation would result in fewer damages (including reduced loss of life). A “200-yr” level of protection for California’s urban areas is still lower than many of America’s major River Cities⁵ including New Orleans. Tacoma, Kansas City, Dallas, and St. Louis all operate under a 500-year level of protection.

As Chair Isenberg mentioned during the May 12 meeting, there are other methods of determining acceptable levels of risk and safety standards than those which may typically be used in the US (arbitrary 1% annual chance protection). He brought up Dutch methods which incorporate fatalities, direct and indirect economic damage costs including business interruption among other factors.⁶

Much of the discussion at the Council meeting on March 12 focused around, “It’s all about the levees—let’s just strengthen the levees.” Discussion was also devoted to complicated insurance aspects of the NFIP. Both of these discussions are missing the point. Communities behind 100-year levees in the Delta are extremely vulnerable. Though limiting development in already developed areas may have unintended consequences as Supervisor Nottoli mentioned, allowing new buildings and communities in undeveloped floodplains is unsafe.

III. Flood Management Investment (page 92)

American Rivers strongly supports policy **RR P6** which states that “actions utilizing State investments for levee improvements in the Delta shall:

- reduce risk of loss of life
- not result in an increase in the number of people at risk

This policy should be amended to include:

- restore ecosystem in the Delta

⁵ Sacramento Area Flood Control Agency. <http://www.water.ca.gov/levees/history/images/rivercities.gif>

⁶ Jurjen Wagemaker, Jakolein Leenders & Jan Huizinga. 2005. 2—5. Economic Valuation of Flood Damage for Decision Makers in the Netherlands and the Lower Mekong River Basin. Accessible: http://www.hkv.nl/documenten/Economic_Valuation_Flood_Damage_WEBSITE_JW_JL_JH.pdf

American Rivers reminds that all of these criteria can be achieved by preventing new development in deep floodplains, and by designating areas for flood bypasses and expanded floodways, which will reduce risk and restore ecosystem.

IV. Emergency Preparedness and Response (Page 93)

Emergency response cannot be our first line of defense despite the first sentence of page 93 (line 2). As we've seen in New Orleans, emergency response is important, but not sufficient. Accepting emergency response as a first line of defense means that the Council views flooded houses, economically decimated communities, and huge government bail-outs as acceptable outcomes.

Evacuations are costly, disruptive, and in many cases inadequate when demand for rescue is greater than the availability of rescue personnel. Six inches of swiftly moving water is enough to sweep people off of their feet and to float a car. Six feet of water is very dangerous and nine feet requires swift water rescue. Wet rescues (as opposed to dryland ones), pose significant threat to rescue workers. We are reminded that Hurricane Katrina saw the largest migration since the Civil War and that New Orleans may never recover. Though emergency response IS critical and warrants sufficient investment, it should be line the *last line* of defense in the Delta. **Prevention should be the first line of defense.** Avoiding additional development in undeveloped floodplains, particularly deep floodplains, is the best form of prevention.

To restate our comments to Council in Clarksburg on March 11, *manage risk—not floods*. Reducing the *likelihood* of flooding by **expanding bypasses and floodways**, and reducing the *consequences* of flooding by **keeping people out of harm's way** are the two most important actions that Council could implement to reduce risk. Together these actions would prevent loss of life and significant damages.

As William Hammond Hall stated, there are two classes of levees, "Those that have been overtopped by flood waters and those that were going to be." Therefore, it is imperative that we also manage risk *behind* the levees (to augment Emergency Response) where development has already been permitted by means of implementing the following strategies as policy and regulation:

- 1) Prohibit development on lands below sea-level.
- 2) Boats: American Rivers supports Council Member Nordhoff's suggestion that residents behind levees be required to purchase boats. Boats historically are a primary mode of transportation for evacuation. One study from residents below sea level in Spanos Park West cites that 0 out of 114 respondents owned a boat.

- 3) Building codes
 - a. Water tight doors ⁷
 - b. First floor sacrificial zone
 - c. Elevated evacuation routes (example below)



(Elevated walkway/evacuation route for residents and employees of Hamburg, Germany's Hafencity)

- d. Flood Hazard Disclosure *behind levees* (See previous American Rivers comments for details).

See American Rivers previous comments for suggested language.

V. Financing of Local Flood Management Activities (Page 94)

The discussion and problem statement on page 94 (lines 30-38) are incomplete and do not correctly identify the problem. This must be changed to be sure policies address the right problem.

Coordination is not the greatest concern with respect to levee maintenance. As we've mentioned before, a larger problem is the lack of sustainable funding for flood protection and drainage infrastructure in new developments. When cities permit development and ultimately can't fund the flood protection infrastructure overtime, what happens to the residents when the revenue generated by the few occupied properties is not sufficient to maintain the levees?

⁷ Hanak, E. Lund, J., Dinar, A., Gray, B., Howitt, R., Mount, J., Moyle, P. & Thompson, B. "Managing California's Water: From Conflict to Reconciliation." Public Policy Institute of California, 2011, San Francisco, California

If a levee is decertified on account of insufficient maintenance, residents will be double-burdened with both a huge safety concern and a flood insurance requirement after an LOMR draws the development “back into the floodplain.”

The **problem statement** on page 94, line 36 should be amended to read as follows:

Financing of local levee operations, maintenance, and related data collection efforts is not well coordinated, is inadequate, and is not-sustainable. As a result, public safety and regional economies are increasingly compromised.

Please see previous comments for associated policies and regulations.

VI. Reoperation of Upstream Reservoirs and Peak Flow Attenuation to Improve Flood Management (page 96).

This section of the plan is missing a key component to successful reservoir reoperation. The problem is not solely that:

"Flood and water supply operations are not well coordinated" (page 96 line 7).

The greater issue is that the two uses of reservoirs are conflicting. Reoperation alone would compromise either public safety or a reliable water supply because increasing the flood reservation decreases the amount available for water supply. Floodways below the reservoir must first be expanded to accommodate both uses in successful reoperation.

The Delta Plan should restate what was previously stated in the Delta Vision Strategic Plan:

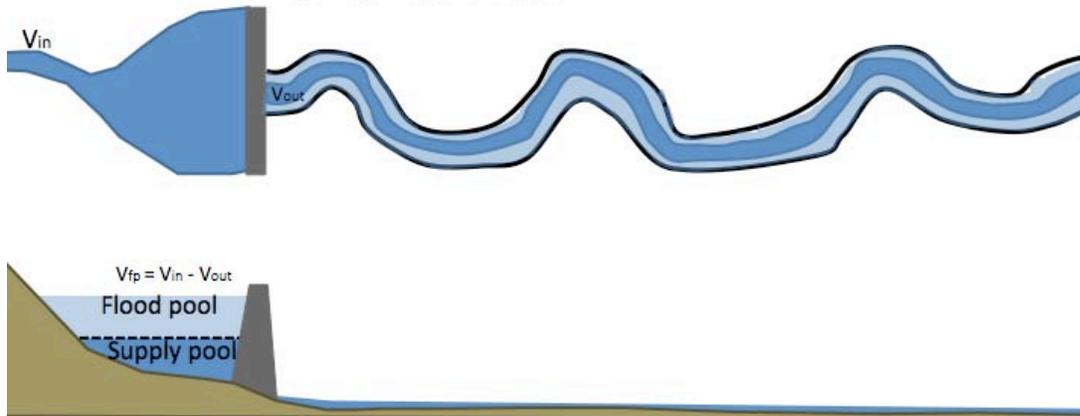
Section 5 (page 105) of the Delta Vision Strategic Plan reads:

*“The challenges of flood control and water supply reliability in the Delta are two sides of the same coin. Within a given reservoir, water supply storage and flood control are competing priorities at certain times of the year—more of one means less of the other. Present management practices focus on maintaining a given capacity in the reservoir at a given time of year. Improved forecasting allows reservoir managers to modernize flood control operations so that more water can be stored for supply without compromising flood safety. **Expanding the flood conveyance capacity downstream of reservoirs also increases management flexibility by allowing more flood water to be released safely from the reservoir if necessary.**”*

The following graphics illustrate the concept.

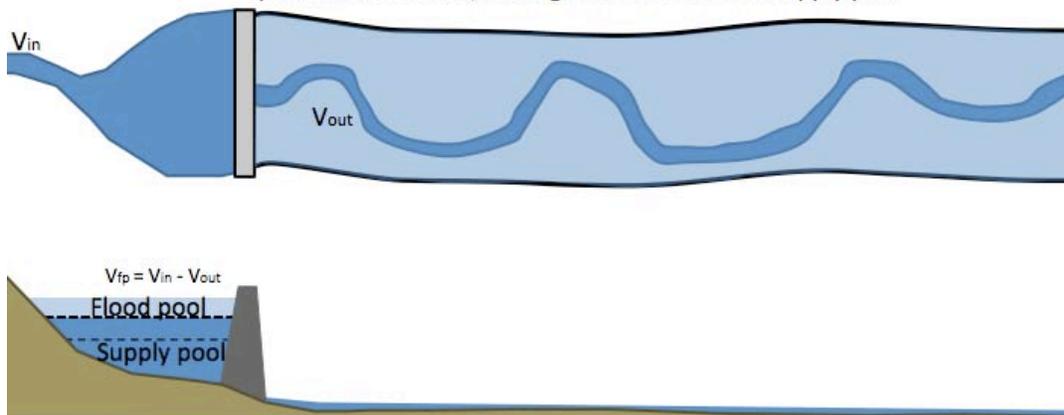
Existing strategy

Existing levee system constrains rate of downstream release, requiring a large flood pool



Larger floodway strategy

If downstream capacity allows larger safe releases flood pool can be smaller, leaving more water in the supply pool



A modified **problem statement** should be:

Reservoirs are managed for two conflicting purposes: flood control (public safety) and water supply.

Associated modified **policy** should read:

RR PX: *US Army Corps of Engineers, US BR and DWR should modify flood control management procedures for reservoirs upstream of the Delta AND should expand floodways below reservoirs to safely accommodate for changes in precipitation, changes in water supply operations, and sea level rise.*

VII. Funding for Land Acquisition in the Delta (Chapter 9, page112)

FP R4 on line 14, page 112 recommends allocating \$50million of Prop I E funds to DWR for the acquisition of land/easements in the South Delta Floodplain. This is likely more money than will be necessary to acquire necessary parcels or easements for a flood corridor in this area.

This should be amended to read:

FP R4: *The Legislature should allocate \$50 million of Prop. 1E funds to the Department of Water Resources, and direct the Department to begin the acquisition of land or easements for the proposed San Joaquin/South Delta Floodplain—after purchase of the necessary parcels, the remainder of these funds shall be used for the land acquisition and easements for other floodways designated in this Delta Plan.*