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RE: Comments on the Draft Central Valley Flood System Conservation Strategy

Dear Mr. Cepello:

Thank you for the opportunity to comment on the Draft Central Valley Flood System Conservation Strategy (Conservation Strategy). We also appreciated the opportunity to meet with Ray McDowell of your staff on August 5, 2015, to learn more about the Conservation Strategy and discuss our common goals.

As required by the Delta Reform Act (Water Code section 85306), the Council, in consultation with the Department of Water Resources (DWR) and the Central Valley Flood Protection Board (Flood Board), is leading an effort to update its Delta Levee Investment Strategy (DLIS). While investing in levee improvements to reduce flood risk, the State has both an opportunity and an obligation to enhance habitats to provide a net benefit to aquatic species and mitigate adverse environmental impacts of levee projects. Therefore, in support of the DLIS, the Council is conducting a review of levee-related habitat projects and is developing recommendations to improve the cost effectiveness of future projects by using an adaptive management approach. Because a portion of the Systemwide Planning Area for the Central Valley Flood Protection Plan (CVFPP), and therefore the planning area of the Conservation Strategy, lies within the Delta and plays an important role in maintaining the integrity of the Delta levee system, it is essential that our agencies coordinate closely as the 2017 CVFPP Update, including the development of the Conservation Strategy, proceeds.

Delta Plan Consistency

As you know, the Council adopted in 2013 a legally enforceable management framework for the Delta and Suisun Marsh called the Delta Plan. The Delta Plan coordinates state and local actions to achieve the coequal goals of protecting and enhancing the Delta ecosystem and providing for a more reliable water supply for California. The Delta Plan also seeks to ensure that the coequal goals are achieved in a manner that protects and enhances the Delta as an evolving place, which includes reducing flood risks for Delta communities.

State and local agencies are required to comply with the Council's regulations if their proposed activity is determined to be a "covered action" under the Delta Plan. Although the Conservation Strategy does not appear to meet the definition of a covered action, the Flood Board may determine that the 2017 CVFPP Update is a covered action. Moreover, many of the projects in the Delta undertaken to implement the CVFPP, which will be guided by the Conservation Strategy, are likely to be covered actions. Therefore, the Council, in its coordination role, encourages consistency with the Delta Plan for that portion of the Conservation Strategy that overlaps with the Delta. The following comments are based on key policies and recommendations in the Delta Plan that the DWR should consider to better align the Conservation Strategy with the Delta Plan.

1. Best Available Science and Adaptive Management

Delta Plan Policy **G P1** (23 CCR Section 5002) states that actions subject to Delta Plan regulations must document use of best available science. Best available science should be consistent with the criteria listed in the table in Appendix 1A of the Delta Plan regulations (http://deltacouncil.ca.gov/sites/default/files/documents/files/FinalRegText_appendices_07262013.pdf), including relevance, inclusiveness, objectivity, transparency and openness, timeliness and peer review. We applaud DWR for using these criteria to develop the Conservation Strategy, and we fully support the proposed organizational structure that uses a Science Advisory Committee headed by a lead scientist to strengthen the application of scientific expertise and rigor to the implementation and review of the Conservation Strategy's adaptive management and monitoring.

Additionally, Delta Plan Policy **G P1** calls for ecosystem restoration projects to include adequate provisions for implementation of adaptive management, appropriate to the scope of the action. This requirement can be satisfied through the development of an adaptive management plan that is consistent with the framework described in Appendix 1B of the Delta Plan regulations (http://deltacouncil.ca.gov/sites/default/files/documents/files/FinalRegText_appendices_07262013.pdf), along with documentation of adequate resources to implement the proposed adaptive management process. The Council's adaptive management liaisons are available to support DWR in refining its adaptive management approach for the Conservation Strategy.

The Conservation Strategy describes two levels of adaptive management. First, DWR, in collaboration with its flood management and conservation partners, will use adaptive management to implement the Conservation Strategy and evaluate its success. Second, DWR proposes an adaptive management strategy specifically for vegetation on levees and management of invasive plants.

Regarding adaptive management of the Conservation Strategy itself, we note that DWR proposes a process that is similar to the adaptive management framework in the Delta Plan, but three key steps are missing. Step 1, "Define the problem" is not included. The problems the Conservation Strategy seeks to address are defined in Chapter 2: "impaired ecosystem processes (particularly hydraulic and geomorphic processes); eliminated, fragmented, and degraded habitats; and declining native species populations." Because the problems have been clearly articulated, this step would be easy to add.

Step 3 of the Delta Plan's adaptive management framework, "Model linkages between objectives and proposed actions", is also missing. This step refers to the use of conceptual models to help guide decision-making processes, such as planning and designing the project, as well as monitoring, evaluating and reporting on project performance. While the Conservation Strategy (in Appendix G) contains conceptual models for the target species, we recommend including a conceptual model for the Statewide Planning Area as a whole and/or for each of the five Conservation Planning Areas.

Conceptual models represent causal relationships of the system in a simplified manner based on best available science and can provide a basis for incorporating new information and continually improving knowledge of the system.

Implementation of the Conservation Strategy through an adaptive management process would also be strengthened by noting that the selected action may be either a pilot-scale or full-scale project (Step 4). In its discussion of uncertainty, the Conservation Strategy refers to the Delta-focused conceptual models developed under the auspices of the Delta Regional Ecosystem Restoration Implementation Plan (DRERIP), a component of the Ecosystem Restoration Program. In addition to relying on the DRERIP conceptual models to identify uncertainties to be reduced through targeted studies, DWR and its partners can use conceptual models such as the DRERIP models to guide the selection of appropriate scale of action to achieve goals and objectives.

Finally, the Conservation Strategy's process is also missing Step 8 of the Delta Plan adaptive management framework, "Communicate current understanding." This step follows monitoring and evaluation and is essential to maintaining a transparent process for the public and decision-makers. DWR has recognized the importance of outreach and engagement in the Conservation Strategy (Section 8.4 of the Conservation Strategy), particularly with engagement with the general public and ongoing regional planning efforts. However, Step 8 of the Delta Plan adaptive management framework not only calls for effective communication with the public to meet the goal of transparency and clarity, but also for engagement with policy makers and managers so that recommendations for potential changes in management strategies can be based on current scientific understanding. Council staff recommends modifying the Conservation Strategy's adaptive management process to add these three missing steps (i.e., Steps 3, 4, and 8) in order to achieve more alignment with the Delta Plan adaptive management framework.

Council staff is pleased to see that DWR has also proposed an adaptive management strategy specifically for vegetation on levees, as well as an adaptive management strategy for invasive plant management. However, we note that important steps of the adaptive management process are missing for these two strategies, as well. Levee vegetation is subject of particular importance in the Delta because near-shore aquatic habitat needed by migratory fish, as well as riparian habitat needed by birds and mammals, has been highly degraded. In its forthcoming levee-related habitat review, the Council will provide a summary of the best available science and a detailed adaptive management framework to guide future habitat improvement projects related to levees. We would be happy to share this report with you when it is complete, and encourage you develop a more detailed adaptive management strategy for vegetation that includes all appropriate steps of the adaptive management process, including the use of conceptual models to select appropriate actions and communication of current understanding to inform adaptation, following monitoring and evaluation.

We are encouraged by how the Conservation Strategy identifies the need for budgets for ecosystem restoration projects to adequately fund the long-term costs of those projects, i.e., monitoring and adaptive management, including through use of endowments. Such a commitment to long-term monitoring is vitally important for effective implementation of the adaptive management process. Additionally, information learned from monitoring can provide insights into which types of restoration activities are successful, and can help guide future investments of public funds in restoration projects.

2. Habitat Restoration

Delta Plan Policy **ER P2** (23 CCR Section 5006) states that habitat restoration must be consistent with Appendix 3 of the Delta Plan regulations, which is an excerpt from the 2011 Draft Ecosystem Restoration Program Conservation Strategy. Appendix 3 describes the many ecosystem benefits related to restoring floodplains, but provides two notes of caution. First, restoration must incorporate as much natural connection with the river as possible to reduce potential stranding of native fish. Second, floodplain restoration activities should include investigation and implementation of Best Management Practices (BMPs) to control methylmercury production and transport because periodic wetting and drying of floodplains makes these areas prone to methylation of mercury.

We are pleased to see that DWR acknowledges the potential for fish stranding in inundated floodplains unless modifications to the floodplain are made. The Conservation Strategy states how floodplains can be modified to eliminate features (e.g., isolated pits) that can strand fish when water recedes. The Conservation Strategy also has “modify floodplain topography to minimize stranding potential” as one of the specific objectives to maximize salmonid species recovery in the Lower Sacramento River and Lower San Joaquin River Conservation Planning Areas.

We noticed that the Conservation Strategy does not address the potential for floodplain restoration to enhance methylation rates of mercury. Since methylated mercury is a serious concern because it can bio-accumulate in fish, and in turn become an issue to the health of humans and wildlife that consume these fish, we suggest that the potential for widespread restoration of inundated floodplain to contribute to higher loading of methylmercury in the Delta should be analyzed in the Conservation Strategy.

Delta Plan Recommendation **ER R2** calls for DWR, as well as CDFW, and the Delta Conservancy to prioritize and implement habitat restoration projects in areas designated by the Delta Plan as Priority Habitat Restoration Areas (PHRAs), which are the Yolo Bypass, Cache Slough Complex, Cosumnes River-Mokelumne River confluence, Lower San Joaquin River floodplain, Suisun Marsh, Western Delta/Eastern Contra Costa County. The Conservation Strategy identifies two potential areas for restoring floodplains in the Delta that overlap with the Lower San Joaquin River Floodplain PHRA. While the floodplain restoration opportunity areas described in the Conservation Strategy and the Delta Plan are not identical, they are generally consistent.

The Conservation Strategy describes its alignment with the 2014 NMFS Recovery Plan for Salmon, including the list of specific near- and long-term restoration and recovery actions that could be partially or fully implemented through the CVFPP. Several of these identified restoration actions would occur in the Yolo Bypass and the Cache Slough Complex PHRAs, including restoring floodplain connectivity and channel meander by constructing setback levees (e.g., West Sacramento Levee Improvement), breaching islands (e.g., Prospect Island), and removing revetment, as well as expanding and changing flood bypasses such as the Yolo Bypass.

As stated in Delta Plan Recommendation **ER R2**, the Delta Plan’s vision for the Yolo Bypass is to “enhance the ability of the Yolo Bypass to flood more frequently to provide more opportunities for migrating fish” while the overall vision for the Cache Slough Complex is to “create broad non-tidal, freshwater, emergent-plant-dominated wetlands that grade into tidal fresh-water wetlands, and shallow subtidal and deep open-water habitats.” The potential restoration actions considered by the Conservation Strategy for the Yolo Bypass are consistent with the Delta Plan since they both call for increased inundation frequency for this area, primarily to benefit anadromous fish. As the Delta Plan’s recommendation for the Cache Slough Complex PHRA is to have perennial non-tidal wetlands that

gradually transition into tidal wetlands, we hope the Conservation Strategy will promote efforts such as levee breaching, rather than focusing primarily on enhancing seasonal floodplain inundation for the Cache Slough Complex.

Setback Levees

Delta Plan Policy **ER P4** (23 CCR Section 5008) calls for levee projects to, where feasible, increase floodplains and riparian habitats. The policy also requires for the evaluation of setback levees in several areas of the Delta, which include: The Sacramento River between Freeport and Walnut Grove; the San Joaquin River from the Delta boundary to Mossdale Paradise Cut, Steamboat Slough, Sutter Slough, the North and South Forks of the Mokelumne River, and urban levee improvement projects in the cities of West Sacramento and Sacramento. The areas identified for where setback levees should be considered were based upon information provided by DWR when the Delta Plan was developed.

The Conservation Strategy identifies several areas located at least partly within the Delta where potential setback levees should be considered. These areas include Sacramento River along the cities of West Sacramento and Sacramento (approximately River Miles 52 to 57), on the mainstem of San Joaquin River along Upper Roberts Island and the City of Lathrop (approximately River Miles 48 to 55), and a long stretch of the Lower San Joaquin River from around the San Joaquin River National Wildlife Refuge to the vicinity of McMullin Ranch in the Delta (approximately River Miles 61 to 78). The first two potential setback levee locations are consistent with setback areas designated by the Delta Plan. The third area of the Delta identified by the Conservation Strategy as a potential setback levee area is not one of the areas identified as such by the Delta Plan. While the area between the City of Lathrop and Upper Roberts Island has not been identified by the Delta Plan as a potential area for setback levees, we would like to discuss with FESSRO staff in further detail to better understand why this area is being considered now by DWR.

Delta Plan Recommendation **RR R8** calls for DWR, in conjunction with the Central Valley Flood Protection Board, CDFW, and the Delta Conservancy to develop criteria to define location for future setback levees for the Delta and the Delta watershed. We appreciate the progress DWR has made in addressing this task through the Conservation Strategy, specifically with Section 5 of *Appendix I: Floodplain Restoration Opportunities Analysis*, which outlines an approach to preliminarily identify general areas that may be suitable for setback levees throughout the CVFPP area. We would appreciate the opportunity to further discuss the general guidelines that were also considered (Section 5.5. of Appendix I) for evaluating setback levee locations, especially to get a better understanding of the tradeoffs between minimizing setback levees in perched channel reaches, a pervasive circumstance in the Delta, while also considering setback levees in tidally influenced reaches to lower base flow stages.

3. Invasive Species

Delta Plan Policy **ER P5** (23 CCR Section 5009) calls for the potential for new introductions of or improved habitat conditions for nonnative invasive species be avoided or mitigated in a way that protects the ecosystem. This policy is relevant to the Conservation Strategy because nonnative species can become a major obstacle to achieving conservation goals by adversely affecting the survival, health, and distribution of native wildlife and plant species. To the maximum extent practicable, design of habitat restoration actions undertaken to implement the Conservation Strategy should avoid or minimize effects that would lead to establishment of nonnative invasive species populations on site before relying upon mitigation measures. In the event mitigation is necessary, we recommend following the mitigation measures provided in the Delta Plan Program EIR.

The Delta Plan Program EIR's **Biological Resources Mitigation Measure 4-1** calls for an invasive species management plan to be developed and implemented for any projects that could lead to introduction or facilitation of invasive species establishment. The plan must ensure that invasive plant species and populations are kept below preconstruction abundance and distribution levels and be based on best available science and developed in consultation with Department of Fish and Wildlife and local experts (e.g., UC Davis, California Invasive Plant Council). This mitigation requirement also calls for the plan to include the following elements:

- Nonnative species eradication methods (if eradication is feasible)
- Nonnative species management methods
- Early detection methods
- Notification requirements
- Best management practices for preconstruction, construction, and post construction periods
- Monitoring, remedial actions and reporting requirements

Provisions for updating the target species list over the lifetime of the project as new invasive species become potential threats to the integrity of the local ecosystems

Council staff notes that Conservation Strategy contains DWR's first invasive plant management plan for the CVFPP, which is generally consistent with Delta Plan ER P5. We especially appreciate the work in identifying which invasive plants are expected to be the most problematic throughout the Plan area, outlining strategies for abatement for many of the different weed species, and listing some of the pros and cons of the various weed treatment options. Although this invasive plant management plan was developed at a programmatic level for application at the CVFPP-scale, we believe it provides an excellent source of information from which to develop project-scale invasive species management plans.

One suggestion we offer is to specifically track effectiveness of different invasive plant treatment methods to better determine which options work best under different conditions. As the entire Conservation Strategy area is extensive, there will be a wide array of site-specific considerations to be made when controlling invasive plant colonies and different treatment options may be more effective depending on the situation. An experimental approach to assessing the effectiveness of different treatment options for different conditions may be appropriate, as DWR will be implementing its invasive plant management under the CVFPP through an adaptive management approach.

The Arundo Control and Restoration Program for the Cache Slough Complex being funded by DWR and implemented by the Delta Conservancy is one example of how this approach is being utilized. The program will use different treatment options (based on site constraints and permitting obligations) to treat giant reed (*Arundo donax*) stands in various areas throughout the Cache Slough Complex, with each treated patch reassessed regularly to determine effectiveness. This information will guide strategy for retreatment, if necessary, of treated patches, and help guide learning through an adaptive management process. Another example of an experimental control of invasive plants within a riparian corridor is the Santa Margarita *Arundo donax* Control Project where different treatment methods and horticultural restoration techniques were first tested in preliminary trials before a widespread implementation occurred. In this experiment, preferred soil conditions and position on the floodplain preferences for specific native riparian plants was revealed to guide future restoration plantings. Similar work to manage invasive plants in the Santa Ana River, Russian River, Sonoma Creek and Cache Creek may also provide lessons learned.

We suggest that research and pilot-scale management actions are considered, in addition to the full-scale management of problematic weed species, within the CVFPP Plan Area, and we recommend using scientific monitoring and evaluation to assess which strategies work best under different site conditions, while also taking into considering permitting constraints.

4. Mitigation Measures

Delta Plan Policy **G P1** (23 CCR Section 5002) requires that actions not exempt from CEQA and subject to Delta Plan regulations must include applicable feasible mitigation measures consistent with those identified in the Delta Plan Program EIR or substitute mitigation measures that are equally or more effective. This policy will likely apply to many CVFPP projects in the Delta.

The Delta Plan Program EIR's **Biological Resources Mitigation Measure 4-3** calls for proponents to design projects that avoid impacts that would lead to substantial loss of fish and wildlife habitat. If there will be a loss of habitat for fish and wildlife species from a project, Mitigation Measure 4-3 calls for proponents to replace, restore, or enhance habitats for those species and preserve in-kind habitat. Levee projects needed to improve flood protection often have major impacts on near-shore aquatic and riparian habitat, by removing established riparian vegetation and instream woody structure and increasing the size of shallow-water substrate through placement of rip-rap. Overall, the impacts on fish and wildlife habitat can range from a decrease of shading of shallow aquatic habitat to a loss of riparian trees for terrestrial wildlife.

We note that, while the Conservation Strategy builds upon the mitigation measures identified in the CVFPP Programmatic EIR, the intent of the Conservation Strategy is to go beyond mitigating adverse effects and achieve significant improvements in ecosystem conditions. DWR states that the Strategy proposes a system of regional programmatic permitting agreements, advance mitigation and enhancement measures, long-term maintenance, and incorporation of multi-benefit features into projects that would proactively improve habitat quality and resiliency. Council staff supports the proposed shift in emphasis from single-purpose flood protection projects to integrated multi-benefit projects, as well as the proposed improvements in permitting and advance mitigation.

Performance Measures

DWR has included specific, measurable objectives in the Conservation Strategy, an important step toward improving accountability. The Delta Plan has performance measures related to tracking progress towards achievement of the Delta Plans goals and strategies. There are some performance measures related to the Delta Plan's chapter on ecosystem restoration that we believe may have substantial overlap with DWR's commitment to monitor and track the effectiveness of the CVFPP and Conservation Strategy activities to achieve ecological objectives.

One example of a Delta Plan performance measure is "Pilot-scale Delta habitat restoration projects are developed and initiated in the priority areas described in ER R2 by 2015. These projects include tidal brackish and freshwater marsh as well as floodplain restoration, and have clear adaptive management plans aimed at improving outcomes and providing lessons for the development of large-scale restoration projects." The associated metrics are acres restored by habitat type and lessons learned. Another measure is "Progress, measured in acres of restored or enhanced habitat, is being made toward the biological opinions' targets of restoring 8,000 acres of tidal marsh and [enhancing] 17,000 to 20,000 acres of floodplain rearing habitat." We are interested in collaborating with DWR to develop common metrics and use of effective tracking and reporting tools for riparian habitat, floodplain

inundation, and other conservation needs, as part of our ongoing refinement of Delta Plan performance measures.

Upstream Conservation and Restoration

The Delta Reform Act states that while the ecosystem restoration projects and programs identified in the Delta Plan are limited to the Delta and Suisun Marsh, the Delta Plan may include recommended ecosystem projects outside of the Delta that will contribute to achievement of the coequal goals (Water Code section 85302(b)). The Delta Plan identifies additional areas of interest and concern related to the Delta ecosystem that may deserve consideration in future Delta Plan updates. One of these areas of interest is upstream migratory corridors that are critical for Delta species, such as anadromous fish and songbirds, which use the Sacramento and San Joaquin valleys for portions of their life cycles.

Considering the constraints to re-establishment of natural geomorphic processes along river corridors in many parts of the Delta, restoration of such processes in the Delta's upstream watershed is vitally important. Therefore, we appreciate how the Conservation Strategy identifies restoration needs in the upper Sacramento and San Joaquin Rivers and the Feather River to establish riparian habitat, reconnect floodplains, and allow for natural channel meander. These actions should help benefit many Delta species as well as other important California native flora and fauna.

Final Remarks

Overall, we believe that current draft of the Conservation Strategy provides a solid foundation for guiding how ecosystem improvements can be integrated with flood risk reduction under the CVFPP. We appreciate how this draft now provides measurable targets for restoration of different habitat types, while working within the constraints of the existing State Plan of Flood Control. If you need any clarification regarding our comments, I encourage you to contact Jessica Davenport at Jessica.Davenport@deltacouncil.ca.gov or (916) 445-2168.

Sincerely,

Cindy Messer
Deputy Executive Officer
Delta Stewardship Council