

EXHIBIT B
Corrections to Misstatements, Inaccuracies and Omissions in Staff Report

Section 2.0

1. ***Page 6, paragraph 1: The Commission believes it is reasonable for Poseidon to demonstrate landowner approval in the form of a lease from the State Lands Commission as part of its CDP Application review.***

In its July 25, 2007 letter to the applicant, Coastal Commission staff wrote:

We have now received all the information and documentation needed except for the required leases from the State Lands Commission; however, the Executive Director has waived this filing requirement pursuant to Section 13053 of the Commission's regulations. With this information you have provided, with the Executive Director's waiver of the required State Lands Commission leases, Commission staff has determined your application complete.

2. ***The Commission's findings must address several significant issues and potential impacts that could vary greatly based on conditions that may be imposed on Poseidon through a State Lands Lease.***

As Staff is aware, the State Lands Commission staff recommended lease conditions have been public for two weeks now and these recommendations were the subject of a public hearing in San Diego on October 30th. It is inaccurate to state that the Commission continued the hearing "pending resolution of several issues that may change the project," since the Commission decided prior to the hearing that, in light of the San Diego fires, it would open the public hearing on October 30 and continue the matter to a later date to allow the public adequate opportunity to participate. Because the hearing was being continued, the Commission requested that Poseidon address certain questions that arose during the hearing, such as those related to the Climate Action Plan, at the continued hearing. The Commission noted, however, that the expectation is that it would consider approval of a lease substantially in the form recommended by staff on December 3, 2007.

3. ***The State Lands Commission declined to issue the lease and continued the hearing pending resolution of several issues that may change the project as currently proposed.***

In a letter dated October 25, 2007 the Coast Law Group, on behalf of the Surfrider Foundation and San Diego Coastkeeper, requested a hearing continuance due to the San Diego wildfires. In response, the Commission declined to postpone the hearing, but decided that a vote would be deferred until its next scheduled hearing on December 3,

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2007 to accommodate additional public testimony.. The Commission noted that the expectation is that any open items are would be addressed prior to the next meeting so that it could consider approval of the lease at that time.

- 4. Further, as described later in these Findings, Commission staff has determined that information in the project Environmental Impact Report is not adequate for review purposes.***

The Coastal Commission Staff's determination that the EIR is not adequate is inconsistent with the determination of every other regulatory authority in the state that has review the project. The City of Carlsbad, t San Diego Regional Water Quality Control Board, California Department of Health Services, and, most recently, the staff of the State Lands Commission have all determined that the preparation of a supplemental or subsequent EIR would not be permitted under Section 15162 of the CEQA Guidelines. Following extensive testimony as to the adequacy of the EIR at the October 30 hearing, State Lands Commission staff reaffirmed its view that no further CEQA review was warranted.

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- 5. Project Setting. Last sentence. Cabrillo proposes to provide additional grid reliability if needed, and Cabrillo anticipates that only two generating units would operate only a few weeks per year.***

The two units in question represent two-thirds of the generation capacity in the existing plant. At the State Lands Commission, a representative from Cabrillo testified that these units are "must-run" generators and will remain in service indefinitely and that the California Independent System Operator ("Cal-ISO") would ultimately determine when they are no longer needed for grid stability. During the 12 month period from September 1, 2006 to August 31, 2007, the cooling water pumps at the Encina Power Station were operational 296 days – over 80% of the time.

- 6. Footnote 2 page 7 Poseidon would pump an additional 250 MGD to reduce salinity concentrations of its discharge.***

The Staff Report incorrectly states that an additional 250 MGD would need to be pumped into the intake and discharge system to reduce the salinity concentration of its discharge. The correct number is 200 MGD.

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- 7. Bottom of page 12, Cabrillo's proposal includes removing three of the existing plant's five generating units and operating the remaining two units only part time (expected to be up to a few weeks per year) for several more years...***

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All the Encina Power Station generating units are subject to Reliability Must Run facility status, as contracted by Cal-ISO). The two units in question represent two-thirds of the generation capacity in the existing plant. At the State Lands Commission a representative from Cabrillo testified that these units will remain in service indefinitely and that Cal-ISO would ultimately determine when they are no longer needed for grid stability. During the 12 month period from September 1 2006 to August 31 2007, the cooling water pumps at the Encina Power Station were operational 296 days.

- 8. Top of page 13, with the changes to the power plant operations Poseidon's facility would no longer be able to use water from an already operating intake system and the resulting adverse environmental impacts would be solely due to Poseidon's use of the system.***

The comment does not accurately describe the contents of the City of Carlsbad's Final EIR. At the Coastal Commission staff's specific request, the City of Carlsbad added a section to the Final EIR to address potential "standalone" operation of the desalination facility. In several locations in the Final EIR, in the City staff report and in the proceedings before the City Planning Commission and the City Council, the possibility of the desalination facility's standalone operations due to the potential cessation of once-through cooling by the Encina Power Plant was discussed and analyzed. The City concluded that stand-alone desalination plant operation would not result in any new significant adverse environmental effects. No evidence was presented to the City that standalone operations would result in any adverse impacts, and the City's consultants did not find any such adverse impacts.

- 9. Top of page 13, Poseidon's main remaining advantage – using an existing intake and discharge structure rather than having to build one – becomes a disadvantage because of all the adverse environmental damages and costs associated with the use of that structure.***

The Final EIR looked at a number of potential alternative seawater intake structures. The staff claims that moving the power plant intake offshore would be "an environmentally superior alternative" to reduce the same types of impacts Poseidon's project would cause. There are several problems with the Coastal Commission staff's claim. First, as detailed in the project EIR and November 30, 2006, January 19, 2007, June 1, 2007, July 16, 2007 and October 8, 2007 letters from Peter MacLaggan to Tom Luster of the Coastal Commission staff, the available scientific research indicates that various beach well configurations, seafloor intake filtration galleries or a new offshore intake would not have less impact than the existing intake structure and do not represent environmentally superior alternatives to the existing intake. Remarkably, the Coastal Commission staff has presented no evidence to support its claim that an offshore intake would reduce any identified significant adverse environmental impact of the current intake structure. Finally, the Commission's argument rests on the incorrect premise that there is any

evidence that Poseidon's use of the existing intake system would result in any adverse environmental impacts. The EIR, as well as experts hired by the City of Carlsbad, determined that Poseidon's project, including use of the existing intake system, would not result in any adverse environmental impacts.

10. 2nd full paragraph on 13, Poseidon's proposal would require substantially more electricity than it might otherwise use, since it would pull in far more water than is needed for the desalination process (304 MGD instead of 104 MGD).

Less than 4 percent of the energy used by the project is associated with pumping the 200 MGD of seawater that is required to dilute the saline byproduct from the desalination process to an acceptable level prior to returning that water to the Pacific Ocean. In addition, the implementation of the San Diego County Water Authority's Regional Water Supply Master Plan will result in a 16% overall reduction in the average energy needed to acquire and treat water for the San Diego region, and the Plan includes operation of the proposed desalination project. In this regard, the proposed desalination project is consistent with AB 32, and is part of the County's long-term water supply portfolio that will reduce water-related energy to below 1990 levels.

11. 2nd full paragraph on 13, Poseidon is proposing to use the older and relatively inefficient existing power plant pumps rather than install newer and more efficient pumps.

Coastal Commission staff has provided no evidence to support its position that the existing power plant pumps are inefficient. Furthermore, assuming Poseidon could achieve a 10 percent increase in pumping efficiency by replacing the pumps, the higher efficiency pumps would result in slightly more than one-half of one percent decrease in the overall energy use by the desalination facility.

12. Bottom of Page 14 and top of 15, staff is arguing that 316b and Riverkeeper II should apply to the desalination facility.

Staff implies that the Coastal Commission should defer action on the project because a court remanded multiple provisions of regulations implementing Section 316(b), including provisions defining "best technology available" (BTA). USEPA later suspended these regulations. In addition, staff states that the Commission should wait to act on the Plan until issuance of the State Board's guidance on compliance with Section 316(b). These developments by other agencies do not provide a basis to defer action on the Project, as indicated in Section 316(b) and its implementing regulations, as well as in the State Board's recent scoping document regarding the State's Section 316(b) Policy, Section 316(b) does not apply to seawater desalination plants such as the Carlsbad desalination plant.

Section 316(b) of the Clean Water Act regulates cooling water intake structures, stating:

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Any standard ... applicable to a point source shall require that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact.

33 U.S.C. § 1326(b) (emphasis added). As defined in the remanded and suspended regulations, a “cooling water intake structure” is “the total physical structure and any associated constructed waterways used to withdraw cooling water from waters of the U.S.,” including intake pumps. 40 § C.F.R. 125.93. “Cooling water” is “water used for contact or non-contact cooling, including water used for equipment cooling, evaporative cooling tower makeup, and dilution of effluent heat content,” intended “to absorb waste heat rejected from the process or processes used, or from auxiliary operations on the facility’s premises.”). Id.

The regulations implementing Section 316(b) apply only to “the location, design, construction, and capacity of cooling water intake structures.” Id. § 125.90(a). These regulations apply only if the facility: (1) is a point source that uses or proposes to use a cooling water intake structure with a design intake flow of 50 MGD or more; (2) uses at least 25 percent of the water it withdraws for cooling purposes; and (3) as its primary activity, either generates and transmits electric power or generates electric power and sells it to another entity for transmission. See id. § 125.91.

The Carlsbad desalination project, and its operation in conjunction with or independent of the EPS clearly does not meet the applicability requirements of the regulations implementing Section 316(b). While the EPS intake will be the source of the water to Poseidon, none of the water would be used by the Carlsbad desalination project for “contact or non-contact cooling.” Instead, Poseidon would use the water only for desalination purposes. Accordingly, the Carlsbad desalination project does not have a cooling water intake structure. In addition, electric power would not be generated at or transmitted from the Carlsbad desalination project. Because the Carlsbad desalination project would not generate or transmit electric power, would not have a cooling water intake structure, and would not use the EPS’s cooling water effluent for cooling purposes, Section 316(b) is not applicable to Poseidon.

The State Board’s recent Section 316(b) scoping document states that desalination plants are “outside the scope of the Clean Water Act [Section] 316(b)” and “would be more appropriately addressed through the other water quality control plans.” State Board, Scoping Document: Proposed Statewide Policy on Clean Water Act Section 316(b) Regulations, at 28 (June 13, 2006).

Because the Carlsbad desalination project does not have a cooling water intake structure and will not use the EPS’s cooling water effluent for cooling purposes, Section 316(b) is not applicable to desalination plants such as the Carlsbad desalination project. Not only is this generally recognized in the State Board’s Section 316(b) scoping document, but also the Regional Board clearly acknowledges in the Order that “the [Section] 316(b)

regulations are not applicable to Carlsbad desalination project.” Order R9 2006-0065 at F-49. Because the regulations are inapplicable, “no special conditions related to the 316(b) implementing regulations are included in this Order.” Id.

In the petition recently dismissed by the State Board, the petitioners alleged that Order R9 2006-0065 should have contained a re-opener requiring the Regional Board to reopen the permit when the State Board’s Section 316(b) policy is finalized. Poseidon’s response to the petition explained that neither the Section 316(b) regulations nor the State Board’s policy were applicable to the Carlsbad desalination project, for the reasons discussed above, and a re-opener related to Section 316(b) thus was not necessary. The State Board considered the petition after the suspension by the USEPA of the federal regulation implementing Clean Water Act Section 316(b), found that the petition did not raise a substantial issue, and dismissed the petition. The State Board has, therefore, decided that the Regional Board’s actions with respect to Section 316(b) were not appropriate for review. There is no basis for the Coastal Commission staff to conclude that Section 316 (b) is applicable to the Carlsbad desalination project.

13. 2nd paragraph page 16 Coastal Commission staff suggests that Poseidon requires a connection to the regional distribution system to deliver water that would be used by customers that are not in close proximity to the plant.

The City of Carlsbad EIR examined facilities to interconnect with several local water delivery systems and there are no plans at this time to connect the desalination facility to the regional water delivery system. Because all of the water districts in San Diego County are connected to the same imported water delivery system, it is not necessary for the desalination facility to be connected to the regional system to exchange water among the agencies located in close proximity to the plant and those that are located outside the reach of the desalinated water delivery system.

14. Bottom of page 16, The 10-day emergency water supply designation for Carlsbad’s Maerkle Reservoir would have to change if Poseidon were to store water there.

This assertion is incorrect. The ten day storage requirement is to provide the City of Carlsbad with enough water during an aqueduct shutdown. Since the City will be receiving all of its potable water supply from the desalination facility rather than the aqueduct, it no longer needs to set aside capacity in Maerkle Reservoir for an aqueduct shutdown.

15. Bottom of page 18, Poseidon’s relying on a yet to be approved \$250/AF subsidy being available from MWD.

In its June 22, 2007 letter to Mr. Douglas, the Metropolitan Water District of Southern California reaffirms its intent to provide the \$250 per acre-foot financial incentive to the project participants:

Metropolitan's Board authorized financial assistance to help make this important project viable. Metropolitan would provide up to \$14 million annually for seawater desalination from the project for potable supply that reduces demand for imported water supplies.

Furthermore, the subsidy would go to the public agencies and not to Poseidon as incorrectly stated in the Commission staff report.

16. Pages 18- 20 Commission questions the feasibility of the proposed project on the assumption that Poseidon has not factored into its costs additional mitigation costs, electricity costs, dredging or product water pumping costs into the cost of water.

Poseidon has taken each of these costs into consideration in assessing the feasibility of the proposed project.

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17. Page 21, last paragraph – Poseidon's operations would cause additional sedimentation in Agua Hedionda Lagoon which is listed by the State and Regional Boards as an impaired water body due in part to high rates of sedimentation.

The San Diego Regional Control Board has identified 6.8 acres of Agua Hedionda Lagoon as being impacted by sedimentation.¹ This impacted area (2 percent of the lagoon area) is primarily in the eastern lagoon.² The source of the sedimentation problem is not the water that is drawn in through the intake of the lagoon. The source of the problem has been identified by the Regional Board as nonpoint and point source runoff.³

As noted in the San Diego Coastal Lagoons TMDL Monitoring Workplan⁴, Poseidon's operations would actually have a beneficial impact on the sedimentation problem in Agua Hedionda Lagoon:

The coastal lagoons of San Diego County ... are heavily influenced by urbanized watersheds. Watershed runoff, coupled with reduced tidal influence from restricted inlets, has resulted in beneficial use impairments in many systems, including ... sedimentation.

In the absence of Poseidon assuming responsibility for maintenance dredging and stewardship of the lagoon after the Encina Power Station is decommissioned, the lagoon

¹ 2006 Clean Water Act 303(d) List of Water Quality Limited Segments Requiring TMDLs, San Diego Regional Water Quality Control Board, June 28, 2007.

² Id.

³ Id.

⁴ Final San Diego Coastal Lagoons TMDL Monitoring Workplan, June 18, 2007, McLaughlin et al.

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would be without an entity responsible for its long-term survival. Continued use of the existing intake by the desalination facility solves this problem. Once built, the desalination plant will ensure the continued stewardship of Agua Hedionda Lagoon and the surrounding watershed, and will guarantee for many years that residents and visitors will be able to enjoy the benefits of this clean lagoon and its surrounding beaches.

Historically, tidal patterns affecting Carlsbad State Beach removed most of the beach's sand, leaving only rough cobblestones. The periodic dredging of the Lagoon by the power plant provided the beach with a permanent sand supply. Poseidon will take over the responsibility for dredging the lagoon, providing much-needed sand replenishment.

In a letter to Coastal Commission staff dated October 8, 2007, Poseidon provided a comparative analysis of intake flow rate and sand influx rates at Agua Hedionda Lagoon under historic power plant operations, stand-alone operation, and the no project scenario.⁵ For the period from 1981 to the present, the average dredging frequency for the Encina Power Station was approximately every two years. For the stand-alone desalination facility the dredging frequency would be reduced to approximately every three years and the sediment capture rates would be reduced by 42 percent. Under the no power plant and no desalination plant scenario, the influx rates of sand are about 15 percent less than for the stand-alone desalination facility; but this reduction is not sufficient to allow the dredge frequency to be extended beyond once every three years due to schedule limitations that prohibit dredging during the least tern nesting season. Given the variability in the actual sand transport from year to year and the accuracy of the modeling, there isn't any discernable difference between the estimated dredging frequency and related environmental impacts associated with the stand-alone desalination facility versus the no project scenario.

18. Page 22 first full paragraph – Poseidon's proposed project would be expected to result in the "take" of species protected under the Marine Mammal Protection Act or Endangered Species Act. Poseidon has yet to indicate how the proposed project would conform to those requirements.

The proposed Carlsbad desalination project will not impact any protected or endangered species. In a letter to Coastal Commission staff dated June 1, 2007, Poseidon indicated that it intends to apply to the NMFS for an independent Incidental Harassment Authorization (IHA) under the Marine Mammal Protection Act (MMPA) for any impacts to sea lions, seals, or any other protected marine mammals resulting from construction and operation of the Poseidon project. In the course of issuing the IHA, NMFS will engage in a consultation under Section 7 of the federal Endangered Species Act (ESA) to ensure that the Poseidon project will not jeopardize the continued existence of any species listed as threatened or endangered under the ESA. Measures to be undertaken to avoid impacts to protected species are described in Poseidon's Flow, Entrainment and

⁵ Comparative Analysis of Intake Flow Rate on Sand Influx Rates at Agua Hedionda Lagoon: Low-Flow vs No-Flow Alternatives, Dr. Scott Jenkins, September 28, 2007.

Impingement Minimization Plan (Attachment 25 to the letter reference above) and Regional Board Order No. R9-2006-0065.

19. Page 22 second paragraph, Agua Hedionda has historically provided habitat for the tidewater goby...this designation could affect whether Poseidon is able to operate its proposed intake system in conformity with the ESA.

The Staff Report does not accurately state the current knowledge regarding the presence of tidewater goby in Agua Hedionda Lagoon. Although the U.S. Fish & Wildlife Service (FWS) published a final rule in 2000 designating critical habitat for tidewater goby and including Agua Hedionda Lagoon in that designation, FWS subsequently entered into a consent decree, as Staff recognizes, that vacated the designation of Agua Hedionda as critical habitat. Significantly, the November 2006 proposed revised critical habitat designation, available to the public, confirms that FWS is not designating Agua Hedionda as critical habitat for tidewater goby, stating: “We are proposing to remove Aliso Creek in Orange County. In addition, we are not including in this proposed designation one area vacated by the court, Agua Hedionda Lagoon in San Diego County. Both of these units were included in the 2000 designation. These two areas have not been occupied for many years and were not occupied at the time of listing (the last tidewater goby specimen from Aliso Creek was collected in 1976 and the last tidewater goby specimen from Agua Hedionda Lagoon was collected in 1940 (Swift *et al.* 1989, p. 19)).” See USFWS Proposed Revised Rule, available at:

<http://www.fws.gov/arcata/es/fish/Goby/documents/2006Nov28%20Tidewater%20Goby%20Revised%20Critical%20Habitat%20Proposed%20Rule%2071%20FR%2068914.pdf>

.Agua Hedionda Lagoon is not suitable habitat for tidewater goby, will not be designated as critical habitat for tidewater goby and Poseidon therefore will be able to operate the intake in full conformity with the Endangered Species Act.

20. Page 28, 3d paragraph - Poseidon’s impingement rate would be much less, averaging less than 2.5 pounds per day. This is a relatively insignificant impact...

We are pleased that Coastal Commission staff opines that this level of impingement is insignificant; however, staff has overstated the impingement impacts by 30 percent. In a letter to Coastal Commission staff dated June 1, 2007, Poseidon provided the Coastal Commission staff a copy of Poseidon’s Flow, Entrainment and Impingement Minimization Plan (Attachment 25 to the referenced letter). Page 19 of the Minimization plan provides:

The daily biomass of impinged fish during normal operations over the period of June 2004 to June 2005 was estimated at 0.96 kg/day (1.92 lbs/day) for an intake flow of 304 MGD.

21. Page 30, first paragraph - The Commission is unaware whether Poseidon's entrainment protocol followed accepted methodologies.

The entrainment study protocol followed by Poseidon's entrainment and impingement data collection consultant was provided to the Commission staff with a letter dated June 1, 2007.⁶ This protocol was approved by the San Diego Regional Water Quality Control Board.

22. Page 30, first paragraph - The study results did not distinguish between the different types and rates of productivity in these habitat types.

Pages 9-5 and 9-10 of the entrainment study protocol followed by Poseidon's entrainment data collection consultant effectively demonstrate that the study results did distinguish between the different types and rates of productivity in these habitat types.⁷ We collected

⁶ See Attachment 5 to the Flow, Entrainment and Impingement Minimization Plan – Proposal for Information Collection Clean Water Act Section 316(b), Encina Power Station Cabrillo Power I LLC, Tenera Environmental.

⁷ Id. Sampling to determine the composition and abundance of larval fishes, *Cancer* spp. magalopae, and spiny lobster larvae at the EPS intake and the local vicinity began in June 2004. The sampling was completed monthly thereafter, with the final sampling being completed in May 2005. Samples during each of these monthly surveys were collected over a 24-hour period, with sampling being divided into four 6-hour periods. Sampling was conducted near the intake structure to estimate larval entrainment, and at eight nearby stations in two sub-areas [four stations in Agua Hedionda Lagoon and five stations in the nearshore] to estimate larvae in the sources water (figure 7-1).

The samples at the entrainment location (E1), at all the nearshore stations (N#), and at the Outer Lagoon station (L1) were collected using a bongo net frame equipped with two 0.71 m (2.33 feet) diameter opening with attached 335 um (0.013 in) mesh plankton nets and codends. Each net had a calibrate flowmeter that was used to determine the volume of water filtered during sample collection. Samples were collected by first lowering the fram and nets from the surface to as close to the bottom as practical without contacting it, and then moving the boat forward and retrieving the nets at an oblique angle. The target volume of the combined volume filter through both nets was at least 2,120 feet³ (60 m³). After retrieving the nets from the water, all collected material was rinsed into the codend. The collected material from both nets was placed into a labeled jar and preserved.

Due to the shallow depths in the vicinity of the Middle (L2) and Inner Lagoon (L3 and L4) stations, especially during low tides, samples at these stations were collected using a different sampling protocol. These stations are sampled using a single plankton net and frame attached to the bow of a small boat that pushes the net through the water and collects a sample from approximately the upper 1 meter of water. By placing the net on the bow of the boat, the net collects a sample from undisturbed water. The collected material was rinsed into the codend and then placed into a labled jar and preserved.

a complete series of 24-hour samples from the upper, middle and lower lagoon during every monthly survey. The sample collections in the three lagoons were also synchronized with sampling at the intake for entrained organisms and ocean sampling of nearshore and offshore habitats in close proximity to the lagoon's outlets.

23. Page 30, first paragraph - The results of the entrainment study provide only a surrogate for the full range of impacts, since they do not identify smaller but numerous and important planktonic species that serve as the basis for much of the estuary's productivity.

The study rationale, as reviewed by National Marine Fisheries Service, the California Department of Fish and Game and approved by the EPA independent consultant and the Regional Water Quality Control Board, focused on the entrainment of the meroplankton of larvae fish and selected invertebrate species. The vast majority of entrained organisms are holoplankton species that spend their entire lives, some as short as 20 days, as plankton, and the vast majority of these organisms are heavily armored with either silicon or chitinous skeletons (shells) that have been proven to enable their entrainment and passage through a power plant cooling water system, such as the Encina Power Station's cooling water system, completely unaffected by heat or mechanical stresses. These survival rates of entrained phytoplankton and zooplankton were demonstrated through extensive studies at Huntington Beach Generating Station and Ormond Beach Generating Station as well as many other studies throughout the United States and overseas. Not only are the vast majority of entrained organisms returned unaffected (excepting losses to the desalination filtration processes), but some equivalent number of these organisms will be produced by the restoration habitat used to mitigate the larval fish entrainment losses; this production is truly a coastal enhancement, since it is not offsetting any entrainment loss.

24. Page 30, first paragraph – Poseidon's study does not appear to incorporate the hydrologic dynamics of Agua Hedionda Lagoon that result in some parts of the lagoon habitat likely contributing more organisms to entrainment than other. Based on the assumption that Poseidon's 304 MGD flows would represent about 30% of the daily tidal flux from Agua Hedionda Lagoon – the projects entrainment impacts could be substantially higher or different than described by Poseidon.

Dr. Hany Elwany of Scripps Institute of Oceanography served as a consultant to the project retained through NRG. Dr. Elwany conducted an extensive series of hydrodynamic tests and analyses of the entire Agua Hedionda Lagoon system. His published findings were employed in their entirety to evaluate both the static and dynamic tidal volumes of each lagoon and the results explicitly incorporated into the ETM model of the project's entrainment effects.

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25. Page 30, second paragraph – staff generally disagrees with the City of Carlsbad’s finding that the expected entrainment impact does not constitute a significant adverse impact.

Staff may “generally disagree”, but has provided no scientific basis or site-specific marine research to substantiate their conclusion..

26. Page 30, last paragraph carrying on to top of page 31 - Poseidon’s estuarine water use would cause significant adverse effects to species that are important for commercial or recreational fishing.

As indicated on page 25 of the Minimization Plan, species of direct recreational and commercial value constitute a very small fraction (less than 1 percent) of the entrained organisms and therefore, the operation of the Carlsbad Desalination Facility does not create a significant ecological impact.

In addition, Poseidon’s commitment to maintain and dredge the lagoon after the Encina Power Station is decommissioned will allow for the Hubbs-Seaworld Fish hatchery to continue replenishing the White Seabass population. In addition to the lagoon maintenance, approval of the Carlsbad desalination project will result in the dedication of land currently in private ownership that will allow for the expansion of the fish hatchery. In this regard, the Carlsbad desalination project will have a significantly positive impact on species that are important for commercial and recreational fishing.

27. Page 31 -- The study showed that 6.5 percent of the entrained fish would be Garibaldi. Coastal Commission staff suggest that this level of entrainment would have an adverse impact on Garibaldi populations in Agua Hedionda Lagoon.

Garibaldi (*Hypsypops rubicundus*) currently live in the rocks immediately adjacent to the power plant intake structure. Biological surveys clearly demonstrate that the Garibaldi at this location have thrived during the operation of the power plant, notwithstanding the fact that historically the pumping rate of the power plant is twice that under the stand-alone desalination facility operations.

28. The study showed that 1.5 percent of the entrained fish would be halibut that are important for recreational fishing.

This is incorrect. Staff has misread the study and overstated the halibut entrainment impact by 900 percent. Since halibut is the only sport fish identified in the entrainment study, Staff has also overstated the entrainment impact to recreational fishing by 900

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percent. The study results show that 0.15 percent of the entrained fish would be halibut. It would be difficult to conclude that this level of entrainment is anything but insignificant.

29. Page 31 - The Northern anchovy serves as an important forage fish for a number of species.

The study results show that 0.16 percent of the entrained fish would be Northern anchovy. It would be difficult to conclude otherwise that this level of entrainment is anything but insignificant.

30. Page 31 – Overall, Poseidon’s entrainment study results show that its proposed use of an estuarine intake would cause a substantial loss of important individual species and substantial loss of production within Agua Hedionda Lagoon.

At the Coastal Commission staff’s specific request, the Carlsbad City Council added a section to the Final EIR to address potential “standalone” operation of the desalination facility. In several locations in the Final EIR, in the City staff report and in the proceedings before the City Council, the possibility of the desalination facility’s standalone operations due to the potential cessation of once-through cooling by the Encina Power Plant was discussed and analyzed. The Final EIR also examined whether there were adverse impacts from the stand-alone desalination facility relying on the existing seawater intake system. No evidence was presented to the City that standalone operations would result in any adverse entrainment impacts, and the City’s consultants did not find any such adverse impacts. The City concluded that standalone operation would not result in any new significant adverse entrainment effects resulting from desalination facility operations.

It is incorrect to state that Poseidon’s project would cause a substantial loss of important individual species and substantial loss of production within Agua Hedionda Lagoon. The loss of larval fish entrained by the Carlsbad Desalination Plant, whether the EPS is operating or not, represents a small fraction of marine organisms from the abundant and ubiquitous nearshore source water populations. Using standard fisheries models for adult fishes, the loss of larvae (99 percent of which are lost to natural mortality) due to the desalination facility entrainment would have no effect on the species’ ability to sustain their populations. Species with the highest mortality (i.e. the CIQ Gobies) are not substantially impacted because of their widespread distribution and high reproductive potential due to spawning several times a year, and are able to sustain conditional larval stage mortality rates of up to 60 percent without a decline in adult population level. This absence of potential population level effects is especially true for the species’ early larval stages. The sheer numbers of larvae that are produced overwhelm population effects of both natural mortality and high levels of conditional mortality.

Poseidon has agreed to include in its approval from the Regional Water Quality Control Board the additional environmental benefit of additional wetlands restoration and preservation. This additional benefit was not the result of any finding of significant adverse impact under CEQA, but rather was the result of the regulatory process before the Regional Water Quality Control Board.

31. Page 31 - The project may also cause losses in nearby nearshore water due to the intake entraining organisms that would otherwise enter nearshore areas due to tidal discharges; however, the study results did not identify whether that hydrodynamic-related effect was included.

Samples during each of these monthly entrainment surveys were collected over a 24-hour period, with sampling being divided into four 6-hour periods. Therefore, the hydrodynamic related effects of four tidal cycles were captured during each sampling period. Less than 10 percent of the entrained fish are species that entered the lagoon from nearshore areas. At least ninety percent of the entrained larvae collected in this extensive study were species confined by their habitat requirements to shallow enclosed bays and lagoons.

32. Page 31 - The proposed project is also likely to result in the “take” of protected marine mammals and sea turtles due to those animals being drawn into the intake.

With respect to entrainment of endangered species, sea turtles are rarely seen in the lagoon. During the last 53 years, one green sea turtle has been entrained and released unharmed and one was found dead at the intake structure. Since turtles do not breed in this area, only the adult species would be susceptible to impingement. Adult turtles are too large to fit through the bar racks at the entrance to the intake. Poseidon has documented that during standalone operation the velocity of the water at the entrance to the bar racks is at or below 0.5 feet per second. Therefore the proposed operation would be consistent with what the U.S. EPA considers to be “best available technology” for cooling water intakes. As such the impingement impacts and the potential for an incidental take associated with the stand-alone operation are less than significant.

Measures to be undertaken to avoid impacts to protected species are described in Poseidon’s Flow, Entrainment and Impingement Minimization Plan (Attachment 25 to the letter reference above) and Regional Board Order No. R9-2006-0065.

33. Page 32, second paragraph - Poseidon’s study showed that its use of the power plant intake would impinge about 2.5 pounds of fish per day. While this is a relatively minor impact, past power plant operations have also included

These materials have been provided to the Coastal Commission Staff

impingement of an endangered species, which constitutes a significant adverse impact. Staff cites stand-alone desalination facility intake velocities of 1.8 to 2.8 feet per second at the unit 4 pump screen to support this conclusion and notes that the primary method of avoiding and minimizing impingement is to maintain intake water velocities below 0.5 feet per second (fps), a rate that the U.S. EPA considers to be “best available technology” for cooling water intakes. Staff suggests that Poseidon has not proposed the use of any of these measures to further reduce its impacts and has not shown that their use would be infeasible.

As previously noted, staff has overstated the impingement impact by 30 percent. The maximum impingement under worst case conditions is 1.92 pounds of fish per day. We are pleased that staff agrees that this is a minor impact.

With respect to entrainment of endangered species, sea turtles are rarely seen in the lagoon. During the last 53 years, one green sea turtle has been entrained and released unharmed and one was found dead at the intake structure. Since turtles do not breed in this area, only the adult species would be susceptible to impingement. Adult turtles are too large to fit through the bar racks at the entrance to the intake. Therefore, the turtles never reach the Unit 4 pump screens. Poseidon has documented that during stand alone operation the velocity of the water at the entrance to the bar racks is at or below 0.5 feet per second. Therefore the proposed operation would be consistent with what the U.S. EPA considers to be “best available technology” for cooling water intakes. As such the impingement impacts associated with the stand-alone operation are less than significant, and as staff notes, relatively minor.

Moreover, Poseidon has proposed measures to reduce the project’s de minimis impingement impacts. Poseidon’s Flow, Entrainment and Impingement Minimization Plan outlines several planned operational, technical and mitigation measures, including minimization of intake flows and installation of variable frequency drives.

34. Pages 32-36 staff makes the argument that subsurface intakes appear to be a feasible and less environmentally damaging alternative.

Poseidon analyzed various configurations of beach wells and offshore intake systems.⁸ In all cases it was concluded that the alternative intakes were infeasible and far more environmentally damaging than the proposed use of the existing intake system. Poseidon acknowledges that staff does not agree with its estimate of the cost of the alternative intake systems. However, even if staff’s concerns about the cost estimates were found to be valid, which they are not, the subsurface intake systems would still cost hundreds of millions of dollars. The purpose of this expense would be to avoid a circumstance that

⁸ See EIR pp. 6-5 to 6-7 and Poseidon’s response to CCC dated November 30, 2006, pp. 31-41 Poseidon’s response to CCC dated June 1, 2007, p. 10, and Poseidon’s letter to Tom Luster dated October 8, 2007.

over eight years of scientific research and environmental study by leaders in the field, including the Scripps Institute of Oceanography, have proven will not have a significant, negative impact on the marine environment. This conclusion is true for all operating conditions studied, including the scenario when the Encina Power Station is decommissioned and no longer using the seawater intake and outfall infrastructure. This conclusion is also universally held by permitting agencies and the regulatory community including the City of Carlsbad, Regional Water Quality Control Board, California Department of Health Services and the State Lands Commission.

Beach Wells. Site-specific conditions and thorough evaluation of alternative subsurface intake technologies completed during the project EIR preparation phase of the project have led the City of Carlsbad and Poseidon to conclude that use of a subsurface beach well intake system is infeasible due to an inability to pump an adequate quantity or quality of water in the area, and that such an intake system would result in far greater adverse environmental impacts than the proposed project. In our previous responses, we have provided detailed and site-specific factual evidence developed by expert geologists who are knowledgeable about the hydrogeological conditions in the area after completing borings and construction and operation of a test-well in Agua Hedionda Lagoon. The experts' conclusion that subsurface intakes are infeasible supports the conclusion of the independently developed, publicly reviewed and certified EIR for the Carlsbad seawater desalination plant that subsurface intakes are not a viable seawater intake alternative for the proposed project. The presented facts are not just "issues of concern," they indicate that use of subsurface intakes is not feasible due to an inability to pump an adequate quantity or quality of water and therefore, fatally flawed based on the site specific subsurface conditions of this project. The results of this site-specific study indicate that:

- The maximum intake flow that can be delivered by a single vertical well is 1.3 MGD or less than 5% of the project flow requirements.
- Depending on the configuration of the wells (vertical, slant, Ranney collector) 20 to 200 intake structures would need to be located along two miles of coastline west of the desalination along with associated access roads, parking, interconnecting pipelines and electrical supply.
- Contrary to staff's suggestion, these facilities cannot be located underground due to the high-voltage electrical motors and switchgear required and the need to perform periodic and preventative maintenance.
- As shown below, location of 20 to 200 beach wells along a two mile stretch of the coast would result in a permanent loss in public access and visual resources.
- Detailed source water quality analysis of the water samples collected during the well test indicated that the quality of the water available from the wells would be difficult, if not impossible, to treat (salinity twice that of ambient seawater, excessive iron and high suspended solids).
- The estimated cost of various configurations of beach wells range from \$438 million to \$650 million.

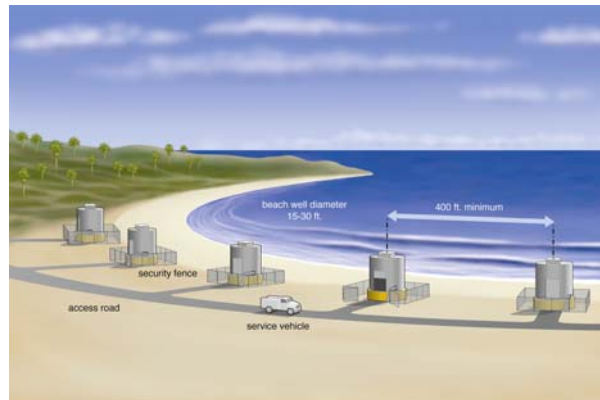
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Vertical Wells



Horizontal Raney Collector Well

Subsurface Seabed Filtration Intake System. As discussed in Poseidon’s October 8 letter to Coastal Commission staff, a submerged seabed intake system sized to provide 304 million gallons per day (MGD) of seawater would impact approximately 150 acres of seafloor. The system consists of two components; (i) the intake filtration bed; and (ii) 78 connector pipelines spaced at 200 foot intervals. The intake filtration bed would be three miles long and 400 ft wide and 15 feet deep and would disturb about 75 acres of seafloor. An additional 75 acres of seafloor would also need to be excavated to a depth of 12 feet to lay the 26 connector pipes from the shore through the surf zone to the filter bed.

The 104 collector pipelines will be connected to 78 wells located on the beach. The wells will pump the seawater to the desalination facility via a newly constructed pipeline (four miles long, ranging from 24 to 72 inches in diameter). Each of the 78 wells will require

approximately 2,800 square feet of beachfront property, for a combined loss of seven acres of beachfront property.

The submerged seabed intake structure would need to be placed outside the maximum wave impact zone and far enough north of the EGS discharge channel to ensure no mixing of intake and discharge water. Staff has suggested that offshore of Agua Hedionda is “an area of over 200 acres of featureless bottom with fine-grained sand that may be suitable for such a system.”⁹ Recent survey of the area indicated that 70 percent of the impacted area would contain sensitive basement and high relief reefs.¹⁰ This rocky habitat makes it physically and environmentally infeasible to place this type of structure in the area. Construction impacts would destroy this area and would have a permanent and significant effect on the marine biota along with permanent destruction of kelp beds and lobster fishery grounds. Many of the reef areas contain extensive Surfgrass meadows, which are important nursery grounds for many of the nearshore fish.

The habitat-loss analysis presented above is based on the assumption that the Carlsbad site has close to ideal conditions (aggressive filtration rate, no loss of filtration media due to coastal erosion and tidal movement, and high quality seawater) for subsurface intake. Therefore, 150 acres is the minimum area of coastal habitat that will be impacted if subsurface intake is built. Even under this best-case scenario, the 150-acre coastal habitat loss associated with subsurface intake is 400 percent higher than the worst-case estimate for the area of habitat production forgone (APF) of 36.8 acres indicated in the entrainment study prepared for the desalination facility using the existing intake.

The environmental impact as a result of the loss of 150 acres of offshore habitat is far greater than the estimated 36.8 acres of area of habitat production forgone for the following reasons:

- The construction of subsurface intake will result in an actual physical removal and destruction of 150 acres of coastal habitat.
- The area of habitat production forgone (APF) on the other hand is acknowledged by the experts to represent a worst-case, extremely conservative measure of potential impact of loss of marine organisms that relies on a number of conservative assumptions, which never occur in practice. While at least 150 acres of actual marine habitat will be destroyed irreversibly when the subsurface intake filter bed is constructed because the habitat will be removed from the ocean; the 36.8 acres of APF is the theoretical area required to produce the fraction of the

⁹ Page 35 of the staff report for item Th7a.

¹⁰ The marine habitat offshore of the EGS was evaluated in 2000 (Le Page and Ware, 2001) with Side Scan Sonar, verification dives, and fish and invertebrate transect dives. This information was the primary biological analysis for the Jetty Extension EIR was used to verify Poseidon’s response regarding biological impacts of the Fukuoka-type subsurface intake structure for the EGS, which was submitted to the Coastal Commission on July 16, 2007.

lagoon's larval goby and blenny population that would be entrained; simply stated there is no actual or implied habitat destruction. Many of the marine organisms that would be produced by the restoration, in addition to larval gobies and blennies, are completely unaffected by intake effects of entrainment or impingement. An obvious fact that the APF is crude and overly conservative measure is the abundant marine habitat in Aqua Hedionda Lagoon after over 50 years of power plant operations at this location. As indicated in the EIR for the Carlsbad project, over the last 20 years the plant was taking an average of 600 MGD of seawater from the lagoon. Yet, there is abundant sea life in immediate proximity of the intake including, highly populated Garibaldi nesting areas within 25 feet of the intake. The fact that the power plant has operated at this mode for over 50 years and while supporting one of the most productive lagoons along the California coast clearly underscores that the APF is conservative measure of intake impact.

The construction of the subsurface intake will have many other significant environmental impacts besides the irreversible destruction of marine and coastal habitat. Some of the key impacts are as follows:

- Excavation and construction of 78 intake water collection wells and trenches for collector piping along a four-mile beach strip of the City of Carlsbad shore will limit public access to the beach for a period of over 2 to 4 years and result in a permanent loss in public access and visual resources.
- In order to secure consistent operation of the intake filter bed, this bed would need to be dredged every one to three years to remove the sediment and entrained marine life that will accumulate in the intake filter bed and over time will plug the bed. If this material is not removed, than the intake flow will decrease over time and the desalination plant will cease to function. The dredged material will need to be disposed away from the one-mile strip of the intake filter bed in order prevent the removed solids to return to the area of the bed. This will not only result in frequent destruction of the marine flora and fauna in the area but will also render the area unavailable for recreational activities during intake bed dredging/maintenance activities.

In conclusion, the physical and benthic habitat of the offshore area near the proposed desalination plant is not suitable for a submerged seabed intake gallery. The overall environmental impact associated with the construction and operation of submerged seabed intake gallery will be significantly higher than that associated with the use of the existing intake for the Carlsbad Desalination Project. The estimated cost of various configurations of beach wells range from \$438 million to \$650 million. *See Poseidon's Intake Cost Estimates*, submitted to the Commission on October 17, 2007. It also should be noted that the subsurface intake systems referenced in staff comments are not recognized by the USEPA 316 (b) Regulations as a Best Technology Available (BTA)

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for reduction of impingement or entrainment of aquatic organisms and staff's belief of the superiority of the subsurface technologies is not substantiated and supported by results from impingement and entrainment studies of the referenced subsurface technologies in contrast with the comprehensive impingement and entrainment studies completed by Poseidon for the Carlsbad project.

35. Pages 36-38 staff argues that a new offshore intake in open coastal waters would move those effects from the highly sensitive estuarine environment of Agua Hedionda to the somewhat less sensitive open ocean waters in which the adverse effects would be more diffuse.

Staff has opined that the construction and operation of a new offshore intake to serve the seawater supply needs of the desalination project may be an environmentally preferred alternative to Poseidon's proposed use of the existing intake at the Encina Power Station. Specifically, it is staff's view that an offshore intake would reduce the frequency of dredging of Agua Hedionda Lagoon under the stand-alone desalination facility operation; and would result in fewer environmental impacts than the use of the existing Encina Power Station intake under the stand-alone desalination facility operation.

The basis for staff's opinion was the State Lands Commission (SLC) environmental impact report (EIR) for the Agua Hedionda Inlet Jetty Extension Project. That EIR identified an offshore intake as an environmentally preferred alternative to the proposed extension of the inlet jetty. Poseidon prepared two studies that effectively demonstrate that neither of staff's objectives would be met through the construction of a new offshore intake.

The first study addresses whether an offshore intake would reduce the frequency of dredging of Agua Hedionda Lagoon under the stand-alone desalination facility operation.¹¹ This study concluded that the dredging frequency for the stand alone desalination facility would be approximately every three years when adhering to present dredging practices. Under the no power plant and no desalination project scenario, the minimum dredging required to keep Agua Hedionda open to the Pacific Ocean would be about 15 percent less than for the stand-alone desalination facility; but this reduction is not sufficient to allow the dredge frequency to be extended beyond once every three years due to schedule limitations that prohibit dredging during least tern nesting season. Given the variability in the actual sand transport from year to year and the accuracy of the modeling, there isn't any discernable difference between the estimated dredging frequency and related environmental impacts associated with the stand-alone desalination facility versus the no project scenario.

¹¹ *Comparative Analysis of Intake Flow Rate on Sand Influx Rates at Agua Hedionda Lagoon: Low-Flow vs. No-Flow Alternatives*, Jenkins and Waysl, September 28, 2007

The second study addresses whether an offshore intake would result in fewer environmental impacts than the use of the existing Encina Power Station intake under the stand-alone desalination facility operation.¹² Here the authors evaluate the Jetty EIR and conclude that the SLC did not adequately evaluate the environmental impacts associated with constructing an offshore intake. The Jetty EIR underestimates the biological impacts of installing a large diameter pipe 1000 feet offshore, which depending on placement, would potentially destroy existing rocky reef outcroppings occurring offshore. The Jetty EIR did not evaluate the down coast effects of an intake structure on habitat, sand flow, or sedimentation.

Further, the Jetty EIR did not adequately evaluate entrainment and impingement effects. The authors believe that an offshore intake has the potential to affect a greater diversity of adult and juvenile organisms as well as both phyto- and zooplankton species than is currently impacted by the existing intake at the Encina Power Station. The community of organisms that will take up residence in the intake pipe will consume virtually all of the entrained plankton.¹³ This has implications for the survival potential of organisms that can survive passage through the power station.

The impact of an offshore intake takes on even greater significance when considered in the context of a possible stand-alone operation of a desalination plant. Such a facility will draw far less water than the power plant and two-thirds of the drawn volume would be used for dilution of the concentrated desalinated stream. Some of the plankton in the dilution water would not be affected during circulation through the plant. A long offshore intake, on the other hand, would have significantly greater entrainment effects because virtually all of the entrained plankton would be consumed by organisms living in the intake itself.

The estimated cost of the new offshore intake is approximately \$150 million. See Poseidon's Intake Cost Estimates, submitted to the Commission on October 17, 2007.

In conclusion, there is no evidence to support Staff's position that "the impacts of a properly designed and sited open water intake would be substantially less than those caused by the existing estuarine intake" and considerable evidence to suggest the impacts would be substantially greater.

36. Page 38, 3d paragraph - Poseidon has not yet shown that additional avoidance and minimization measures are infeasible.

¹² *Issues Related to the Use of the Agua Hedionda Inlet Jetty Extension EIR to Recommend An Alternative Seawater Intake for the Carlsbad Desalination Project*, Graham, Le Page and Mayer, October 8, 2007

¹³ *Issues Related to the Use of the Agua Hedionda Inlet Jetty Extension EIR to Recommend An Alternative Seawater Intake for the Carlsbad Desalination Project*, Graham, Le Page and Mayer, October 8, 2007

Pursuant to Regional Board Order R9-2006-0065, Poseidon is required to assess the feasibility of site-specific plans, procedures, and practices to be implemented and/or mitigation measures to minimize the impacts of marine organisms when the desalination facility intake requirements exceed the volume of water being discharged by the Encina Power Station.¹⁴ Poseidon's Flow, Entrainment and Impingement Minimization Plan (Plan) is subject to the approval of the Regional Board.¹⁵

Based on the comprehensive analysis of a number of flow minimization, impingement and entrainment reduction alternatives, the Plan identified a combination of best available and feasible operational, technological and mitigation measures to accomplish this purpose.

Nineteen operational and technology based alternatives for reduction of impingement and entrainment of aquatic organisms in the source seawater were evaluated for both the desalination plant intake and the existing Encina Power Station intake. Many of these alternatives were determined to be infeasible due to site-specific constraints. All of the operational and technology based measures that were determined to be feasible are proposed for implementation; these measures include minimization of intake flows through optimal operation of the power plant intake pumps when the power plant is shutdown or flows are reduced, and the installation of variable frequency drives to minimize flows. *See Revised Flow, Entrainment and Impingement Minimization Plan.*

Poseidon is required to consider additional technology based avoidance measures as they become available.¹⁶ In the meantime, any potential entrainment and impingement

¹⁴ Regional Water Quality Control Board Order R-9-2006-0065, Section C.I.2.e.

¹⁵ Poseidon submitted the initial draft Flow, Entrainment and Impingement Minimization Plan (Plan) to the Regional Board in February 2007. The Regional Board circulated the draft Plan for public comment. Poseidon revised the Plan in response to comments received from the Regional Board and members of the public and resubmitted it to the Regional Board June 2007. The Regional Board is currently taking comments on the revised Plan and will hold a public hearing on the Plan prior to approval.

¹⁶ City of Carlsbad Planning Commission Resolution 6091: "In the event that the EPS were to permanently cease operations, and the Developer were to independently operate the existing EPS seawater intake and outfall for the benefit of the project, such independent operation will require CEQA compliance and permits to operate as required by then-applicable rules and regulations of the City and other relevant agencies; Regional Board Order R9-2006-0065, Section VI.C.1.: "Reopener Provisions" for changed conditions; State Lands Commission proposed Lease Paragraph 12: "Without interference with, or interruption of, power plant scheduled operations and at its sole cost and expense, Poseidon Resources, as a separate obligation, shall use the best available design, technology, and mitigation measures at all times during which this Lease is in effect to minimize the intake (impingement and entrainment) and mortality of all forms of marine life associated with the operation of eh desalination facility as determined by the San Diego Regional Water Quality Control Board or any other federal, state or local entity;" State Lands Commission proposed Lease Paragraph 14: "Ten years from October 30, 2007, Lessor will undertake an environmental review of the ongoing impacts of the operation of the desalination facility to determine if additional requirements pursuant to Paragraph 12 are required. Lessor will hire a qualified independent environmental consultant at the sole expense of Poseidon Resources with the intent to analyze all environmental effects of facility operations and alternative technologies that may reduce any impacts found. Lessor may require, and Poseidon Resources shall comply with such additional requirements as are

impacts associated with the desalination facility operation under stand-alone conditions will be fully mitigated through the restoration and enhancement of 36.8 acres of coastal wetlands.

37. On October 10, 2007, Poseidon provided to Commission staff its proposed “Coastal Habitat Restoration and Enhancement Plan”. The Plan does not include the level of information or certainty to determine that any of the possible measures would be implemented, would provide adequate mitigation, or would conform to Coastal Act provisions.

To address Staff’s concerns, Poseidon has proposed that the Commission adopt Special Condition 4 as part of the Commission’s approval of the Project. Special Condition 4 provides:

Habitat Mitigation Plan. PRIOR TO COMMENCEMENT OF CONSTRUCTION, the Applicant shall submit to the Coastal Commission evidence of the Regional Water Quality Control Board’s approval of a Habitat Mitigation Plan. The Habitat Mitigation Plan shall provide for the restoration of no less than 37 acres of marine wetlands. The Plan shall detail the specific site of the mitigation. The site shall be contained within the San Dieguito Wetland Restoration Plan that was approved by the Coastal Commission on October 12, 2005 (Coastal Development Permit No. 6-04-88) and was the subject of a Final Environmental Impact Report that was prepared and certified by the San Dieguito River Park Joint Powers Authority and U.S. Fish and Wildlife Service, or such substitute site or sites approved by the Regional Water Quality Control Board. The Habitat Mitigation Plan shall include an implementation protocol that includes 5 years of monitoring and annual performance review. No later than the commencement of commercial operation of the desalination facility, applicant shall commence implementation of the Plan. The Executive Director may extend the deadline for implementation of the Plan upon Poseidon’s request and showing of good cause.

With the approval of the Carlsbad desalination project conditioned on Special 4, the Commission can be reassured that Poseidon will, indeed must, implement its proposed Coastal Habitat Restoration and Enhancement Plan (“CHREP”).

With regard to whether the CHREP would provide for adequate mitigation, Poseidon does not believe any mitigation is required to comply with Coastal Act policies, because, as the EIR determined, the Project will have no significant impact on coastal resources even should it operate stand-alone. However, Poseidon has agreed to provide restoration

reasonable and as are consistent with applicable state and federal laws and regulations and as Lessor determines are appropriate in light of the environmental review.

These materials have been provided to the Coastal Commission Staff

with the project and has agreed to make this restoration enforceable as a condition of approval of the Carlsbad desalination project. Neither the Coastal Act nor Commission regulations impose mitigation standards by which what constitutes “adequate mitigation” is determined. Although mitigation is not required by CEQA, the CHREP meets the CEQA standard for mitigation measure adequacy in that it will be enforceable through conditions of approval of the project and the program’s success will be monitored through performance standards, monitoring and reporting.

When the Encina Power Station flow rate is lower than the minimum flow of 304 MGD needed for operation of the desalination facility, the desalination facility’s use of the EPS’s existing intake may result in potential de minimis incremental impingement and entrainment of marine organisms. The purpose of the CHREP is to provide mitigation for any unavoidable impingement and entrainment effects of the Carlsbad desalination project operations through restoration and enhancement of coastal wetlands.

The proposed CHREP is based on a model (Empirical Transport Model) that estimated the portion of the larvae of each target fish species at risk of entrainment with the intake source water. Multiplying the average percent of populations at risk by the physical area from which the fish larvae might be entrained, yields an estimate of the amount of habitat that must be restored to replace the lost fish larvae. This estimate is referred to as the area (acreage) of habitat production foregone (APF).

The entrainment effect of the stand-alone operation of the desalination plant extends over 12.2 percent of the total area that could be potentially impacted by the intake operations. Specifically, 12.2 percent of the area of Aqua Hedionda Lagoon’s habitat that supports the entrained species is 36.8 acres. Thus, maximum restoration area needed to fully mitigate the Carlsbad desalination project entrainment losses is 36.8 acres. The restoration requirement is estimated under worst-case conditions when the power plant is not operating and the existing pumps are operated solely to deliver 304 MGD of seawater for the operation of the desalination plant.

The CHREP will provide significant environmental benefits beyond fully mitigating the desalination facility’s potential intake impacts, which, as documented in the EIR, are not significant. These benefits include the enormous ecological value of the restored acreage that will accrue to valuable wetland species completely unaffected by desalination facility operations, such as the numerous riparian birds, reptiles and mammals that will utilize the wetland for foraging, cover and nesting. Additionally, phytoplankton, zooplankton and invertebrate species, that are largely unaffected by desalination facility operations, benefit directly from the expanded carrying capacity of the restored habitat.

In order to identify suitable coastal habitat enhancement alternatives, on August 31, 2007, Poseidon issued a request for expression of interest (REI) for Development and Implementation of Coastal Habitat Enhancement Project associated with the Carlsbad Desalination Plant. Poseidon has received eight Statements of Interest for coastal

restoration and enhancement projects in response to the REI. One proposal was received that meets or exceeds the CHREP objectives, the proposal of the San Dieguito Wetland Restoration Plan.

Contingent on the Regional Board's approval, Poseidon intends to move forward with the restoration proposal submitted by the San Dieguito Wetland Restoration Plan, which is one of the proposals listed in Poseidon's CHREP. The San Dieguito proposal is one part of a larger restoration project that has already been approved by the Coastal Commission, on October 12, 2005 (W8f 11/15/05), CDP # 6-04-88.¹⁷ Additionally the San Dieguito Wetland Restoration Plan was the subject of a Final Environmental Impact Report that was prepared and certified by the San Dieguito River Park Joint Powers Authority and U.S. Fish and Wildlife Service. As such, the Plan includes more than a sufficient level of certainty to determine that the proposal conforms to Coastal Act provisions.

Even if the San Dieguito proposal is not chosen by the Regional Board (the entity with primary authority to consider marine impacts pursuant to Coastal Act Section 30412), the Habitat Mitigation Plan will include an implementation protocol that includes 5 years of monitoring and annual performance review such that the Commission will be able to determine that the restoration meets performance standards and complies with the Coastal Act.

The San Dieguito Wetland Restoration Plan proposal is described in the discussion that follows.

San Dieguito Coastal Habitat Restoration

Project Proponent. The proponent for this project is San Dieguito River Park Joint Powers Authority (local government agency in partnership with the San Dieguito River Valley Conservancy (501 (c) (3) organization).

Project Background. Pursuant to the requirements of the Coastal Commission (W8f 10-2005), Southern California Edison is creating 115 acres of tidal wetlands at San Dieguito and will keep the river mouth open in perpetuity. Their San Dieguito Wetlands Restoration Project includes a new deep water lagoon on the west side of I-5, extensive finger channels on the east side of I-5 north of the river, California least tern nesting sites and berms along the river to keep the water in the riverine channel flowing to the sea without dropping sediment or flooding the newly created wetlands under normal conditions.

Project Scope. As shown in Figures 1-3, the proposed CHREP involves the development of a total of 37.26 acres of coastal habitat in the San Dieguito Lagoon Area that is above and beyond what is included in the ongoing Southern California Edison

¹⁷ A copy of the staff report and recommendations has been forwarded to Coastal Commission staff under a separate cover.

Wetlands Restoration (SCE) Project. The majority of the coastal habitat will be wetlands (28.7 acres) and associated native grassland supporting wetland species (8.52 acres). The new coastal habitat will be created from what is now entirely disturbed land located within two miles of the coast and immediately adjacent to the San Dieguito Wetlands Restoration Project boundary.

The San Dieguito Lagoon is located approximately 12.5 miles south of Agua Hedionda Lagoon, and was historically one of the largest lagoons in San Diego County. A more detailed scope of this project was provided to the Coastal Commission staff October 8, 2007.



Figure 1 – Overview



Figure 2 – Detailed 23.75-acre Area

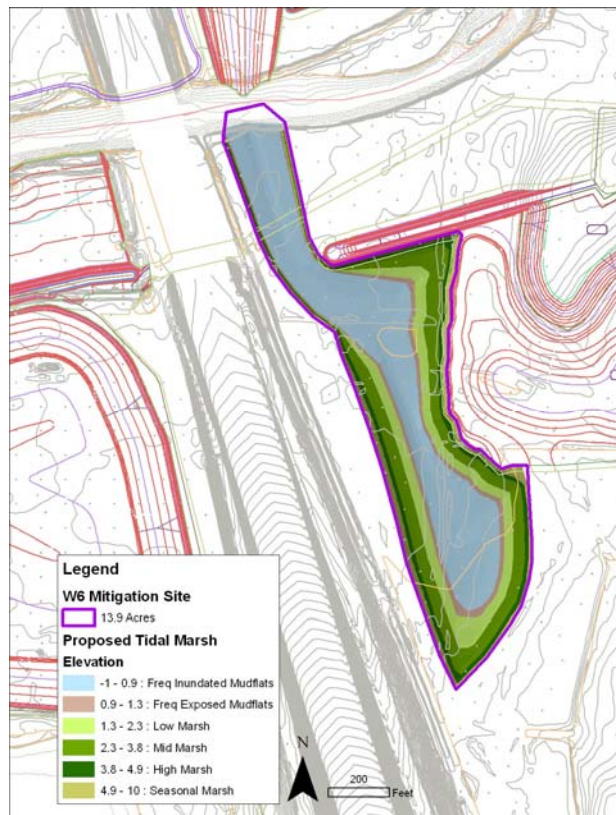


Figure 3 – Detailed 14-acre Area

These materials have been provided to the Coastal Commission Staff

Project Benefits and Merits

The project location was chosen to expand the number of acres of functional wetlands and associated habitat in the San Dieguito Lagoon area, by supplementing the 115-acre Wetlands Restoration Project, which is currently underway.

The proposed restoration projects will create 28.74 acres of wetlands and 8.52 acres of associated native grassland habitat from what is now entirely disturbed land. The current state of the land chosen for this project, results from decades of fill, grading and/or agricultural use, rendering it unsuitable for supporting native species that rely on freshwater/intertidal marsh or upland habitat. The project includes maintenance and monitoring to ensure the successful re-establishment of planted species. A second component of this project is funding for enhanced water quality sampling, testing and monitoring of the proposed Water Quality Treatment Ponds.

The proposal targets 37.26 acres of coastal wetlands and associated native grassland are within two miles of the coast. The treatment ponds are located within 1.5 miles of the coast. Both project locations are immediately adjacent to the San Dieguito Wetlands Restoration Project boundary. The Wetlands Restoration Project, largely funded by Southern California Edison, is designed to create 115 acres of coastal wetlands, maintain the inlet mouth in an open condition in perpetuity (valued at the equivalent of 35 acres of wetland creation) and create 92 acres of coastal sage scrub by 2010.

The projects described in this proposal will create additional habitat that will increase the acreage of wetlands populated by plant species with known ability to filter out contaminants, thereby improving water quality; increase the area of native habitat capable of capturing sediment, reducing stream flow and increasing infiltration into groundwater stores; and, increase the acreage of native vegetation communities able to support wildlife, including migratory waterfowl and special status species such as the Light-Footed Clapper Rail.

The proposed San Dieguito Coastal Habitat Restoration Project:

- will generate coastal habitat comparable to that found in and around Agua Hedionda Lagoon;
- is consistent with the requirements of, and is supported by, a broad array of local, state and federal agencies, including the California Coastal Commission, Regional Water Quality Control Board, National Marine Fisheries Service, US Fish & Wildlife Service and the California Dept. of Fish & Game;
- will create 37 acres of coastal habitat;
- is located in San Diego County, on the coast, approximately 12 miles south of the Agua Hedionda Lagoon;

These materials have been provided to the Coastal Commission Staff

- will provide sustainable, comprehensive environmental benefits for water quality, habitat diversity for species abundance and for sensitive and endangered species in perpetuity; and
- leverages a specific grant of \$550,000 from the State Water Resources Control Board; however, in reality it leverages a great deal more due to the association with the restoration of the tidal wetlands in the San Dieguito Lagoon; the previous work by public agencies in purchasing land in the lagoon; public support and involvement in creation and approval of the Park Master Plan and the Environmental documents for the San Dieguito Coastal Area restoration.

38. Bottom of page 40 - The Plan does not recognize that Agua Hedionda is already the subject of extensive mitigation work. There are a number of initiatives already occurring or planned that involve enhancing or restoring water quality or habitat in Agua Hedionda, many being implemented with substantial amounts of public funding. Poseidon's planned use of the estuarine intake and its proposed compensatory mitigation approach away from Agua Hedionda would diminish many of the water quality benefits and habitat values that these other mitigation efforts are expected to provide. Top of page 41 - The Carlsbad Watershed Network requested that any mitigation the Commission may require of Poseidon be integrated with the existing state funded effort for the Agua Hedionda Watershed Management Plan. Thus far, however, Poseidon's possible mitigation projects do not show the necessary level of coordination with these other ongoing efforts.

Poseidon would be very interested in collaborating on a habitat restoration project for Agua Hedionda Lagoon. In an effort to coordinate our restoration plans with Agua Hedionda watershed interests, we sent our August 2007 Request for Expressions of Interest to a number of the organizations and individuals that are involved with the Carlsbad Watershed Network (CWN), as well as Carlsbad Aqua Farm, Hubbs Research Institute and the Agua Hedionda Lagoon Foundation.

We received four proposals from Agua Hedionda Lagoon interests. A representative of the CWN offered consulting services, but no specific restoration plan was identified. Carlsbad Aqua Farm expressed an interest in working with Poseidon on an abalone stock enhancement plan. The Agua Hedionda Lagoon Foundation submitted two proposals, one related to lagoon upland property acquisition and the other related to removal of invasive plants from upland areas. We included copies of the Carlsbad Aqua Farm and Agua Hedionda Lagoon Foundation's proposals in the Coastal Habitat Restoration and Enhancement Plan we submitted to the Coastal Commission staff on October 9.

Poseidon has yet to receive any proposals for Agua Hedionda Lagoon addressing the stated objective of Poseidon's Coastal Habitat Restoration and Enhancement Plan -- marine wetlands restoration -- but we remain open to suggestions.

On October 26th Poseidon contacted the representative from the CWN that contacted the Commission staff and Poseidon regarding possible integration of Poseidon's mitigation plans with the state funded effort for the Agua Hedionda Watershed Management Plan. We expressed an interest in working with the Watershed Network to identify a specific marine wetland habitat restoration project in Agua Hedionda Lagoon. On October 31 the CWN representative replied "I'm sorry ... but we are not yet working on the acquisition and restoration part of the Watershed Management Plan. We are still in the data collection phase."

Based on this response, we concluded that the CWN is not in a position at this time to provide what the Commission staff has requested of Poseidon -- "a substantially more detailed proposal to determine whether any of the proposals would meet Coastal Act mitigation standards." (Recommended Findings 40 of 88). In their communication to Commission and Poseidon staff, CWN is very clear that they are early in the planning process and that their interests lie outside the tidal zone:¹⁸

I understand the desire to mitigate marine habitat in the lagoon, however, there are many opportunities within the Agua Hedionda watershed that would have a direct impact on lagoon habitat by mitigating sediment or other pollutants from entering the lagoon. A watershed management plan is currently being developed for the Agua Hedionda Watershed and the results will include recommendations for a series of projects (including property acquisitions) to improve the watershed health.

39. Poseidon states that the Plan is based on providing 1:1 mitigation for the loss of about 37 acres of habitat within Agua Hedionda. However, none of the potential projects offered would provide "in-kind", on-site mitigation -- that is, none would replace the habitat or organisms lost in Agua Hedionda due to entrainment -- and so the individual projects or any combination of projects would have to provide mitigation at more than a 1:1 ratio.

Neither the Coastal Act nor Commission regulations impose precise qualitative or quantitative standards for mitigation. Consistent with similar mitigation plans approved by Commission, Poseidon is proposing to provide a comprehensive habitat restoration plan that includes no less than 37 acres of marine wetlands habitat. In accordance with Poseidon's proposed Special Condition 4, the restoration site shall be contained within the San Dieguito Wetland Restoration Plan that was approved by the Coastal

¹⁸ Email from Agua Hedionda Watershed Coordinator Meleah Ashford to Tom Luster, October 26, 2007.

Commission on October 12, 2005 (Coastal Development Permit No. 6-04-88) and was the subject of a Final Environmental Impact Report that was prepared and certified by the San Dieguito River Park Joint Powers Authority and U.S. Fish and Wildlife Service, or such substitute site or sites approved by the Regional Water Quality Control Board. The APF estimate of 36.8 acres is a conservative estimate of area potentially impacted by the operation of the desalination plant intake in which only a small portion of organisms of high abundance and no commercial significance will be impacted. As previously indicated, the APF calculation provides an overestimate of the effect of the intake on the productivity of the impacted area. The fact that this lagoon has retained and enhanced its biological and marine productivity over the last 50 years of power plant operations proves that the APF estimate of 36.8 acres is overly conservative and the actual impact is well within the capacity of the impacted species to naturally compensate for the losses even without the development of any additional habitat for such species. The habitat restoration will not only compensate for the physical loss of individuals of the impacted species but also enhance the coastal environment.

The proposed restoration plan will generate benthic habitat, salt marsh and uplands habitat, thereby extending the benefits from the proposed mitigation measure far beyond the area of actual impact of the desalination plant operations.

40. Top of 42 – The restoration project Poseidon has proposed is not the best available mitigation measure feasible.

The Coastal Commission found this location to be acceptable for mitigation of the entrainment and impingement impacts of the San Onofre Nuclear Generating Station which is 45 miles away from San Dieguito Lagoon and is impacting open water fish species that don't necessarily reside in a lagoon environment. The proposed desalination facility is much closer to the proposed mitigation site (12 miles) and Poseidon is proposing to replace tidally exchanged coastal lagoon habitat with like habitat.

41. Top of page 42 - Poseidon's proposed new use is not likely to occur until the Regional Board develops the required TMDL for Agua Hedionda Lagoon.

As previously discussed, the TMDL for Agua Hedionda Lagoon is to address sedimentation in 6.8 acres primarily located in the eastern lagoon. According to the Regional Board, the source of the sedimentation problem is nonpoint and point source runoff from the upstream watershed, not water flowing into the lagoon through the intake. The Regional Board has acknowledged that keeping the lagoon open and dredged, as proposed by Poseidon, will lessen the impacts of nonpoint and point source sedimentation by providing a means of removing some of the upstream sediment through

optimal tidal exchange. Lastly, the Regional Board already issued an NPDES permit for the proposed project.

42. Poseidon's desalination process would also include adding a number of chemicals to the water such as ferric sulfate, sulfuric acid and various cleaning chemicals. The discharge to the ocean is expected to include some relatively low concentrations of some of those chemicals.

Poseidon has incorporated state-of-the art ultrafiltration (UF) membrane pretreatment system supplied for the project by GE Water Technologies. This pretreatment system does not require the use of ferric sulfate and sulfuric acid for seawater pretreatment. The cleaning chemicals planned to be used for periodic maintenance of the desalination plant membranes will be collected in a separate tank, pretreated in this tank, and subsequently discharged to the sanitary sewer for further processing at the nearby wastewater treatment plant. As a result, the desalination plant discharge will be free from ferric sulfate, sulfuric acid and cleaning chemicals.

43. Page 43, paragraph 1 - Poseidon is proposing a discharge of 40 ppt salinity when EPA recommends a maximum allowable discharge of 38.4 ppt in areas permanently occupied by food and habitat forming plants.

The Regional Board approved a 40 ppt salinity discharge when it issued an NPDES permit for the project. The EPA standard is not applicable here. EPA (1986) policy on discharge effects related to salinity acknowledges that fishes and other aquatic organisms are naturally tolerant of a range of dissolved solids concentrations (in this case salinity) and must be able to do this in order to survive under natural conditions. Also, marine species do exhibit variation in their ability to tolerate salinity changes. EPA (1986) recommendations state that, in order to protect wildlife habitats, salinity variation from natural levels should not exceed 4 parts per thousand (ppt) from natural variation in areas permanently occupied by food and habitat forming plants when natural salinity is between 13.5 and 35 ppt. The food and habitat forming plants located in the vicinity of the proposed project are found in the subtidal hard bottom habitat located 2,000 feet offshore to the north and to the south of the discharge channel. The EPA standard is not applicable to the area immediately offshore of the discharge channel which does not support food and habitat forming plants.

As applied to the proposed project, operational conditions that do not elevate salinities above 38.4 ppt (34.4 ppt upper limit of the natural variation in salinity plus EPA recommended variation of 4 ppt) in the subtidal hard bottom habitat are fully protective of the food and habitat forming plants living offshore. The 40 ppt discharge limit established by the Regional Board ensures that this standard will be met, because, under the worst case operational conditions (minimal natural mixing conditions), the discharge salinity would be reduced to 36 ppt within 1,000 feet of the discharge channel. The salinity range of the mixed discharge from the Carlsbad seawater desalination plant and

the power plant would never exceed 40 ppt at the point of discharge. Also, the discharge will be rapidly diluted to near 36.5 ppt (i.e., within 10 percent of the ambient salinity of 33.5 ppt) within the zone of initial dilution (ZID), which is within 1000 feet of the discharge channel. It should be noted that these thresholds do not represent the absolute tolerance level of local species that could be affected, and that the actual maximum exposure thresholds may be higher. The selected maximum salinity level of 40 ppt is a conservatively estimated threshold for extended exposure established for the site-specific conditions of the proposed project.

To specifically address effects on local marine organisms, Poseidon conducted studies to determine the threshold salinity levels at which adverse effects to local marine species would occur. The purpose of the studies was also to determine whether the historic EPS flow would provide an acceptable dilution rate in consideration of the proposed operational characteristics of the desalination plant. The Salinity Tolerance Investigations study (Le Page, 2005) examined the effects of the predicted salinity levels for the desalination operating parameters. This study examined the effects of long-term exposure on organism behavior and vitality to predicted salinity levels ranging from 36 ppt to 40 ppt.

The results of those and other studies formed the basis for the 40 ppt maximum salinity discharge limit established by the Regional Board (Order R9-2006-0065). Important to the Regional Board's determination of appropriate threshold were the conclusions of the studies that no significant effects were identified on local marine organisms with salinity levels ranging from 36 ppt to 40 ppt. Similar, Carlsbad's EIR determined that the project's discharge would have no salinity-related impacts. See EIR at 4.3-48.

44. Page 43, paragraph 3 - Poseidon provided test results showing that a 40 ppt salinity level would cause minimal acute effects to several test organisms; however, these organisms are not representative of the full suit of marine life living in these nearshore waters and benthic habitat..

The Comprehensive Salinity Tolerance Study and site-specific analysis completed for the Carlsbad project by Dr. Steven Le Page and Dr. Jeffrey Graham and peer reviewed by a number of environmental experts indicates that the discharge of the desalination plant will be environmentally safe and will not exhibit acute or chronic toxicity. The salinity range of the mixed discharge from the Carlsbad seawater desalination plant and the power plant would never exceed 40 ppt at the point of discharge. Also, the discharge will be rapidly diluted to near 36.5 ppt (i.e., within 10 percent of the ambient salinity of 33.5 ppt) within the zone of initial dilution (ZID), which is within 1000 feet of the discharge channel.

The results of the salinity tolerance evaluation completed for the Carlsbad desalination project were well accepted by the state and local regulatory agencies responsible for

environmental protection in California. These results were also used for the environmental review and permitting of the 50 MGD Carlsbad project. In August 2006 this project received an NPDES Permit. In addition, the Salinity Tolerance Investigation described herein was recognized by the American Academy of Environmental Engineers, which recently awarded Poseidon Resources the 2006 Grand Prize for Applied Research for work completed at the Carlsbad desalination demonstration plant, including this study. In September 2006 this work also received the 2006 Global Grand Prize in the “Applied Research” category by the International Water Association – the highest recognition for innovation in the water and wastewater research field worldwide.

The Salinity Tolerance Study included long term (5.5 months) exposure of 18 marine species inhabiting the discharge area to a typical discharge salinity of 36 ppt. A list of test marine species is presented in Table 1. The test species were chosen due to their known existence in the subject area.

Table 1 - Marine Species Used for the Carlsbad Biometrics Test

	Scientific Name	Common Name
1	<i>Paralichthys californicus</i>	California halibut
2	<i>Paralabrax clathratus</i>	Kelp bass
3	<i>Paralabrax nebulifer</i>	Barred sand bass
4	<i>Hypsoblennius gentilis</i>	Bay blenny
5	<i>Strongylocentrotus franciscanus</i>	Red sea urchin
6	<i>Strongylocentrotus purpuratus</i>	Purple sea urchin
7	<i>Pisaster ochraceus</i>	Ochre sea star
8	<i>Asterina miniata</i>	Bat star
9	<i>Parastichopus californicus</i>	Sea cucumber
10	<i>Cancer productus</i>	Red rock crab
11	<i>Crassadoma gigantea</i>	Giant rock scallop
12	<i>Haliotis fulgens</i>	Green abalone
13	<i>Megathura crenulata</i>	Giant keyhole limpet
14	<i>Lithopoma undosum</i>	Wavy turban snail
15	<i>Cypraea spadicea</i>	Chestnut cowrie
16	<i>Phragmatopoma californica</i>	Sand castle worm
17	<i>Anthropleura elegantissima</i>	Aggregating anemone
18	<i>Muricea fruticosa</i>	Brown gorgonian

The results of the 5.5 month test of exposure of the 18 species to typical discharge salinity of 36 ppt indicate that all organisms remained healthy throughout the test period. No mortality was encountered and all species showed normal activity and feeding behavior. The appearance of the individuals remained good with no changes in coloration or development of marks or lesions.

These materials have been provided to the Coastal Commission Staff

In addition, a 19-day salinity tolerance test was completed on species which are known to be highly susceptible to environmental stress: (1) the Purple sea urchin (*Stronglyocentrotus purpuratus*), Figure 1; (2) the Sand dollar (*Dendraster excentricus*), Figure 2; and (3) the Red Abalone (*Haliotis rufescens*), Figure 3.

During these tests all individuals of the three tested species behaved normally and exhibited their usual movement patterns, and fed regularly. Also, the three test species active had survival rate of 100 %, which confirms that they have adequate salinity tolerance to the desalination plant discharge in the entire range of operations of the desalination plant (i.e., up ≤ 40 ppt at the end of pipe and averaging ≤ 36 ppt within the ZID).

In summary, the Salinity Tolerance Study completed for the Carlsbad seawater desalination project confirms that the elevated salinity in the vicinity of the plant discharge would not have a measurable impact on the marine organisms in this location and these organisms can tolerate the entire range of elevated salinity of 35 to 40 ppt to which they may be exposed as a result of the operation of the desalination plant.

Additional acute and chronic toxicity studies completed subsequently for this project using the United States Environmental Protection Agency's standard whole effluent toxicity (WET) test have confirmed the validity and results of the Salinity Tolerance Study. WET testing using Abalone (*Haliotis rufescens*) showed that the chronic toxicity threshold for this species occurs at greater than 40 ppt salinity. An acute toxicity test completed using another standard WET species, the Topsmelt (*Atherinops affinis*), indicates that it tolerates exposure to a salinity above 50 ppt and will therefore be unaffected by the 40 ppt discharge.

45. Page 43, paragraph 3 - Species used in Poseidon's tests are generally considered more salinity tolerant than others, so the test results likely do not reflect actual effects that would occur to species exposed to these high salinity levels in the natural environment. For example, a State Board proposal to establish a salinity limit in the state's Ocean Plan includes a proposed limit of 36.5 ppt based on study results show that level caused adverse effects to sea urchin embryos.

See Response Above. The statement that species used in the Poseidon test are generally considered more salinity tolerant than others is inaccurate. Abalone, Sand Dollar and Red Sea Urchin used for the test are standard EPA-approved species selected as test marine organisms exactly for their sensitivity to changes in marine water quality. See EIR at 4.3-48 ("These species were chosen due to their known susceptibility to environmental stress."). In addition, these and the other 18 test species used for the Salinity Tolerance Study are collected from their natural habitat in the area of the desalination plant discharge and the Agua Hedionda Lagoon and are therefore reflective of the site-specific marine fauna of the area of the discharge. Sea urchins, referenced in

These materials have been provided to the Coastal Commission Staff

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the Coastal Commission staff comment, were also tested and no negative effects on these species were observed.

The statement that the California State Water Quality Control Board (State Board) has proposed a limit of 36.5 ppt, insinuated by Coastal Commission staff report is inaccurate and misleading. In their Scoping Document of June 2007, the State Board has indicated that they are considering three possible actions regarding the incorporation of salinity limit in the next Ocean Plan : (1) No Action; (2) Narrative Water Quality Objective; (3) Numeric Water Quality Objective. The State Board referenced a 1992 SCCWRP Study associated with a salinity level of 36.5 mg/L which reported potential impact on sea urchin embryos at this salinity. However, in the same Scoping Document the State Board acknowledged that *“this option (i.e., numeric water quality objective) may be too prescriptive for Regional Water Boards in addressing the natural background (different in different portions of the State’s ocean waters).”*

In addition, the results of the 1992 SCCWRP Study referenced by the CCC staff as a proof of a problem with sea urchin embryos at 36.5 ppt, clearly indicate that the tests are inconclusive because *“All reference toxicant samples for the urchin embryo development test, including controls, had poor development.”* This means that the test results are inconclusive at best. Otherwise, the urchin embryos in the controls which contained no desalination plant concentrate would have developed normally and they did not. In addition, the same report concluded that *“The desalination waste brine was not toxic to amphipods, kelp spores, or sea urchin embryo at concentrations expected to occur in the field.”*, which conclusion does not contradict the findings of the Salinity Tolerance Study completed for the site-specific conditions of the Carlsbad desalination project. Poseidon’s site-specific studies have been well accepted by all of the other agencies that have considered them.

46. Page 43, paragraph 3 - Other studies show that slight differences in salinity levels can affect the population density of various species, their ability to tolerate various environmental stressors, reproductive rates, and other effects.¹⁹

The referenced reports (i.e., Technical Report 39: San Francisco Estuary Regional Monitoring Program for Trace Substances, Result of the Benthic Pilot Study and article by Glen Modica “Influence of salinity and temperature on acute toxicity of cadmium on *Mysidopsis bahia*, Environmental Contamination and Toxicology, January 1990) are completely irrelevant for the site-specific conditions of the Carlsbad seawater desalination project because of the drastically different flora and fauna, salinity range, and cadmium content of the bottom sediments of the San Francisco Estuary as compared

¹⁹ See, for example, Technical Report 39: San Francisco Estuary Regional Monitoring Program for Trace Substances, Result of the Benthic Pilot Study, August 2000; and Voyer, R.A., and Glen Modica, Influence of salinity and temperature on acute toxicity of cadmium on *Mysidopsis bahia*, in Environmental Contamination and Toxicology, Vol. 19:1, January 1990.

to the open area surrounding the desalination plant discharge in Carlsbad. In addition, the San Francisco Estuary is well known for the extremely high levels of cadmium contained in the bottom sediments and toxicity associated with it. Such conditions do not exist in the vicinity of the Carlsbad seawater desalination plant discharge.

The Carlsbad Salinity Tolerance Study used concentrate produced by a seawater desalination demonstration plant to complete all toxicity and salinity tolerance tests. Using concentrate of the same chemical makeup as that of the full-scale desalination plant accounts for the interaction and cumulative effects of all chemical constituents in the seawater desalination plant discharge.

47. Top of page 44 - Poseidon's discharge would include some as-of-yet unknown amounts of other constituents that would enter the discharge from various materials or methods used in the proposed facility. As noted above, these include various chemicals and the dead organic matter from organisms entrained in the intake.

This statement is speculation; not based on actual facts or data. As a part of the project environmental review and NPDES Permitting process, Poseidon has collected and reported the water quality and the fate of all waste streams that will be generated by the desalination facility. These water quality data are included as attachments to the project EIR and the NPDES permit application for the Carlsbad Project.

The desalination plant intake and discharge was analyzed for "dead organic matter" by measuring the concentration of the desalination plant intake and discharge biochemical oxygen demand (BOD). The BOD concentration of these streams was found to be below 5 mg/L. If a given water contains large amount of "dead organic matter", the water will exhibit a higher biological oxygen demand.

48. Top of page 44 - Additionally, Poseidon has not conducted tests to determine the chronic effects of its proposed discharge. Its NPDES permit requires Poseidon conduct those test before beginning operations, but they have not yet been conducted.

This statement is inaccurate. Poseidon submitted the results of comprehensive chronic toxicity testing study to the San Diego Regional Water Quality Control Board and the CCC staff earlier this year. The San Diego Regional Water Quality Control Board (Regional Board) NPDES Permit Order R9-2006-0065 for the Carlsbad desalination project establishes salinity limits of the blended desalination plant/cooling water discharge of 40/44 ppt (daily/hourly average). These permit salinity limits were established based on a conservative analysis of the desalination plant discharge completed during the environmental impact report preparation phase of the project. In order to more accurately determine the salinity threshold at which the desalination plant

concentrate can be discharged safely, Section VI.2.c.1 of the adopted NPDES Permit order requires the discharger to conduct a study using Carlsbad desalination project pilot plant effluent to assess short-term exposure of test species to salinity concentrations that range from 36 to 60 parts per thousand (ppt).

The purpose of this study is to determine the threshold of concentration of total dissolved solids (TDS or salinity) of the discharge from the Carlsbad desalination project below which short-term exposure (30 minutes to 24 hrs) of standard test organisms to this discharge does not cause acute toxicity. The study was completed to fulfill Poseidon Resources obligations under the requirements of Order No. R9-2006-0065 of August 16, 2006, of the San Diego Regional Water Quality Control Board, Section VI.C.2.c.1: “Salinity-Related Toxicity Threshold for Short-Term Exposure”. The toxicity testing was completed in accordance of Study Plan reviewed and approved by the Regional Board staff. The test results indicate the following:

- The NPDES permit daily average and maximum hourly salinity limitations of 40 ppt and 44 ppt are conservative.
- The NPDES permit acute toxicity unit (“TUa”) Performance Goal of 0.765 is not exceeded until salinity reaches 48 ppt and is safely met at salinity of 46 ppt or less.
- Current NPDES permit average hourly salinity limitation of 44 ppt is also very conservative. The test data indicates that no mortality effect was observed for a period of 2 hours at discharge salinity of 60 ppt.

Concentrate of salinity of 46 ppt and acute toxicity level TUa of 0.65 complies with a reasonable margin of safety with the NPDES acute toxicity TUa performance goal of 0.765. Therefore, 46 ppt of concentrate salinity level could be considered as an acceptable and conservative salinity-related toxicity threshold for short-term exposure.

49. Page 44, first full paragraph - Based on the above, Poseidon’s proposed discharge would likely cause adverse effects to organisms in from about eight to 44 acres of nearshore benthic habitat.

In accordance with the State Board’s Ocean Plan, the Regional Board issued to Poseidon a Permit with an average daily effluent limitation of 40 ppt for salinity after determining that no impacts to the marine environment occur at this level. In issuing Order R9-2006-0065, the Regional Board adopted a finding that the permit will be fully protective of all beneficial uses applicable to the Pacific Ocean in the vicinity of the discharge including marine habitat.

The Regional Board adopted the Order, in part, based on the multi-year, multi-disciplinary studies, results of which have been briefly discussed above and have been presented to the CCC staff on numerous occasions during the coastal development permit process for the proposed project. The comprehensive, peer-reviewed scientific evidence clearly indicates that the desalination plant discharge will be environmentally safe and the impact on the aquatic environment in the area of discharge will be insignificant.

50. Routing the discharge to the sewer or evaporating the water would eliminate the discharge.

As described in the project EIR in Section 6.2, the Encina Wastewater Treatment Plant does not have sufficient capacity, is not designed to handle highly corrosive concentrated seawater, and introduction of desalination facility discharge into the waste water collection system would render the City of Carlsbad's recycled water supply unusable. Carlsbad currently meets 20 percent of its water demand through the use of recycled water. Evaporating the concentrated seawater is an extremely expensive energy and land intensive process.

51. Poseidon would need to provide compensatory mitigation for the adverse effects its discharge would cause to some area of the seafloor.

As explained in Poseidon's previous responses to Commission staff dated January 19, 2007 and June 1, 2007, the Regional Board has appropriately conditioned all potential discharge-related impacts of the proposed project to ensure compliance with Clean Water Act and Ocean Plan requirements.

Section 30412 of the Coastal Act acknowledges that the State Board and the Regional Board have "primary responsibility for the coordination and control of water quality" and prohibits the Commission from "modify[ing], adopt[ing] conditions, or tak[ing] any action in conflict with any determination by the [State Board] or any California regional water quality control board in matters relating to water quality" In accordance with the State Board's Ocean Plan, the Regional Board issued to Poseidon a Permit with an average daily effluent limitation of 40 ppt for salinity after determining that no impacts to the marine environment occur at this level. The Staff therefore is prohibited from seeking to impose salinity levels, such as 10% above 33.5 ppt, or 36.9 ppt, which would conflict with the Regional Board's determination.

The Regional Board established the salinity effluent limitation "[o]n the basis of available salinity effects information," as it found this limit necessary "to prevent salinity-related acute toxicity effects ... and to prevent degradation of marine species." Permit at 12. Available information, including studies and analyses submitted by Poseidon, as well as the results of a technical literature review, "indicate[d] that no salinity-related [toxicity] effects would occur in receiving waters if salinity levels ... are maintained below 40 ppt." Id. at F-18. In addition, "information submitted by [Poseidon] indicates that salinity concentrations up to 44 ppt will not likely cause violations of Ocean Plan's acute toxicity

standards.” Id. at F-37. Furthermore, salinity impacts were analyzed in the EIR for the desalination plant, which concluded that such “impacts to ocean water quality resulting from desalination plant operations would be less than significant.” EIR at 4.7-21.

Thus, the Commission’s actions would conflict with the Regional Board’s determination that 40 ppt is the level at which no impacts would occur if it were to require mitigation for salinity levels that the Regional Board has determined not to be harmful to receiving waters. In addition, the Commission Staff’s proposed threshold of 36.9 ppt does not account for any dilution in the mixing zone in the immediate vicinity of the discharge. The Staff’s failure to take such mixing and dilution into account conflicts with State Board policy followed by the Regional Board. The State Board requires that “[w]aste effluents shall be discharged in a manner which provides sufficient initial dilution to minimize the concentrations of substances not removed in the treatment.” Ocean Plan at 11. The Ocean Plan specifically requires that this initial dilution be considered in determining compliance with water quality objectives and in setting effluent limitations. The Ocean Plan defines “initial dilution” as “the process which results in the rapid and irreversible turbulent mixing of wastewater with ocean water around the point of discharge.” Id. at 26.

Dischargers into ocean water must comply with water quality objectives, which are set forth in the Ocean Plan. Id. at 6, 7-9. In evaluating whether a discharger complies with water quality objectives, initial dilution must be accounted for: “Compliance with the water quality objectives ... shall be determined from samples collected ... where initial dilution is completed.” Id. at 4 (emphasis added). The Ocean Plan also sets forth procedures to calculate effluent limitations, which may be imposed on a discharge to ascertain that it will comply with water quality objectives. Effluent limitations must be imposed “such that the ... water quality objectives shall not be exceeded in the receiving water upon completion of initial dilution ...” Id. at 13 (emphasis added). The Ocean Plan provides a formula for calculating effluent limitations; the formula requires consideration of the minimum probable initial dilution Id. at 15. Thus, when effluent limitations are established for a discharge, they account for initial dilution, as required by the Ocean Plan.

The Regional Board implemented these Ocean Plan requirements for accounting for initial dilution, both in determining compliance with water quality objectives and in calculating effluent limitations. The Permit requires compliance with all water quality objectives, including that for salinity. Permit at 17. The Permit states that “water quality objectives ... shall not be exceeded outside of the zone of initial dilution as a result of discharges from the Facility,” id., conforming to Ocean Plan requirements. In addition, the Regional Board established effluent limitations for multiple pollutants, including salinity, in conformance with procedures provided in the Ocean Plan. Id. at F-32 (“From the ... water quality objectives of the Ocean Plan, effluent limitations are calculated according to the... equation [set forth in the Ocean Plan]”). Thus, as required by the Ocean Plan, the Regional Board accounted for initial dilution in setting effluent limitations. If the Commission were to require mitigation for salinity levels in discharge

without accounting for initial dilution, the Commission’s actions would conflict with the State Board’s determination that initial dilution should be considered, as discussed in the Ocean Plan, and the Regional Board’s consideration of initial dilution, as required by the Ocean Plan and set forth in the Permit.

Finally, we are unaware of the Coastal Commission previously requiring consideration of discharges resulting in salinity levels outside the natural range of variability, notwithstanding that hundreds of discharges subject to Commission review – including virtually every wastewater treatment plant discharging to the Pacific Ocean – result in such salinity changes. In the past, the Commission has determined that applicable water quality and marine resource policies of the Coastal Act are satisfied when: (i) adequate monitoring is in place; and (ii) the Regional Board has determined that the discharger’s effluent complies with applicable Clean Water Act and Ocean Plan requirements. See, e.g., California Coastal Commission Staff Report and Recommendation on Consistency Certification No. CC-028-02. In its issuance of an NPDES Permit to Poseidon, the Regional Board addressed both of these requirements.

As discussed in our previous responses to staff, the Permit establishes extensive monitoring and reporting requirements. Permit at 22, E-1 to E-15. Salinity must be monitored weekly at two locations. Id. at E-5, E-8. The Permit “may be modified [or] revoked and reissued ... [t]o include an effluent limitation if monitoring establishes that the discharge causes, has the reasonable potential to cause, or contributes to an excursion above [a] ... water quality objective.” Id. at 19. In addition to imposing monitoring requirements, the Regional Board determined that Poseidon’s effluent, discharged pursuant to the provisions of the Permit, would comply with the requirements of the Clean Water Act and the Ocean Plan. Id. at 6 (“This [Permit] is issued pursuant to section 402 of the Federal Clean Water Act ... and [Porter-Cologne].”), 8 (“Requirements of this [Permit] implement the Ocean Plan.”). Because the Regional Board has established adequate monitoring and compliance with Clean Water Act and Ocean Plan requirements, the applicable water quality and marine resource policies of the Coastal Act are satisfied, and no additional mitigation is warranted.

52. Pages 47-48 - Agua Hedionda Lagoon is one of 19 coastal wetlands identified in the California Department of Fish and Game identifies high priority wetlands for acquisition, based primarily on their values for fish and wildlife habitat and threats to their continued existence as a natural resource. Areas of the lagoon where the plant and animal life is especially valuable due to its special nature in the ecosystem include the Agua Hedionda Lagoon State Marine Reserve and Ecological Reserve, which cover about 180 acres extending along about a half-mile of the lagoon’s Inner Basin. The lagoon includes extensive areas of open water habitat, eelgrass beds, and various types of wetlands, and provides significant habitat benefits to a number of species, as described in previous section of these Findings. Those Findings also show that Poseidon’s proposed use of estuary water would create adverse entrainment

These materials have been provided to the Coastal Commission Staff

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effects equal to the loss of no less than about 37 acres of Agua Hedionda's wetland and open water areas.

The pristine ecological state of the Agua Hedionda Lagoon, as described above, is the direct result in large part of the Encina Power Plant's maintenance of the lagoon.

In Spanish, Agua Hedionda literally means "stinking water". This was an accurate description of the stagnant wetlands before the Encina Power Station was commissioned in 1952. For over 50 years, the operators of the power plant have regularly maintained the lagoon and dredged an opening to the ocean to sustain a source of seawater to cool the power plant's generators.

As a result, today the 388-acre Agua Hedionda Lagoon is a man-made, shallow coastal embayment teeming with marine life and an array of recreational and educational activities, including environmental research. The lagoon supports a thriving marine ecosystem and is home to the Hubbs-SeaWorld fish hatchery, the Carlsbad Aquafarm, YMCA Camp, a commercial boating operation, private residences including a small-craft marina, an ecological preserve run by the California Department of Fish and Game, and the Lagoon Foundation's Discovery Center.

The seawater cooled power plant is expected to be decommissioned in the coming years, leaving the lagoon without an entity responsible for its long-term maintenance. Locating the new seawater desalination plant next to the Encina Power Station solves this problem by introducing a new lagoon steward.

Over the last 50 years, the flow of water through the power plant averages 600 million gallons per day. The Carlsbad Desalination Project will require 304 million gallons per day, half of the power plant's water use. Since the Agua Hedionda Lagoon provided a vibrant and productive marine environment while the power plant circulated and average of 600 million gallons per day, then Poseidon's reduced usage will achieve a net environmental benefit.

Over eight years of scientific research and environmental study by leaders in the field, including the Scripps Institute of Oceanography, have proven that the project will not have a significant, unmitigable impact on the marine environment. This conclusion is true for all operating conditions studied, including the foreseen scenario when the Encina Power Station is decommissioned and no longer using the seawater in-take and out-fall infrastructure. This conclusion is also universally held by permitting agencies and the regulatory community including the City of Carlsbad, Regional Water Quality Control Board, California Department of Health Services and the State Lands Commission.

The Coastal Commission staff acknowledged that under the current circumstance where the power plant is extracting considerably more water out of the lagoon than the desalination facility will after the power plant is retired "Agua Hedionda Lagoon continues to provide significant habitat values."

These materials have been provided to the Coastal Commission Staff

Poseidon Resources wholeheartedly agrees, which is why we have committed to step into the power plant's responsibilities when the generating plant is decommissioned and serve as the lagoon's steward. Poseidon's commitment to expand the lagoon's public boundaries, sustain a clean and healthy watershed and dredge a permanent opening to the Pacific Ocean will guarantee that these vital coastal wetlands are preserved. Specifically, approval of the project will result in the dedication of over 15 acres of lagoon and oceanfront land for public access and recreation, and for the expansion of the Hubbs-SeaWorld fish hatchery. These private land contributions aid the California Department of Fish and Game's goal of acquiring "high priority wetlands, based primarily on their values for fish and wildlife."

The value of this commitment is evident by the project's endorsement by the Agua Hedionda Lagoon Foundation, Hubbs Seaworld Fish Hatchery, Carlsbad Aquafarm and every lagoon user, which all have concluded the desalination project is essential to the long-term health of the lagoon's ecosystem.

Augmenting the commitment to the Agua Hedionda Lagoon, Poseidon has prepared a Coastal Habitat Restoration and Enhancement Plan, which includes a commitment to restore 36.8 acres of wetland habitat.

This level of mitigation is not only consistent with the applicable policies of the federal, state, regional and local regulatory agencies, it exceeds the Coastal Commission's own mitigation formulas and will result in the addition of valuable acreage for wetland species completely unaffected by the desalination plant's operations.

53. Page 48, first full paragraph - Agua Hedionda Lagoon is on the state's list of impaired water bodies due to high rates of sedimentation, which are caused in part by the power plant's intake and would continue due to Poseidon's proposed use of the intake.

Inspection of CWA documents on file at the San Diego Regional Water Quality Control Board reveals that the 303(d) listing of Agua Hedionda Lagoon as an impaired water body is based on fine-grained sedimentation discharged by urban run-off into the lagoon from the neighboring watersheds (predominately by Agua Hedionda Creek), impacting 6.8 acres primarily located in the east basin of the lagoon. There is no physical mechanism by which the Carlsbad Desalination Project can affect this urban run-off into the lagoon.

54. Bottom of page 48 - The State Lands Commission conducted environmental review of the proposal and published in January 2005 a Draft EIR that provided a comprehensive and independent assessment of the effects caused by dredging in Agua Hedionda.

These materials have been provided to the Coastal Commission Staff

This is not an accurate characterization of the DEIR. There is no “comprehensive and independent assessment of the effects caused by dredging in Agua Hedionda” presented in the DEIR. Only a few historic dredge numbers can be found in the technical portions of the DEIR along side various qualitative statements about greater or lesser amounts of dredging in relation to the alternatives considered. The only analysis in the DEIR that would qualify as a comprehensive assessment was done in regards to beach erosion and how the jetty restoration vs other alternatives might impact that erosion (ref., Section 4.2 Hydrology and Water Quality).²⁰

55. Page 49, paragraph following bullet list - In regards to the “environmentally superior alternative” (the offshore intake) staff writes, “It also found that maintenance dredging of about 20,000 cubic yards per year from near the lagoon’s mouth would be adequate to maintain tidal flows in the lagoon, which would help continue the lagoon’s other existing beneficial uses.

This number appears only in the Executive Summary of the DEIR. No where in the supporting text (Section 3.3 Alternatives Evaluated in EIR/ER) or in the technical sections (Section 4.2 Hydrology and Water Quality) is this number ever substantiated or even mentioned.

56. Page 50, first full paragraph - Additionally, the EIR’s identification of those significant impacts led to its selection of an environmentally preferred alternative that would require dredging only about 20,000 cubic yards per year from the lagoon mouth rather than Poseidon’s identified dredging of over 100,000 cubic yards per year average within the lagoon’s West Basin.

The analysis of the environmentally preferred alternative (the offshore intake) in the DEIR is minimal and would probably not pass peer review. While the executive summary gives 5 paragraphs of discussion about the environmentally preferred alternative, only two paragraphs are found in the main body and technical sections of the DEIR: one paragraph on page 3-6 that describes it as 30 foot diameter, 3000-foot-long pipeline with an offshore intake structure placed at an ocean depth of 30 feet; and a second paragraph in the Hydrology and Water Quality Section on page 4.2-20 that acknowledges its construction would disturb the ocean bottom and increase turbidity. There are no references anywhere in the text of the DEIR to more detailed studies about the environmentally preferred alternative, and inspection of the reference list in Section 8.0 reveals no reports having anything about offshore intakes in the titles. There are clearly inadequacies with the DEIR documentation of this alternative that preclude it from being applied to a stand alone desalination facility at Agua Hedionda. Intake flows of 304 mgd for the stand alone desalination plant would produce flow velocities of only 0.66 ft/sec in the pipeline. These flows are insufficient to prevent the pipeline from developing a sand

²⁰ DEIR, 2005, “Agua Hedionda Lagoon Northern Jetty Restoration Project Environmental Impact Report/Environmental Assessment”, California State Lands Commission & MWH, January 2005, 9 Sections and 3 Append.

plug.²¹ Also, the DEIR gives no consideration to bio-fouling of the pipeline and the impacts associated with the repeated loss of marine life that would be routinely killed during de-fouling maintenance cycles of the pipeline. A stand-alone desalination plant would not have the option to de-foul the pipeline by heat-treatment, leaving chlorination as the only viable option, with all its associated polluting impacts, none of which are considered in the DEIR. As noted above, the 20,000 cubic yards per year dredging estimate for what it might take to maintain tidal circulation in the lagoon with the offshore intake alternative is completely unsubstantiated in the DEIR. This is actually a very difficult number to estimate, (because the lagoon has never operated under such conditions), and demands some kind of explanation for how it was obtained. The Poseidon study²² estimates that the dredging burden would be 89,000 cubic yards per year if no lagoon water were consumed, and this number is consistent with a study that appeared in the reference list of the DEIR²³ but was never considered in the text of the DEIR. Regarding which estimate is probably more accurate, consider the fact that the nearest neighbor, Batiquitos Lagoon, has been dredged an average of 26,000 cubic yards per year since 1999, and that level of effort has not kept pace with the tidally driven sediment infilling of the lagoon.²⁴ The over riding reality at Agua Hedionda is that it is not a natural system and was originally constructed from a grading plan that places the majority fraction of tidal prism above mean sea level.²⁵ Such a distribution in the lagoon's storage volume causes the tidal transport through the ocean inlet to be flood tide dominated, even without the consumption of lagoon water. Because of flood tide dominance, maintenance dredging of the west basin would still be required every 3 years to sustain existing beneficial uses of the lagoon, even if no lagoon water is taken for power generation or desalination.²⁶

57. Page 50, first full paragraph - The EIR's independent and more comprehensive analysis provides a credible assessment of the type and degree of impacts that

²¹ Jenkins, S. A., D. L. Inman & J. A. Bailard, 1980, "Opening and maintaining tidal lagoons and estuaries," *Proc. 17th Int. Coastal Eng. Conf.*, Amer. Soc. Civil Eng., v. 2, p. 1528-1547. Jenkins, S. A., Inman, D.L., Michael D. Richardson, M.D., Thomas F. Wever, T.F. and J. Wasyl, 2007, "Scour and burial mechanics of objects in the nearshore", *IEEE Jour.Oc.Eng*, vol. 32, no. 1, pp 78-90.

²² Jenkins, S. A. and J. Wasyl, 2007, "Comparative Analysis of Intake Flow Rate on Sand Influx Rates at Agua Hedionda Lagoon: Low-Flow vs No-Flow Alternatives," submitted to Poseidon Resources , Inc, 28 September 2007, 8pp

²³ Jenkins, S. A. and J. Wasyl, 1998, Coastal Processes Analysis of Maintenance Dredging Requirements for Agua Hedionda Lagoon, submitted to San Diego Gas and Electric Co., 176 pp. + appens.

²⁴ Jantz, Steve, Associate Engineer, City of Carlsbad Engineering Department. Phone communication 7 November 2007.

²⁵ Jenkins, S. A. and D. L. Inman, 1999, Sand transport mechanics for equilibrium in tidal inlets, *Shore and Beach*, vol. 67, no. 1, pp. 53-58. Jenkins, S. A. and J. Wasyl, 2005, "Coastal evolution model," Scripps Institution of Oceanography Tech. Rpt. No. 58, 179 pp + appendices.
<http://repositories.cdlib.org/sio/techreport/58/>

²⁶ Jenkins, S. A. and J. Wasyl, 2007, "Comparative Analysis of Intake Flow Rate on Sand Influx Rates at Agua Hedionda Lagoon: Low-Flow vs No-Flow Alternatives," submitted to Poseidon Resources , Inc, 28 September 2007, 8pp

These materials have been provided to the Coastal Commission Staff

would be associated with Poseidon’s proposed dredging. Additionally, the EIR’s feasible least damaging environmental alternative – that is, ending the use of the intake in the lagoon and instead using an offshore intake – would result in substantially reduced impacts, would restore a more natural longshore sand transport system, and would substantially decrease the amount of sand influx into the lagoon.

Given the fact that this DEIR was never certified, and was never subjected to the rigorous review process that is required for certification, this is not a credible statement. As cited above, the claims made for the offshore intake are un-substantiated in the two paragraphs about this alternative found in the main body of the DEIR. The central focus of the DEIR was to build an assessment that disqualified the jetty restoration as a viable alternative. Very little rigor was given in the assessment of the alternatives that were substituted for the jetty alternative. In the case of the offshore intake alternative, we find no references to detailed analysis of this alternative and claims in the executive summary were not supported by the text.

58. Page 52. There are a number of additional measures available that would minimize adverse environmental effects of dredging.

Poseidon’s proposed condition of approval, Special Condition 12, provides that Poseidon will apply for a separate CDP for any future dredging activities that will include the measures the Commission has imposed on Cabrillo Power in the past for dredging activities. Special Condition 12 ensures that any adverse environmental effects of dredging are minimized in conformity with the Coastal Act.

Section 2.5.4 – Energy Use and Greenhouse Gas Emissions

59. Page 56. “According to methods developed by the California Climate Action Registry (CCAR), Poseidon’s proposed electrical use would result in no less than 200,000,000 pounds of carbon dioxide emissions per year.”

The California Legislature established the California Climate Action Registry (“CCAR”) in 2001 by passing SB 1771 to be the state agency to establish protocols to help companies establish their carbon emission baselines, and to establish a reporting mechanism to annually update their emissions factor. This is the **only** state agency that is authorized by the California State Legislature to perform this function. The Coastal Commission has no authority to substitute its judgment for CCAR’s. CCAR has carefully established a specific Power Utility Protocol, based on internationally recognized protocols, to guide electric utilities like SDG&E in the calculation of the emissions factor for their delivered electricity or system power. Their reporting tool (CARROT) is a complex, comprehensive and detailed analysis that leads to an accurate and reliable emissions factor for each utility.

As set forth more fully below, the Staff Report’s purported reliance on the CCAR protocols to calculate the Carlsbad’s Project’s carbon footprint is incomplete. While use of the CCAR’s methods are appropriate, what the Staff Report fails to point out is that SDG&E – the expected source of system power for the Carlsbad Plant – has registered its “emission factor” for each megawatt-hour of energy produced, and that CCAR has certified those calculations in accordance with the CCAR protocol upon which the staff cites. The CCAR certified, registered emissions factor is 546.46 lbs of CO2/MWH for delivered SDG&E system power electricity, the source of power for the Carlsbad facility. (See Exhibit D , the certified SDG&E emissions factor registered with the CCAR.) Based on that emissions factor, the gross carbon footprint of the project is 61,004 metric tons of CO2 per year.

In footnote 59, the staff report erroneously sets forth a different and significantly higher emissions factor of 804.54 lbs of CO2/MWH for SDG&E power. However, the use of this figure ignores the unambiguous direction of the very protocol the Staff Report claims to follow. According to the protocol, “if your electricity provider reports an electricity delivery metric under the Registry’s Power/Utility Protocol, you may use this factor to determine your emissions, *as it is more accurate than the default regional factor.*” (CCAR General Reporting Protocol, Page 31. Emphasis supplied.)

What’s especially troubling about the Staff Report’s selective use of CCAR protocol and disregard of SDG&E’s certified emissions factor is the misleading implication that the emission rate used by Poseidon is somehow the product of Poseidon’s own “calculations.” (Staff Report, Page 64.) It is not. In fact, while Poseidon relies on SDG&E’s certified emission factor registered with the CCAR, it is CCC staff that favors its own analyses over the state’s legislatively mandated experts and calculates its own emissions rate based on more generalized and less accurate data. In addition, to justify its approach Staff simply compares various data and concludes – without clarifying that what is at issue is CCAR certified data – that the certified emissions rate relied on by Poseidon is just not high enough.

The Staff Report not only ignores the fact that Poseidon’s calculations rely on data certified by the CCAR, it also ignores that the SDG&E emissions factor certified by the CCAR is in line with other utilities that have also registered and certified their emission rates with the CCAR. As illustrated below, the emissions factor registered by SDG&E is well within the range of what other utilities have reported.

Utility	Report Year	CCAR Report Date	Emission Factor
SDG&E	2005	7-Mar-07	546
SDG&E	2004	16-Mar-06	614
PG&E	2005	1-Dec-06	489

PG&E	2004	12-Oct-06	566
SCE	2005	30-Jan-06	666
SCE	2004	6-Feb-06	679

As a result of Staff’s erroneous use of an emission rate well above the certified rate for SDG&E system power, Staff’s claim that “Poseidon’s proposed electrical use would result in no less than 200,000,000 pounds of carbon dioxide emissions per year” is also erroneous. (200,000,000 pounds equals 90,700 metric tons, the units normally used when calculating carbon footprints.) Based on CCAR certified data, emissions resulting from the Carlsbad Desalination plant’s electricity use is expected to be 61,004 metric tons of CO2 per year.

60. Page 56. “These analyses evaluate only those carbon emissions that would be generated by Poseidon’s electrical use for pumping and desalinating water and transporting it to Maerke Reservoir. . . . It also does not include emissions from the pumping needed to move part of Poseidon’s produced water to the regional distribution system.”

This is not correct. Poseidon’s energy usage and greenhouse gas calculations accounts for all phases of the facility’s operations, from the electricity required to pump raw seawater into the plant, to treating and purifying the water, to delivery to all points of use.

61. Page 57. “Because water is relatively heavy, it requires significant amounts of electricity to transport – for example, the State Water Project uses up to about 5 billion kilowatt-hours each year to move millions of acre-feet of water from Northern to Southern California. Its average demand per acre-foot is about 3,200 kilowatt-hours.”

This is not correct. The average electricity demand per acre-foot of water delivered through the State Water Project – including treatment, delivery and evaporative losses – is 3,400 kilowatt-hours (or 3.4 megawatt hours) (See Poseidon Resources October 21, 2007 Energy Use and Greenhouse Gas Production).

62. Page 57. “Poseidon’s proposal is expected to require no less than about 4,400 kilowatt-hours per acre-foot, about 40% more than the State Water Project. Further, in addition to the electricity needed to operate a seawater desalination facility, Poseidon’s proposal would require additional electricity to move the desalinated water from sea level to higher elevations where it can be distributed to end users.”

This is not correct. Poseidon’s expected energy requirement of 4,400 kilowatt-hours (4.4 megawatt-hours) per acre-foot accounts for the electricity required to transport water

from the plant to the point of delivery (See Poseidon Resources October 21, 2007 Energy Use and Greenhouse Gas Production).

63. Page 63. *“Poseidon’s most recent estimates show that it expects the project would use 4,833 kilowatt-hours to produce each acre-foot of potable water.”*

This is not correct. As set forth in Poseidon’s submittals and as recognized by staff on page 57 of its report, after accounting for efficiency measures that will reduce electricity demand by 10%, the Carlsbad operation is expected to require 4,400 kilowatt-hours to produce each acre-foot of potable water.

64. Page 63. *“Poseidon’s estimates also show that its expected continual electrical demand would be between 28.1 and 33.8 megawatts, with an average demand of about 30 megawatts. Using these figures, Poseidon’s electrical use would range from 246,156 to 296,088 megawatt-hours per year, with an average annual use of 262,800 megawatt-hours.”*

This is not correct. The Carlsbad project’s expected demand is 28.1 average megawatts of power per year, with a peak of 33 megawatts. As a result, the correct figure for the expected annual electricity demand is 246,156 megawatt hours per year. (See Poseidon Resources October 21, 2007 Energy Use and Greenhouse Gas Production).

65. Page 63. *“Along with this energy demand, Poseidon’s project would require a pump station in Oceanside that would use about 0.5 megawatt, or approximately 4,380 megawatt-hours per year.”*

This is not correct. Poseidon has configured the Carlsbad plant so it does not require a pump station at Oceanside, and the energy required to make the equivalent lift has been accounted for in Poseidon’s energy demand calculations for the facility.

66. Page 64. *“Along with the energy demand of the Oceanside pump station, Poseidon’s electrical use would be no less than about 250,000 megawatt-hours per year, which is used as the basis for the analyses in these findings. This would result in carbon dioxide emissions of about 200,000,000 pounds per year.”*

For reasons stated above, this is not correct. The Carlsbad project’s electrical use is expected to be 246,156 megawatt hours per year, and its expected annual emissions of carbon dioxide is 61,004 metric tons.

67. Page 64. *“As noted above, the analyses in these Findings do not include . . . electricity needed to move water from Maerke Reservoir 350 feet higher into the regional water distribution system, even though they could add substantially*

to the project's greenhouse gas contributions.”

As stated above, Poseidon's calculations include all electricity required to move water from the plant, into the regional water system (including from Maerkle Reservoir) and to the point of delivery.

68. Page 64. “Poseidon contends that its emission rate should be based on 546 pounds of carbon dioxide emissions per megawatt-hour, based on emissions expected from the energy sources in SDG&E's energy supply portfolio. This would result in about 84,000,000 pounds of carbon dioxide per year instead of 200,000,000 pounds.”

This statement is both misleading and incorrect. It is misleading because, as stated above, it fails to state that the emission rate of 546 pounds of carbon dioxide per megawatt-hour is the rate calculated by SDG&E and certified in accordance with CCAR protocol. Using the correct rate the Carlsbad's facility's carbon footprint is expected to be 61,004 metric tons per year, which equals approximately 134,400,000 pounds per year.

69. Page 64. “In comparing the SDG&E portfolio with the CCAR's average California portfolio, the SDG&E portfolio appears to result in an even higher emission figure than the California average. For example, coal and natural gas, which have average emission rates much higher than 804.54 pounds per megawatt-hour, make up a larger proportion of San Diego's portfolio than the state portfolio. Additionally, SDG&E testimony before the California Public Utilities Commission suggests its carbon dioxide emissions are in the range of 1100 pounds per megawatt-hour, based on an average of a range of natural gas technologies and heat rates. It appears, therefore, that Poseidon's calculations are in error.”

As stated above, this statement is both confusing and misleading. Rather than simply stating that it does not agree with the CCAR's certified emission rate for SDG&E system power, the staff report instead cites a variety of general information to support its belief that the certified rate is simply too low to serve staff's purposes.

Since Poseidon intends to buy all of its energy from SDG&E system power, the appropriate emission factor to use for the Project's indirect carbon emissions from its electricity purchases is SDG&E's annual emission factor for delivered electricity as stated in their California Climate Action Registry (CCAR) Annual Emissions Report. SDG&E last filed an Annual Emissions Report with the CCAR on March 7, 2007.

The California Legislature established CCAR in 2001 by passing SB 1771 to be the state agency to establish protocols to help companies establish their carbon emission baselines, and to establish a reporting mechanism to annually update their emissions factor. This is

the **only** state agency that is authorized by the California State Legislature to perform this function. The Coastal Commission has no authority to substitute its judgment for CCAR's. CCAR has carefully established a specific Power Utility Protocol, based on internationally recognized protocols, to guide electric utilities like SDG&E in the calculation of the emissions factor for their delivered electricity or system power. Their reporting tool (CARROT) is a complex, comprehensive and detailed analysis that leads to an accurate and reliable emissions factor for each utility.

In that report, which will be updated annually, the certified emissions factor for SDG&E for reporting year 2005 was 546.46 lbs of CO₂ per delivered MWH of electricity. In their 2004 CCAR Annual Emissions Report their emissions factor was 614, and it will likely be different in their upcoming 2006 Report and beyond. The table below shows that the emissions factor for the three major IOUs in California has changed for each utility over the past two years, and that each utility has a unique calculation based on their unique resource mix.

When the Project purchases system power from SDG&E, SDG&E will in turn purchase additional spot market power to meet the needs of the proposed Project. This power will be added to the overall mix of resources. When SDG&E adds 28 aMW to its nearly 1,900 aMW system, the system power emissions factor will change. However, given that the Project's load is but a small fraction of the overall SDG&E system (about 1.5%), the emissions factor will only increase slightly (about 2.2% to 558.43 using the 2005 Report and an emissions factor for spot market power of 804 as prescribed by the Power Utility Protocol). This change will be reflected in SDG&E's system power emissions factor in the following years' CCAR Annual Emissions Report.

Every new customer of SDG&E will slightly increase the emission factor of SDG&E because they will cause SDG&E to buy additional spot market power to serve this new load. This process is called "melding". It is the exact same process regulators use for establishing the utility electricity rate for all new customers. It would be inappropriate, and against common practice, to assign a marginal emission factor to each and every new SDG&E customers as they come on to the system. This would create a circumstance that has us grant all existing customers the old embedded emission factor for system power, and would assign a unique new emissions factor for each residential, commercial and industrial customer based on the marginal resource at that time. This would create a system that would be nearly impossible to administer and implement. It would also create turmoil in the new emerging carbon trading markets by requiring the tracking of each and every new and old customer and when they came onto their system so that would could calculate their unique emissions factor. SDG&E would eventually have hundreds of thousands of emission factors to report and monitor. Therefore, when a new customer adds new load to SDG&E by purchasing system power, its new load is melded into the price structure as well as the emissions factor of SDG&E. It is appropriate to use

a melded, and not a marginal, emissions factor for all new customers, including the Carlsbad facility.

The **only** known, certified, reliable, easily accessible over time emissions factor based on internationally accepted protocols for SDG&E system power is the one published annually by CCAR – 546 pounds of carbon dioxide per megawatt hour.

70. Page 65. *“In selecting an appropriate rate to use for these analyses, Commission staff used the standard figure from the Climate Action Registry.”*

This is not correct. As stated above, Commission staff – for reasons not clearly explained in its report – did not follow the standard CCAR protocol to use certified emission factors when they are available.

71. Page 66. *Poseidon’s proposed project does not ensure a decrease in imported water supplies to the San Diego Region.*

This is not correct. The Carlsbad facility will supply 56,000 acre-feet of water per year to the San Diego region, water that would otherwise have to be pumped into the region through either the State Water Project or the Colorado River Aqueduct. As stated by all Carlsbad desalination project water agency partners in letters to the State Lands Commission dated November 6 and November 7, 2007, that were provided to the Coastal Commission, water from the desalination plant will provide direct, one-for-one replacement of imported water to meet the requirements of their Urban Water Management Plans, thus eliminating the need to pump 56,000 acre feet of water into the region. *See Poseidon Resources Corporation. Letter to Paul Thayer Re: Desalination Project’s Impact on Imported Water Use, November 8, 2007.* including attachments from eight water agencies. Conversely, if the project is not approved the demand for imported water by the eight public water agencies will increase by 56,000 AF/Y starting in 2010.

If the replaced water is pumped into the region for other uses, then the associated carbon emissions from such pumping should be and is the responsibility of the proponents of those other uses. Any other result would be an unfair and unwarranted “double counting” of carbon emissions, requiring Poseidon to offset emissions caused by other activities not associated with its own operations.

In addition, only one of Poseidon's customers, the City of Carlsbad, will utilize water to serve customers in the coastal zone. The Coastal Commission has no authority outside of the coastal zone.

72. Page 74 – *Use of the proposed project site could reduce the site’s value as a designated location for a Coastal Power Plant expansion.*

The following excerpt from the City of Carlsbad Final EIR for the project confirms that the staff's concern about preserving the site's value for power generation has been addressed:

The site of the desalination plant was specifically selected so as not to conflict with two City of Carlsbad Redevelopment Plan goals. The first goal relates to facilitating the conversion and possible relocation of the existing power plant to a smaller more efficient facility. The second goal relates to the enhancement of commercial and recreational opportunities in the Plan area. After a careful consideration of the five options, it was determined that the proposed location, where Tank 3 is currently located, would create the least amount of constraints on any future conversion of the Encina Power Station. The five potential sites considered do not represent alternatives to the proposed project; instead, they are the results of the analysis conducted to determine in part the location of the desalination plant at the EPS that would best comply with the Redevelopment Plan goals.

73. Page 76, 4th paragraph - Public agencies wishing to buy Poseidon's water will need to pay more than anticipated and may likely need to raise their rates significantly.

Given the substantial documentation of the public water agency desalinated water purchase agreements provided to the Coastal Commission staff, the above suggestion is baseless. Eight public water agencies have entered into long-term agreements with Poseidon to receive desalinated water from the project. Under the contracts, the customers' price of water to be paid to Poseidon will not exceed that which would have otherwise been paid for the imported water supply from the San Diego County Water Authority. Poseidon will be responsible for all costs and risks associated with the permitting, development, construction and maintenance of the project.

74. Page 77, 1st paragraph - If the ratepayers were unwilling to pay the necessary rate increase, the water may go to the higher bidder, perhaps some distance from the area.

This suggestion is incorrect. 100% of the plant's 56,000 AF/Y of capacity is already subscribed to eight San Diego County public water agencies under long-term, 30-year contracts. The customers have committed to receive the agreed-upon amount of drinking water over a 30-year period, with the unilateral option to extend the agreement for two additional 30-year terms. Since the cost of the desalinated water cannot exceed that of the San Diego County Water Authority's charges for imported water that the agencies no longer would have to purchase,

any rate increases that Poseidon's public agency partners decide to enact would have occurred irrespective of the project.

75. Page 77, 1st paragraph - The project could lead to a loss of local decision-making ability about how to use the water and other losses that are not in the public interest.

This is incorrect. The entire plant output has been appropriated for public use by the public agency partners, ensuring that the water will remain in the public domain. The public water agencies, not Poseidon, will determine when, where and how the desalinated water is to be used. Since the public agency partners control the allocation and use of the water, local decision-making and governmental oversight is preserved.

76. Page 78, 2nd full paragraph - The project participants are not doing enough water conservation and water recycling.

This suggestion irresponsibly ignores the statutory responsibility of the San Diego County Water Authority (Authority) to manage the County's water resources. Contrary to Staff's suggestion that additional water conservation and recycling would render the proposed project unnecessary, The Authority has determined desalination is a vital and integral part of the region's future water supply mix. The Authority's water supply planning includes 56,000 acre-feet per year of local, desalinated seawater from the Carlsbad Desalination Project by 2011. It is important to point out that before adopting the 2005 Urban Water Management Plan, the Water Authority thoroughly studied, over the course of several years, increasing conservation and reclamation efforts beyond projected levels in lieu of seawater desalination. The Water Authority's Regional Water Facilities Master Plan and accompanying Programmatic EIR determined that such a strategy would jeopardize regional water reliability by relying on unproven and non-cost-effective conservation measures and recycled water use levels that were unrealistic given the current regulatory environment, the market shift that would need to occur, and the level of local investment required.

Since the early 1990's, the Water Authority and its member agencies have invested hundreds of millions of dollars in conservation efforts and recycling projects. The Water Authority will continue to aggressively pursue conservation and water recycling programs. Today, 9 percent of the region's water supply portfolio is the result of conservation and recycling efforts, and this number will jump to 17 percent by 2020.

Through rebate programs the Water Authority has installed 518,000 ultra-low-flush toilets, 600,000 water-saving showerheads, and 60,000 high-efficiency clothes washers. An additional 15,000 acre-feet of water has been saved through commercial-industrial-institutional hardware replacements. This past May, the Water Authority Board adopted a 5-year blueprint for water conservation that aggressively pursues savings in landscape.

The Water Authority's blueprint places a special emphasis on outdoor water conservation that we expect will increase our total water savings to 94,000 acre feet of water annually by 2020.

As a result of these efforts, per capita demand for water today is 178 gallons per day compared to 190 gallons per day in 1990. By 2020, this figure is expected to be reduced to 158 gallons per day.

Still, the region cannot recycle or conserve water it does not have, which is why the Water Authority and its member agencies are pursuing a water diversification strategy that not only puts an emphasis on conservation and water recycling, but on developing new local supplies like ocean desalination.

77. Additional information is needed regarding the change in power plant operations to fully identify the project's impacts and whether its significant adverse impacts are mitigated as required by CEQA.

This information has been provided to Coastal Commission staff numerous times over the past year. At the Coastal Commission staff's specific request, the Carlsbad City Council added a section to the Final EIR to address potential "standalone" operation of the desalination facility. In several locations in the Final EIR, in the City staff report and in the proceedings before the City Planning Commission and the City Council, the possibility of the desalination facility's standalone operations due to the potential cessation of once-through cooling by the Encina Power Plant was discussed and analyzed. The City concluded that standalone operation would not result in any new significant adverse environmental effects resulting from desalination facility operations. No evidence was presented to the City that standalone operations would result in any adverse impacts, and the City's consultants did not find any such adverse impacts. The Final EIR looked at a number of potential alternative seawater intake structures. The Final EIR also examined whether there were adverse impacts from the existing seawater intake system. The Coastal Commission staff simply dislikes the conclusions reached by the Final EIR in the analysis that was done by the City at their specific request.

78. Poseidon proposes to mitigate for its entrainment effects, but the current proposal is conceptual only and lacks the information needed for the Commission to determine that the project's entrainment effects will be fully mitigated.

See response 37, above.

79. Poseidon proposes to mitigate for its entrainment effects, but the current proposal is conceptual only and lacks the information needed for the

Commission to determine that the project's entrainment effects will be fully mitigated.

See responses 37 and 38.

80. The Commission does not yet have information needed to evaluate the growth that would result from the now-known service areas that Poseidon would supply.

The staff incorrectly states that the City of Carlsbad EIR did not look at potential growth inducement. In fact, the Final EIR examined growth inducement on the basis that all of the water would be used in the service area of the San Diego County Water Authority and concluded that the project would not have any effect on planned growth in the region. See EIR at Section 9. Each of the water districts planning to purchase water from the project is located within the San Diego County Water Authority. In addition, only one of Poseidon's customers, the City of Carlsbad, will provide water in the coastal zone, and the Coastal Commission lacks authority to regulate outside of the coastal zone. The EIR determined the project would not induce growth in Carlsbad. See EIR at 9-7.

81. Poseidon has yet to analyze the impacts of construction of a pipeline and pump station to deliver water to the regional aqueduct.

Staff correctly states that the City of Carlsbad EIR did not look at the potential impacts of facilities to deliver Poseidon's water from the desalination facility to all users in the region through the regional water distribution system. The Final EIR examined facilities to interconnect with several local water delivery systems and there are no plans at this time to connect the desalination facility to the regional water delivery system. Because all of the water districts in San Diego County are connected to the same imported water delivery system, it is not necessary for the desalination facility to be connected to the regional system to exchange water among the agencies located in close proximity to the plant and those that are located outside the reach of the desalinated water delivery system.