

RESPONSES TO COMMENTS

Comment No.1



Arnold
Schwarzenegger
Governor

June 30, 2005

Scott Donnell
City of Carlsbad
1635 Faraday Avenue
Carlsbad, CA 92008-7314

Subject: Precise Development Plan and Desalination Plant Project (EIR 03-05)
SCH#: 2004041081

Dear Scott Donnell:

The State Clearinghouse submitted the above named Draft EIR to selected state agencies for review. On the enclosed Document Details Report please note that the Clearinghouse has listed the state agencies that reviewed your document. The review period closed on June 29, 2005, and the comments from the responding agency (ies) is (are) enclosed. If this comment package is not in order, please notify the State Clearinghouse immediately. Please refer to the project's ten-digit State Clearinghouse number in future correspondence so that we may respond promptly.

Please note that Section 21104(c) of the California Public Resources Code states that:

"A responsible or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency. Those comments shall be supported by specific documentation."

These comments are forwarded for use in preparing your final environmental document. Should you need more information or clarification of the enclosed comments, we recommend that you contact the commenting agency directly.

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process.

Sincerely,

Terry Roberts
Director, State Clearinghouse

Enclosures
cc: Resources Agency

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
TEL (916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov



Sean Walsh
Director



RESPONSE TO COMMENT NO. 1 Governor's Office of Planning and Research State Clearinghouse and Planning Unit (Letters dated June 30, and July 1, 2005)

June 30 letter

1A This letter acknowledges that the City of Carlsbad has complied with the State Clearinghouse review requirements for draft environmental impact reports pursuant to CEQA.

1B In order to provide adequate time for review and comment of the draft document, per CEQA Guideline Section 15203, the Lead Agency established a 45-day review period starting on May 16, 2005 and closing June 29, 2005.

July 1 letter

1C One comment was received by the State Clearinghouse after June 29, the end of the review period. This comment, a June 29, 2005 letter from the California Coastal Commission, was also sent directly to the Lead Agency by the review period deadline. The Lead Agency extended the review period an additional 15 days and incorporated comments received prior to July 14, 2005 in the Final Environmental Impact Report (FEIR). The review period extension represents a 60-day review period for the Draft EIR, which is within the time frames identified in Section 15105 (a) of the CEQA Guidelines, indicating that public review period for draft EIRs should be not less than 30 days and not more than 60 days.

RESPONSES TO COMMENTS

Document Details Report State Clearinghouse Data Base

SCH# 2004041081
Project Title Precise Development Plan and Desalination Plant Project (EIR 03-05)
Lead Agency Carlsbad, City of

Type EIR Draft EIR

Description The project is a proposal to (1) construct and operate a 50 million gallon per day seawater desalination plant and other appurtenant and ancillary water and support facilities to produce potable water, including an offsite water delivery pipeline system; and (2) establish a Precise Development Plan (PDP) for the Encina Power Station (EPS). The desalination plant would be located at the Encina Power Station in Carlsbad. The offsite pipeline system would extend into the cities of Carlsbad, Oceanside, and Vista. The PDP would serve as the primary City of Carlsbad land use application for the desalination plant and as a document to establish existing land uses at and development land use standards for the EPS. The project does not propose to modify EPS operations or existing facilities, other than discharge channel and electrical connections.

Lead Agency Contact

Name Scott Donnell
Agency City of Carlsbad
Phone (760) 602-4616 **Fax**
email
Address 1835 Farsday Avenue
City Carlsbad **State** CA **Zip** 92008-7314

Project Location

County San Diego
City Carlsbad, Oceanside, San Marcos, Vista
Region
Cross Streets Carlsbad Blvd. / Cannon Road
Parcel No. Multiple
Township Multi. **Range** Multi. **Section** Multi. **Base**

Proximity to:

Highways I-5, SR-78
Airports Palomar-McClellan
Railways NCTD
Waterways Pacific Ocean, Agass Hedionda Lagoon and tributary drainages
Schools Multiple
Land Use Public Utilities (U) for desalination plant site and surrounding power station. Land uses, zoning and General Plan designations vary for the offsite pipeline.

Project Issues Aesthetic/Visual; Air Quality; Archaeologic-Historic; Coastal Zone; Cumulative Effects; Drainage/Absorption; Flood Plain/Flooding; Forest Land/Fire Hazard; Geologic/Seismic; Growth Inducing; Landuse; Minerals; Noise; Population/Housing Balance; Public Services; Recreation/Parks; Sewer Capacity; Soil Erosion/Compaction/Grading; Solid Waste; Toxic/Hazardous; Traffic/Circulation; Vegetation; Water Quality; Water Supply; Wetland/Riparian; Wildlife

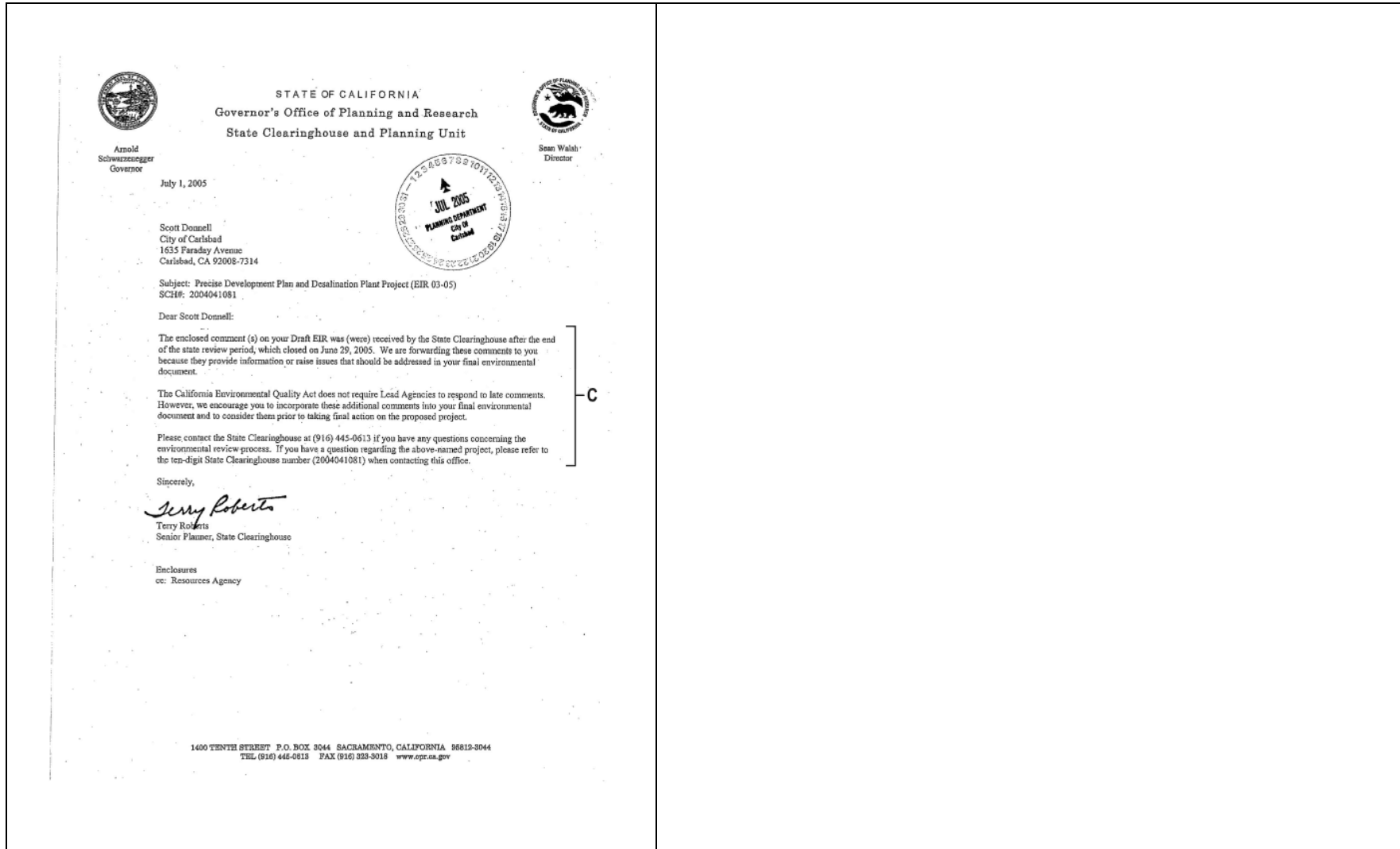
Reviewing Agencies Resources Agency; Regional Water Quality Control Board, Region 9; Department of Parks and Recreation; Native American Heritage Commission; Public Utilities Commission; Department of Health Services; Department of Fish and Game, Region 5; California Highway Patrol; Caltrans, District 11; Caltrans, Division of Aeronautics; California Coastal Commission; California Energy Commission; State Lands Commission; State Water Resources Control Board, Clean Water Program

Date Received 05/16/2005 **Start of Review** 05/19/2005 **End of Review** 06/29/2005

Note: Blanks in data fields result from insufficient information provided by lead agency.

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RESPONSES TO COMMENTS



Arnold
Schwarzenegger
Governor

STATE OF CALIFORNIA
Governor's Office of Planning and Research
State Clearinghouse and Planning Unit



Sean Walsh
Director

July 1, 2005

Scott Donnell
City of Carlsbad
1635 Faraday Avenue
Carlsbad, CA 92008-7314



Subject: Precise Development Plan and Desalination Plant Project (EIR 03-05)
SCH#: 2004041081

Dear Scott Donnell:

The enclosed comment (s) on your Draft EIR was (were) received by the State Clearinghouse after the end of the state review period, which closed on June 29, 2005. We are forwarding these comments to you because they provide information or raise issues that should be addressed in your final environmental document.

The California Environmental Quality Act does not require Lead Agencies to respond to late comments. However, we encourage you to incorporate these additional comments into your final environmental document and to consider them prior to taking final action on the proposed project.

Please contact the State Clearinghouse at (916) 445-0613 if you have any questions concerning the environmental review process. If you have a question regarding the above-named project, please refer to the ten-digit State Clearinghouse number (2004041081) when contacting this office.

Sincerely,

Terry Roberts
Terry Roberts
Senior Planner, State Clearinghouse

Enclosures
cc: Resources Agency

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
TEL (916) 445-0613 FAX (916) 333-3018 www.spr.ca.gov

RESPONSES TO COMMENTS

Comment No. 2



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
521 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213

JUN 17 2005

F/SWR4-RSH



Mr. Scott Donnell
Associate Planner
Carlsbad Planning Department
1635 Faraday Avenue
Carlsbad, California 92008

Dear Mr. Donnell:

Thank you for the opportunity to comment on the Draft Environmental Impact Report (DEIR) for the proposed seawater desalination facility at the Encina Power Station.

The project proponent, Poseidon Resources Corporation, is proposing to construct a 50 million gallon per day (mgd) seawater desalination facility within the City of Carlsbad. The facility will be collocated with the Encina Power Station. The power facility currently utilizes a seawater intake for once-through cooling, and discharges warmed seawater to the ocean. The desalination facility will withdraw approximately 100 mgd from the cooling water discharge system as source water. Using reverse osmosis process, the proposed facility will produce approximately 50 mgd of fresh drinking water, and 50 mgd of concentrated brine waste water. This waste water would be returned to the cooling water discharge stream, diluted and discharged to the ocean. No modifications to the existing intake or discharge structures are proposed.

Endangered Species Act

The proposed project may affect species listed under the Endangered Species Act (ESA). Listed sea turtle species under the jurisdiction of NOAA's National Marine Fisheries Service (NMFS) that may be found in the vicinity of the project area include, green turtles (*Chelonia mydas*), loggerhead turtles (*Caretta caretta*), leatherback turtles (*Dermochelys coriacea*), and olive ridley turtles (*Lepidochelys olivacea*). The mechanism by which the project may affect these species is through possible entrainment at the intake structure. Since 1988, three green sea turtles have been reported to be entrained at the Encina Power Station.

Under the ESA it is illegal to "take" a listed species without a permit. The term "take" is defined as harassing, harming, hunting, pursuing, shooting, wounding, killing, trapping, capturing, or collecting a listed species. NMFS is currently working on processing an application submitted by Cabrillo Power I, LLC, owner and operator of the Encina Power Station, for the incidental taking of green, loggerhead, leatherback, and olive ridley turtles pursuant to section 10 of the ESA. The Poseidon Resources Corporation may



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RESPONSE TO COMMENT NO. 2 United States Department of Commerce National Oceanic and Atmospheric Administration (Letter dated June 17, 2005)

- 2A** This comment provides a summary of the project description. Additional information on the project components are provided in Section 3.0 of the Draft EIR. No additional response is required.
- 2B** As noted in the discussion provided in Section 4.3.4 (Page 4.3-36) of the Draft EIR, the cooling water intake structure is part of the EPS existing operations. The desalination plant feedwater does not include a new intake structure, but rather will intake seawater from the EPS discharge flow. The desalination plant feedwater intake will not increase the volume, nor the velocity of the EPS cooling water intake nor will it increase the number of organisms entrained or impinged by the EPS cooling water intake structure. Therefore, the project would not result in any additional impingement effects of the EPS and therefore, impingement effects are not considered as significant impacts attributable to desalination plant operations. It appears that the commentor's conclusions that the proposed project may affect listed species is based on effects of the EPS, not the proposed project, and as such, the comment does not appear to be applicable to the proposed project. The comment indicates that green sea turtles have historically been entrained in EPS intake. The Lead Agency is aware of four green sea turtles impinged on the trash racks on the power plant intake due to illness. These turtles were rescued, rehabilitated and subsequently released. In each instance the turtles weighed more than 100 pounds and were over 3 feet long. Marine animals larger than 3/8 inch will not be affected by the

RESPONSES TO COMMENTS

<p style="text-align: center;">2</p> <p>want to work with Cabrillo Power, I, LLC to apply for a combined section 10 permit for the incidental take of listed species as a result entrainment in the cooling water intake. In processing the permit, NMFS will analyze the adverse effects of entrainment to the sea turtles. Until this permit is processed, NMFS will continue to monitor the entrainment of listed species at the Encina Power Station through the NMFS stranding network.</p> <p>Marine Mammal Protection Act</p> <p>Many species of marine mammals may be found within the vicinity of the Encina Power Station. However, the only species that are likely to be affected by the proposed action include the California sea lion (<i>Zalophus californianus</i>) and the Pacific harbor seal (<i>Phoca vitulina richardsi</i>). Small numbers of California sea lions have been entrained in the Encina Power Station intake structure. Although reports indicate that harbor seals have not been entrained at this location, entrainment of harbor seals has been reported at other California coastal power plants and may become entrained at this facility.</p> <p>Seals and sea lions are protected under the Marine Mammal Protection Act (MMPA). Under the MMPA, it is illegal to "take" a marine mammal without prior authorization from NMFS. "Take" is defined as harassing, hunting, capturing, or killing, or attempting to harass, hunt, capture, or kill any marine mammal. "Harassment" is defined as any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal in the wild, or has the potential to disturb a marine mammal in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering. Cabrillo Power I, LLC has submitted an application for an incidental small take permit under section 101(a)(5)(A) of the MMPA for the take of marine mammals during routine operations of the Encina Power Station. NMFS is currently processing the permit application. The Poseidon Resources Corporation may want to work with Cabrillo Power I, LLC to apply for a combined small take permit for the incidental take of marine mammals as a result entrainment in the intake structure. Until the permit is issued, the number of marine mammals entrained at this location will be monitored through the NMFS stranding network. In the event of a stranding or entrainment of a marine mammal or sea turtle at the Encina Power Station, facility staff should contact Mr. Joe Cordaro, the NMFS stranding coordinator at (562) 980-4017.</p> <p>Magnuson-Stevens Fishery Conservation and Management Act</p> <p>The proposed project is located within an area identified as Essential Fish Habitat (EFH) for various life stages of fish species managed under the Coastal Pelagics and the Pacific Groundfish Fishery Management Plans, as defined in the Magnuson-Stevens Fishery Conservation and Management Act. NMFS has evaluated the proposed project for potential adverse effects to EFH and is concerned with potential impingement and entrainment issues if the current cooling water needs of the existing power plant were significantly reduced or eliminated. At an undetermined reduced cooling water need, the desalination facility would need to divert water from the ocean that had not first been used for power plant cooling. The DEIR should consider this possibility and address</p>	<p>desalination plant because they are unable to pass through screens on the intake of the power plant.</p> <p>2C This comment discussed provisions of the federal Endangered Species Act (ESA) related to "take" of listed species and indicates that Cabrillo Power I, LLC has submitted an application for a permit pursuant to Section 10 of the ESA for incidental take associated with the EPS intake structure, suggesting that the project applicant work jointly with Cabrillo Power I, LLC on the Section 10 application. As noted in Response 2B, it is not anticipated that the project would result in a finding that the proposed construction and operation of the desalination plant may affect ESA listed species.</p> <p>2D As noted in Response 2B, the desalination plant feedwater does not include a new intake structure, but rather will intake seawater from the EPS discharge flow. Therefore, it is not anticipated that the project would have any effects on species protected under the Marine Mammal Protection Act. See also Response 2C.</p> <p>2E See Response 2D.</p> <p>2F Relative to the comment that the EIR should consider the possibility of significant reductions or elimination of cooling water from EPS, Section 3.3 of the Draft EIR, <i>Environmental Setting and Baseline Conditions</i>, discusses the rationale for determining reasonably foreseeable operating characteristics of the EPS, based on over 20 years of operating data of the EPS, and based on current designation of the facility as "Reliability Must Run" (Draft EIR Section 3.3, Page 3-14). Additionally, any change in the EPS cooling water flow that would require direct intake of seawater into</p>
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RESPONSES TO COMMENTS

<p style="text-align: center;">3</p> <p>measures to eliminate entrainment and/or impingement impacts under this situation. If entrainment/impingement impacts could not be feasibly eliminated, then other forms of mitigation to offset these impacts should be included in the DEIR under this operational scenario.</p> <p>In addition, while the DEIR evaluated the effects of elevated salinity on several species of fish and invertebrates and concluded that no significant impact occurred to any of the test species, that study did not consider whether those species or others would avoid areas where elevated salinities occurred. If that were to occur, then the habitat value of those areas exposed to chronic salinity increases could be significantly reduced. Studies to determine if a preferential salinity regime exists for those species likely to be exposed to elevated salinities should be performed.</p> <p>Should you have any questions regarding our comments, please contact Bob Hoffman at 562-980-4043 or via email at Bob.Hoffman@noaa.gov.</p> <p style="text-align: center;">Sincerely,  Valerie L. Chambers Assistant Regional Administrator for Habitat Conservation</p> <p>cc: CDFG – San Diego (Bill Paznokas)</p> <p style="text-align: right;">↑ F (cont.) ↓ G</p>	<p>the desalination plant would require entirely new approvals and permitting that would be subject to additional environmental review.</p> <p>2G The comment refers to the report by Mr. S. Le Page (<i>Salinity Tolerance Investigations: A Supplemental Report for the Carlsbad, CA Desalination Project</i>, March 7, 2005; hereinafter the “Le Page report,” Draft EIR Appendix E). The Le Page report presents findings on the effects of elevated salinity on representative benthic invertebrates and fishes in the Encina habitat. These tests were done using elevated salinity water produced by the demonstration desalination facility that has operated at the Encina Power Station.</p> <p>Le Page maintained a number of local species in an aquarium at 36 ppt for extensive periods at the Carlsbad test facility. This tank, which has been open for public viewing to various community and school groups for over two years, has shown that sea urchins, which are usually regarded as “at risk” to salinity variation, did very well in the higher salinity, as demonstrated by normal feeding, gains in body weight, and production of gametes during the breeding season.</p> <p>In reference to the question raised in the comment of whether or not species would avoid the elevated salinity was not tested for the following reasons. First, the area of the elevated salinity will be contiguous, that is, it will extend out from the discharge channel in a continuous plume that will be rapidly diluted. For this reason evaluation of the effects of elevated salinity on benthic organisms does not reduce to a question of whether or not they can behaviorally respond to a salinity gradient and move along it. Such tests are highly unfeasible given all of the organisms occurring in the area.</p>
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RESPONSES TO COMMENTS

The more appropriate design strategy was to develop a plan to sufficiently dilute the desalination water byproduct with the Power Plant water to ensure that the salinity increase occurring in discharge flow area would minimally affect the biota. This was done. The Draft EIR refers to the report analyzing the dispersion and dilution of the combined Power Plant and Desalination Facility by Dr. S. Jenkins and Mr. J. Wasyl (*Hydrodynamic Modeling of Dispersion And Dilution of Concentrated Seawater Produced by the Ocean Desalination Project at the Encina Power Plant, Carlsbad, CA. Part II. Saline Anomalies Due to Worst-Case Hydraulic Scenarios* March 5, 2005; hereinafter the “2005 Jenkins and Wasyl report”, Draft EIR, Appendix E), and to a marine biological assessment of the potential effects of the combined discharge by Dr. J. Graham (*Marine Biological Considerations Related to the Reverse Osmosis Desalination Project at the Encina Power Plant, Carlsbad, CA*, April 4, 2005; hereinafter the “Graham report”, Draft EIR, Appendix E). Both reports were made available for public review with the Draft EIR.

The 2005 Jenkins and Wasyl report shows that, under historical average flow conditions, benthic salinity at a distance of 500 ft out from the discharge channel will be 35.2 ppt. At a distance of 1000 ft out from the end of the discharge channel salinity would be 34.5 ppt. These findings can be seen by inspecting Figures 26 and 30 in the 2005 Jenkins and Wasyl report . These figures further show that, under the range of Plant flow volume scenarios and receiving water mixing conditions that were modeled for the discharge channel, the probability of a salinity of 37 ppt or greater occurring 500 ft from the discharge is less than 5%. Similarly, the probability of a 37 ppt or greater salinity occurring at 1000 ft from the discharge channel is less than 2%.

RESPONSES TO COMMENTS

In other words, the models show that by diluting the desalination byproduct water, discharge salinities are kept low. Based on the Graham report (and findings summarized therein) and the Le Page report, it can be expected that salinities up to and including 38 ppt would be readily tolerated by the benthic organisms currently residing in the sandy sublittoral habitat at the end of the discharge channel. Specifically, most of the scientific literature reviewed by Graham indicates that chronic exposure to salinities greater than 38 ppt and as high as 40 ppt do not present long-term tolerance problems for many species, and the Le Page studies document no effect of continuous occurrence in elevated salinity water and survival by key benthic species in 40 ppt water for as long as 19 days.

Thus, because of the small area of salinity increase (1.5 acres) and the relatively low magnitude of the actual salinity increase (i.e., 34-37 ppt vs. 33.5 ppt ambient), the preference experiments suggested by this comment would not provide any new or useful information relevant to the significance of the effect of an elevated salinity regime on benthic invertebrates.

The Draft EIR, and the 2005 Jenkins and Wasyl and Graham reports acknowledge and discuss the finding that an elevated salinity region will occur between the end of the discharge channel and out to a distance of 1000 ft. (The 1000 ft perimeter, defined as the zone of initial dilution [ZID], was selected for this analysis because it is the reference point most commonly referred to in the NPDES permit governing the Power Plant's thermal discharge.) As noted above, beyond 500 ft and out to the 1,000 ft ZID perimeter, the benthic salinities will be only slightly above ambient (i.e., 34-37 vs 33.5 ppt).

RESPONSES TO COMMENTS

With respect to the area (about 1.5 acres) between the end of the discharge channel and 500 ft, Figure 25 in the 2005 Jenkins and Wasyl report shows that the median salinity occurring at the end of the discharge channel would be 36.8 ppt. This median salinity is well within the tolerance ranges demonstrated by Le Page and end of channel salinities as high as 40 ppt will occur rarely and will have a brief duration. As documented by the 2005 Jenkins and Wasyl report, the end of channel salinity is rapidly diluted by surf action and mixing, resulting in the reduced salinities at 500 and 1000 ft described (Figures 26 and 30 of that report).

The Draft EIR and the Graham report both point out that the elevated salinity regime that would be in place from the end of the channel out to 500 ft is likely to be within the range of tolerance of species currently residing there. It is also worth noting that this area of slightly elevated salinity will be relatively small (approximately 1.5 acres).

Regarding the commentator's assertion that "studies to determine if a preferential salinity regime exists for these species likely to be exposed to elevated salinities should be performed", the salinity preference experiments suggested here would not provide useful information about the question of salinity effect. The slightly elevated salinity regime that will be permanently in place, will be well within the range of test conditions documenting no salinity effect on survival and behavior of the benthic species tested by Le Page.

RESPONSES TO COMMENTS

Comment No. 3

Scott Donnell - Precise Development Plan and Desalination Plant Project Page 1

From: <Benjamin_Frater@fws.gov>
 To: <sdonn@ci.carlsbad.ca.us>
 Date: 06/29/2005 12:50:00 PM
 Subject: Precise Development Plan and Desalination Plant Project

Mr. Donnell,

The California Department of Fish and Game and U.S. Fish and Wildlife Service (collectively, the "Wildlife Agencies") have reviewed the Draft Environmental Impact Report (DEIR) for the Precise Development Plan and Desalination Plant Project (SCH# 2004041081). Unfortunately, the Wildlife Agencies do not have the time to formally comment on the DEIR. However, our review of the DEIR revealed no specific demonstration of consistency with the City's Habitat Management Plan (HMP). While we recognize that the Wildlife Agencies and the City have not formalized a structure for such consistency findings, the need for these findings remain. The Wildlife Agencies will refer to consistency findings when the Army Corps of Engineers (ACOE) is processing permits for this project.

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Unfortunately, it has been our recent experience that a lack of consistency findings can delay the ACOE permitting process. Therefore, we recommend that consistency findings are written in a reasonable format and given to the Wildlife Agencies in advance of seeking an ACOE permit. In the meanwhile, the Wildlife Agencies will continue to work with the City to develop a standardized template for consistency findings that should simplify this process in the future.

B

We appreciate your consideration in this matter.

Libby Lucas (858) 467-4230
 California Department of Fish and Game

Ben Frater (760) 431-9440
 U.S. Fish and Wildlife Service

CC: <elucas@dfg.ca.gov>, <mgrim@ci.carlsbad.ca.us>

RESPONSE TO COMMENT NO. 3 California Department of Fish and Game and United States Fish and Wildlife Service (Email correspondence dated June 29, 2005)

- 3A** The Draft EIR, Section 4.3.4 (page 4.3-33) discusses the project's relationship to applicable regional resource planning efforts, including the Multiple Habitat Conservation Plan and associated City of Carlsbad Habitat Management Plan and City of Oceanside Subarea Plan. That section also discusses the project's consistency with those plans, pursuant to addressing the applicable CEQA significance thresholds. It is acknowledged that formal findings of consistency will be required at the point in the planning process when a project is considered for approval.
- 3B** Comment noted. The Lead Agency will follow the consistency procedures outline in Section E of the City's Habitat Management Plan.

RESPONSES TO COMMENTS

Comment No. 4

STATE OF CALIFORNIA—THE RESOURCES AGENCY
CALIFORNIA COASTAL COMMISSION
 45 FREMONT, SUITE 2000
 SAN FRANCISCO, CA 94105-2319
 VOICE AND TDD (415) 964-5300
 FAX (415) 954-5400

June 29, 2005

Mr. Scott Donnell,
 Carlsbad Planning Department
 1635 Faraday Avenue
 Carlsbad, CA 92008

RE: Draft Environmental Impact Report (DEIR) #03-05 – Proposed Precise Development Plan for proposed desalination facility (SCH #2004041081)

VIA FACSIMILE (760) 602-8559

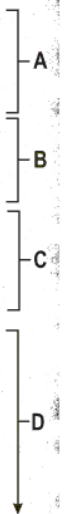
Dear Mr. Donnell:

Thank you for the opportunity to comment on the above-referenced document. The DEIR evaluates a proposed change to the development plan at the Encina Power Station that would allow construction and operation of a desalination facility by Poseidon Resources Corporation. The facility would produce up to 50 million gallons per day (mgd) of drinking water using seawater drawn through an existing intake used for the power plant's cooling system.

Our comments in this letter focus primarily on some of the aspects of CEQA review that will be of interest during the proposal's review for conformity to the Coastal Act. Portions of the proposed project are within the coastal zone jurisdiction of both the Coastal Commission and the City of Carlsbad and will require a coastal development permit from each. We will likely have additional and more detailed comments and questions during that review.

Our primary overall comment is that there are numerous significant shortcomings in the DEIR that make it inadequate for purposes of CEQA review and for use in determining the proposed project's conformity to the Coastal Act. We note that we identified many of the issues of concern in the letter we sent last year commenting on the DEIR's Notice of Preparation (NOP). We are therefore incorporating those earlier comments by reference and will provide that letter as an attachment.

Due to the concerns expressed in these letters, we recommend the DEIR be thoroughly revised and then recirculated for additional review. We recommend in particular that the revised document incorporate more complete analyses regarding marine biology – both for existing baseline conditions at the proposed project site and for potential impacts likely to be caused by the proposed project – and that it evaluate how the proposed facility would operate both in conjunction with the power plant and at times independent of the power plant. These revisions will more accurately reflect the conditions likely during the proposed project's expected useful life and would better reflect CEQA's requirements to address project-specific impacts. This approach would also be consistent with the approach suggested in the October 2003 Water Desalination Findings and Recommendations report by the state's Desalination Task Force. We further recommend the DEIR evaluate the issues identified in the Coastal Commission's March



RESPONSE TO COMMENT NO. 4
California Coastal Commission
(Letter dated June 29, 2005)

- 4A** This comment provides a summary of the project description. Additional information on the project components are provided in Section 3.0 of the Draft EIR. No additional response is required.
- 4B** This comment identifies actions that will be considered by the California Coastal Commission as a Responsible Agency to this EIR and indicates the focus of the comments contained in the letter. No additional response is required.
- 4C** The Lead Agency disagrees with the general statement of opinion offered in this comment relative to the adequacy of the analysis, however since the comment lacks specificity, a more detailed response is not possible. The Lead Agency acknowledges receipt of the California Coastal Commission's comment letter on the project NOP, as evidenced by its inclusion in Appendix A of the Draft EIR. The Lead Agency carefully considered all of the relevant issues raised in that letter and incorporated consideration of those issues that it considered to be relevant to the CEQA analysis in the Draft EIR.
- 4D** The Lead Agency disagrees with the commentator's suggestion that the Draft EIR be revised and recirculated. As demonstrated by the analysis provided in the Draft EIR and as further demonstrated in these Responses, the Draft EIR provides a complete assessment of environmental effects associated with the proposed project. Specifically

RESPONSES TO COMMENTS

Comments on DEIR for Proposed Desalination Facility – SCH #2004041081
June 29, 2005
Page 2 of 10

2004 report on Seawater Desalination and the California Coastal Act (available at www.coastal.ca.gov), since it identifies many of the potential adverse impacts that will need to be reviewed during the proposed project's coastal development permit review, several of which are applicable to the current CEQA review process.

Comments:

1) Incomplete information: Several important analyses in the DEIR are inadequate due to their use of incomplete data about baseline environmental and operating conditions. Two key missing components are the baseline information about existing conditions of the affected marine biological system and the characteristics of power plant operations. The result is that the DEIR does not provide accurate analyses in at least two significant and interrelated areas: (1) how the proposed project will operate both in conjunction with the power plant and independent of the power plant; and, (2) the effects on marine biology caused by the two facilities operating both together and separately. These interrelated issues are discussed in more detail in other comments below.

2) Operating characteristics of the power plant and the proposed desalination facility: The DEIR does not adequately describe the relationship between the proposed desalination facility and the power plant. The DEIR is based largely on the assumption that the proposed project will only use seawater that passes through the power plant condensers and will not require any additional water beyond what is used by the power plant. For several reasons discussed below, this assumption is likely incorrect, and the analyses in the DEIR related to water use need to be revised.

In actuality, water use by the co-located facilities is likely to be substantially higher than water used just by the power plant. Additionally, if the power plant were to shut down for any period of time or change its cooling method, the proposed desalination facility would be the sole cause of any entrainment losses. The DEIR largely dismisses these concerns by stating that the proposed desalination facility will not modify the power plant's permitted operating capacity. However, for several reasons, "permitted operating capacity" is not an adequate or accurate measure of baseline conditions upon which to base evaluations of the proposed project. At best, the permitted capacity describes only a maximum amount of seawater allowed to be used by the power plant – it does not describe the baseline biological or habitat characteristics associated with that water. Additionally, the permitted capacity is derived from National Pollutant Discharge Elimination System (NPDES) permit review, which is not subject to CEQA and has therefore not been evaluated under CEQA standards that require baseline conditions be based on the existing physical conditions at the site, which include affected habitats and biological organisms.

Further, at least three characteristics applicable to the proposal – the highly variable nature of cooling water flows at the power plant, recent changes in the NPDES regulatory measures that apply to those flows, and uncertainty about future power plant operations during the expected operating life of the proposed desalination facility – result in very different sets of effects than those described in the DEIR. The document therefore needs to describe the characteristics and effects of these different scenarios.

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with respect to the commentator's reference to baseline conditions, Section 3.3 of the Draft EIR, *Environmental Setting and Baseline Conditions*, discusses the rationale for determining reasonably foreseeable operating characteristics of the EPS, based on over 20 years of operating data of the EPS, and based on current designation of the facility as "Reliability Must Run" (Draft EIR Section 3.3, Page 3-14). Additionally, any change in the EPS cooling water flow that would require direct intake of seawater into the desalination plant would require entirely new approvals and permitting that would be subject to additional environmental review. Both of the referenced reports: the Desalination Task Force's October 2003 *Water Desalination Findings and Recommendations*, and the California Coastal Commission's March 2004 *Seawater Desalination and the California Coastal Act* were considered extensively in the scoping and preparation of the Draft EIR. The Lead Agency carefully considered all of the issues relevant to the CEQA analysis raised in those reports and incorporated consideration of those issues in the Draft EIR analysis. This is not to say that the Lead Agency necessarily agrees with all of the recommendations provided in those reports, but it did consider them and exercised its independent judgment as to the applicability of the recommendations to the CEQA analysis for the subject project.

4E See Response 4D, and as further discussed in the following responses, the Lead Agency disagrees with the commentator's opinion relative to the adequacy of the analyses provided in the Draft EIR.

4F The operational relationship between the desalination plant and the power plant are described in detail in Section 3, Project Description of the Draft EIR. As indicated on pages 3-18 and 3-20 of the Draft EIR, the desalination plant will not affect power plant operations. It will be connected to the power plant discharge. As defined in the project

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- 3) **Operating conditions and pump capacities:** The DEIR states that the desalination facility would pump up to 104 million gallons per day of seawater from the existing power plant cooling system. The DEIR uses a combined pumping rate of 304 million gallons per day as its “reasonable worst-case scenario”, based largely on historical conditions at the power plant, which can pump up to 860 mgd.

As noted above, the DEIR needs to evaluate the effects caused by the proposed desalination facility operating on its own. As part of that review, it should identify the pumping rates needed by the facility to produce desalinated water and to adequately dilute and disperse its high saline discharge. This evaluation should describe the effects on marine biology that would be caused by these pumping rates (e.g., entrainment, salinity plumes, etc., as described below). The DEIR should also address the feasibility of alternative measures (e.g., variable speed pumps, other types of intakes and discharges, etc.) to avoid or reduce probable impacts.

We note, too, that Appendix C of the DEIR states that the desalination facility is to have three duty pumps (and one standby), each with an average pumping rate of 24,200 gallons per minute and a maximum pumping rate of 29,600 gallons per minute. Operating the three pumps at their average rate would result in 104.5 mgd, and operating them at the maximum rate would result in 127.8 mgd. The DEIR should clarify whether there will be times when the proposed desalination facility would pump more than the stated 104 mgd maximum used as the basis for the DEIR’s analyses.

- 4) **Cooling water use and water temperature:** Reverse osmosis membranes are designed to be used in a particular range of water temperatures (e.g., up to 95° F), with their most efficient operating temperature generally somewhat lower than the maximum of the range. The power plant’s cooling water may at times exit the condensers at higher temperatures than optimal or usable for the membranes; therefore, the water used by the desalination facility may need to be cooled by using additional seawater that has been drawn into the power plant intake but has bypassed the condensers. As a result, the desalination facility may end up using much more than the stated 104 million gallons per day of water, and more than would otherwise be used by the power plant. These characteristics would result in the proposed desalination facility causing entrainment that would not otherwise be caused by the power plant. The DEIR should evaluate this issue and describe any additional entrainment effects that would be associated with this additional water use.

- 5) **Operational characteristics and energy use:** CEQA Section 15126.4 requires that EIRs consider the implications a proposed project may have on energy use. It further requires an energy conservation analysis that considers costs along with other measures of feasibility. Among the goals of such review is to decrease reliance on natural gas and oil, and increase reliance on renewable energy sources. Further, Coastal Act Section 30253(4) requires that new development minimize energy consumption.

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description, the desalination plant will not have its own separate direct ocean intake nor will the desalination plant have a direct connection to the power plant intake structure. The power plant intake and discharge flows are not expected to be different from the historic and current range of intake and discharge flows described in the EIR. Over twenty years of operation history is sufficient to provide an accurate assessment of baseline conditions. In any event, the project will not increase any intake and discharge flows above permitted levels in the existing power plant NPDES permit.

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There are no plans for the power plant owner, Cabrillo Power, LLC, to significantly reduce or eliminate the cooling water needs of the existing power plant or to retool the power plant to use alternative cooling methods. As indicated in Section 3, Project Description, of the Draft EIR, the current project is defined as using the cooling water discharge of the power plant as source water for the desalination plant. Under CEQA, the Lead Agency is required to address existing or reasonably foreseeable future conditions and impacts and cannot speculate about uncertain outcomes or potential effects that cannot be reasonably quantified or predicted at this time or are outside the project definition. In addition, the baseline for measuring potential environmental impacts of a project under CEQA is the current physical environment, including current operating conditions. Since no plans currently exist or are under consideration to reduce or discontinue the power plant use of seawater for cooling purposes, the assessment of plant operations under this completely different project baseline is speculative at best and is outside of the scope of the CEQA review of this project, as defined in the Draft EIR.

The power plant “permitted operating capacity” was not used as a “baseline condition upon which base evaluations of the proposed project

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Several recent studies – for example, the Pacific Institute's Waste Not, Want Not: The Potential for Urban Water Conservation in California (November 2003), and the Planning and Conservation League's Investment Strategy for California Water (November 2003) – conclude that seawater desalination is relatively costly and energy-inefficient, particularly when compared with other available sources of water such as conservation and recycling, brackish water desalination, and even many of the state's water import infrastructure projects. The DEIR should be revised to evaluate whether the proposed project supports the cited CEQA and Coastal Act requirements and how it fits into California's increasing emphasis on energy efficiency and conservation.

Additionally, the DEIR states that the proposed facility is expected to use about 29.8 to 35.5 megawatts of electricity (or roughly 750 megawatt hours per day). Power plants such as the Encina Power Station using a once-through cooling system require up to tens of thousands of gallons of cooling water per megawatt-hour of electricity generated. Therefore, the desalination facility's electrical demand, if drawn from the power plant, would require several million gallons per day for cooling. While some of this water would likely be the same as that withdrawn from the cooling system for desalination use, the DEIR should identify the amount of cooling water needed to respond to the proposed facility's energy demand if it is to obtain its electricity from the power plant and assess the effects associated with that water use.

Additionally, the DEIR states that the proposed 10 million gallon per day pump station for Oceanside would require about 0.5 megawatts of electricity. It appears, however, that distribution of the 50 million gallons per day proposed to be produced at the facility would require additional pumping and electricity. Because the proposed facility would be at sea level, it may require substantial additional energy to pump the produced water several hundred feet uphill into the distribution system. The DEIR should be revised to fully incorporate the energy demand for production and distribution of the produced water into its evaluations.

6) **Operating Costs:** The DEIR does not describe the cost of the water to be produced. Because cost is a consideration of determining the feasibility of proposed projects, mitigation measures, and alternatives, it is a necessary part of CEQA's environmental review. The DEIR should discuss the anticipated costs and the basis for those costs, and should then use those costs to determine the feasibility of project alternatives and mitigation measures.

A significant cost that needs to be included in this evaluation is the cost of energy. While there appears to be belief on the part of many desalination proponents in California that facilities co-located with power plants may be able to benefit from "inside the fence" rates of \$0.05 or \$0.06 per kilowatt-hour, these costs are not currently available, and it appears that actual rates are about twice as much. This will likely have a substantial effect on the type and range of alternatives determined to be environmentally and economically feasible, and needs to be incorporated into the DEIR.

impacts were completed," as stated by the commenter. As required under CEQA, the environmental impact analysis of this project was completed based on existing physical conditions of the site, including the range of conditions associated with the ongoing operations of the adjacent power plant. As shown in Appendix E of the Draft EIR, the existing physical conditions of the power plant discharge were determined based on a 20.5 year database of the actual power plant operations and ambient ocean conditions in the area of the discharge. During this period, the power plant has never completely shut down or stopped circulating seawater (see Draft EIR, Appendix E). As noted in Section 3.3 (page 3-14 of the Draft EIR), the California Independent System Operation (CALISO) has designated a portion of the generating capacity at the Encina power plant as a "reliability-must-run" (RMR) status. Therefore it is not reasonably foreseeable that the power plant would completely shut down. A comprehensive analysis of the desalination plant discharge impact was completed under a number of scenarios reflective of both the normal power plant operations and historical extreme operational conditions identified over the 20.5-year period of plant operations. The results of these analyses are presented in Appendix E of the Draft EIR and summarized in section 4.3, Biological Resources of the Draft EIR. The impingement and entrainment effects contributed to the desalination plant operations were estimated under a monthly maximum desalination plant intake flow of 106 MGD, as stated in Section 4.3 of the Draft EIR. As indicated in Section 3, Project Description, of the Draft EIR, the average desalination plant intake flow is 104 MGD. These flow rates are well within the actual historic baseline flow range of power plant operations defined in Appendix E.

The permitted maximum discharge capacity of the power plant is derived from the NPDES permit that establishes the maximum flow limits of the

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7) **Status of power plant approvals, permits, and contracts:** The DEIR does not properly assess the short-, medium-, and long-term operational changes likely to occur in the power plant operations and how those changes may affect the proposed desalination facility. Recognizing that there is some level of uncertainty involved, there are still several likely changes that can be anticipated and should be addressed in the DEIR. These include everything from daily variations in electrical demand, upcoming changes to existing energy contracts, and measures that may be required to minimize the cooling system's entrainment and impingement effects, including the potential to switch to alternative cooling methods (e.g., dry cooling, closed loop cooling, recycled water cooling, etc.) that may not provide the same benefits for desalination.

These reasonably foreseeable changes could result from any of the following:

- The power plant's NPDES permit is up for renewal every five years. The next renewal will require review to ensure conformity to a recent rule change by the U.S. EPA (described in more detail below), and may result in substantial changes to the power plant's structures, operations, or mitigation requirements.
- The DEIR does not describe the timeline or terms of existing energy contracts at the power plant. These contracts could affect the continued viability of the existing power production system and should be incorporated into the DEIR's analyses.
- The DEIR does not describe in sufficient detail the conditions of the agreement between the power plant owner and the proposed desalination facility, allowable ways to modify the agreement, and other elements that could result in substantial changes to how either of the two facilities operates over the course of the agreement.

All of these suggest that the DEIR analyses should incorporate several substantial and reasonably foreseeable changes and alternatives that would affect the proposed desalination facility. We recommend the DEIR be revised to fully describe these various permits and agreements and to assess the effects of likely changes.

8) **Inadequate baseline for marine biology:** As noted above, the DEIR does not adequately describe the existing baseline conditions at the site of the proposed project that may be affected by the proposed project. It describes the maximum volumes of seawater permitted to flow through the power plant's cooling system and some findings related to organisms found in the water after it has passed through the power plant condensers; however, it does not adequately characterize as it should the organisms and habitat functions contained in the Agua Hedionda sourcewater, which are necessary components of the baseline.

The analyses provided on potential effects on marine life are based on the "incidental entrainment" that would be caused by the proposed desalination facility using water that has already passed through the power plant condensers. As noted above, this analysis does not adequately portray the baseline environmental conditions needed for both CEQA review and Coastal Act review, in part because the desalination facility should be expected to operate independently at some times and because even when it is operating in conjunction with the power plant, it will likely result in more water being drawn through the cooling water system than would occur if the power plant was operating on its own.

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power plant intake and discharge. The Regional Water Quality Control Board issued the power plant NPDES permit in 2000 through a process that under State law is considered to be functionally equivalent to CEQA. The power plant NPDES permit has undergone technical review by the Regional and State Water Quality Control Boards that have engineering staff qualified to complete this review and has received public review as

As indicated in the Draft EIR (page 3-14), this Encina Power Station is a RMR facility which operates 24 hours a day and 365 days per year and supplies over 25% of the power of San Diego County. As a result, the power plant cooling water flows are not highly variable in nature. The plant flow variability for the last 20.5 years is described in Appendix E of the Draft EIR. This variability was taken under consideration when analyzing the environmental impact of the operation and discharge of the co-located desalination and power plants.

Cabrillo Power, LLC (Cabrillo), is the owner and operator of the Encina power plant, and is currently conducting impingement and entrainment studies to establish baseline conditions pursuant to renewal of their NPDES permit under the new Phase II 316(b) requirements. Cabrillo intends to achieve full compliance with the requirements, but has not as of yet determined the specific measures, or combination of measures, that will be implemented to achieve compliance. However, the Lead Agency believes it is reasonably foreseeable that compliance can be achieved without reduction of seawater intake below the threshold levels identified as the "worst case" (historical extreme) scenarios analyzed in the Draft EIR and in the technical studies contained in Appendix E of the Draft EIR ("Hydrodynamic Modeling of Dispersion And Dilution of Concentrated Seawater Produced by the Ocean Desalination Project at the Encina Power Plant, Carlsbad, CA. Part II. Saline Anomalies Due to Worst-Case

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We understand that the power plant is conducting an entrainment study for purposes of conforming to Clean Water Act requirements. At the very least, the data and analyses from that study need to be incorporated into the DEIR as part of the characterization of the existing baseline environmental conditions for the proposed desalination facility. We note that the DEIR references data collected during three source water sampling events in June and July of 2004. These provide only a small part of the necessary data and do not adequately reflect the annual or seasonal biological conditions that would be affected by the proposed facility.

- 9) **Rate of entrainment mortality:** The DEIR states that power plant tests show entrainment mortality to be about 94-95% and that the proposed desalination facility would increase that rate only marginally. The standard approach for such studies is to assume an entrainment mortality of 100%. Even if some individual organisms are able to survive the temperatures and pressures experienced when going through the cooling system, they are generally considered to have a survival rate of zero when they are discharged from the cooling system back into the water column, where they are subject to predation and other natural forces.

For the water withdrawn for the proposed desalination facility, any organisms that survive the power plant cooling system should be assumed to have 100% mortality, since desalination pretreatment, filtering, and other processes are meant to remove all organic particles from the water, which would naturally include eggs, plankton, and larvae. The DEIR entrainment analyses should therefore be revised using a 100% mortality rate for both the power plant and the proposed desalination facility.

- 10) **Tidewater goby (*Eucyclogobius newberryi*):** The DEIR includes no mention of the tidewater goby, which is listed as endangered at the federal level and as a species of special concern by California. The Intake Effects Assessment (in Appendix E of the DEIR) states only that the goby was not recorded in a 1995 ecological assessment of Agua Hedionda and that the lagoon is unlikely to support the goby. The DEIR falls far short of the information and analysis necessary to address this issue. Other recent documentation by the U.S. Fish & Wildlife Service notes that Agua Hedionda is part of the designated critical habitat for the goby and the lagoon is included as part of the draft recovery plan for the species. The California Department of Fish and Game notes in its management recommendations for the species that coastal estuarine habitat for the goby, such as Agua Hedionda, needs to be restored to allow reintroduction of the species. The DEIR needs to reflect these designations and to discuss the likely effects of ongoing cooling water intake use on the goby and on the restoration potential of Agua Hedionda.

- 11) **Source water:** The DEIR does not contain the necessary discussion and analysis of source water movement through Agua Hedionda and how the pumping action of both the power plant and the proposed desalination facility affects the hydrodynamics of the estuary. This is particularly important for this proposed project, since the power plant operating at full capacity can pump through its cooling system each day the approximate equivalent of the entire water volume of Agua Hedionda. Even the proposed desalination facility operating on its own could pump a substantial amount of the estuary's water volume each day. The DEIR should include hydrodynamic modeling showing the areas of Agua Hedionda that contribute water to the cooling system, and the resulting effects on the affected biological communities.

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Hydraulic Scenarios” March 5, 2005; hereinafter the “2005 Jenkins and Wasyl report”, and “Marine Biological Considerations Related to the Reverse Osmosis Desalination Project at the Encina Power Plant,” April 4, 2005; hereinafter the “Graham report”).

Under the historical extreme scenario used as the basis for a worst case analysis of effects related to increased salinity discharge, the power plant seawater intake volume is identified as 304 MGD, which is approximately 53% of the average intake volume (20.5 year average of 576 MGD), and 35% of the maximum permitted intake capacity (857 MGD). Therefore, even if the proposed compliance measures included reduction of intake volumes, it is unlikely that the flow would drop below 304 MGD.

In addition, the baseline for measuring potential environmental impacts of a project under CEQA is the current physical environment, including current operating conditions. Since specific plans for compliance with the new Phase II 316(b) requirements are not known at this time, and since there is no current proposal to reduce or discontinue the power plant use of seawater for cooling purposes, the assessment of plant operations under unknown future conditions is speculative at best and is outside of the scope of the CEQA review of this project, as defined in the Draft EIR.

There is no uncertainty about the power plant operations. There are no plans by the owner of the Encina plant, Cabrillo Power, LLC, to initiate changes, reduce the power plant electricity output, or modify the current and historical power plant mode of operation or to discontinue or significantly reduce the use of seawater for cooling purposes. Since claimed predictions of changes of power plant operations, cooling method, or production capacity are not based on reasonably certain

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12) **Standard of review:** The DEIR states that the power plant meets the federal Clean Water Act's Section 316(b) requirements for thermal power plant cooling water structures. Please note that this does not equate to conformity to CEQA or the Coastal Act, both of which have more stringent standards for mitigating adverse effects. Please also note that the power plant's upcoming NPDES permit review will be subject to the recent changes to that section of the Clean Water Act. The DEIR should therefore not use past 316(b) conformity as the standard by which to determine conformity of the proposed desalination facility to applicable water quality and marine protection requirements.

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13) **Impingement:** The DEIR does not address the water velocities at the cooling water intake structure. However, the 316(b) study plan for the facility states that the intake brings in water at a velocity of between 0.7 to 1.6 feet per second. Please note that the U.S. EPA has established a flow rate of 0.5 feet per second as "Best Technology Available" in its recent rule revision, which is among the requirements applicable to this facility. The DEIR should evaluate the environmental effects caused by the existing intake velocities, the changes that may be necessary to reduce those velocities, and any mitigation measures that may be needed to address this issue.

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14) **Effects associated with the proposed facility's discharge:** The salinity analyses in the document are based on an "historical average" scenario that would occur when the power plant pumps 526 million gallons per day, and an "historical extreme" scenario when the power plant pumps 304 million gallons per day, each under different ocean conditions. The document then describes an area of increased salinity near the existing power plant discharge that would be caused by combining the proposed desalination discharge with the power plant flows. The areas affected by salinities of between 1% and 10% above background could cover up to several hundred acres of shoreline and nearshore habitat and areas affected by salinities of more than 10% above background range up to dozens of acres.

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As noted previously, the DEIR does not adequately differentiate between the effects caused by the power plant and the proposed desalination facility operating together and the proposed desalination facility operating on its own. The areas of increased salinity described under these two scenarios represents a significant portion of the shoreline and nearshore waters off of Carlsbad, and because the scenarios include the dilution benefits of the power plant water flows, they likely fall short of the "reasonable worst-case scenario" and do not appear to be the insignificant impact described in the DEIR. The DEIR should be revised to evaluate the effects that would result from the desalination facility operating on its own with only one power plant pump or with a different pump.

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The DEIR also concludes that the species within these areas that would be exposed to these higher salinity levels are either tolerant of the higher levels or would be able to move out of the affected areas. Its primary basis for this conclusion is that these species are exposed to these expected higher salinity concentrations elsewhere in their range. This does not appear to be a valid comparison for at least two reasons. First, the analyses do not differentiate between the range of tolerance for a species and the tolerance of particular individuals of that species. For example, while individuals of a particular species may do well in higher salinity waters in other parts of the species' range, it does not mean individuals living in the range of

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information, they are speculative in nature, and at present, are not contemplated, the Lead Agency is not required to address such speculative uncertainty.

The combined pumping rate of 304 MGD, indicated as a "reasonable worst-case scenario" refers to the power plant intake flow, not the desalination plant intake flow. The desalination plant average and monthly maximum intake flows are 104 MGD and 106 MGD, respectively, as stated in Section 3, Project Description, of the Draft EIR.

It is not reasonable to evaluate the effects of the proposed desalination facility operating on its own, because such mode of desalination plant operation is not anticipated. As described in Section 3, Project Description, by its baseline definition, the desalination plant is planned to operate in conjunction with the power plant and to use cooling water flow from the power plant discharge rather than to operate on its own and to take seawater directly from the ocean. As indicated in responses to previous comments, there are no plans for the current power plant operations to be changed, or for the power plant to be shut down. Therefore, desalination plant operations under the conditions of permanent power plant shutdown are not reasonable assumptions and assessment of such impact is speculative in nature and as such not required under CEQA.

In the event that the project were to require independent operation of the intake and outfall for any reason, the direct connection to the intake structure by the desalination plant would be treated as a separate project. The direct connection to the intake structure by the desalination plant would be subject to applicable CEQA and regulatory agency permit requirements, including the approval of the City of Carlsbad. Avoidance,

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salinity found offshore of Carlsbad would do well if those waters were to change to having salinity concentrations significantly higher than the existing range of ambient conditions. Secondly, the analyses do not describe how quickly these organisms are able to adapt to these types of salinity differences. While the organisms may be able to adapt to the naturally occurring 10% change in salinity over the course of a year, they may not be able to respond to an immediate change of that range or greater. Additionally, some areas within the discharge plume will cycle back and forth through these salinity ranges relatively quickly based on the number of pumps that happen to be operating at the power plant at any given time, thus requiring exposed organisms to quickly adjust to salinity extremes far higher than normal conditions. It is likely that many organisms adapted to local conditions would actively avoid the higher salinity areas, thus creating a zone with lower biomass, less biodiversity, or with other substantial ecological changes. Further, the aquarium studies cited in the DEIR, while interesting, do not adequately describe the natural conditions in the nearshore environment and do not describe behavioral or other changes in the affected biological community.

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15) Drinking water quality and public welfare: The presence of boron in drinking water is an emerging health concern. At elevated levels, boron is believed to cause human reproductive effects and is harmful to plants. Here in California, there is no drinking water standard for boron; however, the state has established an action level of 1.0 mg/L. Providers of drinking water that exceeds this action level must notify the consumers and local governments, and the Department of Health Services may recommend removal of the water source from service if concentrations of the contaminant significantly exceed the action level. The World Health Organization has established a guideline for maximum boron concentrations in drinking water of 0.5 mg/L.

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Seawater contains boron at naturally occurring levels of about 4.5 mg/L. Single-pass reverse osmosis systems like the one proposed to be used at the facility are generally considered to have only a 50-75% removal efficiency for boron, which would bring the boron concentrations down to roughly 1-2 mg/L, or about two to four times the recommended concentrations for drinking water. The DEIR does not describe the effectiveness of the proposed desalination process in reducing boron to acceptable levels, and in fact, its only mention of boron is in the water purchase agreement (Appendix B), which states only that Poseidon and the City will figure out an appropriate boron concentration later.

The DEIR should be revised to provide more detailed information about the efficiency of the proposed desalination process in reducing boron levels in the product water, including a description of the materials and processes the facility would use to reach the stated levels. It should also identify any available measures that would further reduce the boron concentrations along with the costs and effects of those measures.

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16) Alternative analyses and feasibility: The DEIR states in its review of alternatives that the document's analyses of proposed project impacts did not identify any significant unavoidable adverse effects. Based on the other comments in this letter, it appears that this statement is likely not accurate. We therefore recommend it not be used as a basis for the alternatives analyses unless the necessary further evaluations are completed and show that it is accurate.

minimization, and mitigation measures for such a direct connection would occur at that time.

As indicated on page 4.3-41 of the Draft EIR, under normal operational conditions, the incremental entrainment effects attributed to the desalination plant “range from 0.01 percent for northern anchovy to 0.28 percent for CIQ gobies”, and these entrainment effects are less than significant.

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On a long-term average, the desalination plant intake flow would not exceed 104 MGD, as indicated in the Draft EIR. The maximum daily intake flow may exceed this value. The intake pump capacity is oversized to accommodate these maximum daily water needs. As indicated in the referenced Appendix C of the Draft EIR, at least one of the desalination plant intake pumps will be supplied with a variable frequency drive, which would allow the operator to adjust the total intake pump flow so the total daily intake flow is maintained at or below 104 MGD. As shown in *Tables 4.3-5 and 4.3-6* (page 4.3-41) of the Draft EIR, the effect of the maximum monthly water intake flow of 106 MGD is accounted for in the desalination plant entrainment analysis. Since it is the cumulative effects of entrainment that are of concern, analyzing these effects based on the maximum monthly flow rate rather than the long-term average flow rates results in a conservatively high (or worst case) estimate of the entrainment impact of the project.

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The assumptions contained in the comment are factually incorrect. Even if the Encina power plant were using up to its maximum permitted temperature increment of 20° F, defined in the plants’ NPDES permit, during the warmest day of the last 20.5 years, the maximum possible temperature of EGS discharge/desalination facility intake would have

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Also, because the DEIR does not address the costs associated with producing the desalinated water, its alternatives analysis does not yet adequately assess whether other project alternatives are feasible. As noted previously, the DEIR should include the costs associated with producing and buying the produced water and these costs should then be used to assess the feasibility of alternatives.

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Potential impacts of the proposed project on energy use are presented in Section 4.11 (*Public Utilities and Service Systems*) of the Draft EIR.

Further, the DEIR does not adequately establish the need for the specific level of water production for the proposed project. As a result, the document improperly dismisses alternatives that may be feasible and may meet all or most of the project's objectives. It appears from the description of local and regional water supplies and needs that nearly any feasibly produced amount of water would be useful. The alternatives discussed – the 50 mgd Proposed Project and the 25 mgd Reduced Production Proposal – represent only two of any number of possibly feasible alternatives that would help meet the project objectives. This inadequate description of potential production levels in the DEIR results in it dismissing various alternative water sources and various subsurface intake alternatives that may be feasible. For example, the DEIR dismisses an alternative site at the nearby Encina Water Pollution Control Facility primarily because it would be limited to 10 mgd. It also dismisses subsurface intakes because the number of intakes needed to produce 25 to 50 mgd is characterized as causing too many impacts along the coast. Regarding this last issue, the DEIR does not adequately describe the basis for these limitations – there are subsurface intakes elsewhere that produce more than five mgd and there are several subsurface intakes along the California coast that have been determined by the Coastal Commission to conform to Coastal Act requirements.

II

As indicated on page 4.11-20 of the Draft EIR, the desalination plant will be designed and operated with provisions to minimize energy consumption. The design provisions include the use of state-of-the-art energy recovery system and high-efficiency pump motors, and the operational provisions include ability to shut-down a portion of the desalination plant reverse osmosis trains during hours of peak power demand. The operator of the project has a strong incentive to achieve the greatest level of efficiency to reduce its cost of operations.

The DEIR additionally leaves out an adequate and necessary evaluation of how smaller desalination projects might fit with feasible conservation and recycling efforts in the service area. This is due in part to the lack of rationale for the proposed level of production from the desalination facility and results in the document missing what may be valuable consideration of combining smaller and less environmentally damaging desalination facilities with other water supply options.

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This comment expresses an opinion that seawater desalination is relatively inefficient when compared to demand management and other sources of water such as recycling brackish water desalination and increased use of imported water and questions whether the proposed project fits into California's increasing emphasis on energy efficiency and conservation.

We recommend the alternatives analyses be re-done to consider other feasible amounts of production and that other aspects of the proposed project be revised to reflect these other amounts. We also recommend the DEIR re-evaluate the feasibility of subsurface intakes and revise its analyses accordingly. This should include the geotechnical analysis used as the basis for such evaluation.

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17) Alternative ownership: The DEIR does not address alternative forms of ownership that may result in different types or levels of environmental impacts. We provided comments on this issue in our Notice of Preparation comment letter, and we again recommend the DEIR include an evaluation of the issues we identified in that letter. The DEIR should also evaluate the issue of ownership for this proposed project by comparing the likely characteristics and impacts of this proposal with those of the desalination facility being proposed by the San Diego County Water Authority. The Authority's proposal is clearly one that should be considered in the alternatives analyses, and it would be helpful for this DEIR to provide a comparison.

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The Department of Water Resources' draft California Water Plan Update 2005 acknowledges that local efforts to conserve and reuse water must continue to be implemented *and* new water supplies must be developed

RESPONSES TO COMMENTS

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18) Cumulative impacts: The DEIR does not adequately address cumulative impacts associated with the proposed project and its environmental setting. For example, it does not address at all the effects associated with impairment of nearby affected ocean and estuarine waters pursuant to Clean Water Act Section 303(d), and only partially addresses the numerous intakes, outfalls, and discharges of all types in the area affected by the proposed project. It also does not fully address the decline in the local and regional fishery caused in part by the multiple adverse effects occurring in the ocean waters. These aspects of the existing environmental setting need to be incorporated into a further revised DEIR.

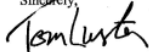
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Closing

Thank you again for the opportunity to comment on this document. In closing, we wish to reiterate that the DEIR should be revised as noted in this letter to allow it to suffice for CEQA review and so it can provide adequate information upon which to begin review pursuant to Coastal Act requirements.

NN

Sincerely,



Tom Luster
 Energy and Ocean Resources Unit

Cc: Poseidon Resources – Peter MacLaggan
 Regional Water Quality Control Board, San Diego
 Surfrider – Joe Geever

Attachment: May 14, 2004 Comment letter on Notice of Preparation

(including up to 500,000 acre-feet of desalination) to ensure an adequate water supply for California’s future.¹ Update 2005 states that if recent growth trends continue, water conservation and reuse alone will not be adequate to meet Southern California’s future needs. More than 600,000 acre-feet of new supply will be needed to meet the South Coast region’s needs by the year 2030.²


As noted in Section 9.0 (Growth-inducing impacts) of the Draft EIR, the San Diego region’s pursuit of seawater desalination is in direct response to growing concern over water supply reliability. This concern is driven by several factors, including climate, limited surface and groundwater supplies, expected population growth and decreasing reliability of imported water resources stemming from the Colorado River 4.4 Plan and QSA, Sacramento-San Joaquin Bay-Delta Accord and other regional, state and federal water issues.

Between 1980 and 2000, Carlsbad added 47,000 people to its population and the San Diego County added 952,000 people to its population. Carlsbad expects to add another 40,000 people under its voter approved Growth Management Plan, while the region is expected by 2030 to further increase its population by 1 million, to 3.8 million through natural growth and migration. Carlsbad’s population growth has already been studied and provided for in the City of Carlsbad’s General Plan. However, the project’s planned sale of desalinated water to Carlsbad is not dependent on any population growth in the City, but instead is intended to provide an alternate source of supply to meet the City’s current water needs at a cost that is equal to or less than expected future

¹ California Water Plan Highlights page 15.

² California Water Plant Highlights page 4.

RESPONSES TO COMMENTS

<p style="text-align: center;">STATE OF CALIFORNIA—THE RESOURCES AGENCY CALIFORNIA COASTAL COMMISSION <small>43 FREMONT, SUITE 2000 SAN FRANCISCO, CA 94105-2219 VOICE AND TDD (415) 904-5208 FAX (415) 904-5800</small></p> <p style="text-align: right;"><small>ARNOLD SCHWARZENEGGER, GOVERNOR</small></p> <p style="text-align: center;"></p> <p>May 14, 2004</p> <p>Mr. Scott Donnell City of Carlsbad Planning Department 1635 Faraday Avenue Carlsbad, CA 92008</p> <p>VIA FACSIMILE (760) 602-8559</p> <p>RE: Comments on Notice of Preparation (NOP) of Draft EIR for Proposed Poseidon Seawater Desalination Plant (State CEQA Clearinghouse #2004041081)</p> <p>Dear Mr. Donnell:</p> <p>Thank you for the opportunity to comment on the above-referenced NOP. The NOP is for a 50 million gallon per day seawater desalination plant and associated pipelines and facilities, proposed to be located at the Encina Generating Station in the City of Carlsbad.</p> <p>The proposed project will require a coastal development permit (CDP) from the California Coastal Commission. While the concerns and requests for information in this letter are focused largely on issues related to coastal resources and Coastal Act conformity, the issues also require evaluation during CEQA review. Addressing our comments early in the CEQA process will provide a more efficient environmental review and permitting process and will also allow the proposed project to incorporate alternatives and mitigation measures necessary to conform to Coastal Act requirements.</p> <p>The comments below are in two main categories – first, general comments that apply broadly to the proposed project or to several aspects of it; and second, comments on specific aspects of the proposal. We will likely provide additional comments after our review of the DEIR.</p> <p>GENERAL COMMENTS</p> <p>1) The DEIR should evaluate applicable issue areas identified in the Coastal Commission's Desalination Report as part of CEQA review: As our overarching general comment on this proposal, we request you review the recently published Coastal Commission report, "Seawater Desalination and the California Coastal Act" (March 2004). It describes many of the concerns and types of information that will likely need to be evaluated during project review, and suggests many ways in which a proposed desalination facility might more readily conform to the applicable Coastal Act policies. The report is available online at www.coastal.ca.gov. Many of the concerns identified in the report also require review during the CEQA process to allow full consideration of alternatives and measures that may be needed to avoid, minimize, or otherwise mitigate adverse effects. This comment letter incorporates that report by reference; therefore, please include applicable information described in the report in the CEQA review.</p>	<p>costs of imported water supplies. A complete discussion of growth-related issues is presented in Section 9.0 of the Draft EIR.</p> <p>The issues of population increases and water availability have become a concern not only of Carlsbad, but also of the San Diego County Water Authority (SDCWA) and the Metropolitan Water District of Southern California (MWD), who must provide services for these new residents.</p> <p>Approximately 97% of San Diego County's population lives within the SDCWA service area. San Diego County imports between 75 and 90% of its water supply from the State Water project and Colorado River Basin through MWD and SDCWA. According to the SDCWA Regional Water Facilities Master Plan (RWFMP), the SDCWA currently imports nearly 600,000 AF per year from MWD, but is only legally entitled to approximately 300,000 AF per year, and thus the region's imported water supply is highly vulnerable to water shortages and supply disruptions. Increased pressure on supplies diverted from the Bay-Delta and the Colorado River are anticipated to heighten the region's vulnerability to water shortages and supply disruptions.</p> <p>SDCWA's RWFMP has projected that as a result of the additional one million people that will be added to the county over the next three decades water demands will grow by 118,000 acre-feet per year (AFY) to reach 813,000 AFY. The contribution from water conservation efforts account for 54,000 AFY of reduced demand today and is expected to grow to over 12% or 93,200 AFY in reduced demand over the next 15 years. The increased demand projection of 118,000 AFY is net of 93,200</p>
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³ SDCWA Regional Water Facilities Master Plan Draft Program Environmental Impact Report, page 19-16, August 2003

⁴ SDCWA Regional Water Facilities Master Plan Draft Program Environmental Impact Report, page 19-17, August 2003

RESPONSES TO COMMENTS

*Comments on Notice of Preparation for Carlsbad desalination facility
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We also recommend the DEIR incorporate applicable documents of the state Desalination Task Force (available at <http://www.owue.water.ca.gov/recycle/desal/desal.cfm>) that describe other aspects of desalination likely to require evaluation during environmental review, including issues such as energy demand, economics, environmental justice considerations, and others.

- 2) **The DEIR must identify appropriate baseline conditions for CEQA and Coastal Act conformity:** Regarding baseline conditions for marine biology, please note that environmental review of this proposed project will require a new entrainment and impingement study. This study is needed to determine existing conditions for both CEQA and the Coastal Act, as the existing data, from a previous study done in 1979-80, are out-of-date and were obtained using sampling and analytical methods that are currently considered inadequate for determining the effects of the intake structure on the marine environment. The previous study, for example, did not use consistent sampling methods, did not study the full range of affected species, and used a modeling method that has since been surpassed by more accurate methods. We note that a more recent review of the original study done in 1997 did not generate new data but only reinterpreted the previously collected data, which as noted above, were fundamentally inadequate for determining impacts. Therefore, neither the original study nor the more recent review of that study provide the information necessary to determine current baseline conditions or describe the existing marine biological community that would be affected by the proposed project.

We recommend the City ensure the necessary entrainment/impingement study be done using protocols acceptable to the Regional Board for any similar study they may require of the Encina Generating Station, pursuant to requirements of section 316(b) of the federal Clean Water Act. We believe that with proper coordination, a single study could serve to meet the requirements of CEQA, the Coastal Act, the Porter-Cologne Act, and the federal Clean Water Act.

- 3) **The DEIR should include alternatives analyses to adequately address numerous aspects of the proposal:** Due to the potential significant impacts of the proposed project and the wide range of options available to meet the project purpose, many aspects of the proposal will require extensive alternatives analyses. The NOP states that alternatives to be considered include a "no project" alternative, a smaller-sized facility, alternative project sites, and alternative water supplies. As noted below, we request that the DEIR evaluate specific aspects of those alternatives along with several other alternatives. Please note that some of our specific comments later in this letter include several additional aspects to be included in the alternatives analyses. Alternatives considered should include the following:

- a) **The "No Project" Alternative:** Within the "no project" analysis, the DEIR should describe other sources that could provide up to 50 million gallons per day of water to the proposed service area. The DEIR should describe the availability and feasibility of these other sources, including conservation and recycling, and should include an economic comparison of those alternatives with the proposed project.

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AFY of projected savings due to ongoing and planned water conservation efforts.

Between 2001 through 2004 the SDCWA and member agencies conducted an extensive review of the water supply options available to address regional water supply needs through the year 2030; including alternatives that would maximize water conservation, groundwater and water recycling opportunities. This process included extensive opportunities for public input that culminated in the certification of the RWFMP Programmatic EIR (PEIR), which is incorporated by reference into the Draft EIR, and approval of a preferred project.

Alternatives that rely solely on maximizing water conservation and recycled water and increased groundwater production to meet future water supply needs were evaluated in the PEIR. These alternatives were rejected by the SDCWA because they failed to feasibly attain most of the basic objectives of the RWFMP as described below.

The increased water conservation alternative was rejected because it failed to meet four of the basic objectives of the regional project including³:

- Objective 1. *To plan for future treated and untreated water supplies and facilities to meet the project demands of a growing regional population.* This alternative fails to make sufficient provision for water supplies and facilities in response to new growth projections.
- Objective 2. *To protect public health, safety and welfare by maintaining and enhancing a safe and reliable supply of water.* Conservation programs defer or limit the rate of demand for water; however, these programs cannot reliably supply water in the long-term based on increasing population and economic growth.

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b) **Alternative project locations:** The proposed project would be located adjacent to the Encina Generating Station and would take advantage of several aspects of the power plant, including use of its existing cooling water structure and support infrastructure (e.g., parking, security, etc.). Even with these advantages, co-location raises unique concerns that require review of issues that may not arise for independently-located facilities. We note that the proposed facility would be located at an existing coastal power plant that was sited several decades ago using a design that may not reflect current understanding of the effects of its intake and discharge on coastal ecosystems. Therefore, while this location may offer some operational advantages for desalination, it may also contribute to ongoing significant environmental effects that will require consideration of alternative locations or designs to avoid or minimize those effects.

The Coastal Commission's desalination report describes many of the issues related to co-location, related primarily to the design, location, and combined operation of the two facilities, and the DEIR should comprehensively evaluate those issues. For example, the DEIR should evaluate the perceived advantage of having the desalination facility use the existing power plant cooling water system and balance it against the significant impacts caused by that system. This review should also identify the incremental effects of the proposed desalination facility (e.g., entrainment, energy use, etc.) that would be caused by using the existing system, and should assess whether there may be fewer adverse impacts if the desalination facility constructs a new intake and/or outfall system designed and located so as not to worsen or continue existing adverse impacts at the power plant. The DEIR should also describe the basis for any anticipated energy cost benefits for a proposed co-located facility.

In addition to siting issues related to co-location, the DEIR should also evaluate other feasible sites for the proposed facility. This analysis should consider whether there are alternative locations that may be more advantageous for distributing water to the intended service area or that may allow better connection to the existing distribution infrastructure.

c) **Alternative water sources:** The DEIR should evaluate alternatives to using the once-through cooling system at EGS as the water source. For reasons noted elsewhere in this letter, there may be substantial adverse effects related to the use of that cooling system that could result in the proposed facility not conforming to Coastal Act policies or that could require extensive mitigation measures. We therefore recommend the DEIR evaluate the use of various subsurface intakes (e.g., beach wells, Raney collectors, horizontally-drilled wells, etc.) at the proposed project site and at other feasible locations. We also recommend the DEIR compare the costs and benefits of using an open-water intake and the pre-treatment needed for that water source with the use of subsurface intakes, which generally do not require the level of pre-treatment needed to remove particulates from an open water intake source. We further recommend the document evaluate other water sources that may be available, such as brackish groundwater, recycled water, or other sources that may result in fewer adverse impacts and may be less expensive to desalt.

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- Objective 3. *To plan facilities that are cost-effective.* Over the long-term, conservation measures serve to defer or limit rate increases by reducing the region's need for other, more expensive supplies and increased infrastructure. However, this alternative fails to make any provisions for a reliable water supply in the long-term.
- Objective 4. *To provide an ability to adjust facility plans to meet changes in future demands.* This alternative fails to make sufficient provisions for additional supplies and facilities in response to new growth projections.

The alternative to increase local supply above planned yields with combined recycled water and groundwater projects was rejected by the SDCWA because it could not feasibly attain most of the basic objectives of the project, as described below⁴:

- Objective 1. *To plan for future treated and untreated water supplies and facilities to meet the project demands of a growing regional population.* Current regulatory and public acceptance obstacles surrounding development of increased local supply yield, above what is currently planned.
- Objective 2. *To protect public health, safety and welfare by maintaining and enhancing a safe and reliable supply of water.* Groundwater and recycling programs defer or limit the rate of demand for water; however, an increase in yield for these programs cannot reliable supply water in the long-term based on increasing population and economic growth.
- Objective 3. *To plan facilities that are cost-effective.* Over the long-term, increased use of groundwater would not be cost-effective because of costs related to construction, operation, treatment and mitigation. Increased use of recycled water would not be cost-

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d) Alternative ownership and operations: As noted in the Coastal Commission's recent desalination report, there are a number of concerns about privatization of water supply and water-related infrastructure that raise questions about how such a proposal will conform not only to the Coastal Act policies but other local, state, and federal environmental requirements. The DEIR should evaluate the effect of regulations that may apply differently to facilities owned or operated by public agencies, private entities, or public/private partnerships, and the different environmental effects that may result from each form of ownership. There are areas of regulation that differentiate between public and private entities, such as the level of public oversight and control, the determination of rates, service areas, and end users, and other issues that could result in very different effects from a publicly-owned versus a privately-owned facility. We note that previous Coastal Commission decisions regarding water supplies have been based in part on whether a proposed project was public or private. To address these and associated issues, the DEIR should describe the anticipated relationship between the facility owner and operator, regulatory agencies, and the water purchasers, as well as alternative relationships that could result in fewer environmental or social effects.

The DEIR should also address differences between public, private, and public/private partnerships regarding the applicability of international trade agreements and the adverse environmental effects that may result from these differences. For example, private entities covered by provisions of these agreements (e.g., NAFTA, GATS, etc.) may attempt to use these agreements to challenge state or local regulations as barriers to free trade. The challenges could be on anything from permit conditions meant to avoid or reduce environmental impacts to limits on the amount of water produced due to local growth restrictions. If successful, these challenges could result in various local or state regulations not applying as anticipated for the proposed facility, thereby significantly increasing adverse environmental impacts well beyond the level generally assumed during the planning and review process.

While the state has expressed confidence that its statutes and regulations will be implemented regardless of these international trade provisions, given the paucity of final legal decisions about how local and state regulations might apply to companies covered by such provisions, the DEIR should include a reasonable worst-case scenario describing the adverse effects of the proposed facility if local and state regulations were determined to not apply to the facility's construction or operation due to its ownership or operation by an entity covered under these trade agreements. The DEIR should also compare the differences between the facility as proposed and one owned and/or operated entirely by a public entity, such as the City of Carlsbad or the San Diego County Water Authority. This comparison should include alternative types of ownership or management of the proposed facility, including, for example, a public agency entering into a "design-build" contract with the proponent rather than a "design-build-operate" contract or similar arrangement.

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effective because of the costs related to treating and delivering the water.

- Objective 4. *To provide an ability to adjust facility plans to meet changes in future demands.* This alternative fails to make sufficient provisions for additional supplies and facilities in response to new growth projections.

Consequently, the increased conservation alternative, and the recycling and groundwater alternative to increase local supply above planned yields were rejected by the SDCWA. Instead, the preferred project approved by the SDCWA Board of Directors after numerous public workshops and hearings contemplates a balanced water supply portfolio for the San Diego region that includes already planned increase in conservation, already planned increase in water recycling, reduction in imported water use, already planned increase in water transfers and 80,000 to 150,000 acre-feet of desalinated water supply.

Similarly, CMWD considered a variety of actions to improve its water supply reliability, diversify supplies, and reduce dependence on imported water. These actions include a commitment to implement all cost-effective water conservation and recycling opportunities. Today, CMWD has one of the most aggressive conservation and recycling programs in the San Diego region.

CMWD is committed to implementation of the best management practices (BMPs) set forth in the California Urban Water Conservation Council's 1991 Memorandum of Understanding Regarding Urban Water Conservation in California. These BMPs include: residential surveys, plumbing retrofits, water audits, metering with commodity rates,

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On a related note, the DEIR should evaluate how the proposed method of ownership would address the project objective of having a local and reliable water supply. While the water itself would be produced locally regardless of the type of project ownership, a private proposal would result in decisions about how and where the water is used being made elsewhere in a manner that incorporates relatively little or no local decision-making ability. The DEIR should therefore assess the effects of this ownership and decision-making scenario on local resources.

- 4) **Administrative question regarding the CEQA review process:** The NOP states that the San Diego County Water Authority is preparing an EIR for a similar desalination proposal, but that it is an entirely separate proposal from the one being reviewed by the City. The two proposals do not appear to be entirely separate, as they are both at the same site, are the same size, and are proposed by the same applicant. Please describe in the DEIR why there are two independent CEQA review processes for what seem to be the same proposed facility.

COMMENTS ON SPECIFIC ISSUES

5) **Marine Biological Resources / Water Quality and Hydrology:**

- a) **Effects of intake structure:** One of the key environmental concerns with desalination is its potentially significant adverse effects on marine organisms. The reverse osmosis process causes the death of essentially all organisms drawn into the desalination facility, which, depending on the location and design of the intake structure can result in substantial environmental effects to the local or regional marine ecosystem. The proposed project would use the estuarine waters of Aqua Hedionda, which are believed to provide a relatively rich and significant habitat for a wide variety of marine and estuarine species. Please note, pursuant to our comments above regarding the environmental baseline, that the results of a new entrainment/impingement study will be needed before any conclusions can be made about the effects of the proposed project on marine biological resources.
- b) **Effects of proposed discharge:** The NOP states that the high salinity discharge from proposed project may affect marine biological resources. The DEIR should describe the scope of this impact, including the area and the species that would be affected. This analysis should include the "worst-case scenario" that would occur when the desalination facility is operating at full capacity, the power plant is operating at its lowest flow rates, and offshore hydrologic conditions act to reduce mixing or keep the high salinity discharge close to shore or near sensitive habitat areas.

Reverse osmosis desalination facilities generally use various alkaline and acid cleaning agents and anti-scaling chemicals. The DEIR should include a description of the types, amounts, and toxicity of materials to be used, the frequency of their use, and their fate and transport in the discharge system. It should also describe alternatives and mitigation measures that would avoid or minimize related impacts, such as using less toxic chemicals or less hazardous methods during the process (e.g., using ultraviolet light instead of chemical biocides), routing all or part of the

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conservation pricing, landscaping programs, high-efficiency clothes washer rebates, and public education and conservation programs.

In 1991, Carlsbad adopted a five-phase Recycled Water Master Plan designed to save potable water. The result is that CMWD has the most aggressive water recycling program in the region when measured in terms of percent of supply derived from recycled water. Currently, CMWD purchases recycled water from Leucadia County Water District's Gafner and Vallecitos Water District's Meadowlark water recycling plants for distribution to a variety of irrigation applications.

In 2004, approximately 2,061 AFY or 10% of CMWD's water needs were met by recycled water supplied from the two existing water recycling plants. This water, which is only used for non-potable applications, such as landscape irrigation, is sold at a reduced cost. Currently, there are approximately 30 miles of recycled water pipelines installed in CMWD's service area. CMWD's ability to supply the non-potable demands with recycled water is limited by the availability of supply from the two existing water recycling plants. To correct this deficiency, CMWD has invested \$49 million in a new water recycling facility and associated distribution mains at the Encina Wastewater Treatment Plant.

When the newly constructed recycled water production facility becomes operational in the fall of 2005, recycled water use in CMWD's service area is expected to more than double to 5,000 AFY and supply more than 20% of projected water demands. The use of recycled water is expected to continue to grow as it is the policy of CMWD to require dual plumbing and recycled water use in all new developments within its service area. Thus, water recycling has become and will continue to be a major

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discharge flows to a wastewater treatment facility, and shipping all or part of the generated solids to a landfill. For this latter example, the DEIR should also describe the chemical characteristics and total volume of materials that may be shipped to a landfill, along with a description of landfill capacity available for such material. The DEIR should also describe the synergistic impacts on the marine environment when the desalination discharge is introduced into a power plant discharge that has high organic and thermal loads.

- c) **Operational characteristics:** The facility as proposed would be dependent on water from the power plant cooling system, so the DEIR should include a thorough discussion of the relationship between desalination facility operations and power plant operations. As noted above, this should include an evaluation of the characteristics of intake and discharge flows when both facilities are operating and when only the desalination plant is operating. It should also describe the operational history of the power plant, any operating agreements between the two entities, and other similar considerations that could affect the type or degree of effects caused by either facility. One of the results of this evaluation should be identification of the incremental effects that would be caused by the desalination facility locating at this site and using this water source.
- d) **Alternatives:** For both the intake and discharge, the DEIR should evaluate alternatives that would avoid, minimize, and reduce entrainment or impingement impacts. The evaluation should include alternatives such as building smaller facilities, using subsurface intakes rather than open water intakes, and other similar approaches that would reduce entrainment. We recommend that these alternatives also consider the cost savings that may accrue by using subsurface intakes, which may reduce the facility's pre-treatment costs. The DEIR should similarly evaluate alternatives that would mitigate the impacts of brine discharges, such as alternative outfall locations, multipoint diffusers, or combining the discharge with other existing discharges, such as treated wastewater. Further, for both entrainment and discharge impacts, the analyses should include direct, indirect, and cumulative impacts, and describe available and feasible mitigation measures.
- 6) **Air Quality:** The Coastal Act requires that new development be consistent with requirements imposed by an air pollution control district or the State Air Resources Control Board. The NOP states that the proposed project would be in a non-attainment basin for certain pollutants and would likely result in substantial adverse impacts to air quality. The DEIR should describe the operating relationship between the proposed facility and the power plant and how the energy demand of the desalination facility (approximately 28-35 MW) would affect air emissions. The document should also assess all alternatives and mitigation measures that would allow the proposal to meet air quality requirements and would avoid or minimize the proposal's adverse impacts to air quality.
- 7) **Geology and Soils:** The DEIR should evaluate the geologic hazards at and near the site, including seismic activity, liquefaction, and tsunami-associated risks. It should also describe all feasible mitigation measures available that would avoid or minimize these risks.

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component of CMWD's water supply.

CMWD's 2000 Urban Water Management Plan (URMP) was referenced in the Growth Inducing Impacts discussion (Section 9.0) of the Draft EIR. The implementation of the water conservation and water recycling elements included in CMWD's UWMP are on schedule and are achieving the desired reduction in potable water use. These programs are designed to work in tandem with the proposed seawater desalination project to accomplish the City Council's water supply reliability goal of 90 percent water availability during a severe drought. This goal could not be met through conservation and recycling alone.

CMWD's success with these programs translates to a 3.5 percent reduction in the demand on the regional water supply system and an overall improvement in regional water supply reliability.

In summary, excessive dependence on water from the Colorado River and Bay-Delta has caused CMWD and SDCWA to shift their focus toward the development of local water resources. This includes the water transfer agreement with Imperial Irrigation District, implementation of recycled water projects, ground water desalination projects, water conservation programs, and proposed desalination plant in Carlsbad. SDCWA's Regional Water Facilities Master Plan determined that a combination of conservation, recycling, importation and desalination was needed to provide the San Diego region the most cost-effective and efficient means of addressing its water supply reliability needs through the year 2030.

A baseline assumption incorporated in the Draft EIR is that the water conservation and water recycling elements included in CMWD's 2000 Urban Water Management Plan and SDCWA's 2004 Regional Water Facilities Master Plan (RWFMP) will be fully implemented. However,

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- 8) **Hazards:** The NOP states that the facility would store and use various hazardous materials. The DEIR should assess the risks associated with transporting, storing, and handling these materials, and should identify measures required to minimize the associated risks.

The NOP also states that the proposed site is currently occupied by fuel storage tanks. The DEIR should include an assessment of soil conditions at and near the site, including results of samples to determine whether hydrocarbons or other hazardous materials are in the soil or groundwater. This information should be used to determine whether soil or groundwater remediation is needed and if so, how that cleanup work would affect proposed project construction and operation.

- 9) **Energy Use:** The Coastal Act requires that new development in the coastal zone minimize energy consumption. Reverse osmosis desalination facilities are energy-intensive. Recent data suggests that a 50 million gallon per day reverse osmosis facility would require approximately 28-35 megawatt-hours of electricity. The DEIR should provide an analysis of the energy use required by the proposed facility, the effects of this energy demand on local and regional energy supplies, and a discussion of feasible methods to minimize energy use at this facility. It should also discuss the costs of the electricity to be used and the assumptions behind those costs. Given the current uncertainty of energy supplies and prices, these analyses should be done using a reasonable range of possible energy costs.

- 10) **Land Use/Planning:** The DEIR should describe existing land use and zoning requirements within the areas proposed to be served by the new water supply, and should evaluate the effect of the water provided by this facility on the eventual build-out capacity of those areas.

- 11) **Growth-inducement:** The project is the largest proposed coastal desalination facility in the U.S., and could have significant growth-related effects. The DEIR should describe the growth that could potentially result from creation of this new water supply, including the location of that growth and the resulting effects on coastal resources. The DEIR should also identify any long-term commitments made or proposed to provide water to specific entities and the resulting effects of those commitments on growth.

The assessment of growth-inducing impacts should also describe measures currently in place within the proposed service area or measures that could be feasibly implemented to reduce or eliminate the need for water produced by this facility. This should include mitigation measures such as conservation and reclamation, growth, planning, and zoning policies of local governments in the proposed service area, and other similar measures. We also recommend that as part of the feasibility analysis the DEIR include a cost-benefit analysis to compare the costs of these measures with the cost of the desalinated water supply. Because desalinated water is relatively expensive, it is likely that a wide range of conservation or recycling practices will be found feasible to implement, either as alternatives to the proposed project or as mitigation measures.

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even with the targeted conservation and recycling in place, both SDCWA and CMWD identified a need for additional local water in an amount equal to or greater than the project capacity.

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As stated in the Draft EIR, the power supply for the Desalination Facility would be from the Encina Power Station (EPS) or the regional grid. If the EPS is the source of the power, the desalination facility would be able to draw power from either Unit 4 or Unit 5, the two newest and largest independent generating units on site. Under this mode of operation, the desalination facility will use approximately 10% of the generation capacity available from one of the two generating units. An additional 10% load on an individual generating unit does not represent enough demand to cause the EPS to bring on an additional generating unit, or increase the cooling water flow rate. Additionally, if EPS were to supply power to the Desalination Facility, it is not certain that EPS would increase its overall power generation, rather than reduce its power sales to other buyers. The EPS manages its level of power sales and power generation to achieve an optimum state of operation, taking into account a variety of factors including cost of fuel, maintenance requirements and the performance of its generating units. Typically, once a unit is brought on line, the cooling water system flow rate remains constant. Thus, the EPS would continue to pump the same amount of source seawater for cooling as it does today. The flow rate for Unit 4 and Unit 5 are 304 MGD and 350 MGD, respectively. The existing permit allows the EPS to divert up to 860 MGD.

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A detailed energy use breakdown by key desalination project components, including the power demand for product water transfer to the distribution system, was included in Appendix C of the Draft EIR. As indicated in this Appendix, the total desalination project power demand of

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Comments on Notice of Preparation for Carlsbad desalination facility
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- 12) **Transportation/Traffic:** Along with the immediate effects of traffic resulting from the proposed construction and operation, the DEIR should evaluate the transportation and traffic impacts associated with any growth-inducing elements of the proposed project. For example, if the additional water supply is likely to result in increased growth in areas to be provided with new water, the DEIR should include an evaluation of the increased traffic impacts in those locales.
- 13) **Utilities and Service Systems:** The NOP states that the proposed facility will generate approximately 20 tons per day of non-hazardous dewatered solid waste. The DEIR should describe the location(s) and methods of disposal for this waste and the effects of this additional waste load on the active life of the disposal sites. The DEIR should also discuss the conceptual pipeline alignments and the purpose for selecting these particular alignments. Specifically, the discussion should include the water supply systems available along these selected pipeline routes and the cumulative and growth-inducing impacts associated with connecting the proposed pipeline with these systems. The DEIR should additionally discuss the compatibility of the proposed desalination facility with the existing water supply distribution system. There are at least two areas of particular concern – first, whether the existing distribution system is engineered to move water from a coastal location inland rather than the other way around; and second, whether the desalination treatment method is compatible with the treatment used for other water that will be in the distribution system (for example, water treated with chlorine is not compatible with water treated with chloramines).
- 14) **Cumulative Impacts:** Among the potential cumulative impacts of the proposed project, the DEIR should emphasize evaluating those associated with marine biology, water quality, growth-inducement, and energy use.

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(cont.)

CONCLUSION

Again, thank you for the opportunity to comment. Please contact me at (415) 904-5428 or tluster@coastal.ca.gov if you have questions or would like more information. We look forward to continuing our involvement with the environmental review of this proposal.

Sincerely,



Tom Luster
 Environmental Specialist
 Energy and Ocean Resources Unit

Cc: CEQA State Clearinghouse
 Poseidon Resources – Peter MacLaggan
 San Diego Regional Water Quality Control Board – Hashim Navrozali
 Coastal Commission – Sherilyn Sarb

29.8 to 35.5 MW includes the energy needed to pump and deliver the potable water produced by the desalination plant to the final delivery point in the local distribution systems. No other additional power is required to support the project as described in the Draft EIR.

4P The proposed project and its related facilities are considered to be feasible, as are the proposed mitigation measures contained in the Draft EIR. Further, none of the alternatives considered in the Draft EIR were rejected on the basis of economic infeasibility. Therefore, the relationship the commentor attempts to draw between costs and feasibility is misplaced. Further evidence demonstrating economic feasibility of the proposed project is contained in the provisions of the Water Purchase Agreement (Appendix B of the Draft EIR), in which the project applicant has contractually committed to pursuing the project and providing product water to the City of Carlsbad from the project at an established price.

4Q See Response 4P. The project applicant has provided the Carlsbad Municipal Water District with product water pricing commitments. Therefore, from the standpoint of the Lead Agency, costs associated with water produced from the proposed project are predictable and within an acceptable range. As noted in Response 4P, none of the alternatives to the project identified in the EIR were rejected based on economic infeasibility.

4R See Response 4H. There is no uncertainty about the power plant operations. There are no plans by the owner of the Encina plant, Cabrillo Power, LLC, to initiate changes, reduce the power plant electricity output, or modify the current and historical power plant mode of operation or to discontinue the use of seawater for cooling purposes. Since claimed

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	<p>predictions of changes of power plant operations, change of cooling method or production capacity are not based on accurate information, are speculative in nature, and at present, are not contemplated, the Lead Agency is not required to address such speculative uncertainty.</p> <p>4S See Responses 4H, 4P and 4Q.</p> <p>4T The baseline for the marine biology and the areas that may be affected by the desalination project are addressed in Section 4.3 – Biological Resources, of the Draft EIR and are described in detailed reports contained in the Draft EIR, including a report by Dr. Jeffrey Graham entitled <i>Marine Biological Considerations Related to the Reverse Osmosis Desalination Project at the Encina Power Plant, Carlsbad, CA</i>, April 4, 2005; hereinafter the “Graham report”, <i>Marine Biological Considerations Related to the Reverse Osmosis Desalination Project at the Encina Power Plant</i>, April 4, 2005; hereinafter the “Graham report”, Draft EIR, Appendix E and a report prepared by Tenera Environmental entitled <i>Carlsbad Desalination Facility Intake Effects Assessment</i>, March 3, 2005; hereinafter the “Tenera report”, both of which are attached as Appendix E to the Draft EIR.</p> <p>4U As indicated previously, desalination plant operation baseline is defined in Section 3, Project Description, of the Draft EIR. The desalination plant is proposed to operate in conjunction with the power plant and to draw its feedwater from the power plant discharge system only and does not have a separate ambient seawater intake. As stated previously, there are no plans to shut down the power plant either on a short term or long term basis, and the power plant has been an integral component of the region’s power supply and has been in continuous operation for over fifty years.</p>
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	<p>The impingement and entrainment effects of the desalination plant are addressed in Section 4.3 of the Draft EIR. As indicated on page 4.3-36 of the Draft EIR, “The desalination plant feedwater intake will not increase the volume, or the velocity of the EPS cooling water intake, nor will it increase the number of organisms entrained or impinged by the EPS cooling water intake structure.”</p> <p>As indicated on page 4.3-35, “The Carlsbad Desalination Plant will not have a separate direct lagoon or ocean intake and screening facilities, and will only use cooling water that is already screened by the EPS intake.”</p> <p>As indicated on page 4.3-41 of the Draft EIR, under maximum monthly flow conditions, the incremental entrainment effects attributed to the desalination plant “range from 0.01 percent for northern anchovy to 0.28 percent for CIQ gobies.” These entrainment effects are less than significant.</p> <p>Even though such an event is not foreseeable at this time, in the event that the project were to require independent operation of the intake and outfall for any reason, the independent operation would be treated as a separate project and require approval by the City of Carlsbad and other agencies. The direct connection to the intake structure by the desalination plant would be subject to applicable CEQA and regulatory agency permit requirements. Avoidance, minimization, and mitigation measures for such a direct connection would occur at that time.</p> <p>4V See Responses 4T and 4U.</p> <p>4W First, the comment that the Draft EIR states an entrainment mortality of 94-95% is incorrect. As shown on page 4.3-36, section 4.3 Biological Resources of the Draft EIR, “Based on in-plant testing, the average</p>
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	<p>observed entrainment mortality of the power plant was 97.6 percent (2.4 percent survival).”</p> <p>It was not necessary to assume 100 percent entrainment mortality in the Draft EIR because the applicant completed a comprehensive study that provided actual measured mortality data (see the Tenera report cited in Response 4T).</p> <p>The “standard assumption” of 100 percent of entrainment mortality cited by the commentator would mean that the desalination plant would have no incremental entrainment effect. The analysis presented in the Draft EIR is therefore a more accurate and conservative assessment of the impacts which indicate an incremental loss of 0.01 to 0.28 percent of organisms (Draft EIR page 4.3-42).</p> <p>4X Page 4.3-41 of the Draft EIR states that “the incremental mortality assumes 100 percent mortality of all organisms surviving EPS upon withdrawal into the desalination facility.” Therefore, no revisions of the Draft EIR are required.</p> <p>4Y This comment incorrectly states that Agua Hedionda Lagoon is part of the designated critical habitat for the Tidewater Goby. The area designated as “Unit 10 Agua Hedionda Lagoon” in the critical habitat regulation adopted by the Service on November 20, 2000 -- Designation of Critical Habitat for the Tidewater Goby, 65 Fed. Reg. 69693 -- was vacated pursuant to <i>Cabrillo Power v. U.S. Dept of the Interior</i>. Furthermore, the Tidewater Goby larvae were not collected in the desalination project’s intake entrainment study. There is no evidence to support the claim that the Agua Hedionda Lagoon is identified as designated critical habitat for</p>
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	<p>the Tidewater Goby and the Lagoon is not included in any recovery plan for the species.</p> <p>4Z See Response 4G. As previously stated and documented in the Draft EIR, the project would not affect the pumping and water flow characteristics of the power plant.</p> <p>4AA The Draft EIR merely states that the power plant operates under an existing valid permit issued under Section 316(b) of the Clean Water Act. It does not rely on conformance with existing permit requirements to draw conclusions with respect to the proposed project, as the commentor incorrectly states.</p> <p>4BB As noted in Section 4.3 (page 4.3-36) of the Draft EIR, the desalination plant operations have no impact on the velocity of the power plant cooling water intake structure, because the desalination plant has no direct connection to this intake structure. Therefore, the assessment of velocity through the power plant intake is outside the scope of this Draft EIR.</p> <p>The assessment of compliance of the power plant operations with EPA 316(b) regulations and with the intake velocity criteria for “best available technology” quoted by the commentator is the subject of a separate regulatory process that is the responsibility of the power plant. See Response 4H for additional detail regarding 316(b) regulatory compliance for the EPS.</p> <p>A reduction of the power plant intake velocity is not anticipated to have an effect on desalination plant operations or its environmental effects. As indicated in the Draft EIR, the current incremental entrainment impact of</p>
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	<p>the desalination plant is less than significant. Reduction of the intake velocity of the power plant intake would lessen the number of entrained marine organisms, so the desalination plant effect will be even smaller and therefore less than significant. Since the impingement and entrainment effects of the desalination plant are less than significant, no other additional assessments are necessary or required under CEQA.</p> <p>4CC The commentor’s summary of selected information from the Draft EIR fails to acknowledge temporal aspects of the anticipated elevated salinity effects. The Draft EIR refers to the report analyzing the dispersion and dilution of the combined Power Plant and Desalination Facility by Dr. S. Jenkins and Mr. J. Wasyl (<i>Hydrodynamic Modeling of Dispersion And Dilution of Concentrated Seawater Produced by the Ocean Desalination Project at the Encina Power Plant, Carlsbad, CA. Part II. Saline Anomalies Due to Worst-Case Hydraulic Scenarios</i> March 5, 2005; hereinafter the “2005 Jenkins and Wasyl report”, Draft EIR, Appendix E), and to a marine biological assessment of the potential effects of the combined discharge by Dr. J. Graham (“Marine Biological Considerations Related to the Reverse Osmosis Desalination Project at the Encina Power Plant, Carlsbad, CA” April 4, 2005; hereinafter the “Graham report”, Draft EIR, Appendix E). Both reports were made available for public review with the Draft EIR.</p> <p>The Draft EIR, and the 2005 Jenkins and Wasyl and Graham reports acknowledge and discuss the finding that an elevated salinity region will occur between the end of the discharge channel and out to a distance of 1000 ft. However, as all of the documentation demonstrates, because of the high mixing ratio of the cooling water and desalination byproduct water, the salinity at the end of the channel will be about 37 ppt, and because of surf action, mixing will diminish salinity to about 34 ppt at</p>
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1000 ft. On rare occasions, end of channel salinity will increase to about 40 ppt (approximately once in twenty years). However, this will also be rapidly diluted (2005 Jenkins and Wasyl report; Figs. 25, 26, 30). Thus, the sandy bottom habitat immediately adjacent to the channel and extending to 500 ft (approximately 1.5 acres) would have salinities between about 37 and 35 depending upon ocean mixing conditions, which is well within the tolerance ranges demonstrated by studies conducted by Steven Le Page (*Salinity Tolerance Investigations: A Supplemental Report for the Carlsbad, CA Desalination Project Carlsbad, CA* March 7, 2005; hereinafter the “Le Page report”, Draft EIR, Appendix E). Also as noted in previous responses, the desalination plant is not anticipated to operate independent of the power plant.

4DD See Response 4I.

4EE The broad geographic dispersal mechanism of most benthic marine invertebrates is by means of a pelagic larva. As these larvae have the potential to settle out in habitats having different physical characteristics (e.g., temperature and salinity ranges), flexibility and the capacity to tolerate a range of conditions are intrinsic features of the genetic capacity of a species. The geographic salinity range of a species is a useful index of its salinity adaptation capacity that, in the absence of exhaustive laboratory testing of the salinity tolerances of each and every species occurring in the habitat near the Encina Plant’s discharge channel, provides a reasonable approximation of what the discharge salinities are required to prevent adverse effects on the marine community.

As detailed in Section 4.3 of the Draft EIR and in the Graham report (cited in Response 4CC), this general information was coupled with a literature review of salinity tolerances and with detailed salinity tolerance

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tests done by Le Page (cited in Response 4CC) on selected benthic species representative of the Encina area. Benthic organisms are important because they have limited potential for moving out of the permanent elevated salinity area.

As reported in Section 4.3 of the Draft EIR, Le Page conducted salinity tolerance and adaptation tests using elevated salinity water produced by the demonstration desalination facility, that has operated at the Encina Power Station for more that two years.

Le Page's results show:

- 1) no effect of exposure to salinities higher than have been modeled for the discharge plume and,
- 2) that salinity tolerances of species tested far exceed the tolerances predicted by geographic range (e.g., sand dollars, sea urchins, and abalone are unaffected by prolonged [\geq 19 days] exposure to salinities as high as 40 ppt).

Le Page also did tolerance tests involving gradual step increases in salinity (as might happen if Plant flow rate changes) and these show no effect of incremental salinity increases on animal survival. He also maintained a number of local species in an aquarium at 36 ppt for extensive periods at the Carlsbad test facility. In this tank he has shown that sea urchins, which are usually regarded as "at risk" to salinity variation, did very well in the higher salinity, as demonstrated by normal feeding, gains in body weight, and production of gametes during the breeding season.

The Le Page work shows that the salinity tolerances of species from the Encina area vastly exceed the salinity limits suggested by their

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	<p>geographic distribution and vastly exceed the range of salinities modeled for the Zone of Initial Dilution (ZID, the reference point most commonly referred to in the NPDES permit governing the Power Plant's thermal discharge).</p> <p>Specifically, and as reported in the 2005 Jenkins and Wasyl report of the dispersal and dilution of the combined discharge shows that, based on the historical record of Plant thermal discharge rate and assuming a desalination production rate of 50 MGD, there would be a permanent increased salinity "footprint" in the discharge plume. However, because of the mixing of the desalination byproduct and the Plant's discharge, the median salinity at the end of the discharge will be about 37 and this would be rapidly diluted across the 1000 ft extent of the ZID.</p> <p>The 2005 Jenkins and Wasyl report shows that, under historical average flow conditions, benthic salinity at a distance of 500 ft out from the discharge channel will be 35.2 ppt. At a distance of 1000 ft out from the end of the discharge channel, salinity would be 34.5 ppt. These findings can be seen by inspecting Figures 26 and 30 in the 2005 Jenkins and Wasyl report. These figures further show that, under the range of Plant flow volume scenarios and receiving water mixing conditions that were modeled for the discharge, the probability that a salinity of 37 ppt or greater occurring 500 ft from the discharge is less than 5%. Similarly, the probability of a 37 ppt or greater salinity occurring at 1000 ft is less than 2%.</p> <p>With respect to the area (about 1.5 acres) between the end of the discharge channel and 500 ft, Figure 25 in the 2005 Jenkins and Wasyl report shows that the median salinity occurring at the end of the discharge channel would be 36.8 ppt.</p>
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Regarding the comment related to time lapse for adaptation of species to elevated salinity levels, the 10% annual range of ocean salinity reported in the Draft EIR and in the 2005 Jenkins and Wasyl report is not seasonal. Rather, it reflects short-term spikes in salinity change caused by excessive rain or periods of low vertical mixing in association with evaporation from the ocean surface. Organisms are thus tolerant of short-term and abrupt changes. The kinds of tolerance data that are routinely collected by the EPA and by experimenters involve testing abrupt (short-term) changes in salinity. That is, placing a test group or organisms into a container of water having salinity other than that to which they are adapted, and testing survival, often for 48 hours or longer (Graham report). Such tests, by showing no mortality in groups experiencing only slight salinity changes, do in fact test the rapidity of the salinity adaptation response and provide statistically robust data for the threshold lethal effect (i.e., the concentration that is lethal for 50% of the test group, LC₅₀).

The modeling of the physical oceanography reported in the 2005 Jenkins and Wasyl report indicates that the historical rate of Power Plant cooling-water flow is fairly constant. This minimizes changes in the mixing ratio and will keep discharge salinity within a narrow range.

Regarding the comment that many organisms adapted to local conditions would actively avoid the higher salinity areas, Section 4.3 of the Draft EIR, and the 2005 Jenkins and Wasyl and Graham reports acknowledge and discuss the finding that an elevated salinity region will occur between the end of the discharge channel and out to a distance of 1000 ft. However, as all of the documentation demonstrates, because of the high mixing ratio of the cooling water and desalination byproduct water, the salinity at the end of the channel will be about 37, and because of surf

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action, mixing will diminish salinity to about 34 at 1000 ft. On rare occasions, end of channel salinity will increase to about 40 ppt. However, this will also be rapidly diluted, as shown on figures 25, 26 and 30 of the 2005 Jenkins and Wasyl report. Thus, the sandy bottom habitat immediately adjacent to the channel and extending to 500 ft (approximately 1.5 acres) would have salinities between about 37 and 35 depending upon ocean mixing conditions. The median end of pipe salinity is well within the tolerance ranges demonstrated by Le Page.

The Draft EIR and the Graham report both acknowledge that the elevated salinity regime established at the end of the discharge channel out to 500 ft may cause changes in the abundance and diversity of the benthic fauna. If some species living in this area are adversely affected by the salinity increase their numbers will decline. However, other species, those that normally reside in estuaries and are thus more tolerant of elevated salinity, would replace them. Thus, while there could be changes in the numbers of some species and the addition of other species, the habitat area, which is approximately 1.5 acres, would still maintain a benthic fauna. Fishes and other pelagic organisms can be expected to move into and out of the higher salinity area over sufficiently short periods of time to not be substantially affected.

Regarding the comment relative to the effectiveness of the aquarium studies in describing behavioral or other changes in the affected biological community, Le Page maintained a number of local species in an aquarium at 36 ppt for extensive periods at the Carlsbad test facility. In this tank he has shown that sea urchins, which are usually regarded as “at risk” to salinity variation, did very well in the higher salinity, as demonstrated by normal feeding, gains in body weight, and production of gametes during the breeding season. He further noted normal feeding and

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	<p>other (aggressive) behaviors. In other words, the salinity change is so slight that behavior, growth, and other parameters indicative of a normal community are substantially unaffected. It is the opinion of the experts who have assisted in the preparation of this EIR that these studies, conducted specifically for this project, are a useful and appropriate method of estimating potential environmental effects.</p> <p>4FF The proposed seawater desalination facility will be designed to produce potable water which will be in compliance with all regulatory requirements applicable to this project at this time, including with the boron “action level” established by the California Department of Health Services of 1 mg/L. The World Health Organization Guidelines do not have direct relevance to this project nor are they accepted as governing water quality regulations in the US and in many other developed countries in the world. For example, the European Union’s drinking water quality limit for boron is 1 mg/l as well and the boron drinking water standard in Canada is 5 mg/L.</p> <p>The project will use the newest state-of-the art commercially available seawater reverse osmosis membranes which are designed to reject boron at levels significantly higher than the “50-75 % removal efficiency for boron” indicated by the commentator. The commentator likely refers to the older generation seawater desalination membranes or the dual nanofiltration system proposed to be used by the City of Long Beach, which is different from the system that will be used in the proposed project.</p> <p>The newest generation seawater reverse osmosis membranes planned to be used at the Carlsbad seawater desalination facility have boron removal efficiency of 85 to 88% which allows desalinated water to comply with</p>
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the boron product water quality action level requirement of 1 mg/L using a single-stage membrane reverse osmosis system. As referenced in the Water Purchase Agreement (see Appendix B) the project applicant has committed to maintain the maximum level of boron in the desalinated water below the applicable DHS action level of 1 mg/L.

The Carlsbad seawater desalination facility is projected to produce potable water which will have boron concentration typically in a range of 0.6 to 1.0 mg/l. At intake boron level of 4.5 mg/l and rejection efficiency of 85 %, the boron concentration in the product water is projected to be 0.68 mg/L.

The high boron removal efficiency of the proposed reverse osmosis membranes has been tested and proven at Poseidon Resources' seawater desalination demonstration plant located in Carlsbad, California. This plant uses the same single-stage seawater reverse osmosis membrane system configuration as that proposed for the full-scale seawater desalination facility. The Poseidon demonstration plant has been in operation for over two years and has been producing high-quality desalinated water using actual Encina power plant condenser seawater. This demonstration plant uses the newest generation high-rejection seawater desalination membranes, which allows it to consistently produce potable water of boron levels below 1 mg/L and to comply with all applicable product water quality requirements.

If the applicable regulations change in the future and a more stringent boron limit is introduced, than the reverse osmosis desalination system will be upgraded as necessary to accommodate future boron or other water quality limits.

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	<p>4GG As noted in Responses 4A through 4NN, the Lead Agency believes that all potential impacts associated with the proposed project were accurately and described and disclosed in the Draft EIR. Therefore, the Lead Agency disagrees with the commentor's recommendation that further evaluations be completed.</p> <p>4HH See Response 4P.</p> <p>4II The CEQA Guidelines (Section 15126.6(b)) states that the purpose of the alternatives analysis is to focus on alternatives which are capable of avoiding or substantially lessening any significant effects of the project. As noted in the discussion of project impacts, feasible mitigation measures are proposed that have the ability to reduce nearly all of the significant effects of the project, with the exception being cumulative air quality impacts and regional growth-inducing impacts for which no feasible project-level mitigation is available. As noted in Section 6.0 of the Draft EIR, <i>Alternatives to the Proposed Action</i>, none of the project alternatives would avoid or mitigate impacts (including biological impacts) that could not be achieved with implementation of the proposed mitigation measures for the project. Therefore, the Lead Agency believes that the alternatives analysis presented in the Draft EIR includes a reasonable range of alternatives, based on the anticipated effects that those alternatives are intended to address. As such, the Draft EIR provides adequate information and appropriate level of detail is provided in the analysis of project alternatives to foster meaningful public participation and informed decision making.</p> <p>An analysis of modified intake designs (vertical intake wells, horizontal beach wells and infiltration galleries) is provided in Section 6 of the Draft EIR. Further detail supplied by the applicant has been provided in the</p>
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Final EIR to clarify the analysis provided in the Draft EIR, (titled *Carlsbad Seawater Desalination Project Alternatives to the Proposed Intake*), has been added to the appendices to the EIR. It should be noted that beach wells are not designated or recognized by EPA as “best technology available” for mitigation of intake impingement and entrainment under the applicable 316 (B) Federal Regulations. In addition, there is no long-term track record of the use of beach wells for large scale seawater desalination plants or for power plants. Although beach wells have proven to be viable for plants of capacity smaller than 1 MGD, open surface ocean intakes have significantly wider application for large seawater reverse osmosis (SWRO) desalination plants. At present, out of over 50 operational SWRO facilities worldwide with capacity larger than 5 MGD there are only four using beach well intakes. The largest SWRO facility with beach wells is the 14.3 MGD Pembroke plant in Malta. This plant has been in operation since 1991. The 11 MGD Bay of Palma plant in Mallorca, Spain has 16 vertical wells with capacity of 1.5 MGD each. The third largest plant is the 6.3 MGD Ghar Lapsi SWRO in Malta. Source water for this facility is supplied by 15 vertical beach wells with unit capacity of 1.0 MGD. The largest SWRO plant in North America which obtains source water from beach wells is the 3.8 MGD water supply facility for the Pemex Salina Cruz refinery in Mexico. This plant also has the largest existing seawater intake wells – three Ranney-type radial collectors with capacity of 3.8 MGD each. Neither one of these projects is comparable in capacity to the proposed 50 MGD Carlsbad seawater desalination project.

As indicated on page 4.3-41 of the Draft EIR the entrainment effect attributed to the proposed Carlsbad seawater desalination plant “ranges from 0.01 percent for northern anchovy to 0.28 percent for CIQ gobies.” This entrainment effect is less than significant. Therefore, the beach well

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	<p>option does not provide a significant advantage over the intake configuration proposed by the project proponent.</p> <p>As indicated on page 6-6 of the Draft EIR, the collection of 100 MGD of seawater would require the construction of a minimum of 25 beach wells along 4 miles of the Carlsbad beaches. (Note, additional technical detail prepared by the applicant has been provided in the Appendices of the Final EIR to help clarify the analysis provided in the Draft EIR (see <i>Carlsbad Seawater Desalination Project Alternatives to the Proposed Intake</i>). The excavation of over 2 million cubic feet of beach sand material and disturbance of a 4-mile strip of the beach shore for a period of over one year to build the needed 25 beach wells would result in an irreversible loss of large amount of marine organisms inhabiting the sand. The excavation, transportation and disposal of large volume (2 million cubic feet/74,000 cubic yards) of beach sand to construct the wells would also have significant additional environmental and traffic impacts. Taking under consideration that one large-size truck can transport up to 15 cubic yards of sand and the total amount of sand to be transported is over 74,000 cubic yards, the construction of the required number of beach wells would add a minimum of 9,866 one-way truck trips to the local traffic. In addition, the implementation of the beach well alternative would result in negative impacts in terms of beach aesthetics, appearance, and recreation since the majority of Carlsbad's ocean front is set aside as either Carlsbad State Beach or South Carlsbad Sate Beach.</p> <p>4JJ See Response 4M.</p> <p>4KK For the reasons outlined in Responses 4II and 4M, the Lead Agency disagrees with the commentor's recommendation that the alternatives</p>
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	<p>analysis should be revised and additionally believes that sufficient information relative to alternative intake mechanisms has been provided.</p> <p>4LL The Lead Agency does not agree that public ownership by itself would result in different types or levels of environmental impacts. Substantial evidence in the Draft EIR indicates that the project (privately owned and operated) would fully comply with the Coastal Act, the Clean Water Act, and other environmental laws and regulations. One example of this evidence is the provision in the Water Purchase Agreement between the Carlsbad Municipal Water District and the applicant (Appendix B) that provides that CMWD's obligation to buy water is subject to Poseidon having obtained and maintained all necessary governmental approvals for construction and operation of the project. Specifically:</p> <p>LEGAL ENTITLEMENTS. (Page 9 of the Agreement – Appendix B of the Draft EIR) Poseidon, at its sole cost and expense, shall be solely responsible for obtaining and maintaining (or causing its applicable subcontractors to obtain and maintain) any and all permits, licenses, approvals, authorizations, consents and entitlements of whatever kind and however described (collectively, "Legal Entitlements") which are required to be obtained or maintained with respect to the Project or the activities to be performed by Poseidon (or its applicable subcontractors) under this Agreement and which are required to be issued by any federal, state, city or regional legislative, executive, judicial or other governmental board, agency, authority, commission, administration, court or other body or any official thereof having jurisdiction with respect to any matter which is subject to this Agreement, including without limitation the California Coastal Commission, the Regional Water Quality Control Board, the City, the Carlsbad Housing and Redevelopment Commission ("RDA") and the District (each, a</p>
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	<p>"Governmental Authority"). Poseidon also shall be solely responsible for compliance with and for all costs and expenses necessary for compliance with the CEQA, to enable Poseidon to make Product Water available to the District pursuant to this Agreement, and Poseidon shall be responsible for initiating any procedures required for compliance with CEQA with regard to this Agreement. The City shall be the "Lead Agency" (as that term is used in CEQA) with respect to the Project and shall include this Agreement as part of the proposed Project which will be subject to environmental review under CEQA.</p> <p>In addition, the City has the right under the agreement to approve any assignee at its sole discretion, and any future assignee must agree to abide by Legal Entitlements.</p> <p>4MM Section 15130 of the CEQA Guidelines states that "An EIR shall discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable". In this instance, cumulatively considerable impacts of the project related to water quality consist of increased salinity in the combined discharge. As such, the Draft EIR provides an analysis of potential cumulative effects of other reasonably foreseeable past, present and future projects with similar impacts. Section 5.0 of the Draft EIR indicates that the proposed project design and operating parameters would not result in significant impacts to marine organisms as a result of the discharge associated with the proposed desalination plant. In support of this finding are studies pertaining to impingement and entrainment, modeling and prediction of elevated salinity levels, and effects of elevated salinities on marine organisms provided in Section 4.3 and 4.7 of the Draft EIR, and related appendices. Pursuant to the guidance provided in Section 15130(b)(1)(A), the Draft EIR contains a list of reasonably foreseeable past, present and future projects, including proposed seawater</p>
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RESPONSES TO COMMENTS

	<p>desalination plants that have the potential for cumulatively significant discharges, and impingement and entrainment effects on marine organisms. As noted in Section 5.0 of the Draft EIR, specific analyses for each of the cumulative projects that were considered may yield different results, depending on the proposed operational characteristics of each desalination plant and the resources found locally. However, the Draft EIR states that it is reasonable to conclude that the absence of localized impacts to populations of species that occur throughout the cumulative projects study area resulting from the proposed project would indicate that the project's contributions to cumulative effects on marine organisms would be less than significant.</p> <p>4NN The Lead Agency disagrees with the commentator's suggestion that the Draft EIR be revised and recirculated, based on the specific responses to issues raised by the commentator provided in Responses 4A through 4MM.</p> <p>400 The attachment to the comment letter which is identified as Comment No. 400 in the Final EIR consists of a letter dated May 14, 2004, from the California Coastal Commission, in response to the Notice of Preparation for the EIR. The Lead Agency acknowledges receipt of the California Coastal Commission's comment letter on the project NOP, as evidenced by its inclusion in Appendix A of the Draft EIR. The Lead Agency carefully considered all of the relevant issues raised in that letter and incorporated consideration of those issues that it considered to be relevant to the CEQA analysis in the Draft EIR.</p>
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RESPONSES TO COMMENTS

<div style="text-align: right; border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">Comment No. 5</div> <p style="font-size: small; margin-top: 10px;">STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY</p> <p style="font-size: small; margin-top: 5px;">DEPARTMENT OF TRANSPORTATION District 11 • 2829 Juan Street P. O. BOX 85406, M.S. 50 San Diego, CA 92110-2799 PHONE (619) 688-6954 FAX (619) 688-4299</p> <div style="text-align: center; margin-top: 10px;">  <p style="font-size: x-small; margin: 0;"><i>Flex your power! Be energy efficient!</i></p> </div> <p style="margin-top: 20px;">June 29, 2005</p> <p style="text-align: right; margin-top: 5px;">11-SD-005 PM 48.4</p> <p style="margin-top: 10px;">Mr. Scott Donnell City of Carlsbad Planning Dept. 1635 Faraday Ave. Carlsbad, CA 92024-3633</p> <p style="margin-top: 10px;">RE: <u>Encina Seawater Desalination Plant – Draft EIR (SCH 2004041081)</u></p> <p style="margin-top: 5px;">Dear Mr. Donnell:</p> <p style="margin-top: 5px;">The California Department of Transportation (Caltrans) appreciates the opportunity to review the Draft Environmental Impact Report (EIR) for the proposed Encina Seawater Desalination Plant project, located west of Interstate 5 (I-5), at Agua Hedionda Lagoon. This EIR also includes analysis of the construction of water conveyance facilities (pipelines, pump stations) which would extend into Carlsbad, Vista, and Oceanside. The project would involve installation of approximately 91,800 linear feet of 24 to 48 inch pipeline.</p> <p style="margin-top: 5px;">According to Figure 4.10-1 (Affected Roadway Existing Conditions), the pipeline will cross I-5 at Cannon Road and State Route 78 (SR-78) at College Boulevard and Melrose Drive. Any traffic operation impacts to I-5 and SR-78 at these interchanges caused by the project during its construction must be properly addressed and mitigated.</p> <p style="margin-top: 5px;">The Average Daily Traffic (ADT) generated by the power plant is approximately 183 trips per day, based on a traffic survey conducted for the power plant. It is not anticipated that additional traffic resulting from project construction would represent a substantial increase in daily traffic on affected roadways, and any increase is not anticipated to result in Level of Service (LOS) on these roadways falling below acceptable levels.</p> <p style="margin-top: 5px;">Any work performed within Caltrans' Right of Way (R/W) will require an encroachment permit. For those portions of the project within the R/W, the permit application must be stated in both Metric and English units (Metric first, with English in parentheses). If work is anticipated in the R/W, the applicant's environmental document must include such work in the project description and indicate that an encroachment permit will be needed. Information regarding encroachment permits may be obtained by contacting our Permits Office at (619) 688-6158. Early coordination with Caltrans is strongly advised for all encroachment permits. As part of the encroachment permit process, the developer must provide appropriate environmental (CEQA) approval for potential environmental impacts to Caltrans R/W. The</p> <p style="text-align: center; font-size: x-small; margin-top: 10px;"><i>"Caltrans improves mobility across California"</i></p> <div style="position: absolute; right: 0; top: 50%; transform: translateY(-50%); font-size: 2em;"> A B C D </div>	<div style="text-align: center; margin-bottom: 10px;"> RESPONSE TO COMMENT NO. 5 Department of Transportation (Letter dated June 29, 2005) </div> <p>5A This comment acknowledges that the Department of Transportation has reviewed the document and states a summary of the project description. Additional information on the project components are provided in Section 3.0 of the Draft EIR. No additional response is required.</p> <p>5B Comment noted. As indicated in Mitigation Measure 4.10-2, Section 4.10-6, the applicant will be required to submit a traffic control plan for review and approval by affected agencies, including Caltrans, prior to issuance of any required encroachment permits. As noted in the mitigation measure, the traffic control plan will be required to demonstrate that any congestion and delay of traffic resulting from project construction are not substantially increased and will be of a short-term nature.</p> <p>5C This comment indicates the commentator's concurrence with the Draft EIR conclusions relative to increased LOS does not raise any environmental issues that require additional response.</p> <p>5D This comment provides detail regarding the procedures for obtaining an encroachment permit and will be considered by the applicant. No environmental issues are raised and therefore no additional response is required.</p> <p>5E See Response 5D.</p>
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RESPONSES TO COMMENTS

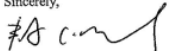
Mr. Scott Donnell
June 29, 2005
Page 2

developer will be responsible for quantifying the environmental impacts of the improvements (project level analysis) and completing all appropriate mitigation measures for the impacts. The developer will also be responsible for procuring any necessary permits or approvals from the regulatory and resource agencies for the improvements.

All work proposed within the State R/W will require lane and shoulder closure charts. Request the charts from Camille Abou-Fadel, District Traffic Manager, at (858) 467-4328. If work will be performed or equipment operated within 1.8 meters of a freeway or ramp lane, then that lane shall be closed. If the work or equipment is more than 1.8 meters away from the edge of traveled way but on the shoulder, then that shoulder shall be closed. Refer to the Caltrans Standard Plans (July 2004) sheets T10-T14.

Caltrans appreciates the opportunity to review this Draft EIR. For general questions regarding the Department's comments, please contact Brent McDonald at (619) 688-6819.

Sincerely,


MARIO H. ORSO, Chief
Development Review Branch

c: BMcDonald Planning MS-50
EGiojuangco Traffic Ops MS-55
MKharrati Design MS-35
SMorgan Staff

"Caltrans improves mobility across California"

D (cont.)

E

RESPONSES TO COMMENTS

Comment No. 6

STATE OF CALIFORNIA

DEPARTMENT OF FOOD AND AGRICULTURE

Office of Agriculture and Environmental Stewardship
1220 N Street, Room A-484
Sacramento, CA 95814
Phone: (916) 653-5658
Fax: (916) 657-5017

ARNOLD SCHWARZENEGGER, Governor

A.G. KAWAMURA, Secretary



June 28, 2005

Mr. Scott Donnell
Principal Planner
City of Carlsbad
1635 Faraday Ave.
Carlsbad, CA 92008

Dear Mr. Donnell:

The California Department of Food and Agriculture provides these comments on the Draft EIR for the proposed Carlsbad Desalination Project.

San Diego County has an agricultural industry valued at more than 1.3 billion dollars and is the top producing county of nursery products in the country. The availability and cost of water are top concerns for farmers in the region. This project will result in 50 million gallons per day of high quality, low-salinity water for the San Diego region and will supplement existing imported supplies. Expanding the water supply in Southern California is important to the future of agriculture, both in terms of supplying water here and limiting pressure on irrigated agriculture throughout the State.

In addition to finding that this project will have no overall significant environmental impacts, the project, including pipeline alignments, will be sensitive to the needs of the agriculture around it and will minimize disruption to those operations. Co-location of the desalination facility with the existing Encina Power Station also ensures that no agricultural operation will be displaced due to siting issues. Finally, the applicant's commitment to water quality studies will ensure existing agricultural operations in the project service area will not be adversely impacted.

Sincerely,

Steve Shaffer
Director

7/7 '04 21:18:00


JUN 20 9:01AM PESTICIDE CONSULTATION

6A

RESPONSE TO COMMENT NO. 6 Department of Food and Agriculture (Letter dated June 28, 2005)

This comment provides information relative to the author's opinion regarding the project and does not raise any specific issues relative to the adequacy of the environmental review. Therefore, no additional response is required.

RESPONSES TO COMMENTS

<p style="text-align: right;">Comment No. 7</p> <p>MAY-31-2005 TUE 10:01 AM CA STATE LANDS COMM DEPT FAX NO. 916 574 1885 P. 01/04</p> <p>STATE OF CALIFORNIA ARNOLD SCHWARZENEGGER, Governor</p> <p>CALIFORNIA STATE LANDS COMMISSION 100 Howe Avenue, Suite 100-South Sacramento, CA 95825-8202</p>  <p style="text-align: right;">PAUL D. THAYER, Executive Officer (916) 574-1800 FAX (916) 574-1810 Relay Service From TDD Phone 1-800-735-2929 from Voice Phone 1-800-735-2922</p> <p style="text-align: right;">Contact Phone: (916) 574-1890 Contact FAX: (916) 574-1885</p> <p style="text-align: center;">May 31, 2005</p> <p style="text-align: right;">File Ref: 2004041081 PRC 871/PRC 1409</p> <p>Mr. Scott Donnell Associate Planner Carlsbad Planning Department 1635 Faraday Avenue, Suite B Carlsbad, Ca 92088</p> <p>Ms. Nadell Gayou The Resources Agency 901 P Street Sacramento, CA 95814</p> <p>Dear Mr. Donnell and Ms. Gayou:</p> <p>SUBJECT: Draft Environmental Impact Report for the Precise Development Plan and Desalination Plant Project, San Diego County</p> <p>Staff of the California State Lands Commission (CSLC) has reviewed the subject document. Under the California Environmental Quality Act (CEQA), the City of Carlsbad is the Lead Agency and the CSLC is a Responsible and/or Trustee Agency for any and all projects that could directly or indirectly affect sovereign lands, their accompanying Public Trust resources or uses, and the public easement in navigable waters.</p> <p>The CSLC has jurisdiction and management authority over all ungranted sovereign lands of the State of California which includes tidelands, submerged lands, and the beds of navigable rivers, sloughs, lakes, etc. (e.g. Public Resources Code 6301.) Such lands include, but are not limited to, the beds of more than 120 navigable rivers and sloughs, nearly 40 navigable lakes, and the three-mile wide band of tide and submerged lands adjacent to the coast and offshore islands of the State. All tide and submerged lands, granted or ungranted, as well as navigable rivers, sloughs, etc., are impressed with the Common Law Public Trust which is administered by the CSLC.</p> <div style="text-align: right; margin-top: 20px;"> <p>— A</p> <p>↓</p> </div>	<p style="text-align: center;">RESPONSE TO COMMENT NO. 7 California State Lands Commission (Letter dated May 31, 2005)</p> <p>7A This comment provides information relevant to the CSLC’s jurisdiction and permitting authority. No additional response is required.</p> <p>7B Comment noted. Section 3.3 of the Draft EIR notes existing leases with the CSLC.</p> <p>7C Page 3-32 has been revised to read “A lease for portions of the project extending to state-owned lands under jurisdiction of the California State Lands Commission.”</p> <p>7D Salinity tolerance investigations for discharge salinity concentrations higher than 36 ppt were conducted as a part of a separate study completed by Mr. Steven LePage (<i>Salinity Tolerance Investigations: A Supplemental Report for the Carlsbad, CA Desalination Project Carlsbad, CA</i> March 7, 2005; hereinafter the “Le Page report”, Draft EIR, Appendix E). This study is included in Appendix E of the Draft EIR and discussed on page 4.3-48 of this document. As indicated on this page, “the experiments provided in the salinity toxicity study (LePage report) indicate that species exposed to historical extreme conditions (40 ppt) would not be substantially affected. Collectively, these studies demonstrate that the test species would not experience substantial adverse effects in terms of overall health and vitality when exposed to the full range of proposed operating conditions (salinity levels of 36 ppt to 40 ppt).”</p>
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RESPONSES TO COMMENTS

MAY-31-2005 TUE 10:01 AM CA STATE LANDS COMM DEPM FAX NO. 916 574 1885 P. 02/04

Mr. J Donnell
Ms. Madell Gayou
Page 2 of 4

The Public Trust is a sovereign public property right held by the State or its delegated trustee for the benefit of all the people. This right limits the uses of these lands to waterborne commerce, navigation, fisheries, open space, recreation, or other recognized Public Trust purposes. The CSLC has a legal responsibility for, and a strong interest in, protecting the ecological and Public Trust values associated with the State's sovereign lands. A lease from the CSLC is required for any portion of a project extending onto State-owned lands that are under its exclusive jurisdiction.

The project proponent, Poseidon Resources Corporation, LLC, proposes to construct and operate the Carlsbad Seawater Desalination Plant and other appurtenant and ancillary water and support and transport facilities, and to produce potable water and to convey that water to the City of Carlsbad and neighboring communities for use. The desalination facility will be located on a portion of the existing Cabrillo Power I, LLC's (Cabrillo), Encina Power Station (EPS). The project will require the demolition of the Fuel Oil Tank #3 and the remediation of any soil/groundwater impacted by contamination. The proposed facility would intake seawater through an existing EPS intake channel and discharge byproduct through an existing discharge channel. The intake/discharge channels, and their associated jetties, are the subjects of two separate leases issued by the CSLC to Cabrillo (PRC 871 and PRC 1409).

The CSLC requests that the lead Agency Address the following comments in the Final EIR.

CSLC Jurisdiction

On page 3-32 of the DEIR (Section 3.0, Project Description), it is noted that the current leases with the CSLC would need to be amended for the desalination project portion of the project. The language should be changed to reflect that Poseidon will be required to submit an application to the CSLC seeking authorization of a separate lease for this proposed use.

Environmental Review

Pages 4.3 - 48 and 49 discuss testing of the reverse osmosis (RO) concentrate. The test used a diluted RO concentrate at 36 parts per thousand (ppt) in a standard bio assay for giant kelp germination and growth (48 hours), 10 day old larval topsmelt for survival (7 days), and post fertilization of red abalone (48 hours). These tests showed no significant effect to these species at this concentration, which is stated to be the "typical range" for salinity discharge in the "Zone of Initial Dilution" (ZID) during standard operations at the facility. This study shows that no significant effects occurred to these species at the 36 ppt range. It does not show, however, if significant effects to these organisms would have resulted at higher concentrations as used in Salinity Toxicity Study for Survivability. The higher salinity ranges that were used in that study may occur under non-typical operating conditions at the plant.

A
(cont.)
B
C
D

7E

First, under normal operational conditions there will be virtually no potential discharge to the ocean of pollutants that may result from chemical treatment of raw seawater. The raw seawater may receive chemical treatment at the seawater desalination plant pretreatment filters. All waste streams and associated pollutants generated during this chemical seawater pretreatment process will be collected and treated by sedimentation. The settled water will either be recycled to the pretreatment filters, or discharged to the ocean via the existing discharge channel. The settled solids will retain virtually all of the chemicals and pollutants captured by the filters and will be either discharged to the City wastewater collection system for treatment and disposal or dewatered on site and trucked to a sanitary landfill.

Second, the commentator makes reference to the DEIR's mention of a 1993 California Coastal Commission report on desalination that expressed concern regarding the mix of desalination plant discharge with treated wastewater in Santa Barbara, California. The main difference between the proposed Carlsbad project discharge and the Santa Barbara desalination plant discharge, is that the Carlsbad project discharge is a mix of concentrated seawater from the RO system and ambient seawater used for cooling by the power plant. The Santa Barbara plant discharge was mixed with treated wastewater.

Bioassay tests completed on blends of desalination plant concentrate and wastewater effluent from the El Estero wastewater treatment indicate that these blends can exhibit toxicity on fertilized sea urchin (*Strongylocentrotus purpuratus*) eggs. Parallel tests on Santa Barbara desalination plant concentrate diluted to similar TDS concentration with seawater, rather than wastewater, effluent did not show such toxicity effects on sea urchins. Long-term exposure of red sea urchins by the

RESPONSES TO COMMENTS

MAY-31-2006 TUE 10:01 AM CA STATE LANDS COMM DEPM FAX NO. 916 574 1885 P. 03/04

Mr. Scott Donnell
Ms. Nadell Gayou
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In addition, page 4.3 - 49 of the DEIR states that concerns expressed in a California Coastal Commission (CCC) (1993) report on desalination, are not applicable due to the fact that the concentrate released from the facility will not be mixed with treated municipal wastewater. CSLC staff assumes that this is because the return water has been clarified before its release as stated on page 4.3 -- 34. This treatment process is further addressed in more detail on page 4.7 -- 22. This process raises a question, however, regarding the potential discharge of waste effluent from the desalination plant back into ocean via the cooling water discharge channel. The potential discharge of pollutants may result from the chemical treatment of raw seawater during various treatment stages at the facility, which would then be placed in the return flow to the ocean. Considering this, how does the treatment process that is being proposed, and resulting discharge, react differently in the environment from that of the treated municipal wastewater mentioned in the CCC's report when those processes would be assumed to be similar?

E

Throughout the DEIR, all salinity modeling and testing appear to have been run using historical discharge data from the EPS facility. This includes an analysis for "historical extreme conditions" that have resulted during past operations at the EPS. The DEIR, however, does not seem to address "non-historical" situations that may result when conditions may exceed those of the "historical extremes". Neither does it address the mitigation measures that would be needed to reduce or eliminate the impacts that may result from such a scenario (i.e., Discharge from desalination facility with little or no dilution from the EPS). This type of scenario would be the result of a reduction or elimination of the historical EPS cooling water return rates currently under consideration. In addition, this scenario has the potential to become even more complex in that along with reduced dilution the hyper-saline discharge may no longer have the benefit of enhanced mixing from the residual heat supplied by the EPS cooling water. The discharge that would occur in this scenario would likely be much denser than that of the ambient ocean conditions. This would in turn increase its potential to consolidate along the ocean bottom and drift intact prior to further mixing. This scenario could potentially cause significant impacts to the surrounding environment. CSLC staff would like to know what analysis for environmental impacts and resulting mitigation measures has been performed for any "non-historical" operational scenarios, which might occur should the EPS be taken off line for an extended period of time, or ultimately decommissioned.

F

Thank you for this opportunity to comment. Should you have any further questions regarding jurisdictional issues, please contact Jane Smith at (916) 574 - 1982. Questions regarding the environmental review should be directed to Thomas Filler at (916) 574 -1938.

blends of concentrate from the Carlsbad seawater desalination demonstration plant and ambient seawater discharged by the adjacent Encina power plant indicate that sea urchins can survive elevated salinity conditions when the discharge is a blend of power plant cooling water and concentrate (Figure 1). The Carlsbad desalination demonstration plant is equipped with a marine aquarium where a number of species indigenous to the existing power plant outfall are exposed to the elevated salinity conditions that are expected to occur after the concentrate discharge from the desalination plant is initiated.

There are many documented cases where mixing desalination plant concentrate and wastewater treatment plant effluent may result in a toxic discharge. The toxicity-related issues of the blend of wastewater treatment effluent and desalination plant concentrate have been studied in a great detail by the American Waterworks Research Foundation (AWERF), and summarized in their report entitled "Major Ion Toxicity in Membrane Concentrate", 2000.

Based on these studies, toxicity may not only be caused by the actual level of salinity, but by a significant change of the ratios of major ions in the discharge to the total dissolved solids concentration in this discharge (referred to as a Major Ion Toxicity by AWERF). The most likely factor causing the toxicity effect on the sensitive marine species when blending wastewater and desalination plant concentrate is the drastic change of the ratios between the major ions (Ca, Mg, Na, Cl and SO₄) and TDS that occur in the wastewater effluent-concentrate blend as compared to the same ratios in the seawater.


RESPONSES TO COMMENTS

MAY-31-2005 TUE 10:01 AM CA STATE LANDS COMM DEPM FAX NO. 918 574 1885

P. 04/04

Mr. Scott Donnell
Ms. Nadell Gayou
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Sincerely,



Stephen L. Jenkins, Asst. Chief
Division of Environmental Planning
and Management

cc: J. Smith
T. Filler

Since the RO membranes reject all key seawater ions at approximately the same level, the ratios between the concentrations of the Ca, Mg, Na, Cl and SO₄ ions and the TDS in the desalination plant concentrate are approximately the same as these ratios in the ambient seawater. Therefore, even if this concentrate is directly disposed to the ocean, marine organisms are not exposed to conditions of ion ratio imbalance that could trigger Major Ion Toxicity effect. Since wastewater treatment effluent has fresh water origin, and fresh water typically has very different ratios of key ions (Ca, Mg, Na, Cl and SO₄) to TDS than does seawater, blending the wastewater effluent with seawater concentrate may yield a discharge that has ratios of the key ions to TDS significantly different from those of ambient seawater. Marine organisms are not adapted to freshwater ratios of key ions to TDS. This significant ion make-up shift (ion ratio imbalance) caused by blending of concentrate and wastewater effluent has been proven to trigger Major Ion Toxicity and therefore is considered the most likely cause for the toxicity effect of the concentrate-wastewater blend on sensitive marine species of the Santa Barbara desalination plant.

The information presented above clearly indicates that blending of wastewater effluent and desalination plant concentrate may have negative effects on some marine species and is an inferior discharge option to co-disposal of desalination plant concentrate and power plant cooling water. The marine organisms that are most likely to show toxicity effects of the blend of wastewater effluent and desalination plant concentrate are the echinoderms (*the Phylum Echinodermata*), which include species such as the urchins, the starfish, the sand dollars, and the serpent stars. The echinoderms are the marine organisms most sensitive to the exposure of a blend of wastewater and concentrate because they are the only major marine taxa that do not extend into fresh water. All of these organisms

RESPONSES TO COMMENTS

	<p>are tested in the Marine Aquarium of the Carlsbad desalination plant and are showing no signs of toxicity or stress after over two years of exposure.</p> <p>7F As indicated in the Draft EIR, this Encina Power Station operates 24 hours a day and 365 days per year and supplies over 25 % of the power of San Diego County. As a result, the power plant cooling water flows are not highly variable in nature. The plant flow variability for the last 20.5 years is shown on Figure 1A of the <i>Hydrodynamic Modeling of Dispersion And Dilution of Concentrated Seawater Produced by the Ocean Desalination Project at the Encina Power Plant, Carlsbad, CA. Part II. Saline Anomalies Due to Worst-Case Hydraulic Scenarios</i> March 5, 2005 (hereinafter the “2005 Jenkins and Wasyl report”, Draft EIR, Appendix E). This variability was taken under consideration when analyzing the environmental impact of the operation and discharge of the co-located desalination and power plants.</p> <p>Cabrillo Power, LLC (Cabrillo), is the owner and operator of the Encina power plant, and is currently conducting impingement and entrainment studies to establish baseline conditions pursuant to renewal of their NPDES permit under the new Phase II 316(b) requirements. Cabrillo intends to achieve full compliance with the requirements, but have not as of yet determined the specific measures, or combination of measures that will be implemented to achieve compliance. However, the Lead Agency believes it is reasonably foreseeable that compliance can be achieved without reduction of seawater intake below the threshold levels identified as the “worst case” (historical extreme) scenarios analyzed in the Draft EIR and in the technical studies contained in Appendix E of the Draft EIR (“Hydrodynamic Modeling of Dispersion And Dilution of Concentrated Seawater Produced by the Ocean Desalination Project at the Encina</p>
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RESPONSES TO COMMENTS

Power Plant, Carlsbad, CA. Part II. Saline Anomalies Due to Worst-Case Hydraulic Scenarios” March 5, 2005; hereinafter the “2005 Jenkins and Wasyl report”, and “Marine Biological Considerations Related to the Reverse Osmosis Desalination Project at the Encina Power Plant,” April 4, 2005; hereinafter the “Graham report”).

Under the historical extreme scenario used as the basis for a worst case analysis of effects related to increased salinity discharge, the power plant seawater intake volume is identified as 304 MGD, which is approximately 53% of the average intake volume (20.5 year average of 576 MGD), and 35% of the maximum permitted intake capacity (857 MGD). Therefore, even if the proposed compliance measures included reduction of intake volumes, it is unlikely that the flow would drop below 304 MGD.

In addition, the baseline for measuring potential environmental impacts of a project under CEQA is the current physical environment, including current operating conditions. Since specific plans for compliance with the new Phase II 316(b) requirements are not known at this time, and since there is no current proposal to reduce or discontinue the power plant use of seawater for cooling purposes, the assessment of plant operations under unknown future conditions is speculative at best and is outside of the scope of the CEQA review of this project, as defined in the Draft EIR.

There is no uncertainty about the power plant operations. There are no plans by the owner of the Encina plant, Cabrillo Power, LLC, to initiate changes, reduce the power plant electricity output, or modify the current and historical power plant mode of operation or to discontinue the use of seawater for cooling purposes. Since predictions of changes of power plant operations, change of cooling method or production capacity are

RESPONSES TO COMMENTS

	<p>speculative in nature, and at present they are not contemplated, the Lead Agency is not required to engage in speculation for such uncertain circumstances.</p>
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