July 19, 2011

Steven Bay
3535 Harbor Blvd., Suite 110
Costa Mesa, CA 92626

Sent via Electronic Mail to: steveb@sccwrp.org

RE: July 5th Brine Workshop Informal Comments

Dear Mr. Bay:

On behalf of the California Coastkeeper Alliance (Alliance) and Surfrider Foundation (Surfrider), we welcome the opportunity to submit these comments regarding the July 5th Brine Workshop. The Alliance and Surfrider work daily to protect and enhance healthy coastal and marine habitats throughout the state, for the benefit of Californians and California ecosystems. The Alliance and Surfrider look forward to working with the State Water Board and SCCWRP on the forthcoming "Policy on Ocean Desalination."

We applaud the effort by the State Water Board and SCCWRP to study brine discharges[1] and their corresponding impacts. However, because this study is intended to bring the best science available to enforcement of California's legislative mandates, regulations and sound public policy, the study should not be conducted as an academic exercise. For example, the study should be conducted using assumptions of a range of brine concentrations, the varied constituents that are mixed with the brine, and the physical structures and locations of the outfalls. As noted below, these baseline assumptions should be consistent with the letter and intent of existing laws and regulations to ensure the study results are relevant and useful for the State Water Board to draft a legally and scientifically sound "Policy on Ocean Desalination." It is important to consider that regulation of the withdrawal of seawater may have a profound impact on the design of the studies conducted to document the impacts from the discharge of concentrated brine.

Hypersaline discharges into California's nearshore habitats need to be addressed thoroughly. The study should consider more than the immediate impacts in both time and space. That is, the expert panel should not limit the scope of the study to the immediate impact on the environment within the Zone of Initial Dilution. Rather, the study should investigate and report on the adverse environmental impacts of these numerous and varied discharges on the broader marine ecological system,[2] as well as the cumulative impacts from the permitting and construction of more and more facilities over time.

[1] We use the term "brine" very broadly so as to include numerous potential constituents beyond the strict definition of "brine."

[2] Brine discharge can introduce chemicals into the ZID, including antiscalant, antifouling, hydrochloric acid, ferric chloride, sodium hexametaphosphate. Yolanda Fernández-Torquemada and José Luis Sánchez-Lizaso, Monitoring of brine discharges from seawater desalination plants in the Mediterranean, 10 Int. J. Environment and Health 10, at pg. 2 (2008).

Brine discharge does not simply increase salinity, but it also reduces light necessary for photosynthesis, reduces pH, increases the nutrients causing eutrophication, releases harmful chemicals, and lowers the dissolved oxygen level.[3] Among these various pollutants that SCCWRP has stated it will address during the Brine Study, the Brine Panel should consider all the long-term cumulative impacts of pH concentrations in the marine environment and the potential exacerbation of ocean acidification. Twenty-three percent of the total U.S. West Coast fish and shellfish catch is estimated to be vulnerable to ocean acidification.[4] Given the importance of coastal areas to fisheries, "there is now a critical need to test the physiological consequences of ocean acidification…."[5] Since brine discharge causes immediate impacts and also further exacerbates the effects of ocean acidification,[6] we request that the Brine Panel analyze questions such as the following[7]:

- What are the immediate and longer-term impacts of a lower pH brine discharge on benthic, intertidal, and nearshore habitats?
- How should the regulated community be required to mitigate a lower pH brine discharge in light of increasing ocean acidification?
- How should discharging facilities monitor for lower pH levels?
- What measure of safety is necessary for brine discharge standards in light of projected climate change impacts to pH and salinity?

Moreover, we are particularly concerned that the Brine Panel will assume co-location with facilities currently using once-through cooling (OTC), in order to utilize the high volumes of the power plant cooling water discharge for so-called "in-plant" dilution prior to the actual discharge. Co-locating brine disposal with power plants currently using OTC is inappropriate in light of the State Water Board's Once-Through Cooling Policy, which will phase out the use of cooling water intakes and discharges in order to restore already-damaged nearshore ecosystems and protect these sensitive, biologically diverse and immeasurably valuable marine ecosystems from continued adverse impacts, including future brine discharges.

So-called "in-plant dilution" is currently prohibited by the Ocean Plan and Water Code Section 13142.5(b). We understand the Ocean Plan to clearly establish the mixing zone for acute toxicity as "ten percent of the distance from the edge of the outfall structure to the edge of the chronic mixing zone (ZID)."[8] In short, this prohibits any in-plant dilution. By definition, "in plant dilution" does not occur in the area between "the edge of the outfall" and either the established chronic or acute mixing zone – it occurs before the brine reaches the "edge of the outfall."

Possibly more importantly, Water Code Section 13142.5(b) demands that industrial installations using seawater for industrial processing use the best available technology (BAT) to minimize the intake and

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[3] Water Corporation, Marine Factors Operational Impacts: Public Environmental Review, Chp. 8 at pg. 188 (2008), *available at* http://www.watercorporation.com.au/_files/PublicationsRegister/15/PER/PER_08_Marine_Factors_Operational_Impacts.pdf.

[4] Claudine Huari *et al*., "Ocean Acidification in the California Current System," 22 *Oceanography* 4, 68 (2009).

[5] Fabry *et al*., "Impacts of Ocean Acidification on Marine Fauna and Ecosystem Processes," 65 *ICES Journal of Marine Sciences* 420 (2008).

[6] "Typical seawater has a pH of approximately 8. The [brine] discharge will range from pH 6 to 8." Water Corporation at 189.

[7] This is not an exhaustive list of questions for a thorough review of potential adverse impacts on marine ecological systems. We offer these questions as an example of the myriad critical issues that should be included in a comprehensive study of the impacts of brine disposal into marine and estuarine environments.

[8] SWRCB, "Water Quality Control Plan: Ocean Waters of California," Section III.C.4.b., at pg. 14 (2009), available at: http://www.waterboards.ca.gov/water_issues/programs/ocean/docs/2009_cop_adoptedeffective_usepa.pdf.

mortality of all forms of marine life.[9] Pulling millions of gallons of water a day to dilute brine waste does not equate to the "best" available technology to minimize mortality. A discharger cannot withdraw seawater to dilute the regulated constituent just to meet the required ZID. This causes marine life mortality during the intake of seawater in order to control toxicity in the receiving waters. In-plant dilution exacerbates marine life mortality from impingement and entrainment. It defies sound public policy to allow the direct mortality of marine life in an effort to minimize the indirect adverse impacts of brine discharge on marine life and ecological systems.

Further, technologies for brine discharge dilution that do not rely on augmented seawater withdrawals are not only available, but already in use around the world. For example, in Israel and Australia desalination facilities, which are also required to implement BAT, must install pressurized diffusers instead of in-plant dilution. Such technology represents BAT and should be reflected as such in the upcoming "Policy on Ocean Desalination." Accordingly, the Brine Panel should not assume co-location or in-plant dilution when analyzing the impacts of brine discharge.

Finally, we would like to echo the concerns of Carol A. Reeb, Ph.D. during the July 5th workshop held by the SWRCB and SCCWRP, regarding the use of desalination experts to analyze the impacts of brine discharge. There are numerous well-qualified and independent experts, including some on SCCWRP's "short-list," that can assess brine impacts outside of the potential conflicts arising from association with desalination project proponents or the desalination industry. The appearance of a conflict of interest creates cause for disqualification. In previous studies, SCCWRP and the State Water Board have set standards that disqualify scientists from studies when an appearance of conflict exists.[10] Scientists associated with existing and projected desalination projects may certainly participate in the discussion as part of the public process, but should not be appointed to the independent Brine Panel.

We thank SCCWRP for allowing these informal comments to be submitted, and look forward to working with SCCWRP, the State Water Board, and the Brine Panel in the future.

Please do not hesitate to contact us regarding this letter or for any other reason.

Respectfully,

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[9] California Water Code §13142.5(b).
[10] SCCWRP and the State Board have made efforts to avoid real or perceived conflicts of interest in the Nutrient Numeric Endpoint (NNE) project and others by excluding experts from technical review panels whom have worked on relevant projects or otherwise maintain some professional or financial interest in the outcome.