CALIFORNIA CENTRAL VALLEY
FLOOD CONTROL
ASSOCIATION

October 27, 2014

VIA EMAIL: DLIScomments@deltacouncil.ca.gov

Mr. Randy Fiorini, Chair
Delta Stewardship Council
980 Ninth Street, Suite 1500
Sacramento, CA 95814

RE: CCVFCA Comments on DSC's Draft Delta Levee Investment Issue Paper

Dear Chairman Fiorini and Council Members:

The California Central Valley Flood Control Association (CCVFCA/Association) appreciates the opportunity to comment on the scoping document (Issue Paper) summarizing the background information, technical and scientific references, and key issues to be considered as the Council develops a Delta levee State investment strategy report.

The Association has been actively involved in advancing and advocating for effective flood management throughout the Central Valley, including the Delta since 1926. Today, CCVFCA represents more than 75 local agencies and consulting engineers with flood control responsibilities to protect life, property and the environment. Many of those members will be greatly affected by the actions, projects and plans the Council recommends in a long-term strategy for prioritizing the State's future investment in Delta levees.

CCVFCA has provided both general and specific comments and suggestions on the Issue Paper and related DSC Staff Reports and documents in order to provide the best possible scoping guidance to DSC decision makers. We apologize for the length of the letter, but felt comprehensive and detailed comments are warranted, due to once again seeing outdated, unsubstantiated, and incorrect information repeated in this Issue Paper despite previous corrections we requested in the Delta Plan. The Association would be glad to provide greater detail on any particular issue if requested.

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CCVFCA's Key Comments on Investment Strategy Issue Paper

The Delta's flood control system is what allows productive agriculture, safe communities, world-class water recreation, protection of critical transportation and utility infrastructure, and unique natural resources supporting a diversity of fish and wildlife.

Since 1982 when the Department of Water Resources (DWR) and the U.S. Army Corps of Engineers (USACE) produced a joint report on the Delta levees recommending the Delta-specific PL 84-99 as the minimum levee standard, it has been the goal of the State, local, and Federal government to work towards achieving this standard. Progress towards that goal has steadily occurred since the State Legislature established the Delta Levees Program in 1973, with acceleration in improvements recently with the influx of bond funding in 2006.

First and foremost, a primary goal that should be the foundation of the State's strategy should be to design a Delta levee funding prioritization methodology that avoids increasing the regulatory burden and costs of implementing annual maintenance, accessing Subventions Program funding, or qualifying for other State levee improvement funding programs. As pointed out in the ESP, each of the Delta islands' levees contribute to the protection of different assets and societal values and the local residents have been doing their part for more than a century to maintain this flood control system. Therefore, the State's strategy should reward their good behavior, not penalize them, because it is in the State's best interest to encourage the continued leadership that the local Delta districts provide in planning, designing, and constructing levee improvements, providing daily levee maintenance, and advocating for landowner approval of assessment amounts necessary to fund local flood protection activities.

As concluded by the Delta Stewardship Council in their Economic Sustainability Plan, the acknowledgement of the federal fiscal incentives, public safety benefits, and long-standing agreement to build Delta levees up to the PL 84-99 minimum standard over time means the key question today is not *what standard should the State invest in?* Instead, the question is *where should levees be improved to an even higher engineering standard to advance State interests such as ecosystem enhancement and hazard reduction with seismic strengthening?*

With these objectives as our underlying premise for guiding a Delta levee prioritization strategy, CCVFCA would like to highlight the following key points regarding the current scope, accuracy, and overall context provided in the Investment Strategy Issue Paper.

Good Start

While our comments primarily focus on areas in the Issue Paper that we feel could use improvement, the Association also acknowledges there is a great deal of good information contained in the paper. The brevity is welcomed after so many recent Delta planning documents, however there is unfortunately

important context and data missing as a result. CCVFCA particularly appreciates the Council's early outreach efforts and sincere interest in understanding stakeholder's views prior to officially launching the public process to draft a Delta levee investment strategy.

Selective Representation, Missing Context

The Issue Paper contains several instances of an unbalanced presentation of negative conditions without presenting the improved current conditions or other information to at least provide balanced and objective context to the issue. Two key topic areas where this occurs: levee miles that require improvement and threats to levees (subsidence and earthquakes). The flip side is also true in places where the Issue Paper is overly-optimistic without also explaining the significant regulatory and local conflicts that will make implementation difficult: ecosystem setback levees and levee vegetation. The result is a lop-sided and inaccurate portrayal of the Delta levee conditions and inflated cost estimates. Using more up to date reports developed in consultation with an expert panel of Delta engineers, the Delta Stewardship Council's (DSC) Economic Sustainability Plan (ESP) has the most current statistics on Delta levee miles. But even the ESP requires updating due to the amount of levee improvements made in the last three years with Prop. 1E and 84 flood protection bond money.

Outdated Data and Inflated Costs

The Issue Paper's reliance on old reports and historical data without reflecting more recent progress made with levee improvements thanks to bond money, makes the information on levee conditions as presented obsolete and therefore not sufficient for purposes of developing a State investment strategy. The fiscal data is also either old (DRMS) or is rough estimates rather than evaluated calculations (CVFPP). The CVFPP's suite of documents/reports also contains more recent information on SPFC facilities, including a current status report. However, the 2012 cost estimates are not based on any sort of evaluation of the system, so they are not an appropriate source for developing a levee investment methodology either. A more current source on levee conditions and cost is the ESP, but again, this data also needs to be updated to reflect the recent levee work completed in the last three years. A handful of Delta engineers working for the Delta RDs are the best source of the most current and accurate data and conditions of each island or area's levees.

Utilization of Local Expertise

As the DSC's consultants did during the development of the ESP, the Association recommends ARCADIS convene a panel of local Delta engineers representing reclamation districts (RDs) and the cities and counties with flood control responsibilities to assist in updating the current levee conditions, the work still needed and where, cost estimates, and development of an accurate map depicting Delta island names and RD#s as well as project and non-project levee locations.

Coordination with CVFPP Implementation

CCVFCA's members are all currently actively participating in the six regions formed to locally develop long-term regional flood protection plans and cost estimates for local flood control priorities for public

safety as well as benefits such as preserving agriculture, protecting ecosystem values, and reducing flood insurance. Three of the regions include portions of the Delta. These regional reports are being finalized now with end of year release dates. The Association encourages ARCADIS convene the three Delta regional representatives to have them present the flood control projects and regional flood protection goals their plans recommend.

I. PROCESS & DEVELOPMENT RECOMMENDATIONS

a. Joint Concurrence on a Delta Map

One of the more frustrating issues for anyone participating in Delta planning efforts is that every State agency uses different maps of the Delta reclamation districts and levees (project and non-project), with very few if any matching up with each other. As a result, they are inconsistent and confusing as to which one has the right information. Obviously not all of them can be correct, which compounds the confusion for the public and decision-makers due to misinformation being repeated by official sources.

The Association believes a critical outcome of the DSC's levee prioritization effort should be consistency and accuracy of Delta levee maps being used in planning documents and websites of the DSC, DPC, Delta Conservancy, BDCP, Central Valley Flood Protection Board (CVFPB), DWR, Central Valley Flood Protection Plan (CVFPP), and the U.S. Army Corps of Engineers (USACE).

During the legislative discussion of the Delta Reform Act in 2009, there was unanimous agreement on one thing – there are too many confusing and conflicting facts about the Delta, due in part to more than 200 Federal, State, and local agencies having overlapping jurisdiction. The Legislature therefore established the Delta Stewardship Council with the intent that it would provide leadership to facilitate the development of data and information about the Delta that could receive widespread concurrence for at least being accurate (at the time) so everyone had a common reference and starting point for ongoing Delta planning processes. The levee prioritization process is the perfect opportunity to accomplish this very important task.

While other attributes may change about the Delta in terms of recreation, agriculture, and the ecosystem, the number and name of islands and levee miles has been fairly static for decades. Reaching concurrence on these two factual numbers and geographic location on a map is a particularly critical starting point for the development of an investment prioritization methodology and strategy. Once developed, the Governor could issue a directive to all State agencies to use the new Delta islands and levee map on their websites and in all regulatory, planning, and informational documents that include the Delta.

Development of such a map will require a joint effort of a panel of Federal, State, and local Delta and flood control agencies. As a matter of accuracy and efficiency, it is important this effort is accomplished with all parties at the same table rather than ARCDIS reviewing each agency's maps and documents or meeting individually with each agency. Once the expert panel concurs on a map, then it should be released to the public for comment. This first step should be initiated immediately so the map can be used by the DPC as they start their public process to prepare a Delta Flood Risk Management Assessment District Feasibility Study and so the CVFPB can incorporate the map into their 2017 update of the CVFPP which is being worked on right now.

RECOMMENDATION: As a first step of the Delta Levee State Investment Strategy, ARCADIS should convene a panel to meet at least once to concur on a Delta islands and levee map, including reaching agreement on the island names, RD#s for islands, and the total number of miles and locations of SPFC project levees, non-project levees, and any other category of levees if necessary such as restricted height, Deep Water Ship Channel, Suisun Marsh levees that are adjacent to but not part of the legal Delta, or breached levees that are no longer managed such as Liberty Island's in the Yolo Bypass. Then the DSC should release the map with island, RD#, and levee locations to the public for review and comment, with the other State Delta agencies and CVFPB bringing to their boards and public meetings for discussion and comment at the same time. The panel can be convened a second time if necessary to resolve any issues identified in public comments. If not, then the DSC can submit a written request to the Governor requesting he issue a directive to all State agencies to use the map on their websites and in all future regulatory, planning, and informational documents they produce regarding Delta island geography or flood protection.

b. Local Expertise on Levee Benefit Allocation

The DSC October 30, 2014 *"Delta Levees Investment Strategy Update"* (Agenda Item 11) mentions identifying "outside" technical expertise to provide input on the development of a methodology for prioritizing Delta levee investments. Even more important than the "outside" technical expertise is assuring the Council and project consultant utilize the "local" technical expertise that collectively exists in a handful of Delta engineers serving as district engineers for local reclamation districts that have spent their careers maintaining, improving, floodfighting, and repairing Delta levees.

These local engineers are the individuals with the most practical experience and best knowledge about the condition, geometry, and costs associated with maintaining and improving levees. They also prepare all the documents necessary to increase assessments, including drafting an Engineer's Reports for RDs in accordance with Proposition 218 (Article XIII of the California Constitution) which requires them to analyze the nature of the benefits derived from levees protecting life and property for each land parcel and weight that benefit proportionally amongst all landowners (beneficiaries). Issues that must be analyzed in the Engineer's Report include specific assets protected by the levees, the exposure of these

assets to risk based on factors such as levee geometry and condition, as well as property land elevation susceptible to flooding.

Therefore, the Delta engineers are the most uniquely qualified individuals to assist the DSC in this effort. Due to their extensive expertise in developing levee investment methodologies, the Delta engineers deserve an equal, if not greater, role than an Independent Scientific Review Panel has been given in evaluating the methodology's effectiveness in quantifying and prioritizing the assets and risks associated with leveed Delta islands.

In addition, the cities and counties in the Secondary Zone of the Delta also provide local flood protection and have specific urban floor risk mandates required by the State Legislature in 2007. Two regional agencies have also been formed to plan, finance, and construct major civil works flood projects to protect the cities of Stockton and West Sacramento. Organized through Joint Powers Agreements, these entities also have extensive experience in levee funding methodologies:

1) San Joaquin Area Flood Control Agency (SJAFC) http://www.sjafca.com/
2) West Sacramento Flood Control Agency (WSAFCA) https://www.cityofwestsacramento.org/city/flood/

RECOMMENDATION: The Council should utilize the local levee funding expertise by either convening a separate panel of Delta engineers representing Delta RDs, cities, counties, and regional agencies with flood control responsibilities or appoint one Delta RD engineer and one Regional Agency engineer with levee design, construction, and financing experience to serve on the Review Team.

c. Interagency Agreement Lacks Local Representation

The DSC's October 7, 2014 Agenda Item 11, Attachment 1, white paper on *"Methodology and Scientific Basis to Support a Delta Levee Investment Strategy"* states an intent to "objectively" lead to a prioritization of islands. CCVFCA recommends including local levee maintainers responsible for flood control in the Delta such as local RD, cities, and counties in the current DSC/DWR/CVFPB Interagency Agreement for development of the investment methodology.

As local subdivisions of the state responsible for the operation and maintenance (O&M) of the State's Central Valley flood control system (SPFC), the addition of local RDs to the Agreement would increase the objectivity, credibility, and possibly local acceptance of the prioritization scheme adopted in the final Delta levee investment strategy. Since the Issue Paper says the strategy developed will also "result in proposed revisions to the Delta Plan's flood risk reduction regulatory policies," the inclusion of interested Delta RDs in the Agreement would also be consistent with the Delta Plan's recommendation to update its interim priorities "working in consultation" with DWR, CVFPB, DPC, CWC, and "local agencies." (RR R4)

RECOMMENDATION: As legal subdivisions of the State and due to their role in performing O&M for the State on SPFC project levees and submitting grant proposals for Delta Levee Subventions projects and apportioning flood protection benefits under a Prop. 218 proportionality methodology, CCVFCA believes the Delta RDs are appropriate entities for the Council to consider adding on to the Interagency Agreement between the DSC and DWR to develop a tool to quantify assets and benefits associated with the State's interest in funding future Delta levee maintenance and improvements.

II. GENERAL COMMENTS ON ISSUE PAPER

a. Introduction and Problem Statement is One-Sided

Brevity is always appreciated in planning documents, however the truncated Introduction and Problem Statement results in the Issue Paper not providing equal time to the positive condition and recent improvement of Delta levees. As currently written, this section continues the same mantra of the 'sky-is-falling Chicken Little' scare tactics when describing the Delta levee system based on outdated information.

It is disappointing to see the Council continue to promote misguided and unsubstantiated assumptions and speculation based on outdated, incorrect or speculative Delta levee information rather than current conditions, resulting in a bleak problem statement that fails to acknowledge the significant levee improvements implemented in the last few years. In fact, Propositions 1E and 84 funding approved by voters in 2006 has resulted in the tripling of annual Delta levee funding every year since then. In addition to the construction of levee projects, this funding also improved emergency preparedness by funding activities such as stockpiling over 243,000 tons of rock in the Delta for emergency response in the event of a levee failure.

The good news is that incorporating the more current levee conditions will show there is less work to be done than thought, so the costs are less than indicated in the Issue Paper. This may also mean the long-term investment strategy should also spend more time on quantifying the maintenance of the minimum levee standards over time once they have been achieved throughout the Delta.

CCVFCA's members and staff have participated on DSC panels, commented at the public hearings, submitted written comments, and met with DSC staff in the attempt to correct many of the factual errors in the previous work products, and is therefore frustrated by the resistance to accurately portraying the progress achieved on the levees over the last three decades. Acknowledging the glass is half full is important to accurately establishing the amount of work still needed to be accomplished and a credible cost and timeline estimate for addressing over the long-term.

For example, there are 1,100 miles of levees in the Delta, and during the last decade there were only two levee failures—Jones Tract (2004) and Fay Island (2006)—and the 100-acre Fay Island district was in the process of improving its levees at the time of the flood. The remaining Delta levees performed exceptionally well, particularly in light of the 2005-06 storms resulting in the seventh-highest water year on record for the combined Sacramento-San Joaquin River system.

In fact, A National Oceanic and Atmospheric Administration storm summary declared 2005 the wettest December on record, with reported high winds and the second-highest astronomical high tide in the Delta; but advance reservoir releases and weir flows into the State Plan of Flood Control bypass system prevented major flooding incidents.

Although CCVFCA can agree that Delta levees are not as robust as RDs would like them to be, we contend that the past 26 years of the Delta Levees Program combined with increased funding from recent bonds has proven that Delta levees can be stabilized to acceptable levels that can withstand even record-breaking storm events such as the Delta experienced in 2006.

The Association agrees the Delta's aquatic species are in decline and their status is affecting the reliability of water supply, but contrary to the impression conveyed in the Issue Paper's Problem Statement, the risk of levee failures in the Delta has been steadily decreasing during recent decades.

Therefore, with continued investment in rehabilitating and maintaining Delta levees through the Delta Levees Program, along with proper disaster procedures and planning, this critical public safety and water conveyance system is sustainable over time.

RECOMMENDATION: Revise the Introduction and Problem Statement to acknowledge the progress made to reduce the frequency and severity of Delta levee failures since the 1986 flooding so the final strategy can credibly define the amount of work still needed based on an accurate portrayal of current levee conditions.

b. Key Issues Lack Nexus to Factors to Consider in Methodology

There are 15 questions the Issue paper calls "Key Issues for Consideration in Updating Priorities for State Delta Levee Investment," indicating these questions will need to be addressed during the development of the investment strategy. While each question is followed with background on the issue and sometimes provides references for further information, the questions did not provide much in the way of linkages or context at the end each section to help define what factors should be considered in the methodology. Therefore, the Issue Paper is not clear on what would constitute a key consideration in developing the methodology for prioritizing State investments in Delta levees.

For instance, question #1 "What are the Delta's Levees?" is followed by information on categories of levees in the Delta (SPFC project, non-project, Suisun Marsh) and brief but incomplete reference to how laws address those levees. However, the Issue Paper never indicates the differences between these three levee categories that might warrant prioritizing State investment for one levee over the other. In fact, the editorial comments on the importance of levees to the environment in Suisun Marsh raise more questions instead of providing direction. The end of this question should clearly identify why (give reasons) the different types of levees that are factors in quantifying different levels of investment by the State.

RECOMMENDATION: Providing more details regarding the context and nexus associated with the ultimate criteria and factors that are selected for the methodology will be important for the Association's members, decision-makers, and the public to understand why they are chosen. Understanding the background and reasoning will be critical for the Association to provide constructive input on the quality of the factors and criteria ARCADIS uses to develop a levee prioritization methodology.

III. KEY ISSUES MISSING FOR DEVELOPING METHODOLOGY

a. Effectiveness of Past Delta Levee Investments Is Key Issue

The Issue Paper claims that a comprehensive prioritization strategy is necessary to assure the investment of public resources into levees reflects a broader, long-term approach. Without demeaning the value of the State having a more well-defined understanding of its long-term financial commitment to maintaining Delta levees, the Association encourages this process to include an evaluation of the effectiveness, efficiency, and durability of the programs, processes, and projects the State has funded annually through DWR guideline criteria and ranking since the flood damages experienced in 1986. Have these past investments achieved the "basic goals of the State for the Delta" defined in Public Resources Code section 29702 mentioned on page 8 of the Issue Paper?

RECOMMENDATION: The Issue Paper should include a comprehensive evaluation of the effectiveness of the historical and more recent State Prop. 1E and 84 investments in Delta levee projects funded through the Delta Subventions and Delta Special Projects Programs in reducing the frequency, quantity, and severity of Delta levee failures as a key issue for updating priorities.

b. Delta Levees Must Be Seen As Part of A System

The Issue Paper's repeated mention of a potential island inundation strategy without providing additional context in terms of the flood control system's interconnectedness or the increased levee maintenance costs adjacent was concerning for the Association. The Delta Levees are a system and

altering their configuration and hydrodynamics would have many detrimental impacts that need to be mitigated. Simply letting a few islands succumb to the "inland sea" effect of the Delta would create increased annual levee maintenance costs for nearby districts and could also mean future levee failures become more likely, given adjacent island seepage and levee erosion. Therefore, a levee investment strategy must consider benefits *and* impacts created by system changes, particularly if they require mitigation or increased annual levee maintenance costs to other districts. The Issue Paper should reflect this fiscal issue.

To provide a real-world example, Prospect Island recently flooded, which caused neighboring Ryer Island to experience increased surface flooding from seepage and boils attributed by reclamation district engineers to the change in hydraulic pressure caused by the flooded state of Prospect Island located on the other side of the slough. This caused crop damage and prevented planting on certain areas that became too wet to farm. This example shows that while significant future investments into certain islands may not make economic sense in isolation, these islands are part of a system and effect islands around.

For system-wide flood protection maintenance and improvements to be successfully implemented, urban and rural communities as well as agricultural areas must all be considered in the identification, evaluation, and prioritization of investments for flood protection. The Association therefore urges the Council to keep a system-wide approach of performance, benefits, and impacts in mind as it develops a methodology to prioritize future State investments in the Delta's complex system of inter-connected and inter-dependent levees.

Additional Context

Following is an example of additional language (with footnotes identifying the source) CCVFCA suggests be considered for inclusion in the Issue Paper Introduction and Problem Statement to improve the context and nexus necessary to develop the criteria to be used in a levee investment methodology tool.

In 1850 Congress approved the Arkansas Act granting several states title to all of the Swamp and Overflowed Lands, including approximately 2 million acres in California. [1] The State considered the reclamation of these swampy lands essential because of their extraordinary fertility for farming when drained (reclaimed) and also because they posed a significant public health risk due to outbreaks of malaria from the mosquito breeding.

In its natural condition, about one-quarter of the Central Valley extending along more than 14 counties was subject to annual or periodic overflow, so the first flood-control projects were the low levees the farmers built to protect their lands from annual inundation. Flood damage in the Sacramento Valley

[1] Arkansas Swamp Lands Act, Act of September 28, 1850, codified at California Public Resources Code Section 7552, 7552.5.

and Delta occurs almost entirely from rain floods, principally on Sacramento, Feather, Bear, Yuba, and American Rivers as well as Stony, Cache, and Putah Creeks, with smaller creeks also causing localized flooding. The Delta also experiences damaging floods along the San Joaquin River and its tributaries including the following stream groups: Mokelumne River, Calaveras River, Littlejohn Creek, Merced County, Madera County, and Fresno County.

Historically, more than 40 percent of Northern California's runoff flows to the Delta with peak winter flows resulting in substantial flooding in the valley floor about every ten years. Currently, most snow-melt run-off is stored or diverted for beneficial uses or passes harmlessly to the ocean, but prolonged high-water stages can cause seepage through levees if they are not vigilantly maintained and improved to withstand these re-occurring flood events with excessive run-off draining through the Central Valley and Delta.[2]

The Sacramento Valley and Delta now receives a substantially higher level of flood protection today than originally provided by levees built by individual landowners. Authorized by Congress in 1917, the Sacramento River Flood Control Project (SRFCP) is a system of "project levees" and flood bypasses designed and built by the U.S. Army Corp of Engineers (USACE/Corps) so the individual segments and elements will function as integrated flood control components efficiently draining to the ocean, facilitate farming, and protect people and property in the Central Valley Basin, including the San Joaquin River tributaries.

The SRFCP consists of leveed channels along natural waterways, supplemented where necessary by leveed bypasses which serve as relief valves to carry surplus flows that the natural rivers cannot accommodate. There are more than 1,600 miles of State-federal project levees in the Central Valley, 385 miles of which are located in the Delta. More than 700 miles of additional Delta levees are classified as "non-project." The key component of the SRFCP system, the Yolo Bypass which is located at the northern end of the Delta, carries 80 percent of the water at the latitude of Sacramento during extreme floods.[3]

Collectively, the facilities, lands, programs, conditions, and mode of O&M for the State-federal flood protection system in the Central Valley are referred to as the State Plan of Flood Control (SPFC).[4]

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[2] United States Dept. of the Interior, *Central Valley basin; a comprehensive report on the development of the water and related resources of the Central Valley basin for irrigation, power production and other beneficial uses in California, and comments by the State of California and Federal agencies.* [Washington, U. S. Govt. Print. Off.] 1949.

[3] Flood SAFE California, flyer, State Plan of Flood Control Descriptive Document (2012). Available at http://www.cvfpb.ca.gov/CVFPP/05_CVFPP-SPFC-DD-11212.pdf

[4] Public Resources Code (PRC) Section 5096.805 (j). A complete description of these assets and resources has been compiled by DWR into the *State Plan of Flood Control Descriptive Document,* available at http://www.water.ca.gov/cvfmp/docs/DRAFT_SPFC_Descriptive_Doc_20100115.pdf

In addition, prior to the authorization of the State Water Project (SWP), the State had plans to improve levees, knowing that the SWP would require levees to be maintained in order to run water through the Delta to the pumping plants in the South Delta. Reference is made to a document, titled *The Delta and the Delta Water Project*, dated January 1960, published by the Department of Water Resources which describes improvements to 250 miles of levees the report termed "master levees". It also describes channel control structures that can be opened and closed in order to keep flood flows from certain Delta channels; and therefore, protecting the levees in those channels from scour, erosion, and failure.

RECOMMENDATION: Incorporate additional flood protection system history and description to the Introduction and Problem Statement to provide context and nexus for the consultant and panel of technical scientific experts to consider the system-wide flood protection design, performance, and benefits when they develop an effective levee investment methodology.

c. Usage of Proper Data Is Important

The Association has noticed several instances where the Issue Paper used incorrect, misleading, or possibly inaccurate data. Uncertainties regarding the amount invested into Delta levees, use of outdated Delta Risk Management Strategy (DRMS) data, a map that shows non-existent levees, incorrect expenditure citation for a recent Delta island inundation, and other errors exist throughout. Greater detail about these individual data flaws is provided in CCVFCA's "Correction of Issue Paper Inaccuracies" and "Comments on Key Issue Questions" below.

Individually (and even cumulatively) the continued use of incomplete, incorrect, outdated, and unsubstantiated data is a significant problem because bad data inputs result in bad data outputs. The repetition of incorrect facts from outdated or unsubstantiated sources only serves to validate otherwise bad data, resulting in an unreliable financing plan. This is particularly concerning since the Council's final report will be provided to the State Legislature, which could lead to the codification of a seriously flawed Delta levee investment strategy. More importantly, as mentioned previously in our comments, the DSC is in a unique position to obtain the most current and accurate information about the Delta, therefore, providing the best possible data, maps, and information must be a primary goal of this project.

RECOMMENDATION: Utilize more recent reports as references, avoid using assertions unsubstantiated by studies or current data, and convene a panel of local flood control experts to develop an accurate map and provide current information on levee conditions. The Association has provided a list of current flood protection and Delta resource documents as an attachment to these comments.

IV. CORRECTION OF ISSUE PAPER INACCURACIES

a. Table 1 Comments

Delta engineer's review of the Issue Paper noted several problems with the data used in Table 1. All of the comments and corrections below have previously been made by the Association and individual Delta engineers in written comments and testimony on other DSC documents, and are disappointing examples of the continuing usage of incorrect, outdated, and unsubstantiated Delta levee information. Failure to correct this information will result in a flawed investment strategy that is unreliable and lacking credibility.

- *Double-Accounting* - There appears to be double-accounting going on in this Table, resulting in inflated cost estimates for Delta levee improvements by more than $1 billion. Presumably both the CVPP and DRMS cost estimates are for the same levee mileage, so adding the numbers together is incorrect. Instead of totaling the combined costs of both the 2012 CVFPP and the 2011 DRMS estimates for Delta levee improvements, Table 1 should compare the different estimates to show there is a difference of $1.18 billion for the Low Cost Estimate and $1.66 billion for the High Cost Estimate.
- *Footnotes* - We would also point out that later in the Issue Paper (page 13, paragraph 3, Question 6), the document states the CVFPP cost estimates are not of sufficient detail to support project-specific actions such as design and construction. That fact should either be noted in the "Source" footnote below Table 1 or the CVFPP Delta levee estimates should be deleted because the estimate is cursory and not substantiated by actual evaluation of current Delta levee conditions. The CVFPP Regional Planning process is currently evaluating the improvements necessary in the three regions covering the Delta. These regional reports will be completed by the end of 2014 and may offer a more updated and accurate source of cost estimates. The Delta Protection Commission's Economic Sustainability Plan (ESP) is also a good source for qualitative levee information, but will require updating to incorporate levee improvements already completed or currently underway using Prop 1E or 84 funds.
- *DRMS Issues* - The table also relies upon the DRMS estimated costs to improve 764 mile of levees to PL 84-99, however local engineers estimate there are only about 350 miles that need to be upgraded to meet PL 84-99 standards, therefore the DRMS 2011 cost estimate of $1.31 billion is overestimated. As the Association has pointed out in prior comments to the Council, the DRMS data is old (circa 2005), and therefore outdated, particularly in light of annual Delta levee funding being tripled every year since voters approved Propositions 1E and 84 in 2006.

Finally, as the Association has pointed out several times in previous comments to the DSC -- ALL of miles the SPFC Project levee miles are already above the 100-year floodplain (meet FEMA's standard) and many even *exceed* PL 84-99 standards. Delta engineers have estimated it would cost about $1 billion to improve the remaining 504 miles of non-project levees still in need of rehabilitation to meet HMP or PL 84-99 standards.

RECOMMENDATION: Revise Table 1 to eliminate the double-counting of levee improvements on the same levee miles. Replace CVFPP estimates with ESP cost estimates, and maybe the CVFPP Regional cost estimates if they are more than superficial estimates.

b. Figure 2 Comments

According to the review of Delta engineers this figure shows lines (indicating levees) in places where levees do not exist. Their assumption is that the map erroneously identifies restricted height and other low elevation structures in the Yolo Bypass as flood control levees, which they are NOT and should therefore not be counted as such. In addition, the location of SPFC project levees are not distinguishable due to a lack of contrast in colors of waterways and project levees.

RECOMMENDATION: The map should be revised to remove lines depicting low elevation non-flood control structures and change project levee color to make their location more clear. The Association recommends using the DPC's ESP and CVFPP's documents on the SPFC, and other documents we have listed in an attachment to these comments as references, and further recommends ARCADIS convene a panel of Federal, State, and local Delta and flood control agencies representatives to develop a map identifying Delta island names, RD #s, and location of project and non-project levees.

c. Overestimated Quotes of Total Recent Levee Investments

On page 3, in the second paragraph, the Issue Paper states that an estimated $700 million of State funds have been "invested" in Delta levee maintenance and improvement since 1973. Because this seems high for the State cost share portion, it appears the number may also include the levee maintaining agencies' local cost share, which we estimate at approximately $200 million.

RECOMMENDATION: The Council should verify whether $700 million is a combined total and acknowledge the local portion of the total invested since 1973.

d. Levee Vegetation Requirements Misrepresented & Over-Optimistic

The paragraph on page 10 mentioning the U.S. Army Corps of Engineers' (USACE) policy prohibiting vegetation on levees (see attached 2008 USACE policy paper) fails to provide the context and nexus regarding its relevancy to the question asked or to the criteria to be used in developing a prioritization methodology. In addition, the last sentence of that paragraph stating progress has been made in the USACE agreeing to exempt Delta levees from this policy is incorrect. The recently approved Water Resources & Reform Development Act (WRRDA) directed the USACE to review and revise their guidelines by 2016, however the Association is not aware of the USACE ever giving any indication of

being willing to "exempt" Delta levees, California levees, or any other levees in the nation from the levee vegetation prohibition.

So far, the USACE has not even been willing to approve the less restrictive life-cycle vegetation management policy adopted by California in the Central Valley Flood Protection Plan (CVFPP) as a "variance" to their policy. There is no "exemption" from levee vegetation removal for the Delta in the the CVFPP either. Also worth noting is that a levee vegetation variance may be granted only where "the analytical levee prism" is un-invaded by roots greater than 0.5 inches, potential erosion and scour, or potential tree overthrow pits. Practically, this means vegetation variances will only be obtained where existing levees are redesigned and reconstructed to create over-widened cross sections with unobstructed levee prisms. This represents a near-physically impossible solution in urban areas (where levees are cheek-by-jowl with residences) and a financially impossible solution in rural areas such as the Delta unless the State funds the project due to the high costs exceeding levee maintenance budgets. Another funding limitation for local agencies is Prop. 218 restrictions on funding "general" public benefits and explicit prohibitions for locals to fund habitat enhancements for other beneficiaries such as Endangered Species Act (ESA) requirements for CVP/SWP.

Currently, the only option available for vegetated levees to avoid losing PL 84-99 eligibility for federal levee repairs after flooding besides removal is to delay the ultimate removal by submitting a System-Wide Improvement Framework (SWIF). This mechanism does not exempt or provide any sort of exception to their levee vegetation policy (see attached USACE memo on SWIFs), but instead provides an opportunity for an eventual transition of levee systems into compliance with the USACE's policy.

As the non-federal sponsor for the State of California and jurisdiction to protect 1.7 million acres in the Central Valley, including the Delta, the CVFPB is the State agency responsible for submitting a SWIF. The Association believes the Board has submitted three SWIFs so far, but none for Delta levees that we are aware of. However, as mentioned previously, acceptance of a SWIF by the USACE simply delays the removal of the levee vegetation, it does not prevent the ultimate removal that is required to remain eligible for PL 84-99 disaster funds. These regulatory and fiscal constraints should be disclosed in the Issue Paper.

RECOMMENDATION: Adopting a PL 84-99 levee standard or something lesser may be a discretionary policy decision, but the investment strategy should incorporate the different consequences to SPFC project versus non-project levees, particularly the State's liability. The issue paper should also reflect the costs of removing existing levee vegetation from SPFC project levees that DWR estimated in a letter to the USACE (see attached DWR letter and policy paper) as Delta maintenance costs needed to comply with PL 84-99.

e. Incorrect Statement on Subvention Eligibility

Question # 7 has incorrect statement on page 16 claiming 50% of an island's acreage must be in the Primary Zone for project levees to be eligible for Delta Subventions funding. This is not true. All project levees in the Primary Zone are eligible.

RECOMMENDATION: Simply delete the 50% acreage wording so is clear all project levees in the Primary Zone are eligible for Subventions funding.

V. COMMENTS ON KEY ISSUE QUESTIONS

a. Question 1: *What are the Delta's Levees?*

An accurate portrayal of the Delta's flood protection system, including a description of the different categories of levees, varying levels of protection, and the secondary benefits and negative consequences beyond flood risk associated with maintaining each level of levee protection standards, should be a fundamental prerequisite before a methodology and tool can be developed to determine where and how much to invest in Delta levees.

As mentioned previously, the Issue Paper's first question is followed by brief information on three categories of levees in the Delta (SPFC project, non-project, Suisun Marsh) and a short and therefore incomplete reference to how current laws address those levees. Unfortunately, the Issue Paper fails to take the next step and indicate the differences between these three categories that might warrant prioritizing State investment for one levee or island over the other. The end of this question should clearly identify why (give reasons) the different types of levees would justify different levels of investment by the State so stakeholders can comment on whether the Council and its consultant are on the right track or not.

Important additional information, both historical and current conditions (e.g., levee system purpose, design, maintenance responsibility, current level of protection, etc.) should also be considered in the formulation of a prioritization methodology to provide context and nexus regarding the proportionality of benefits. CCVFCA recommends the qualitative evaluation of Delta levee benefits in DPC's ESP as a good starting point.

Specific Corrections and Scoping Suggestions

Define Levee Categories - The differences between project levees, non-project levees, and restricted-height non-flood control levees needs to be defined. The differences between the varying engineering standards, costs, and why each would be selected over the other (risk level/secondary benefits) should be

defined and quantified, coupled with the benefits and the negative consequences that apply to each standard that is to be maintained at that level in the future.

Eliminate Non-Flood Control Levees - It should be noted that not all non-project levees are eligible to participate in the Delta Levees Subventions Program, due to the fact that some have restricted height or are built within floodways, both of which are NOT considered flood control levees. Therefore, the actual non-project levees eligible for rehabilitation under the Subventions Program do not total over 700 miles, as seems to be implied by Table 1's DRMS cost estimate and the preceding paragraph in the Introduction. These limited elevation non-flood control levees ***must be removed*** from any accounting used in the DSC's levee methodology and prioritization.

Acknowledge the Delta Levees are Part of a Larger Central Valley Flood Protection System – This section should describe not only how Delta levees operate as an inter-dependent system in terms of providing flood protection and ecosystem benefits such as water quality in the region, but also their importance as critical components necessary for the larger SPFC flood protection system to perform as designed.

For the Sacramento River and tributaries, the Corps requires the State to maintain the channels to pass the design flows at stages at or below the 1957 design profile.[5] In addition, the State has signed assurance agreements with the U.S. Army Corps of Engineers to maintain the San Joaquin River Flood Control Project in accordance with the 1955 MOU.

Relevant to the State's obligations and flood protection goals and investment strategy for the Delta, the Issue Paper should also acknowledge that due to budgetary and environmental constraints, maintenance envisioned when the SPFC system was designed has not taken place, due in part to State funding limitations.

Define and Account for Levee Funding Distinctions – In addition to defining the different categories of levees in the Delta, this question/section should also describe further distinctions between levees in terms of their funding eligibility. The Issue Paper and methodology should therefore divide levees into further subcategories. For instance, not all SPFC project levees are eligible to participate in the Delta Levees Subventions Program, so project levees should be subdivided into two categories because each currently has different State cost-shares which should be reflected in the methodology. Only the project levees in the legal Delta's Primary Zone are eligible for Subventions funding, so the methodology will need to have the expert panel on flood control recommended previously assist in indentifying the location and number of project levee miles located in the Primary Zone and the remaining number of project levee miles and located in the Secondary Zone.

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[5] Central Valley Flood Protection Board *Flood Control System Status Report* (summary document) Available at http://www.cvfpb.ca.gov/CVFPP/04_CVFPP-fcssr-broc-11212.pdf; Central Valley Flood Protection Board webpage, "Flood Control System Status Report." Available at http://www.cvfpb.ca.gov/profiles/index.cfm

Separate Maintenance and Improvement Costs – The methodology should account for not only State investments in bringing some levees up to a higher standard, but factor in the annual maintenance costs to keep over time, including addressing sea-level rise improvements.
The methodology could divide levees in terms of those levees that have already achieved designated State goal for level of protection (e.g., PL 84-99) and only require future maintenance money and those that still need funding for improvements to achieve the PL 84-99 standard.

The good news is that once the Prop. 1E and 84 levee work is completed, rehabilitation of about 20% of the Central Delta levees of concern identified in previous Delta studies will be done, and approximately 100 miles of Central Delta levees will meet the PL 84-99 standard or sustainable HMP standard.

Request Revision of Figure 2 – See CCVFCA's specific concerns with inaccuracy of Figure 2's cost estimates in our comments above in IV (b).

Recommended Flood Protection System Resource Documents – In addition to the Delta Protection Commission's Economic Sustainability Plan (ESP) as a source of better information about the physical location and analysis of levee benefits, CCVFCA recommends ARCADIS and the Council utilize some of the more recent flood protection documents as resources which we have listed in an attachment to these comments. These documents provide physical descriptions of facilities and their location, design flood flow capacities, various levee design standards, the benefits and negative consequences of maintaining one levee standard versus another, assets protected in the Delta, qualitative assessments, and many other elements relevant to developing an investment strategy.

b. Question 2: *What Goals and Objectives Should State Investments in Delta Levees Further?*

First and foremost, a primary goal that should be the foundation of the State's strategy should be to design a Delta levee funding prioritization methodology that avoids increasing the regulatory burden and costs of implementing annual maintenance, accessing Subventions Program funding, or qualifying for other State levee improvement funding programs. As pointed out in the ESP, each of the Delta islands' levees contribute to the protection of different assets and societal values and the local residents have been doing their part for more than a century to maintain this flood control system. Therefore, the State's strategy should reward their good behavior, not penalize them, because it is in the State's best interest to encourage the continued leadership that the local Delta districts provide in planning, designing, and constructing levee improvements, providing daily levee maintenance, and advocating for landowner approval of assessment amounts necessary to fund local flood protection activities.

The Association was pleased to see the emphasis on Water Code section 85305(a) language requiring the Delta Plan "attempt to reduce risks to people, property, and state interests in the Delta." However, rather than simply reciting statutory language goals and requirements for the Delta, it would be helpful for this section to list the other types of benefits and interests that are particularly relevant to the State.

Levees assure the reliability of the region for transportation, agriculture, business, and even water conveyance; and they provide this protection at all times, whether during daily high tides or seasonal high-flow events. Referencing the qualitative flood protection findings from the DSC's ESP is a good place to start identifying goals and objectives for the State. An acknowledgement and explanation of the benefits and negative consequences of selecting one levee standard over another would also be helpful in identifying State goals and objectives.

For instance, there is nothing in the Delta statutes about the State's existing obligations and liability for the State Plan of Flood Control (SPFC), but the State's assurances given to the federal government in a 1953 MOU is a factor that should probably be considered in an investment prioritization methodology. The State's flood management obligations include specific maintenance and operations (O&M) responsibilities as well as responsibility for flood protection of 1.7 million acres in the Central Valley, which means significant annual costs. The State's liability associated with responsibility for the SPFC also has significant fiscal impacts to the State's General Fund. Recent settlement agreements include, but are not limited to, payment of $464 million in 2004 and $45 million in 1995 for flooding damage in same area from two different storm events a decade apart.

If a State goal did include maintaining eligibility for federal disaster funding by adopting an objective to implement a PL 84-99 standard, then how that goal would conflict with the Delta Plan should be acknowledged and discussed in this section. What criteria with the Council use to select one over the other as a State goal or objective?

More factors not necessarily endorsed by the Association, but offered as additional types of State goals and objectives for the Council to consider are:

1) *Existing Obligations* - Comply with the State's assurances (CVFPB) provided to federal government (USACE) to assume responsibility for the ongoing maintenance and integrity of all State Plan of Flood Control facilities (SPFC project levees, bypasses, etc).
2) *Eligibility for Federal Levee Repair Funding* – There is no more effective way to leverage federal funds than by retaining flood control works' eligibility in PL 84-99 because the repair and recovery costs after a flood event are 100% federally funded.
3) *CVFPP Consistency* – The State Legislature mandated the adoption of the Central Valley Flood Protection Plan to be the guiding flood protection plan and investment strategy for the Central Valley, including the Sacramento-San Joaquin Delta. Adopted in 2012, the CVFPP is currently being implemented with a 2017 update in process.

4) *Legislative Mandates* – Examples include 200-year level of protection (or adequate progress towards) for urban and urbanizing areas by 2016. Several urban communities are in the Delta's Secondary Zone (e.g., Stockton, West Sacramento, Lathrop, Antioch, etc.) will face land use restrictions if not accomplished by 2025. Most of these urban areas are protected by SPFC project levees, so means liability exposure to the State.
5) *FEMA* – Federal disaster aid, local building requirements, and flood insurance rates for businesses and homeowners are all determined based on the level of flood protection provided.
6) *Quick and Cost-Effective* - Because the local agencies fund 100 percent of a levee project up front and are reimbursed for the State's cost-share after project completion in the Delta Subventions Program, there is great incentive for the local agencies to perform the work in the most cost effective and expedient manner possible. In other words, the State receives more bang for the buck from their cost-share because more levee miles can be addressed quicker compared to other programs or agencies.

c. Question 3: *What are the State's interests in the Delta?*

Worth mentioning in this section is the January 4, 2012 coalition letter sent to CA Natural Resources Secretary John Laird by SWP/CVP water exporters such as Metropolitan Water District and Santa Clara Water District acknowledging Delta levee maintenance and improvement "in the near term and in the decades to come" as important to water supply reliability. Included with the letter was a white paper entitled, "Urban Water Agencies Strategy for Delta Levees – List of Priority Levee Projects."

On a positive note, the Association agrees with the opening statement of this section affirming the protection of people and property is an inherent and statutory State interest, and generally agrees with the discussion of the State's interests in reliable water supply and quality, and the unique cultural, agricultural, and recreation values in the Delta. The discussion of setback levees and vegetation in the ecosystem portion however, is concerning, and there are State interests that are not included that should be considered.

This section states that ecological restoration "will entail" removing or setting back some levees, but fails to identify any of the statutory, regulatory, binding agreements that present conflicts, or the significantly increased costs to comply with these two policies.

USACE Levee Vegetation Policy Consequences

As discussed earlier in our comments, the USACE is required to review and revise their levee vegetation policy per language in the Congressional WRRDA bill approved in June, and the CVFPP adopted an alternative levee vegetation strategy in 2012 that *does not* comply with the USACE's policy. The CVFPP's flexible, adaptive life-cycle vegetation strategy is certainly favored by the Association's members over the "one size fits all" vegetation prohibition applied by the USACE, but we are not aware

of any interest from the USACE to accept the State's alternative strategy. CCVFCA is also not aware of any request or recommendation by the State to "exempt" Delta levees from the USACE's PL 84-99 policy.

Therefore, as mentioned previously in our comments, the Issue Paper should delete the sentence stating that "some progress has occurred" in gaining federal approval to exempt Delta levees and add in more description of the subsequent impacts and consequences if Delta levees lose PL 84-99 eligibility for failing to comply with federal vegetation policy.

A lawsuit filed by the Center for Biological Diversity challenging the policy, particularly the USACE's failure to consult with the wildlife agencies about the significant national adverse impacts to species and habitat could eventually influence changes to the policy, but CCVFCA is unaware of the current status.

Setback Levee Consequences

The discussion of the Delta Plan's policy on setback levees fails to discuss the consequences implementation will have on Delta communities, transportation, recreation, agricultural production, public safety, or feasibility.

Most, if not all of the setback levees mentioned in this section are project levees specifically designed to manage certain flood flow capacities at particular locations in the integrated system stretching from Red Bluff to Fresno in order to eventually drain out to the ocean. See our comments below regarding the State's existing assurances to the federal government to maintain this system that was agreed to prior to the Delta Reform Act. The Issue Paper fails to discuss these State obligations, the California laws governing modifications to the SPFC system, or the CVFPB's[6] policies for issuing encroachment permits only *if the project is compatible with the flood system and will not hamper the State's O&M responsibilities.* There is also no mention of the USACE's permitting role or their restrictive standards that must be met that add substantial additional costs to fully mitigate any perceptible increase in flood risk.

In addition, setback levees in locations identified in the Delta Plan will require moving of scenic roads and highways, condemnation of productive Delta farmlands, impacts to boating and shoreline fishing, altered water surface elevations, and costly permit requirements from the USACE to prevent any increase in flood risk. These additional regulatory constraints and costs should be disclosed in the Issue Paper.

State's Existing Flood Protection Interests

In 1953, the SPFC works were transferred to California with a memorandum of understanding (MOU) confirming the State's obligation to operate and maintain all completed works/facilities and to hold the

[6] Central Valley Flood Protection Board , A Century of Progress: Central Valley Flood Protection Board 1911-2011 (2011). Available at http://www.cvfpb.ca.gov/Publications/DWR100Years_05.pdf

federal government harmless.[7] For the Sacramento River and tributaries, the Corps requires the State to maintain the channels to pass the design flows at stages at or below the 1957 design profile.[8] In addition, the State has signed assurance agreements with the U.S. Army Corps of Engineers to maintain the San Joaquin River Flood Control Project in accordance with the 1955 MOU.

There are more than 1,600 miles of State-federal Project levees in the Central Valley, 385 miles of which are located in the Delta. More than 700 miles of additional Delta levees are classified as "non-project." The key component of the SPFC system, the Yolo Bypass, carries 80 percent of the water at the latitude of Sacramento during extreme floods.[9]

Responsibility for the protection of 1.7 million acres within the state's Sacramento and San Joaquin Drainage District (SSJDD) is under the jurisdiction of the Central Valley Flood Protection Board (CVFPB/Board).[10] Created by State legislation in 1913, the SSJDD holds the property rights on about 18,000 parcels of SPFC lands, some going back to 1900.[11]

Failure of the State to properly maintain these SPFC project levees as agreed to will likely continue to result in the State General Fund paying out for more damage lawsuits beyond the more than half a billion already paid. Therefore, the liability for the SPFC seems to be a State interest, particularly in regards to development of a levee prioritization strategy.

In addition, the State Legislature identified the maintenance and improvement of the SPFC as a State interest when it mandated the CVFPB to adopt a Central Valley Flood Protection Plan in 2012 that includes a description of current system deficiencies and a strategy for funding system improvements.

This Issue Paper should expand Question 3 discussion by describing the other laws, regulations, and agreements the State is bound by that may conflict with or increase the costs of implementing the Delta Plan's setback levee and vegetation policies. Also provide a better description of the State's obligations for the SPFC and the USACE's current levee vegetation policy, along with the consequences to the State for not complying with PL 84-99, and delete the incorrect sentence claiming progress has been made in federal approval of a vegetation exemption for Delta levees.

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[7] 1953 Memorandum of Understanding (USACE and The Reclamation Board, 1953) and Supplements. Available at ftp://ftp.water.ca.gov/mailout/CVFPB%20Outgoing/Orientation%20Materials/Item%203C%20-%20LM%20Assurance%20Agreements/Example%201%20-%20srfcp_mou_1953%20--%20jsp%20copy.pdf.

[8] Central Valley Flood Protection Board *Flood Control System Status Report* (summary document) Available at http://www.cvfpb.ca.gov/CVFPP/04_CVFPP-fcssr-broc-11212.pdf; Central Valley Flood Protection Board webpage, "Flood Control System Status Report." Available at http://www.cvfpb.ca.gov/profiles/index.cfm

[9] Flood SAFE California, flyer, State Plan of Flood Control Descriptive Document (2012). Available at http://www.cvfpb.ca.gov/CVFPP/05_CVFPP-SPFC-DD-11212.pdf

[10] Authority rests in the Flood Protection Board pursuant to assurance agreements with the USACE and the USACE Operation and Maintenance Manuals under Code of Federal Regulations, Title 33, Section 208.10 and United States Code, Title 33, Section 408

[11] Central Valley Flood Protection Board webpage, "Sacramento-San Joaquin Drainage District Jurisdiction Maps." Available at http://www.cvfpb.ca.gov/cvfpb/ssjdd_maps/

d. Question 4: *What Threatens Delta Levees?*

CCVFCA was disappointed to see the Issue Paper continue to perpetuate the danger earthquakes and land subsidence pose to Delta levees despite no evidence of a levee failure having ever been caused by either without also disclosing the reality of large damaging floods occurring on a regular pattern of at least one major storm every decade. In our opinion flooding has been and continues to be the primary threat to Delta levees.

This discussion also presented an extremely concise description of assumed levee threats, but failed to mention several other threats to Delta levees and the State's interests that may warrant consideration. In addition, there are several revisions we recommend, including an over-quoted levee failure statistic and uncorroborated assertions on subsidence that require additional context and more balanced perspective.

Equal Reference to Progress in Delta Flood Protection

Per DWR's Final Draft of DRMS, there have been 162 Delta levee failures leading to island inundations (this is presumably the source of the "over 140" statistic used by DSC in its Issue Paper). However, since the introduction of the State Levee Subvention Program, there have been fewer than a dozen levee failures on major islands within the Delta since 1973 (excluding those levees that are designed to overtop and are in designated floodways).

In this instance, context is important to demonstrate the success of the Subventions Program, to understand the status NOW as opposed to before significant levee improvements, and to avoid needlessly overstating the current flood risk in the Delta. The development of an investment methodology and levee prioritization strategy requires accuracy in reflecting the current conditions.

Earthquakes and Subsidence

As another example where the Issue Paper should provide more context is the assertion on page 11 that there are four geologic and hydrologic forces that not only threaten Delta levees, but also claims these threats and consequences are increasing steadily. However, the Association is not aware of any levee failures caused by subsidence or earthquakes, or of any subsidence or sea-level rise levee integrity studies to corroborate a direct linkage and nexus of these threats to levee failures. Therefore, both of these assumptions are unsubstantiated and the Issue Paper should clarify these concerns are based on assumptions and probability, not any documented occurrences. If the Council would like evidence to support such assumptions, they should consider directing the ISB to conduct scientific studies on the direct effects of subsidence and earthquakes on levee stability.

In addition to no documented failures in the 160-plus years of managed flood control in the Delta from an earthquake, modeling of the Delta levees' sensitivity to earthquakes also does not predict a widespread series of catastrophic failures as proposed in some reports. Additional studies should be

performed to determine a variety of seismic levee design options to pick depending on risk probability and the critical nature of the State's interests protected. A well-planned emergency response plan would also reduce the amount of time the Delta water supply would be out of commission.

We also question the statement claiming levee subsidence being exacerbated in the future. Typically, the word "subsidence" is used to describe the oxidation of peat soils on the landward side of a levee, mostly in the island interior rather than the perimeter near the levee, and not under the levee foundation. If a Delta levee loses height due to the sinking of the underlying land – as seems to be implied here – it is as a result of "foundation consolidation" and not subsidence. These are two different geologic causes, so the subsidence of interior lands of Delta islands should not be confused with levee settling due to the weight on the foundation.

Surveys and geotechnical evaluations show that subsidence rarely occurs close enough to the levee to cause instability and CCVFCA is not aware of any studies that have analyzed a nexus between landside subsidence of peat soils threatening the foundations or stability of levees either. So the Council should consider commissioning such a study. The lowered interior land elevations from soil subsidence certainly pose a deeper flooding danger if a levee fails, but should not be attributed to the levee failure itself until there is scientific evidence directly linking landside subsidence to levee integrity. Finally, the occurrence of significant landside subsidence only exists on a small percentage of the Delta's total acreage primarily limited to the Central Delta region, and recent LiDAR survey date indicates that very few areas of the Delta are still actively subsiding, so this should be characterized in the Issue Paper as well.

That said, the Association concurs with the Issue Paper's reference to a recommendation from the DPC's ESP in Table 3 that "lowland" levees be improved in a manner that "more fully addressees the risks due to earthquakes, extreme floods, and sea-level rise, allows for improved flood fighting and emergency response, provides improved protection for legacy communities, and allows for growth of vegetation on the water side of levees to improve habitat." This is a factor that should be considered in the evaluation of State's interests, particularly for reliable water supply, and in an investment and funding allocation methodology.

There are several potential threats to Delta levees not identified in this section that are relevant to the State's interests and levee prioritization methodology that may be worth consideration.

Open Water Seepage and Erosion

When an island fails and is not reclaimed (drained and levee breach repaired), not only is the interior terrestrial and avian habitat destroyed when the island is flooded, but the shoreline riparian habitat on the levee is lost too. Without the levees, the strong winds whip up powerful corrosive wave fetch swells that slowly eliminate all vegetation and leave only open-water habitat. These waves also create erosion and scour damage on neighboring levees, increasing the annual RD levee maintenance cost for

potentially several miles of levees. These effects can be plainly seen in the loss of historical levee-based habitat on lower Liberty Island after levee breaches were not repaired. The open water in the newly inundated island also creates hydraulic pressure on adjacent islands, resulting in seepage and boils which could eventually undermine levee stability on the adjacent islands resulting in levee failure at worst, and increased annual maintenance costs for the RDs. These increased levee maintenance costs in the Delta also increase the State's annual costs and should be disclosed in the Issue Paper and factored into the methodology.

BDCP Impacts to Flood Protection

The combined actions in the Bay Delta Conservation Plan (BDCP) Conservation Measures propose the largest modification of the SRFCP/SPFC facilities that have ever been made since the federal project was transferred to the State, which the Association outlined in its comments on the 2014 Draft BDCP and EIR/EIS.

At least 10 of the 22 BDCP Conservation Measures propose to modify the location, configuration, and purpose of SRFCP facilities, particularly construction of three intakes and six barges (CM1) and installing an operable gate on a flood facility (Fremont Weir) to divert water into the Yolo Bypass (SFPC facility) as part of CVP/SWP project operations (CM2). Extensive 2/47 dewatering and pile driving would also threaten levee stability during CM1's 10-year construction period. Other Conservation Measure are likely to result in the seepage of water onto or under the adjacent lands and result in adverse effects associated with seepage, levee stability, subsidence, water elevations, and levee erosion. This could have significant impacts on the costs to RDs for performing their levee maintenance and drainage duties.

An example of a potential threat to the integrity of the SPFC to operate as a system is in the lower Bypass. The original design capacity provides protection estimated at up to the 65 to 70 -year event, conveying as much as 500,000 cfs. Under current conditions, however, the Bypass has little to no margin for safety during high flow events. The U.S. Army Corps of Engineers has recognized that during the 1986 flood (considered to be a 70-year event in the lower Yolo Bypass), surface water elevations rose to within one foot of the top of the levees (RD 2098), even though the levees were designed with five feet of freeboard.[12]

Moreover, several studies have identified a statistical trend toward increasing variance of annual floods within the Sacramento River system, perhaps related to global climate change.[13] If these trends continue, there will be an increased risk of floodwaters outflanking, overtopping or eroding the Bypass Project levees, and it may be crucially important in the coming years to enhance conveyance capacity in some reaches of the Yolo Bypass. These types of system improvements are currently be studied by

[12] Yolo Bypass Working Group, A Framework for the Future: The Yolo Bypass Management Strategy (August 2001)

[13] *See, e.g.,* National Research Council, *Improving American River Flood Frequency Analyses,* National Academy Press (1999); *Climate Change Impacts and Adaptation in California* (2005), Guido Franco, CEC Staff Paper.

DWR and proposed in Regional Plans as part of CVFPP implementation, but was not mentioned in the Issue Paper either.

Rather than repeat the flood control impacts in the Delta from the BDCP proposed encroachments on the SPFC, the Association can provide specific water elevation changes and locations, flood flow impediments, and other adverse effects upon request by ARCADIS.

e. Question 5: *Who is Responsible for the Delta's Levees?*

Generally the Issue Paper's descriptions of the various agencies responsible for levees is very good in this section. We also appreciate the inclusion of information about private ownership of the land underlying the levees, as this is often a point of confusion for many decision-makers. However, the Association recommends a clarification regarding the definition of local agencies that maintain levees mentioned on page 12 because there are not "nearly 100" reclamation districts in the Delta. If the "100" number is also referencing other flood control agencies besides RDs, then this would seem like a wonderful opportunity to describe the involvement of several agencies in planning, operations and maintenance, emergency response, and other aspects of flood protection.

CCVFCA offers the following supplemental information regarding RDs and the CVFPB that may be relevant to levee investments.

Under California law, no modification to the federal/State flood control system (SPFC), encroachment, or project may be constructed on or near the Sacramento and San Joaquin Rivers or their tributaries without the explicit approval of the Central Valley Flood Protection Board (CVFPB). Recent legislation has also increased the board's encroachment enforcement authority to remove such encroachments if necessary.

When an improvement to any feature of the State Plan of Flood Control (SPFC) system (project levees) is completed, the Central Valley Flood Protection Board accepts responsibility for the levee project, but transfers the daily operation and maintenance (O&M) duties to a local agency: typically reclamation and levee districts or joint power authorities that also include cities and counties with flood management responsibilities such as the West Sacramento Area Flood Control Agency (WSAFCA) and the San Joaquin Area Flood Control Agency (SJAFCA), both of which have jurisdiction in the legal Delta.

California reclamation districts (RDs) are legal subdivisions of the State responsible for managing and maintaining the levees, channel embankments, drainage canals, pumps, and other flood protection structures.[14] Each RD is autonomous in its responsibilities and is generally managed by an elected board of trustees from eligible landowners and funded by assessments levied on parcels of State and

[14] Cal. Wat. Code § 50000 et seq.

private property.[15] Cities and counties in the Delta also have flood management responsibilities, including levee financing and maintenance.

Local Reclamation Districts (RDs) are responsible for the daily inspection of levee conditions for issues such as cracks, slippage, encroachments, seepage, burrowing animals, etc. In addition, DWR conducts levee inspections twice a year and the USACE conducts more extensive Periodic Inspections every 5 years, both of which are used by the USACE to determine PL 84-99 eligibility.

Additional flood control features include Delta reclamation district canals and ditches that often function as both water supply and drainage conveyance facilities. Canals and ditches are typically kept at low water levels during the drainage season, and are pumped out by the reclamation districts to remove drainage and stormwater. During the crop irrigation season, water is diverted from tributaries into water supply ditches and irrigation drainage water is captured in the canals and ditches and reused in subsequent irrigation.

f. Question 6: *What plans guide the State's investment in Delta levees?*

On June 29, 2012 the Central Valley Flood Protection Board adopted, with some modifications via Board Resolution 2012-25, the Central Valley Flood Protection Plan (CVFPP) prepared by the CA Department of Water Resources.[16]

The CVFPP is intended to be a comprehensive new framework for system-wide flood management and flood risk reduction in the Sacramento and San Joaquin River Basins,[17] and includes an extensive habitat Conservation Strategy component.[18] This plan provides conceptual guidance on reducing the risk of flooding for more than one million people and $70 billion worth of homes, businesses, and infrastructure in the Central Valley with a goal of providing a 200-year level of protection to urban areas[19] and reducing flood risks to small communities and rural agricultural lands.

The Association was pleased to see the CVFPP in particular mentioned in this section of the Issue Paper. However, we would request specific mention of the regional coordination efforts to plan local flood protection improvements, and the role that Regional Flood Control Agencies such as WSAFCA and

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[15] *Id.*

[16] Central Valley Flood Protection Board, Central Valley Flood Protection Plan (CVFPP).Available at http://www.water.ca.gov/cvfmp/docs/2012%20CVFPP%20FINAL%20lowres.pdf.

[17] CVFPB, "Central Valley Flood Protection Plan: Major Physical and Operational Elements of Preliminary Approaches and State Systemwide Investment Approach" (2011). Available at: http://www.cvfpb.ca.gov/CVFPP/07_CVFPP-SSIA_elements_brochure_12dec2011.pdf

[18] DWR, 2012 Central Valley Flood Protection Plan Attachment 2: Conservation Framework (2012). Available at: http://www.water.ca.gov/floodsafe/fessro/docs/flood1_conservation_framework.pdf

[19] DWR, Urban Level of Flood Protection Criteria (2013) Available at: http://www.water.ca.gov/floodsafe/urbancriteria/ULOP_Criteria_Nov2013.pdf

SJAFCA have in capital improvements that guide overall flood protection strategy from a regional level be disclosed too.

The CVFPP Regional Coordination Committees are currently in the process of developing through a cooperative local process,[20] the flood control projects for their region which will eventually be combined with the System-wide Improvement Projects concurrently being developed by DWR.[21]

In addition, the regional plans will be looking at increasing protection to urban areas at the 200-year flood frequency level. The results of these plans may cause the Yolo Bypass and other parts of the system to be modified in order to increase their flood carrying capacity so should be considered in the prioritization. The Council's prioritization strategy should also avoid reducing current flood capacity or undermining the past and future flood control investments already carried out or planned by these regions. Three of the six Regions in the CVFPP have portions of the legal Delta in their planning jurisdiction and their regional plans will be completed by the end of 2014.

There are also ongoing cooperative flood protection projects in various phases between the USACE, CVFPB, and local RDs using funding appropriated by Congress for improvements to the SPFC. DWR has also funded two regional studies that affect the Delta and that propose local and State investment in the Delta: the Lower Sacramento/Delta North Study has been completed and the Lower San Joaquin/Delta South Study is underway. The results of these studies may be good to summarize in the Issue Paper.

g. Question 7: *How are Delta levee maintenance, operation, and improvements funded now?*

The potpourri of differing cost estimates for Delta levee improvements listed in the first paragraph is confusing, not particularly helpful since some estimates are less reliable than others based on the level of actual evaluation done by each cited source, and therefore inappropriate for a levee investment methodology and prioritization strategy which must use the most accurate and credible estimates available.

Also, as previously mentioned in Section IV of our comments correcting Issue Paper inaccuracies, the Association questions the information provided regarding the State's actual cost share, as well as many of the expenditures reported in the Issue Paper.

First, the discussion in Question 7 repeats the $700 million state cost share figure. As previously discussed in these comments, this amount seems high, and should be clarified if it also includes the local

[20] DWR, "Regional Flood Management Planning" webpage. Available at: http://www.water.ca.gov/cvfmp/regionalplan/

[21] DWR: *Implementing the Central Valley Flood Protection Plan: State-Led Basin-Wide Feasibility Studies* (2013). Available at http://www.water.ca.gov/cvfmp/bwfs/BWFS_Summary_2-Pager_20130411.pdf

agencies' cost share as well. Reading further, the fifth paragraph of page 16 reports the Delta Special Projects program has provided more than $350 million to the Delta's local agencies. If we then add the entire state expenditure under the subventions program ($200 million) to this figure, it would appear that the state cost share is closer to $550 million.

Second, Table 4 ("DWR Priorities for Delta Integrated Flood Management," page 17) also presents some inaccuracies. The description that $218 million of bond funds has been expended in the Delta appears deceptive, particularly given the fact that the Issue Paper's own Table 5 reports that only $110 million has been spent on levee work (Subventions and Special Projects). Clarification of these figures is needed.

Third, local maintaining agencies also take issue with the phrasing that they provide a "lesser but still significant portion of investment in Delta levees." Fully explaining the Subventions Program in the Issue Paper is of utmost importance in the development of a long-term State investment strategy.

The current statutory cost-share ratio for Subventions is 75% State and 25% Local for all eligible expenses incurred on levees in the Delta. However, the local's percentage is actually higher than 25% because the Subventions Program cost-share does not account for the $1,000 per mile amount the RD is required to put in the funding pot first. Nor does it account for the local's cost share rising even more if the annual Program total is oversubscribed (more claims submitted for higher amounts than available) in a given year, which means the RD's final reimbursement amount is less than originally anticipated due to high demand that year. In addition, the Local's costs are increased due to bank interest rates they incur while waiting a year and half to be reimbursed from DWR for the State's cost-share, because the RD typically takes out a loan to fund 100% of project costs up front because of how the program is structured. Once the math is calculated on the increased costs to locals, the Subventions ratio is closer to about a 55 % State and 45 % local cost-share at the end of the day over the total program. Recently, annual program amounts have been about $35 million for Special Projects and between $12- $25 million for Subventions.

Meanwhile, under the Special Projects Program, a typical project includes a 10% local funding share, but can also be up to 100% State funding. CCVFCA recommends the Issue Paper explain these distinctions. Also worth mentioning is more context regarding the State's interests as expressed through legislation. In 1988 the State Legislature increased the state reimbursement amount to Delta RDs for levee maintenance after serious flood and levee failures in 1986, changing the cost-share from a 50-50 split to the current 75-25 cost-share and removing the maximum annual $2 million program amount. The 1988 funding amendment had a sunset date, requiring the Legislature to extend the current cost share formula and unlimited maximum annual budget allowance every few years. CCVFCA recommends the Legislature amend the Subventions statute to make the cost-share that has been in place since 1988 permanent by eliminating the sunset date sentence. The Legislature amended the Delta Levee Programs again in 1991 to add a no long-term net loss of habitat mandate and appropriated $3 million to mitigate past impacts.

Also, the statement on page 16 that only project levees with more than 50% of the island acreage within the Primary Zone is incorrect. All project levees in the Primary Zone are eligible for Delta Levees Subventions Program funds.

As stated in the Issue Paper, in recent years, the State has relied on funding appropriated by the State Legislature from bond measures approved by California voters to finance the continual flood facility maintenance and improvements, but additional context is relevant to an investment methodology and prioritization strategy. The 2005 Hurricane Katrina levee failures in New Orleans heightened the awareness of Californians and the State Legislature to the flood risks in the Central Valley due to expanding populations protected by levees and the location of important statewide infrastructure. As a result, the California voters approved a $4 billion bond (Proposition 1E) in 2006 to rebuild and repair California's most vulnerable flood control infrastructure to protect people and property. Prop. 84 enhanced these flood risk reduction efforts with an additional $800 million for flood control projects approved by voters.[22]

Since 2006, an unprecedented number of flood protection projects have been completed approximately 650 miles of levees by DWR, the CVFPB, and local reclamation districts.

The Issue Paper and investment methodology will need to account for the fact that Prop. 1 E and 84 bond funds expire in July 2016 and a significantly lesser amount will be available if voters approve the new Prop. 1 water bond on the November 2014 ballot. This reduction in bond funding for flood protection occurs at the same time that the State's costs for the ongoing maintenance and operation of the SPFC have increased under the new standards mandated by the Legislature (e.g., 200-year urban level of protection); remapping of new flood hazard zones by FEMA; and more intensive SPFC inspection and removal for federal funding eligibility by the USACE.

Also worth mentioning is that over time due to changing societal expectations for public safety and ecosystem protection, the costs of maintaining the Central Valley's interconnected flood protection system has risen dramatically in the last couple of decades. As a result, the CVFPB often struggles with the increasing costs of maintaining the SPFC system to the 1957 design standards, keeping up with conflicting government mandates regulating flood control and natural resource protection, and maintaining eligibility for federal recovery funding under Public Law 84-99 to repair levee damage after a flood event.

CCVFCA is particularly disappointed with the failure of the Issue Paper to disclose how the Delta Levees Program has dramatically improved flood protection and increased the reliability of water conveyance by utilizing a very efficient process of partnering with the local flood control agencies for

[22] Resources Agency, "Bond Accountability: Proposition 1E Overview" webpage. Available at http://bondaccountability.resources.ca.gov/p1E.aspx

levee maintenance and improvements.[23] The flood protection projects are funded 100% initially by the local agencies and reimbursed by the State for its cost-share portion once the levee projects are completed.[24]

The levee improvements made since the inception of the Delta Levees Subventions Programs have dramatically reduced the risk of flood within the Delta as evidenced in the reduced number of levee failures during the flood events in 1997 and 2006. Currently, most, if not all, SPFC Project levees in the Delta already *exceed* PL 84-99 standards. Nearly all levees in the Delta are above the 100-year floodplain, and failure due to high tides or high flows has been essentially eliminated, thanks in large part to the success of the Delta Levees Program over the last four decades.

SB 200 (2012) by Senator Lois Wolk extended the current state-local cost-share formula for the Delta Levees Program through 2018, which has allowed continuation of the tripling of annual investments in Delta levee projects with flood protection bond funds approved by voters after Hurricane Katrina.

Finally, the Association compliments this section's recognition of beneficiaries other than Delta landowners and the State paying for the benefits derived as well as the local agencies' limitations to fund broad public benefits under Prop. 218 and 26. CCVFCA intends to participate in the DPC's public process to prepare a feasibility study on a Delta flood risk management assessment district.

Following are additional Prop. 218 requirements relevant to the investment methodology and prioritization of State funds. As subdivisions of the State of California, reclamation and levee districts must comply with Prop. 218 when raising assessments on property owners to fund flood management activities.

Proposition 218[25] is a California Constitutional Amendment that restricts local government's ability to impose property assessments in several important ways. First, it requires local government agencies to conduct a vote of the affected property owners for any proposed new or increased assessment before such rates can be levied.

Secondly, it tightens the definition of the two key findings necessary to support an assessment: special benefit and proportionality. An assessment can be imposed only for a "special benefit" conferred on a particular property.[26] A special benefit is "a particular and distinct benefit over and above general benefits conferred on real property located in the district or to the public at large."[27]

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[23] Central Valley Flood Protection Board, *Delta Levees Maintenance Subventions Program Guidelines: Procedures and Criteria* (2011). Available at http://www.water.ca.gov/floodsafe/fessro/docs/subventions_guidelines.pdf

[24] DWR Flood Management, Flood Control Subventions Program Section webpage. Available at: http://www.water.ca.gov/floodmgmt/fpo/sgb/fcs/

[25] (Articles XIIIC and XIIID) (approved by voters in November 1996)

[26] Art. XIII D, §§ 2, subd. (b), 4, subd. (a))

[27] Art. XIII D, § 2, subd. (i)

An assessment on any given parcel must also be in proportion to the special benefit conferred on that parcel: "No assessment shall be imposed on any parcel which exceeds the reasonable cost of the proportional special benefit conferred on that parcel." [28] Additionally, "The proportionate special benefit derived by each identified parcel shall be determined in relationship to the entirety of the capital cost of a public improvement, the maintenance and operation expenses of a public improvement, or the cost of the property-related service being provided."[29] These local assessment issue may affect the investment strategy, so should be disclosed in the Issue Paper.

h. Question 8: *What level of Delta levee improvement is warranted?*

The best form of emergency preparedness is prevention. In other words, an ounce of prevention is worth a pound of cure, because appropriate levee standards and maintenance funding can reduce the frequency and risk of damages and liability from levee failures.

In terms of specific issues in this section, CCVFCA found the description of the PL-84-99 standard confusing. The Issue Paper says the PL84-99 standard "approximates protection against a 50-year flood." However, the Corps of Engineers' *Guidelines for Rehabilitation of Non-Federal Levees in the Sacramento-San Joaquin Legal Delta, CA" 3 September 1987* does not describe 50-year protection or any other design level requirement. The Association is aware of the application of the standard in the Corps' *Levee Owner's Manual for Non – Federal Flood Control Works* (2006),[30] but this standard is used to determine whether a State or local government is eligible for "advance measures" assistance from the Corps. Therefore, the source of this statement should be noted and corrected.

Otherwise, the Association generally concurs with the inclusion of the DPC's Economic Sustainability Plan's levee recommendation, which proposed raising all Delta levees to the USACE's PL 84- 99 standard with additional improvements to certain levees that protect critical infrastructure and water supply. PL 84-99 is the standard to strive for once FEMA's minimum interim HMP levee height is reached because it enables federal funding for levee repair and rehabilitation after a levee failure. The good news is local agency engineers believe improving levees to a PL-84-99 standard could be done for less than $1 billion for all the remaining Delta levees that are not already at that level.

Next, the description for the Hazard Mitigation Plan (HMP) standard asserts that 53 reclamation districts fall below this standard. CCVFCA believes this to be inaccurate, as it appears to have been based on a flawed DWR LiDAR analysis containing several errors, which resulted in an overestimate of the number of reclamation districts that did not meet HMP standards. Some of these errors included counting levees

[28] Art. XIII D, § 4, subd. (a).) (7)
[29] *Id.*
[30] Available at http://www.nws.usace.army.mil/Portals/27/docs/emergency/LeveeOwnersManual(final).pdf

with restricted heights which are non-flood control structures that would never attempt to meet the HMP standard. As a further indication of the flawed analysis, a number of SPFC the levees project levees that actually greatly exceed the HMP standard were deemed not to meet HMP due to missing LiDAR data. The Association therefore urges the Council to avoid referencing statistics from this document in any discussion of the HMP.

i. Question 9: *How should levee maintenance and improvement costs be allocated?*

First and foremost, a primary goal that should be the foundation of the State's strategy should be to design a Delta levee funding prioritization methodology that avoids increasing the regulatory burden and costs of implementing annual maintenance, accessing Subventions Program funding, or qualifying for other State levee improvement funding programs. As pointed out in the ESP, each of the Delta islands' levees contribute to the protection of different assets and societal values and the local residents have been doing their part for more than a century to maintain this flood control system. Therefore, the State's strategy should reward their good behavior, not penalize them.

A more specific is for the Issue Paper provide a little more context to the single sentence stating Delta RDs budget "less than $50,000 to $100,000 annually for levee maintenance." This annual budget number was provided by the Association in comments on the Delta Plan as an example, but we qualified with the fact that it was not based on any actual survey of RDs or review of annual budgets, so that should be mentioned here. As part of this project, the consultant may want to review DWR's annual levee inspection reports for the amounts RDs spend on levee maintenance, or conduct a survey of the Delta RDs to receive a direct response.

That said, in many cases, levee maintenance has been routine for many years, therefore a large budget may not be required for maintenance. In addition, the average Subventions Program claim is approximately $200,000 which is added to the local portion, but is not captured in the current maintenance reference. The Delta RD annual total budgets are relevant in a prioritization strategy intending to implement setback levees that according to the Delta Plan cost an additional $1.5 million per mile than a typical flood protection improvement to reduce the risk of flood.

Instead of referencing an old ability to pay study from 1992 covering only western Delta islands, the Issue Paper could mention the more recent M-Cubed study comparing two districts (Bishop and Empire Tracts, 207) to test the difference between the ability to pay for an agricultural district and an urbanizing district.

The Issue Paper should also address the "domino effect" in regard to levees that may, or may not, be maintained in the future in a levee prioritization strategy. It is well documented that when levees fail and islands are not reclaimed, the neighboring islands experience extensive increases in maintenance

due to seepage problems and increased wind/wave fetch forces causing erosion. This increases the local district's annual levee maintenance costs.

Finally, earthquakes have been cited as a substantial risk to Delta levees, with predictions of a major quake being likely sometime in the next few decades. However, there has never, in the 160-plus years of managed flood control in the Delta, been a documented failure of a levee due to an earthquake. During the 1989 Loma Prieta earthquake (MW 6.9), some Delta levees showed cracks, but none failed.

Therefore, if the State and Federal Projects (SWP/CVP) and water exporters are concerned about levee failures caused by earthquakes, then the portion of costs above PL 84-99 should be fully covered by those water supply beneficiaries, not local Delta residents.

Because local districts already operate on tight budgets, they cannot and should not be responsible for increased capital, operation and maintenance costs, increased liabilities, or endure other obligations to offset impacts that could undermine the performance of the SPFC for the purpose of accommodating habitat projects undertaken within the Yolo Bypass to benefit SWP/CVP water supply. Those are State and Federal interests, not local.

j. Question 10: *What is the federal government's role?*

Although the Association concurs that obtaining federal government cost-share is has recently become more difficult than in the past, this should not mean the State or the Council should simply write-off receiving federal funding for Delta levees. Instead, this section should develop creative ideas on how to leverage and incentivize federal funding. Perhaps the Council determining what the elements and reasons were for the past federal investments being recommended could identify objectives the State's strategy could select to once again target those reasons.

The State's strategy for this section should include: disclose the State's goals regarding the role federal funding should play in a Delta levee investment strategy and identify objectives describing actions designed to leverage increased federal funding by creating incentives and removing historical barriers to future federal investment in Delta levees.

The objectives should be a suite of ideas for leveraging greater federal investment from all federal agencies and programs with an emphasis on the USACE and FEMA. If a goal of the prioritization strategy is to leverage an increased annual percentage of Delta levee funding (cost-share) from federal government, then what are the strategies the State could adopt in the Delta Investment Strategy? The objectives should propose a suite of federal agencies, programs, and actions to focus on with specific ideas on what actions or prioritization criteria the State's Delta levee strategy could include that would leverage more federal funding from both traditional and new federal sources over the long-term.

For instance, is there a Delta objective the State's strategy could identify that would incentivize the U.S. Bureau of Reclamation (USBR) to contribute funding to levee improvements and maintenance of the "master" levees protecting the conveyance of CVP export water to South Delta pumps? Would the objective also be an incentive for the CVP water contractors to contribute funding or to lobby the USBR and Congress for more federal cost-share? After all, in a 1949 Progress Report to Congress on the development of the Central Valley Project, the U.S. Interior and USBR acknowledged the importance of giving "full consideration to the needs for flood control and the necessity for coordinated operation of reservoirs, canals, and channel improvements to that end." In addition, several CVP/SWP water contractors have already gone on record in a letter to Secretary John Laird (see attached) expressing their mutual interest in seeping investment in certain levees critical to the CVP/SWP water delivery pathway.

A better understanding of exactly why the USACE has concluded they will not recommend future federal funding for Delta levee improvements is necessary to determining whether objectives can be designed to create incentive for the Corps' participation. For instance, if the USACE's determination was that investing in individual rural Delta island levees is not a good investment in terms of cost-benefit to the federal government, maybe crafting an objective for the State to bundle multiple island levees together in order to increase the cost-benefit ratio would be more of an incentive. Or could bundling of multiple island levee projects that improve navigation generally and the Deep Water Ship Channels and ports specifically be an incentive? Could levee improvements that benefit navigation mean access to other federal funding pots the USACE has?

Leveraging more federal dollars will likely take more creativity and thinking of opportunities beyond how things have been done in the past. Such as, could levee projects that would contribute to improving water quality leverage funding from U.S. EPA or federal fishery agencies?

This section should also be specific in terms of identifying which federal programs and what outcomes the Delta strategy goals and objectives are trying to achieve. Is the Delta strategy to improve all levees to a FEMA standard that will reduce homeowners insurance for locals? For the levees to be maintained at a standard qualifying the Delta region for FEMA disaster assistance? For the levees to be maintained at a standard qualifying the Delta region for USACE federal rehabilitation funding after a flood? Are the State's costs reduced more if Delta levees are eligible under both FEMA and USACE? If so, then that could be an example of a goal which would then need to have a suite of objectives describing the actions (e.g., levee improvements, de-authorization of certain SPFC levees) to lay the path towards that goal.

Another option currently being considered locally that is relevant to this section, is whether the State should request Congress to de-authorize certain SPFC levees. The State's Delta levee strategy should evaluate the risks, benefits, and consequences to the State and local jurisdictions in order to determine whether this option is a goal the Delta strategy should consider adopting. Coordination with the CVFPP,

particularly the CVFPB and the three Regional Coordination Committees planning regional flood protection projects is necessary for this item.

Finally, CCVFCA has major concerns with the Issue Paper perpetuating misleading cost figures for levee repairs and subsequent island reclamation efforts associated with the 2004 Jones Tract flooding in the Issue Paper. This paragraph describes an estimated $90 million total cost for levee repairs following the infamous sunny day inundation of the island. This number overstates the actual levee rehabilitation and recovery total and State costs by a factor of three. The Association would like the Issue Paper to correct this figure, which has been repeated so often that it is now assumed to be true, despite official documents refuting this exaggeration of the truth. The State's approach to prioritizing levee spending should avoid using inflated and unsubstantiated figures that will skew the risk calculus in such a prioritization.

The only justified and verified costs the Issue Paper should use is the amount of the claim submitted to FEMA, which as detailed in the attached line-item spreadsheet was a total of $29,658,410.[31] Revising the Issue Paper to replace the inflated PPIC unsubstantiated estimate with the total final amount from the official FEMA claim, corrects the erroneous "double dipping" costs that were attributed to this levee failure in previous reports and data. It is possible that there were costs for damage to private property or costs that went unclaimed to FEMA in PPIC's estimate, but those costs should not be considered within the State costs anyway, so we recommend using the FEMA total. For the record, FEMA pays 75 percent of the total costs, so the State probably paid $7.5 million, but the Council may want to verify that amount with DWR.

FEMA also releases flood risk maps. Most of the Delta is considered by FEMA to be Special Flood Hazard Areas (SFHA). Participation in FEMA's National Flood Insurance Program (NFIP) is activated by the county adopting and enforcing floodplain management ordinances on new construction in a floodplain that meets or exceeds FEMA's minimum criteria to reduce future flood damage in the 100-year floodplain.

A legal issue specifically affecting federal agency policies on Delta levee the Issue Paper might want to mention is the Kern County Water Agency and Sacramento's Coalition for a Sustainable Delta which is an organization formed by Delta water exporters filing a legal action (June 2010) against the Federal Emergency Management Agency (FEMA), claiming the Agency's National Flood Insurance Program (NFIP) encourages development in the floodplain, resulting in elimination of valuable habitat and harming protected fish species. Pursuant to a settlement, FEMA is paying a $200,000 fee and beginning a biological assessment of the flood insurance program's potential effect on protected Chinook salmon, Central Valley steelhead and Delta smelt. The assessment could result in an order to implement additional environmental restrictions on development in the Delta floodplain through NFIP. Plaintiffs contended that NFIP's financial incentives for the construction of levees designed to withstand 100-year

[31] In contrast, the value of the lands protected by the levee repair was about $42 million ($3,500 per acre).

floods endangers listed species. FEMA has lost or settled six similar lawsuits in other states and is currently preparing a comprehensive, nationwide environmental study to evaluate the effects of the program on listed species.

k. Question 11: *What conditions should be attached to State funding of levees?*

A message too often lost in the Delta planning process is the fundamental significance of flood protection and control. The levees are not simply one part of the greater complex of problems focused around the Delta—or merely an inconvenient system with adverse impacts that must be addressed in an EIR/EIS. This comprehensive interconnected system of levees is absolutely critical to public health and safety, including the protection of the region's transportation, agriculture, business, homes, and even water conveyance.[32] Levees provide this protection at all times, during two daily high tides and seasonal high-flow events. A condition on Delta levees investments should include consistency with the CVFPP, and with USACE and CVFPB regulatory and permit requirements.

In a 1949 Progress Report to Congress on the development of the Central Valley Project, the U.S. Interior and USBR acknowledged the importance of giving "full consideration to the needs for flood control and the necessity for coordinated operation of reservoirs, canals, and channel improvements to that end." This commitment should still be applied today.

On a technical note, the Issue Paper's brief discussion of Water Code section 12987(b) in Question 11states that few easements have been acquired in order to control, or reverse, subsidence. This statement seems to indicate that local agency plans for levee improvements have not been complying with statutory obligations to acquire these easements. However, as the Issue Paper points out, the referenced water code section (12987(b)) states that improvement plans are only required to acquire easements in subsided areas where "the department determines that such an easement is desirable to maintain structural stability of the levee." Therefore, the fact that here have been few acquisitions of easements is more likely to be because DWR must have determined there were no parcels with levee structural stability threatened by subsidence. Interestingly, DWR's failure to require easements to protect levees from subsidence seems to contradict the oft-stated sentiment, including on page 11 of this Issue Paper, that subsidence is a continuing stressor to levee stability.

Additional evidence that subsidence is not threatening levee stability is recent LiDAR survey data indicating very few areas of the Delta are actively subsiding. In the few areas where it is a problem, the "toe berm" design, used to meet the above flood standard levee section, caps the peat and effectively stops subsidence, so the wider levee provides a two-for-one benefit. In light of this contradictory data, the Issue Paper needs to correct the unsubstantiated assumptions made about subsidence impacting

[32] DWR *A Framework for Department of Water Resources Integrated Flood Management Investments in the Delta and Suisun Marsh* (September 24, 2013)

levees and add in the more recent scientific and technical surveys refuting levees are threatened by subsidence.

Although subsidence is not generally an issue in regard to levee stability, interior subsidence does complicate flood control for RDs due to the difficulty in providing adequate interior drainage to lands that are still subsiding. Some of these subsiding lands may be opportunities in the future to become wetland habitats.

As the CVFPB has recognized with 2-dimentional modeling of the neighboring Sutter Bypass, vegetation can increase water surface elevations and inhibit flow velocities within flood bypasses.[33] New plantings and aquatic habitat projects in the Delta's Yolo Bypass also have the potential to increase hydraulic roughness during flood events, redirect hydraulic impacts, increase water surface elevations and flow velocities along the levees, and exacerbate erosion.

Due to existing conditions in the Yolo Bypass, even nominal changes to the bypass that create higher water surface elevations could reduce available levee freeboard, potentially outflanking or overtopping Project levees. These conditions can quickly erode the backside of levees and imperil life and property, are unacceptable from a flood management perspective, and must be completely mitigated to ensure that flood flow capacity is not reduced.

Finally, it is worth repeating that local districts operate on tight budgets, so they cannot and should not be responsible for increased capital, operation and maintenance costs, increased liabilities, or other obligations to offset the proposed habitat project impacts such as seepage and erosion that could undermine the performance of the district's levees or the SPFC.

l. Question 12: *What provision should be made to improve habitat for fish and wildlife or provide public recreation?*

CCVFCA's primary concerns with the Issue Paper's discussion of levee setbacks and vegetation was already addressed in Question # 4 above, so we merely offer a summarized version here. The discussion about removing or setting back some levees and vegetating other levees fails to identify any of the statutory, regulatory, and binding agreements that present conflicts, and significantly increased costs to comply with these two policies. These consequences need equal discussion in the Issue Paper.

The CVFPP adopted an alternative levee vegetation strategy that does not comply with the USACE's policy, and the Association is not aware of any interest from the USACE to accept the State's alternative strategy. CCVFCA is also not aware of any request or recommendation by the State to "exempt" Delta

[33] CH2M Hill for California Department of Water Resources, Sutter Bypass RMA2 Model Report at 5-16 (June 2012) ("Results indicate that increased growth of vegetation in the Sutter Bypass and Yolo Bypass....would raise water levels by up to 0.83 foot for the 1957 design flow conditions.")

levees from the USACE's PL 84-99 policy. Therefore, the Issue Paper should add more description of the subsequent impacts of Delta levees losing PL 84-99 eligibility.

The investment strategy should account for setback levees in locations identified in the Delta Plan will require moving of scenic roads and highways, condemnation of productive Delta farmlands, impacts to boating and shoreline fishing, altered water surface elevations, and costly permit requirements from the USACE to prevent any increase in flood risk.

In addition, this discussion leaves out the role of Delta agriculture in wildlife and fish habitat. With their large open expanses of farmland, mosaic of small grain crop residues, and shallow flooded fields, agricultural areas provide plenty of opportunities for wildlife to feed and rest, particularly Pacific Flyway birds. Where possible, investments in wildlife and fish habitat should move forward in partnerships ensure truly multi-benefit projects that maintain agricultural activities.

m. Question 13: *What if local agencies don't act?*

This section offers a fairly accurate description of the state maintenance area option in the rare instance where levee districts are not performing their maintenance duties. Another option for the State to consider, particularly for SPFC levees in rural areas including the Delta is requesting Congress to legislatively de-authorize/remove certain project levees from the SPFC. Doing so could reduce the levee maintenance costs and eliminate the need to remove vegetation, but may have other fiscal repercussions that would need to be investigated further before pursuing. As part of the CVFPP, the Regional Plans are considering recommending deauthorizing some project levee segments in their reports, so the Council should review those to see if there is local interest in the Delta.

The Association agrees that most levee maintaining agencies do a very good job of using their local assessments to maintain levees, and many have made substantial progress which is important to also acknowledge. See our previous comments on Delta levee annual funding tripled in recent years thanks to Prop. 1E and 84 and the amount of improvements accomplished to reduce flood risk.

In regards to levee inspections conducted by DWR finding deficiencies in maintenance in some districts, these deficiencies can include minor "cosmetic" fixes in a levee district that faces more severe challenges to life and property that require funding to be focused on levee repairs and improvements to avoid immediate failure, so this context should be included.

n. Question 14: *How should the State's levee priorities address the risk of State liability for levee failures?*

To safeguard at-risk people, properties and communities, the State of California holds the responsibility for a system of levees, weirs, bypasses and other risk-management facilities. Collectively, these State-federal flood protection works –as well as their associated lands, programs, conditions, and mode of operations and maintenance – make up the State Plan of Flood Control (SPFC).[34]

Inverse condemnation liability gives private individuals a pathway to recover for disproportionate damages caused by public improvements projects.[35] After the 1986 flood, a lawsuit involving some 3,000 plaintiffs claiming damages from a SPFC Project levee failure which resulted in evacuations, deaths, and hundreds of millions of property damage was filed against the State (*Paterno v. State of California*).[36]

Key factors in assessing the "reasonableness" of the risk inherent to the State's levee project included the large size of the project, the lack of direct benefit to the plaintiffs from the project, the feasibility of alternatives, and the fact that the ***State benefitted as a whole from the decision not to fund the levee improvements that would have prevented the breach***,[37] with foreseeability a supplemental issue also considered.

In 2003, the State of California settled the case for $464 million (see attached Legislative Analyst Report) after the Third Appellate Court concluded in an appeal of the inverse condemnation lawsuit that the State was liable as the party responsible for the SPFC facilities. The court agreed that the *Paterno* plaintiffs' damages were "directly caused by an unreasonable State plan which resulted in the failure" of the levee, therefore finding the State liable to pay for these damages.[38]

The appellate decision also cited case law stating that a public entity is a proper defendant in an action for inverse condemnation if the entity "substantially participated in the planning, approval, construction, or operation of a public project or improvement that proximately caused injury to private property. So long as the plaintiffs can show substantial participation, it is immaterial 'which sovereign hold title or has the responsibility for operation of the project.'"[39] The appellate court further declared: "the State, but not the District, is liable for *Paterno's* damages, because of the unreasonable plan within the SRFCP which accepted the levee as built without any measures to ensure it met design standards."[40]

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[34] Proposition 1E and Public Resources Code (PRC) Section 5096.805 (j). A complete description of these assets and resources has been compiled by DWR into the *State Plan of Flood Control Descriptive Document,* available at http://www.water.ca.gov/cvfmp/docs/DRAFT_SPFC_Descriptive_Doc_20100115.pdf

[35] *Locklin v. City of Lafayette*, (1994) 7 Cal.4th 327 at 367

[36] *Paterno v. State of California*, (2003) 113 Cal. App. 4th 998; 6 Cal.Rptr.3d 854 (2004)

[37] *Id.* at 1017; Locklin, 7 Cal 4th at 368-369.

[38] *Id.*

[39] *Paterno*, citing *Arreola*, 99 Cal.App.4th at p. 761

[40] *Paterno*, 6 Cal.Rptr.3d 854 (2004) at 864.

The Question 14 discussion seems to focus on how the State can transfer the burden of liability placed upon it by the *Paterno* litigation and settlement. However, there is no mention that with limited exceptions, California law generally also grants local districts with immunity from suit for liability associated with levee failure or other types of flood damage.[41] (See generally Gov't Code § 810 et seq.)

The reason for district immunity is simple: the law is intended to encourage the formation and continued existence of districts in order to maximize flood control projects. If local districts were financially responsible for all flood damage in their jurisdictions, they would be quickly dissolved, leaving landowners to maintain their own levees—a virtually impossible task without a centralized, competent staff, engineering consultants, heavy equipment, and a stable funding source.

Instead of focusing on how it can shift liability for flood damages to the local flood control agencies, the State should continue to work toward reasonable plans that protect public safety. After all, the State incurred liability under Paterno because it took "unreasonable" actions in regard to a SPFC project levee the State gave the federal government maintenance assurances. Planning and funding levee repairs that improve the system will only improve the State's odds of showing "reasonableness" -- and, not coincidentally, will reduce the risk of failure in the first place.

o. Question 15: *What about climate change?*

The Association is optimistic about the Delta's ability to weather climate change. Proposition 1E and Proposition 84 investments in the Delta Levees program have prompted major successes. Now, nearly all Delta levees now elevated above the 100-year floodplain, and nearly all Project levees in the Delta exceeding PL-84-99 standards. The levees that safeguard many islands have raised three feet or more in elevation over the last several years, which demonstrates that Delta levees can and will adapt to the pressures of climate change, given adequate funding.

Delta reclamation districts are planning for sea level rise and the State has performed studies determining the amount of work that must be performed to keep up with the projected sea level rise. Therefore, if continued and adequately funded, the Delta Levees Program will in fact be able to keep up with this growing problem. Continued investment in Delta levee maintenance and improvements will protect Delta levees and the human, financial, and ecological resources they keep safe.

[41] *See generally* Gov't Code § 810 et seq.

VI. CLOSING COMMENTS

The Association appreciates the opportunity to provide input into the scope of key issues the Council and its consultant will consider when developing a levee prioritization strategy. We hope the corrections to erroneous and unsubstantiated statements pointed out in our comments will be incorporated into the Issue Paper and that the Council will pursue our recommendation to utilize local Delta engineers on expert technical panels to offer their knowledge and experience in methodologies to quantify and allocate benefits associated with flood protection.

We have no doubt that the Delta landscape will evolve; however, we feel this evolution can be managed to ensure the Delta levee system will continue to provide protection for fish and wildlife, water quality and supply, urban and legacy communities, recreation, transportation and utility infrastructure, and of course productive agricultural.

CCVFCA would welcome the opportunity to discuss any of these comments in greater detail, upon request.

Sincerely,

Melinda Terry, Executive Director
CA Central Valley Flood Control Association