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San Diego Chapter
Serving the Environment in San Diego and Imperial Counties
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April 9, 2007

California Regional Water Quality Control Board, San Diego Region
Attn: Charles Cheng, Engineering Geologist
9174 Sky Park Court, Suite 100
San Diego, CA 92123-4340

Subject: Flow, Entrainment and Impingement Minimization Plan
Poseidon Resources Corporation, Carlsbad Desalination Project

Dear Dr. Cheng:

The subject plan contains three sections:

1. Flow, Entrainment and Impingement Minimization Plan
2. Study Plan for Evaluation for Salinity-Related Toxicity Threshold for Short-term Exposure to Desalination Plant Discharge and test results
3. Maintenance Dredging Agua Hedionda Lagoon

Comments on each of these sections are provided below.

I. Flow, Entrainment and Impingement Minimization Plan

As you are aware, in January of this year, the U.S. Court of Appeals, Second Circuit, Case Number 04-6992, ruled that EPA must not allow existing power plants using more than 50 mgd of once-through-cooling water to kill billions of fish each day. The Court stated that EPA improperly rejected closed cycle cooling as a best technology available to minimize adverse environmental impacts to aquatic life. EPA's action defies the Clean Water Act which requires best technology available to minimize the adverse impacts. BTAs include cooling towers that use significantly less water or dry cooling that requires very little or no cooling water. In March of this year, EPA[1] suspended Section 316(b) in response to the Court of Appeals ruling.

The ruling applies to the Encina Power Generation Station because it uses once-through-cooling. The Carlsbad Desalination Project proposes to use the cooling water discharge from the Encina plant as source water for desalination. As a stand alone facility, the Project would use the existing cooling water intake structures to provide the source water for desalination and the discharge structures to dispose the by-products of the desalination process. Consequently, drawing in the required amounts of seawater by the project would not protect the aquatic organisms from being harmed or killed. The appeals court ruling on 316(b) and EPA's suspension of 316(b) brings forth new information that was not available at the time the Regional Board adopted Order No. R9-2006-65. We believe that

[1] http://www.epa.gov/waterscience/316b/phase2/implementation-200703.pdf

this fact now invalidates the Flow, Entrainment and Impingement Minimization Plan submitted by Poseidon Resources Corporation. The reasons are summarized below.

- Impingement and entrainment are adverse environmental impacts as defined in the ruling.
- Once through cooling is not the best technology available (BTA) to minimize adverse environmental impacts. Therefore, flow reduction methods do not qualify as BTA.
- Chapter 4 of the Flow, Entrainment and Impingement Minimization Plan presents an argument that entrainment losses are insignificant. The industry petitioners used this same argrument but were refuted by the Court ruling on pages 66 to 70.

We presented basically the same issues in our comment letter to the Board on the Revised Tentative Order No. R9-2006-0065.[2]

II. Study Plan for Evaluation for Salinity-Related Toxicity Threshold for Short-term Exposure to Desalination Plant Discharge and test results

We have a number of concerns on the test protocol used. It only used the topsmelt (*Atherintops affinis*) and no toxicity tests using benthic species. The California Office of Environmental Health Hazard Assessment report *Overview of Freshwater and Marine Toxicity Tests: A Technical Tool for Ecological Risk Assessment*[3] notes that topsmelt tolerates a broad range of salinity because of its tolerance to euryhaline conditions (30 to 40 ppt). We question whether this species is sensitive enough to evaluate the toxicity to elevated salinity. Because little work has been done to evaluate toxicity test methods for salinity, the Southern California Coastal Waters Research Program (SCCWRP) in 1992 conducted a study on the toxic effects of elevated salinity. The results appear in their 1992-93 Annual report[4]. The test species used for increased salinity were the giant kelp (Macrocystis pyrifera), and an amphipod (*Rhepoxynius abronius*). The tests also included interactions between elevated salinity and sewage using the sea urchin (*Strongyloncentrotus purpuratus*). The highest salinity concentration used was 43 g/kg (43 ppt). This less than the 46 ppt value requested in the subject plan. No effects were noted in the kelp spore. The test for the amphipod showed no effects to 38.5 g/kg and no results reported at 43g/kg salinity. So it remains in doubt whether these species or a different, more sensitive test species would tolerate salinity levels above 43 g/kg. The SCCWRP report did recommend that more work needs to be done on toxicity testing and field verification.

The salinity modeling study in Attachment 3 of the submitted plan fails to address whether the concentrated brine discharge would be adsorbed in the sediments surrounding the outfall and increase in concentration over time. Increased salinity concentrations in the sediments could cause significant impacts on the aquatic ecosystems. The study presents only one line of evidence, the topsmelt toxicity results. Multiple lines of evidence should be required to evaluate the toxicity of excess salinity to the marine life.

We conclude that the salinity toxicity test does not justify increasing the NPDES from 40 to 46 ppt. It fails to justify using only test species, a fish and does not include benthic species that are sufficiently sensitive to provide valid results for salinity ranges that are in excess of the maximum expected natural salinity levels of the coastal waters adjacent to the project. It fails to address

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[2] Ltr. Sierra Club to SDRWQCB, Subject: Revised Tentative Order No. R9-2006-0065, dated August 1, 2006

[3] http://www.oehha.ca.gov/ecotox/pdf/marinetox3.pdf

[4] Southern California Coastal Waters Research Program 1992-93 Annual Report, *Toxic Effects of Elevated Salinity and Desalination Brine.*

whether the concentrated brine discharge would accumulate in the sediments and increase in concentration over time and pose harmful conditions to the marine life.

III. **Maintenance Dredging Agua Hedionda Lagoon.**

Maintenance dredging activity in our view goes beyond the scope of the NPDES permit.

Conclusion

The referenced decision by U.S. Court of Appeals, Second District in our view invalidates the Flow, Entrainment, and Impingement Plan. Extracting seawater for power plant condenser cooling or to provide the feedwater for the Carlsbad Desalination Project using the existing intake structures does not qualify as best technology available to minimize adverse environmental impacts. We recommend that the submitted Plan in its entirety be rejected.

Sincerely,

Ed Kimura

Edward Kimura
Water Issues
Sierra Club
San Diego Chapter