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Ms. Diane Riddle
State Water Resources Control Board
P.O. Box 100
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Submitted electronically to Bay-Delta@waterboards.ca.gov

Subject: Follow-up from the June 1, 2012 Coordination Meeting for the Comprehensive (Phase 2) Bay-Delta Technical Workshops

Dear Ms. Riddle:

The Sacramento Regional County Sanitation District (SRCSD) appreciates the opportunity to provide input on the format and questions for technical workshops on the Comprehensive (Phase 2) Review of the Bay-Delta Plan. We are pleased to assist with the planning and coordination efforts for these workshops and will also participate in the Bay-Delta Plan update process. Following are our suggestions for the workshop format and questions as a follow up to the June 1, 2012, coordination meeting.

Workshop Format

SRCSD is committed to ensuring that sound science is the basis for policy decisions regarding ecosystem protection and water supply in the Delta. Therefore, we strongly support the use of an independent expert panel for each of the workshops. At the June 1 coordination meeting, the suggestion was made to have stakeholder panels replace expert panels. Stakeholder panels would provide Board members with the stakeholder's perspectives, but would not necessarily provide the objective, expert advice that an independent panel of technical experts can bring that is essential to the process. Independent scientific experts will have their own perspective based on the science, providing valuable information to the Board. Perhaps one panel that combines both stakeholder and independent scientists would accomplish the goal of hearing from both perspectives. The panels for the 2010 Delta Flow Criteria Informational Proceedings were structured in this fashion, with both types of representatives. We recommend following a similar process as the 2010 Delta Flow Criteria proceedings, but prefer independent expert scientific panels for each workshop.

During the coordination meeting, one of the reasons given for suggesting stakeholder panels is the notion that independent scientists would be difficult to find, that all are biased in some form. Independent panels of scientists exist, such as the National Research Council Delta Sustainability Committee, the Independent Science Board to the Delta Stewardship Council, the Independent

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Science Panel that reviewed the Effects Analysis of the Bay Delta Conservation Plan, the panel formed for the 2009 CalFED Ammonia Workshop, etc...

SRCSD recommends that the Independent Science Board be requested to identify panelists, and then request feedback from stakeholders on the recommended panel. The National Research Council has an established procedure that is used to verify there is no conflict of interest with the panelists they choose for committees. The written procedures the National Research Council follows can be found at the URL below. (http://www8.nationalacademies.org/cp/information.aspx?key=Conflict_of_Interest)

Schedule

The schedule from the coordination meeting indicates that in three to four months SWRCB staff will complete a draft of the Scientific Basis, hydropower effects, and economic effects analysis based on the information gathered from the workshops. The identification of data gaps, and next steps to fill those data gaps, as part of the scientific basis for recommendations, would be helpful to the SWRCB and stakeholders.

This three to four month timeframe most likely accommodates the development of the draft Scientific Basis, but the economic analysis could take longer. There was a recommendation of adding a fifth workshop for examining the tradeoffs, balancing the costs and benefits to the people of the State of California. As the State Board is aware, the Porter-Colgone Water Quality Control Act requires reasonableness in the State Board's water quality planning and implementation functions, and other applicable laws and policies also support the appropriateness of "balancing." SRCSD strongly supports a fifth workshop to be held in the fall of 2012 to evaluate tradeoffs, possibly using a stakeholder panel of experts for this workshop, as stakeholders generally have the most knowledge of impacts to their sector from regulatory decisions.

Questions for Panels

Questions to ask the panels were requested at the coordination meeting, and the following questions could be asked to the Ecosystem Changes and the Low Salinity Zone Panel, Salmonids, Pelagic Organisms, and in some cases the Analytical Tools for Evaluating the Water Supply, Hydrodynamic, and Hydropower Effects of the Bay-Delta Plan. Each question(s) below has an explanation for requesting the question to be asked of independent expert panelists.

How would baseline flows change as water recycling increases throughout the state?

The context for asking this question is that once conservation goals are attempted to be met by municipalities throughout the state, more water will be recycled. The draft Delta Plan has continually recommended that water suppliers implement the 20% reduction in urban water use by 2020, and water recycling will be used to help achieve this conservation requirement. It is important to understand how the Delta ecosystem and water management might be affected by reduced discharges of treated water.

What is the role of hydraulic retention time, and how does it affect the Delta ecosystem (e.g., invasive species, eutrophication, water quality, etc.)?

Retention time in the Delta has been indicated in multiple studies as affecting the ecosystem, salmonids, and pelagic fish. How long water is retained and how it moves through an area of the system has many implications for the life stages and food resources of fishes. For example from the San Francisco Bay 2011 *Numeric Nutrient Endpoint Development for San Francisco Bay Estuary: Literature Review and Data Gaps Analysis* states:

> "Though retention of nutrients in estuaries is positively correlated with residence time of the water mass, the underlying mechanisms are not well understood and it is conceivable that differential effects of limiting factors other than food may obscure a relationship between nutrient load and benthic biomass production (Martinetto et al., 2006; Josefson and Rasmussen, 2000; Heip et al., 1996)."

From the sixth draft Delta Plan:

> "Reverse and otherwise altered flows caused by upstream reservoir operations, the grid of artificially connected Delta channels, and water exports also affect Delta habitat through effects on water residence time, water temperature and the transport of sediment, nutrients, organic matter, and salinity (Monsen et al. 2007).

The March 29, 2012, National Research Council Prepublication *Sustainable Water and Environmental Management in the California Bay-Delta* states:

> "Net Delta Outflow is thought to influence the residence time of materials in various regions of the Delta (Monsen 2000, Monsen et al. 2007), and so should influence primary production in the Delta (Jassby and Powell 1993, Jassby 2008)."

Clearly the role and effect of retention time could be discussed on all the panels.

What are the roles and desired levels of nutrients (i.e., concentrations, ratios, and forms) for achieving a healthy ecosystem, recognizing that too high or too low of nutrient concentrations can have undesirable effects? What indicators and tools should be used to monitor and evaluate successful nutrient management?

How might nutrient changes (e.g., a nutrient TMDL) affect the Delta ecosystem? These changes will likely be positive and negative. How will conflicting objectives be resolved?

What is the ability to attain desired nutrient levels through the management of controllable sources of total nitrogen and phosphorus? How should the attainability of nutrient levels be considered in the development of a nutrient management plan for the Delta?

What is the importance of nutrients supplied by internal cycling compared to external nutrient inputs, relative to managing a healthy ecosystem?

The four questions above on nutrients are being asked because the general concept that nutrient reduction is good for this ecosystem should be tempered by the fact that some amount of nutrients are essential for a healthy ecosystem. Determining the optimum amount of nutrients for this ecosystem should be the basis of determining objectives. For example, the 5th draft of the Delta Plan states:

> "Current pollutants of concern include (but are not limited to) insecticides, herbicides, mercury, selenium, nutrients, and legacy organic pollutants such as DDT and PCBs. Additional water quality issues in the Delta include temperature, salinity, turbidity, low dissolved oxygen, bromide, dissolved organic carbon, pathogens, and harmful algal blooms. Amounts of these constituents that are too high or too low can impair the ability of these waters to support beneficial uses, such as municipal water supply, recreational use, agricultural water supply, and healthy fish and wildlife populations."
>
> and

> "Ecosystem elements are connected through processes (production, food web interactions, nutrient cycling, and energy flow) that lead to particular ecological outcomes such as the presence of a unique native species grouping and the provision of goods and services valuable to humans (clean water, clean air, food, recreational opportunities, and spiritual benefits) (Wallace 2007)."

Research on nutrients has focused on what loads/concentrations may cause a beneficial use impact, when clearly there is a need to understand what level of nutrients are necessary and attainable to provide for a healthy ecosystem, and what indicators may be most useful in monitoring the Delta health (e.g., chlorophyll-a concentrations or the abundance of particular species of phytoplankton) and water quality managers' ability to achieve their desired outcomes (e.g., increased phytoplankton and zooplankton but fewer HABs and SAV). This is an important topic in the Delta ecosystem discussion, fundamental to the development of a nutrient management strategy for the Bay-Delta. Currently, the Numeric Nutrient Endpoint effort is underway to address these issues in the Bay proper. The San Francisco Bay 2011 *Numeric Nutrient Endpoint Development for San Francisco Bay Estuary: Literature Review and Data Gaps Analysis* and other work products from that SWRCB-sponsored effort provide clear support for the above questions.

Though the nutrient questions are written for the Ecosystem Change and Low Salinity Zone, they could also be applied to the Salmonids and Pelagic Organism panels.

How will the Delta ecosystem be affected by the exchange of high-quality Sacramento River water for lower quality San Joaquin River water due to planned changes in State and Federal water diversion locations?

Though this subject is mentioned in various Delta documents and should be addressed in the EIR/EIS for the BDCP, there has not been any focused scientific discussion of the matter. This question applies to all the panels.

How much phytoplankton and zooplankton biomass is removed from the Delta by exports/water diversions, and what impact does it have on the ecosystem?

This is a subject that we have not seen discussed anywhere, and would apply to the first three panels.

How important are known fish losses due to entrainment versus hypothetical losses due to other stressors?

In comparative terms, entrainment losses (direct and indirect) can be estimated (most recently Kimmerer 2011), deriving an actual number of fish lost, while the known losses of fish due to all other stressors is only a hypothesis. This question applies to the first three panels.

What is the role and optimum level(s) of turbidity in the Delta?

The National Research Council 2012 report states:

> "Given the high turbidity of much of the Bay and Delta (the Secchi disk depth—a measure of visibility—is typically less than 1m), planktonic primary production probably is light-limited (Cole and Cloern 1984) such that relatively high levels of nutrients have not resulted in algal blooms."

Understanding turbidity levels necessary for a healthy ecosystem is essential. This question applies to the first three panels.

What are the effects and relative importance of invasive clams on the foodweb, and what can be done to address the effects?

Though much dialogue has taken place regarding the potential effects of nutrients on the foodweb, very little dialogue has occurred on what can be done to address the effects of invasive clams, which are acknowledged to have a significant ongoing effect on the food web. This applies to the first three panels.

The entire Delta is 303(d) listed for invasive species; what can be done to address this issue?

The Delta Stewardship Council Independent Science Board has categorized this stressor as historical, were you can only manage for the future. A more thorough discussion in the first three panels would be very helpful to understand if there is anything that can be done to not only control for the future but deal with existing invasive species.

How could comprehensive ecosystem models be used by regulators and stakeholders to understand the various ecologic and hydrodynamic processes, transformations, and effects to effectively manage the Delta? What can we learn from the effectiveness of resource management in other deltas that have relied on ecosystem models to inform decisions? Did they work? Do current models (or those under development) address the various processes, transformations, and effects that occur due to flows, and invasive species and can they be used to predict the effectiveness of plausible nutrient management scenarios?

This is an overarching question that could apply to all the panels but is specific for the fourth panel regarding analytical tools.

Conclusion

In conclusion, SRCSD is pleased to assist the State Water Board in developing workshops for the update to the Bay-Delta Plan that allows for a balanced thoughtful scientific dialogue to occur, which will inform and prepare the Board members to make the hard balancing decisions when updating the Bay-Delta Plan. If you need further information please contact me at 916-876-6030, or dornl@sacsewer.com.

Sincerely,

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