July 26, 2017

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COMMENTS ON DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT FOR THE POSEIDON RESOURCES PROPOSED HUNTINGTON BEACH DESALINATION PROJECT; SCH No. 2001051092 and EIR #794

Dear Ms. Borack:

The Santa Ana Regional Water Quality Control Board (Santa Ana Water Board) and State Water Resources Control Board (State Water Board) (collectively Water Boards) have reviewed the draft Supplemental Environmental Impact Report (SEIR) for Poseidon Resource's (Poseidon's) Huntington Beach Desalination Project (Project), as currently proposed. The SEIR evaluates environmental impacts associated with Poseidon's proposed modifications to the existing offshore intake and discharge structures for both co-located and stand-alone operations. The proposed modifications include the installation of 1.0 mm wedgewire screens at the intake line and a multiport diffuser with three 36-inch duckbill check valves and one 54-inch (4.5-foot) port at the discharge outfall. The SEIR indicates that if one or both remaining Huntington Beach Generating Station (HBGS) power-generating units ceases once-through cooling flows prior to the diffuser construction phase, which is anticipated to take place in late 2019, the diffuser would be installed with the central port capped (permanently closed). The diffuser's 54-inch port will open only when discharge flow is more than 127 million gallons per day (MGD) and prior to stand-alone commercial operations of the Project. The port would be capped after installation if flows are reduced from greater than 127 MGD to less than or equal to 127 MGD.

The Santa Ana Water Board is the agency responsible for issuing the National Pollutant Discharge Elimination System (NPDES) permit for the discharge of brine and other wastes from the Project to the Pacific Ocean and for making a determination regarding the Project's consistency with California Water Code section 13142.5(b) (CWC section 13142.5(b)). Poseidon submitted to the Santa Ana Water Board both a report of waste discharge and a request for a CWC section 13142.5(b) determination. Santa Ana Water Board staff, in consultation with State Water Board staff, is currently reviewing this information but has not yet determined whether the Project, as proposed, utilizes the best available site, design, technology, and mitigation measures feasible to minimize intake and mortality of all forms of marine life as required by CWC section 13142.5(b), and as further specified in the Water Quality Control Plan for the Ocean Waters of California (Ocean Plan). Water Boards staff acknowledges that the analysis required by the Ocean Plan, in determining consistency with CWC section

13142.5(b), is separate and distinct from the California State Lands Commission's (State Lands Commission's) analyses for the SEIR; however, a CWC section 13142.5(b) determination is subject to CEQA.[1] Accordingly, Water Boards staff offers the following comments on the draft SEIR:

Substantive Comments

1. Page ES-9, lines 15-25 and Section 5.3.1. Water Boards staff requests that the Intake Pipeline Extension Alternative not be removed from further consideration (see section 5.3.1.2). Water Boards staff and California Coastal Commission staff are reviewing information provided by Poseidon on whether extending the intake pipeline would reduce operational impacts and are conducting additional analyses. Preliminary results indicate that extending the intake location offshore may reduce the operational impacts. Therefore, the SEIR should include further analysis for this option. Also please see comment 17.

2. Page ES-9, line 33. As noted in Appendix F1, diffusers that have more ports (and thus more jets) will likely have less shearing-related mortality. For example, if the same volume (e.g., 56 MGD) were discharged through 3 or 6 ports, the discharge velocity would be lower in the 6-port scenario. Therefore, since velocity is the cause of shearing-related mortality, it follows that a diffuser with 6 ports instead of 3 would be the environmentally superior alternative. The SEIR should be revised to incorporate this conclusion. Also please see comment 19.

3. Page 2-19, lines 23-25. The SEIR states that "the cap would be sized to overcome the buoyant force and the maximum pressure inside the diffuser with a suitable factor of safety." The SEIR should be revised to specify the maximum pressure expected and define the "suitable factor of safety."

4. Page 2-21, lines 1-27. The SEIR states that reducing the flow from 514 MGD to 387 MGD results in a reduction of head loss by 0.58-0.71 feet (as shown in Appendix H1). The SEIR then states that reducing the flow to 127 MGD will result in a head loss of 4.99 feet. Additionally, the technical memorandums from Alden Laboratories dated March 22, 2017, March 31, 2017, and April 26, 2017 all assume a brine discharge flow of 127 MGD. The SEIR should include updates to these calculations to reflect the currently proposed discharge volume of 56.7 MGD for permanent stand-alone operations.

5. Page 2-22, Table 2-5. The calculation of the discharge velocity should be clarified. It appears that velocities in the table are calculated by dividing the flow (discharge volume) by the cross sectional area of the ports. However, the cross sectional area varies between approximately 8.6 ft^2 and 13 ft^2 according to Table 2-5. While the cross sectional area of duckbill diffusers does vary for different flow rates, this section should be revised to include a clarifying discussion of how port size, and thus discharge velocities, are calculated.

6. Page 2-27, line 13. If gravity anchors are to be used, then any and all estimates of construction-related mortality in the SEIR should include the acreage that the gravity anchors will occupy.

[1] NPDES permits are statutorily exempt from CEQA (CWC section 13389).

7. Page 2-31, Table 2-6 and Section 4.1.4.2. Table 2-6 and section 4.1.4.2 (page 4-54, lines 9-10) should be updated to include an option 4: stainless steel, self-cleaning screens. This would provide context for comparing the environmentally superior alternative, as identified in Section 5, with the proposed design.

8. Section 4.1.4. The SEIR should include an assessment of entrainment effects from the Project on nearby marine protected areas (MPAs). Several MPAs, including Bolsa Bay State Marine Conservation Area (SMCA), Bolsa Chica Basin SMCA, and Upper Newport Bay SMCA, have been designated since the Final Subsequent Environmental Impact Report (FSEIR) was certified in 2010. The SEIR should evaluate the Project's potential effects on MPAs because Bolsa Bay SMCA and Bolsa Chica Basin SMCA may have overlapping source waters with the facility and the Project potentially may have impacts on Upper Newport Bay SMCA.

9. Section 4.1.4. The 2010 FSEIR only reviewed environmental effects lasting 30 years, but the Project now has a proposed 50-year project life. The SEIR should evaluate whether there will be greater environmental impacts as a result of the longer operating life.

10. Page 4-26, lines 17-21. The SEIR states that "existing or potential sources of ocean water contamination...resulting in adverse effects on source water...is not relevant to the Lease Modification Project, and is not evaluated in this document." This section should be revised to include a discussion of possible source water effects from the Project. In particular, there is a possible effect on source water quality from the addition of a diffuser. Specifically, the diffuser will cause a different dilution and discharge plume than the "no-diffuser" scenario analyzed in the 2010 FSEIR. Discharged brine will flow toward the intake and could have some effect on source water quality. If the Project is not fully constructed and in operation until after HBGS ceases intake of seawater, the Project will discharge only dense brine that will flow offshore due to gravity (likely south due to the prevailing currents) and directly toward the intake. The intake is located only 340 feet (see section 4-10 of the 2010 FSEIR) from the diffuser which is roughly ten feet outside the Brine Mixing Zone, but well within the proposed 1000 feet Zone of Initial Dilution (ZID). Within the ZID, chemical constituents (e.g., chlorine and other chemicals used in pre- and post- treatment processes) are permitted to exceed the water quality objectives in the Ocean Plan. Therefore, the SEIR should include a discussion of the possible effects of potential brine recirculation on source water quality for the proposed Project.

11. Page 4-52, lines 10-11. The SEIR identifies that installation of wedgewire screens composed of copper-nickel alloy may cause chemical leaching into the water column, resulting in significant and unavoidable impacts. However, the SEIR does not provide any details as to whether any potential mitigation measures have been analyzed to see if there is a way to reduce this impact. Although Water Boards staff is unaware of any additional measures to mitigate copper leaching, the SEIR should be revised to include this information and a discussion of any possible mitigation measures.

12. Page 4-59. The estimates of mortality included in the SEIR do not include mortality of fish larvae and meroplankton or how that mortality may affect the marine ecosystem and food web. Water Boards staff suggests that the estimates of marine life mortality in the SEIR be updated to account for all forms of marine life. Staff acknowledges that an accounting of mortality of all forms of marine life is a requirement of the Ocean Plan, and is not necessarily required by CEQA. However, in an effort to streamline the permitting

process and minimize additional analyses that may be needed, the SEIR should be revised to account for mortality of all forms of marine life to expedite technical review for the Project.

13. Page 4-60. As noted in footnotes 25 and 26, the estimates of mortality are based on data from a 2003-04 study. This data set is now 14 years old and will be 17 years old by the proposed construction completion date for the facility. The SEIR should be revised to include an analysis of the scientific validity of relying on a data set that is almost two decades old. The Santa Ana Water Board intends to seek neutral third party review of the scientific validity of relying on the 2003-04 data.

14. Page 4-60. Water Boards staff is currently reviewing the Empirical Transport Model/Area Production Foregone analyses provided by Poseidon, and the Santa Ana Water Board will seek neutral third party review of the calculations and mitigation ratios that were applied.

15. Page 4-60. The State Water Board's *Final Staff Report Including the Final Substitute Environmental Documentation Adopted May 6, 2015: Amendment to the Water Quality Control Plan for Ocean Waters of California Addressing Desalination Facility Intakes, Brine Discharges, and the Incorporation of Other Non-substantive Changes* (Staff Report) contains an estimate that 23 percent of the total water entrained in dilution is exposed to shearing-related mortality. The 23 percent estimate is based on a particular case of a single jet discharging dense effluent oriented at an upwards angle of 60°. The 23 percent estimate does not take into account different diffuser designs because the estimate is purely a function of the discharge volume. As indicated in Appendix F1, the shearing-related mortality caused by a 6-port diffuser discharging at a lower velocity is likely to be lower than the shearing-related mortality caused by a 2-port diffuser discharging at a higher velocity.

    It is important to note that the 23 percent estimate contained in the Staff Report is not a regulatory provision in the Ocean Plan. The following paragraph on pages 115-116 of the taff Report provides additional information on assessing shearing-related mortality:

    "Discharging through multiport diffusers would require an assessment of mortality that occurs as a result of the increased salinity at the discharge and any shearing-related mortality associated with the diffusers even though the effects will likely be minimal from properly sited multiport diffusers (Foster et al. 2013; Bothwell comment letter 2014). An owner or operator could use existing shearing data (see discussion in section 8.5.1.2 above) that has been approved by the regional water board or alternately, could elect to do their own diffuser entrainment modeling under the guidance and approval of the regional water board. Empirical studies of diffuser-related mortality are technically feasible and encouraged, but may be cost prohibitive. As more studies are done, there will be more information available on how to better estimate diffuser-related mortality in order to establish a performance standard for alternative brine disposal technologies."

    Therefore, this excerpt makes it clear that the applicable regional water board has discretion to determine whether to use the 23 percent mortality estimate, or some other estimate based on other existing shearing data. Water Boards staff is still evaluating shearing-related mortality from the proposed diffuser design, so the Santa Ana Water Board staff has yet to determine how shearing-related mortality should be assessed for the Project. The SEIR should include a diffuser-specific analysis of shearing-related

mortality in the SEIR to determine whether the 23 percent mortality estimate is appropriate.

16. Page 4-62. The Marine Life Mitigation Plan is subject to approval by the Santa Ana Water Board in consultation with State Water Board and California Coastal Commission staffs. Water Boards staff has indicated to Poseidon that revisions to this report may be required in order to meet the requirements of the Ocean Plan. The Diffuser-Operation Marine Life Mitigation Plan should also be developed in consultation with Santa Ana Water Board and California Coastal Commission staffs.

17. Page 5-6, lines 18-24 and 29-32. Water Boards staff has reviewed the conclusions in the "Technical Memorandum: Evaluation of a Long-Distance Offshore Intake for the Huntington Beach Desalination Plant" (HDR 2016). Since the Ocean Plan requires a site to minimize impacts to all forms of marine life, Water Boards staff requests that the analysis in this report be revised to include *Emerita* and intends to submit the updated report for neutral third party review. As noted in comment 2, the SEIR should include further analysis for the Intake Pipeline Extension Alternative to confirm that it would not reduce operational impacts from the Project.

18. Page 5-16, lines 24-32. The SEIR should further analyze a 6-port diffuser. As discussed in Appendix F1, the majority of discharge-related mortality is caused by shear. A diffuser design with 6 ports (all open during both co-located and stand-alone operations) will have lower jet velocities and thus should reduce the shearing-related mortality. Thus, the SEIR should further analyze a 6-port diffuser and, as mentioned in comment 5, should include a diffuser-specific analysis of shearing-related mortality.

19. Appendix F1 provides estimates of impingement and entrainment by the Project as it is currently proposed compared to the estimates made in 2010 when a different project design was proposed. Appendix F1 does not evaluate the scientific validity of using data that is 14 years old. As mentioned in comment 13, the Santa Ana Water Board intends to seek neutral third party review of the scientific validity of relying on the 2003-04 data.

    Additionally, the turbulent shearing-related mortality from a diffuser is a new impact from the proposed project modifications, and to accurately assess a diffuser's impacts on marine biological resources, Appendix F1 should include a diffuser-specific analysis of shearing-related mortality, consistent with comment 15.

20. Appendix F1. The Ocean Plan requires an owner or operator of a seawater desalination facility to minimize intake and mortality of all forms of marine life. If possible, Appendix F1 should include an assessment of meroplankton mortality from the Project as well. Also please see comment 12.

Editorial Comments

1. Page ES-3, line 19. This sentence should be revised to state, "...to install a new wedgewire screen and a multiport diffuser...."

2. Page ES-3, lines 28-30. Update this sentence to include that Poseidon will need an NPDES permit renewal/reissuance, in addition to the CWC section 13142.5(b) determination.

3. Page ES-4, line 3. This sentence should be revised to note that alternative and/or additional mitigation measures might also result from the Santa Ana Water Board's determination.

4. Cover page and page 2-1, figure 2.1. The figure shows that wedgewire screens will be installed at the end of the intake pipelines, about 1,840 feet offshore. This should be changed to 1,650 feet seaward of the ordinary high water mark so that the distance of the intake offshore is consistently stated throughout the SEIR.

5. Page 2-2, line 29. There is a typographical error in the reference to a section of the CWC. The text should read "section 13142.5(b)."

6. Page 2-22, table 2-5. This table indicates that the 4.5 ft port is 56 inches, but in Table 2-2 and elsewhere, it is listed as 54 inches.

7. Page 4-25, lines 2-4. This section should be revised to note that the closest Area of Special Biological Significance (ASBS) is Robert E. Badham ASBS, which is adjacent to Irvine Coast ASBS.

8. Page 4-26, lines 2-3. The phrase "required methodology for brine discharges" should be revised to state "required technology for brine dischargers."

9. Page 4-33, lines 20-21. Line 21 should be revised to state "no mitigation measures are required under CEQA." The Ocean Plan requires mitigation for construction-related impacts.

10. Page 4-53, lines 21-22, 25, and 31. The proposed intake and discharge flows should be 106.7 MGD and 56.7 MGD, respectively.

11. Page 4-54, line 2. Since the background ocean water salinity at the Lease Modification Project site is 33.5 ppt, adding 2 ppt to the background salinity would make it 35.5 ppt.

12. Page 5-6, lines 4 and 9. Line 4 and 9 should, therefore, be revised to state 1,650 feet instead of 1,840 (see Water Board staff's comment 4).

13. Page 5-15, line 21 and pages 5-16, line 16. The text should be revised to state "close four of the ports" upon transitioning from co-located to stand-alone operations.

Thank you for the opportunity to comment on the draft SEIR. If you have any questions or would like to discuss further, please contact me at (951) 782-4493 or Lauma Willis at (951) 782-4920.

Sincerely,

L. Lauma Willis

for Hope A. Smythe
Executive Officer
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