

Th 7a

ADDITIONAL
ADDENDUM TO COMMISSION PACKET
FOR
ENERGY, OCEAN RESOURCES and
FEDERAL CONSISTENCY

For Thursday, November 15, 2007

Item No. Th 7a

E-06-013

Poseidon Resources LLC

- Ex Parte Disclosures
- Correspondence

FORM FOR DISCLOSURE OF EX PARTE COMMUNICATIONS

Name or description of project , LPC, etc: Poseidon Resources Corporation, Carlsbad Desalination Facility
Date and time of receipt of communication: November 7, 2007; 11:15 a.m.
Location of communication: Santa Barbara with Brooks Firestone
Type of communication (letter, facsimile, etc.): face-to-face meeting
Person(s) initiating communication: Peter MacLaggan and Walt Winrow, Poseidon Resources Susan McCabe, McCabe & Company Rick Zbur, Latham & Watkins

Detailed substantive description of content of communication: (Attach a copy of the complete text of any written material received.)

Peter MacLaggan, Walt Winrow, Susan McCabe and Rick Zbur gave me a briefing on Poseidon's Carlsbad Desalination Project. The Poseidon team walked me through a detailed briefing package that they informed me has been provided to Commission staff and is in the Commission record for this matter. Among others, the Poseidon team covered the following points in the briefing package:

- Overview of the project;
• Need for the project;
• Poseidon's view that the project site and intake system are the least environmentally damaging project alternatives, compared to alternatives studied that the team explained;
• Implications of the Riverkeeper II case, including the point that it applies to power plants and that even if the power plant's cooling system is discontinued, Poseidon has analyzed the project on a stand-alone basis and believes it is consistent with all LCP and Coastal Act policies;
• Poseidon's commitment to render the project carbon neutral through implementation of a Climate Action Plan that was developed with a quantification methodology consistent with that recommended by the California Climate Action Registry;
• Poseidon's commitment to undertake 37 acres of wetlands restoration;
• Poseidon's obligation to maintain the Agua Hedionda Lagoon in the event that the power plant's maintenance obligations cease;
• Public access benefits of the project, including more than 15 acres of lands dedicated for coastal access purposes.

Date
Dan B. Secord, M.D.

Signature of Commissioner

Rick Zbur
Direct Dial: (213) 891-8722
rick.zbur@lw.com

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File No. 038182-0006

LATHAM & WATKINS LLP

November 13, 2007

VIA U.S. MAIL

Mr. Tom Luster
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

**Agenda Item
Th 7a**

Re: Carlsbad Desalination Project Coastal Development Permit Application
No. E-06-013, Agenda Item Th 7a

Dear Tom:

I am forwarding a copy of an email we received from the project opponents that is addressed to you. Although it is addressed to you, you do not appear to be included as one of the transmittal recipients.

We strongly disagree that the project opponents have been prejudiced in any way or that documents submitted by Poseidon have "not been made available to the public." As you know, once Poseidon has submitted information to the Commission, it becomes part of the Commission's public record, and any member of the public has access to such information.

The opponents are entitled to no special rights. The public record is available for review, just as it is for the project's many supporters. As you are aware, there is nothing unusual about the process undertaken by the Commission or Poseidon's submissions which have been in full compliance with Coastal Act requirements. We also point out that--except for the November submissions which included Poseidon's response to the November 2nd staff report and our project briefing package which was provided to the Commission staff when they were transmitted to Commissioners in compliance with Coastal Act requirements--the information itemized in the opponents' email has been part of the public record for over 3 to 6 weeks.

In addition, while we have not had time to confirm the details of their list, the dated list set forth in the opponents' email appears to correspond, not to the specific dates and titles of documents transmitted, but rather to the email subject headings and dates of Poseidon's email transmissions to Commission staff. It appears to us, therefore, that these submissions already have been received by the opponents, perhaps contemporaneous with their email delivery by

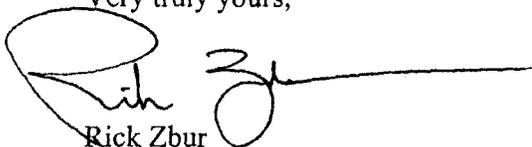
These materials have been provided to the Coastal Commission Staff

Poseidon to the Commission, providing evidence that they already have these documents, and further undermining the opponents' claim of prejudice.

It is difficult to see any prejudice given that the bulk of the submissions that are the subject of the email were submitted prior to the release of the staff report and given that the opponents apparently agree with and therefore need not respond to the staff recommendation. If there was any prejudice at all, it was to the applicant and the many water districts, government entities, elected officials, organizations, businesses and individuals who overwhelmingly support the project, and who had only a few days to analyze and respond to the staff report.

Finally, because it bears on their claim of prejudice, we request copies (including dates of transmission) of all Commission staff's email communications to and from the opponents and other third parties, so that we may respond at the Hearing in the event their unfounded claim of prejudice is raised. We request this communication be made part of the administrative record.

Very truly yours,

A handwritten signature in black ink, appearing to read "Rick Zbur", with a long horizontal line extending to the right.

Rick Zbur
of LATHAM & WATKINS LLP

cc: Peter MacLaggan
Walt Winrow
Susan McCabe

These materials have been provided to the Coastal Commission Staff

From: Marco Gonzalez [mailto:marco@coastlawgroup.com]
Sent: Monday, November 12, 2007 1:36 PM
To: Conner Everts; Joe Geever; Gabriel Solmer; Bruce Reznik; Livia Borak; Susan Jordan
Cc: Marco Gonzalez; Peter MacLaggan
Subject: Request for Documents: Poseidon/Desalination

Dear Mr. Luster

It has come to our attention that Poseidon Resources has submitted substantial documentation to the Coastal Commission in the last 30-60 days, most of which has not been made available to the public. As such, we have been unable to review such material, have not had sufficient time for our experts to review the information and arguments contained therein, and as a result, we will be extremely prejudiced at this week's hearing on the matter.

We would appreciate it if the applicant and/or Commission could make the following and any other "last minute" documents available on either Poseidon's or the CCC's website immediately:

- Sept. 28, 2007: Comparative Analysis of Intake Flow Rate on Sand Influx Rates at Agua Hedionda Lagoon: Low-Flow vs. No-Flow Alternatives
- Oct. 8, 2007: Additional Analysis of Submerged Intake Gallery
- Oct. 8, 2007: Analysis of Offshore Intakes
- Oct. 8, 2007: Issues Related to the Use of the Agua Hedionda Inlet Jetty Extension EIR to Recommend An Alternative Seawater Intake for the Carlsbad Desalination Project
- Oct. 9, 2007: Coastal Habitat Restoration and Enhancement Plan
- Oct. 9, 2007: Updated Response to Coastal commission's September 28, 2007 Request for Additional Information
- Oct. 17, 2007: Intake Cost Estimates
- Oct. 18, 2007: Climate Action Registry CO2 Conversion Calculation
- Oct. 21, 2007: Updated Response to Coastal Commission's September 28, 2006 Request for Additional Information
- Oct. 22, 2007: GHG Emission Baseline Protocol
- Nov., 2007: Carlsbad Desalination Project Briefing Package, CDP Application No. E-06-013
- Nov. 7, 2007: Transmittal of Garibaldi Study and Coastal Development Permit for Southern California Edison and San Dieguito River Valley Joint Powers Authority San Dieguito Wetland Restoration Plan
- Nov. 7, 2007: Draft Proposed Conditions of Approval
- Nov. 8, 2007: Letter to State Lands Commission Executive Director re: Desalination Project's Impact on Imported Water Use

Thank You.

Marco Gonzalez



Marco A. Gonzalez
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City of Vista

November 13, 2007

Chairman Pat Kruer
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105

RE: Support for Carlsbad Desalination Project - Coastal Development Permit
Application No. E-06-013

Dear Commissioners:

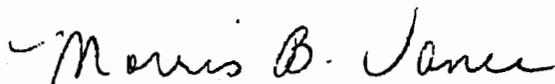
On behalf of the City of Vista, I would like to express our strong support for the Carlsbad Desalination Project's Development Permit.

San Diego County residents, including those from the City of Vista, lack a reliable supply of water. Much of the water currently distributed by the San Diego County Water Authority is imported from the Colorado River and the Sacramento-San Joaquin Delta. The proposed Carlsbad Desalination Project is an integral part of the San Diego region's efforts to diversify its water supplies and reduce our reliance on outside sources. The project has already cleared numerous regulatory hurdles, including an environmental review by the City of Carlsbad which concluded that there were no significant impacts.

Public agencies have already agreed to purchase approximately 70% of the 50 million gallons per day capacity proposed by the Desalination Project. This will enable the region to not only increase the amount of reliable water available, but also provide the water to ratepayers at prices specified under agreements with public agencies. This is a rare opportunity for the San Diego region to take a quantum leap forward in dealing with the issue of water supplies in partnership with a private entity who is willing to fund such an ambitious project.

Accordingly, we request that the California Coastal Commission approve the Carlsbad Desalination Project's Development Permit.

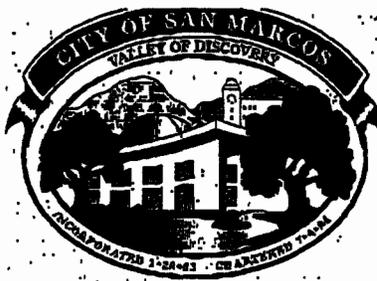
Sincerely,



Morris B. Vance
Mayor

cc: Governor Arnold Schwarzenegger
Assemblymember Martin Garrick
Senator Mark Wyland
Ben Hueso, California Coastal Commission Board Member
Sherilyn Sarb, Deputy Director, California Coastal Commission
Catherine Hill, League of California Cities

1 Civic Center Drive
San Marcos, CA 92069-2918



Telephone
(760)744-1050

November 13, 2007

California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, Ca 94105

RE: Carlsbad Desalination Plant, Coastal Development Permit Application No. E-06-013

Dear Commission Members:

This letter is regarding Poseidon Resources' proposed Carlsbad Desalination Plant which you will be voting on at your November 15th public hearing.

I represent San Marcos, a city of 76,235 residents and over 4,000 businesses in North San Diego County. San Marcos is fortunate enough to be served by the Vallecitos Water District, which also provides water, wastewater, and reclamation services to residents in Lake San Marcos, Carlsbad, Escondido, and Vista. In an effort to further conserve dwindling water supplies, Vallecitos has initiated an extensive conservation program for businesses and residences in San Marcos.

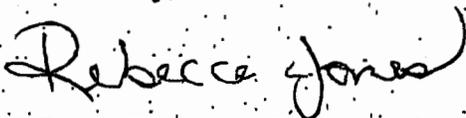
But the district also recognizes the importance of augmenting our imported water supplies with a locally-produced, drought-proof source. Our current water suppliers - the Bay Delta and the Colorado River - are beset with environmental challenges and potentially catastrophic droughts. We cannot count on these sources to keep up with our current or future needs.

Additionally, the recent wildfires have demonstrated the importance of having adequate supplies in our reservoirs and ensuring that natural disasters don't disrupt our water supply from the north.

The Board of Directors of Vallecitos believes that this project is critical for our region's water diversity. To support this effort, they have signed a purchase agreement with Poseidon Resources to purchase 7,500 acre feet annually from the Carlsbad Desalination Project. I agree with their assessment and I wholeheartedly support the project.

As an elected public official I must do my part to ensure my constituents have a safe and reliable water supply. Please vote yes on the Carlsbad Desalination Project.

Sincerely,



Councilmember Rebecca Jones
City of San Marcos

CC: Vice Chairwoman Bonnie Neely
Commissioner Steve Blank
Commissioner Khatchik Achadjian
Commissioner Mary Shallenberger
Commissioner Larry Clark
Commissioner Dave Potter
Commissioner April Vargas
Commissioner Adi Liberman
Commissioner Steve Kinsey
Commissioner Suja Lowenthal
Mr. Peter Douglas
Governor Arnold Schwarzenegger
Senate President Pro Tem Don Perata
Director Lester Snow
Senator Mark Wyland
Senator Denise Ducheny
Assemblymember Lori Saldana
Assemblymember Shirley Horton
Lt. Governor John Garamendi
Commissioner Michael Genest
Commissioner Anne Sheehan
Ms. Barbara Dugal
Ms. Susan Young
Commissioner Ben Hueso
Commissioner Steve Kram
Commissioner Sara Wan
Commissioner Mike Reilly
Commissioner William Burke
Commissioner Judy Biviano-Lloyd
Commissioner Dan Secord
Commissioner Sharon Wright
Commissioner Brooks Firestone
Commissioner Lorena Gonzalez
Mr. Tom Luster
Speaker Fabian Núñez
Secretary Mike Chrisman
Senator Dennis Hollingsworth
Senator Christine Kehoe
Assemblymember Martin Garrick
Assemblymember Joel Anderson
Assemblymember Mary Salas
Controller John Chiang
Commissioner Cindy Aronberg
Mr. Paul Thayer
Ms. Judy Brown
Ms. Jessica Jones

Tom Luster

From: diane nygaard [dandd2@peoplepc.com]
Sent: Wednesday, November 14, 2007 9:40 AM
To: Tom Luster
Cc: Dave Grubb; Meleah Ashford
Subject: Poiseidon Project Mitigation
Importance: High

Mr Luster

I would like to again state the concerns of the Carlsbad Watershed Network related to mitigation for the proposed Poiseidon desal plant.

Our concern is that mitigation for impacts to the Agua Hedionda watershed stay in the Agua Hedionda watershed. We certainly appreciate that most of our coastal watersheds would benefit from mitigation projects, as all are impaired. But Agua Hedionda will be damaged by this project. State funds are being used to develop a comprehensive Watershed Management Plan for Agua Hedionda- an objective assessment of needs- and a proritized list of projects that will have immediate benefit to the area that will be most effected by this plant.

We have been told that representatives from Poiseidon have stated they received no submittals for projects in Agua Hedionda. We know this is not true and are aware of 2 such submittals- one by Meleah Ashford requesting projects that would result from the AHWMP, and one from Dr. William Koestler regarding the acquisition of a parcel immediately adjacent to the ecological preserve surrounding the Agua Hedionda lagoon.

Please- we urge the California Coastal Commission to first consider projects in this watershed to mitigate for the impacts from this project.

Diane Nygaard
Carlsbad Watershed Network

Agenda Item 7.a,
Application E-06-013
Oppose
E. Kimura, Sierra Club



Main Office: (619) 299 1743
Chapter Coordinator: (619)-299-1741
Fax: (619)-299-7142
Email: creiff@sierraclubsandiego.org

San Diego Chapter
Serving the Environment in San Diego and Imperial
Counties
3820 Ray Street

RECEIVED

NOV 13 2007

CALIFORNIA
COASTAL COMMISSION

California Coastal Commission
45 Fremont, Suite 2000
San Francisco, CA 94105-2219

Dear Members of the Commission:

We concur with the staff report and recommendation to deny the Application E-06-013, for a seawater desalination plant located in Carlsbad by Poseidon (Channelside) LLC. However, there are two items that the report did not adequately address. These are:

1. Alternative to seawater desalination using increased conservation and water recycling was not addressed. The staff report cites the San Diego County Water Authority Urban Water Management Plan. The water supply portfolio year 2030 goal shows seawater desalination providing 89,000 acre-feet/year or 10% of the total projected need of 929,700 acre-feet. Conservation and water recycling provides 12% and 6% respectively. Our analysis indicates that increasing conservation and water recycling can provide options to eliminate the Poseidon desalination plant supply of 56,000 acre-feet per year or completely eliminate the need for the seawater desalination supply.. These alternatives are by far more cost effective and with significantly lower environmental impacts compared to seawater desalination that uses surface or subsurface seawater intakes. Energy use and green house gas emission are significantly less.

Increasing conservation from 12% to 18% eliminates the Poseidon plant and reduces the seawater desalination supply to 4% or 33,000 acre-feet/year will meet the County Water Authority total projected. Another option that increases water recycling from 6 % to 8% and conservation to 19% will eliminate the need for any seawater desalination. The County Water Authority water recycling plan includes only non-potable reuse. Because irrigation is the primary user of non-potable recycled water, the seasonal nature of the demand does not fully use the recycled water. The City of San Diego Water Reuse Study ¹ maximizes the recycled water capacity of their two water reclamation plants by providing a mix of both non-potable recycled water and highly purified recycled water using advanced water treatment for indirect potable reuse.

We believe that increased water conservation and reuse measures are feasible. Smart irrigation controllers, reducing turf for landscaping and converting to native and/or drought tolerant vegetation are just a few examples. Indirect potable reuse should be part of the supply portfolio.

¹ City of San Diego Report Water Reuse Study Final Draft Report , March 2006
<http://www.sandiego.gov/water/waterreustudy/involvement/fd2006.shtml>

2. The energy use for the stand alone desalination facility has not been adequately addressed. One primary reason that Poseidon chose to co-locate the desalination plant at the Encina power plant was to use the heated cooling water discharged from the power plant condensers as the feedwater supply. Poseidon has a patent² that describes the advantage of using heated feedwater because it improves the efficiency of the reverse osmosis filters. As a stand alone facility the feedwater temperature will be at the ambient seawater temperature; some 15 to 20 degrees cooler than the heated cooling water. The design recovery ratio of 50% will reduce and a new reverse osmosis design will be required. The energy requirement will increase.

Thank you for your consideration of these comments.

Sincerely,

A handwritten signature in black ink, appearing to read "Edward Kimura", with a long horizontal flourish extending to the right.

Edward Kimura
Water Issues
Sierra Club
San Diego Chapter

² U.S. Patent 6946081 assigned to Poseidon Resources Corp. Sept 20, 2005 Desalination system
<http://www.patentstorm.us/patents/6946081-description.html>

Tom Luster

From: Susan Jordan [sjordan@coastaladvocates.com]

Sent: Wednesday, November 14, 2007 9:36 AM

To: Tom Luster

Subject: Information for Commissioners

Tom,

Here is a copy of CCPN's comment letter as well as some articles that I have attached for their review.

11/14/2007



CALIFORNIA COASTAL PROTECTION NETWORK
906 Garden Street, Santa Barbara, CA 93101 • 805-637-3037
WWW.COASTALADVOCATES.COM

April 14, 2007

Chairman Patrick Kruer
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105

RE: Oppose Application E-06-013 (Poseidon Resources (Channelside), LLC, City of Carlsbad)

Dear Chairman Kruer and Honorable Commissioners,

I write on behalf of the California Coastal Protection Network (CCPN) to express our strong opposition to the proposed Poseidon Carlsbad Desalination Facility that will be heard by the Commission on Thursday, November 15th, 2007.

CCPN's mission focuses on review of large scale, precedent setting projects that have the potential to result in serious, long-term negative impacts to the California coast. Most recently, CCPN led the successful opposition to the BHP Billiton LNG Terminal which was defeated at the State Lands Commission, the Coastal Commission and later vetoed by the Governor.

In our opinion, the Poseidon Desalination Facility, as designed, represents a giant step backward for setting the standard for how desalination plants will be designed and operated in the years to come along the California coast. As such, the project should be denied and the applicant required to bring forth a state of the art proposal that will minimize impacts to coastal resources.

The Project Uses Out-of Date Technology and Aged Infrastructure:

Desalination technology has advanced considerably since Poseidon announced its intention to co-locate its desal plant with the Encina Power Plant and to use the plants massive intakes for its seawater. Newer desal proposals, some in California, are considering state of the art technology (e.g. subsurface intakes) that sharply minimize impacts of entrainment and act as a natural filter.

Further, the intakes that Poseidon proposes to use were approved during the 1950s and have never been subject to permitting review under the Coastal Act. It is hard to imagine the Commission approving these outdated intakes today for any industrial purpose, particularly given the Riverkeeper II decision that is

phasing out the use of these types of intakes for once through cooling.

Finally, the Poseidon design requires a higher throughput than other alternative designs. The conversion ratio for the Poseidon project is 6 part seawater to 1 part produced water. Greater throughput results in increased and, in this case, avoidable impacts.

The Project Uses Damaging Intakes That Are Being Phased Out:

When Poseidon first conceptualized the Carlsbad Project years ago, it made sense to co-locate with an existing power plant and make opportunistic use of the intake water already being utilized. However, with Encina's stated plan to move away from once-through cooling and to stop using the intakes, this rationale is no longer reasonable.

After years of being degraded by the Encina intakes, the Aqua Hedionda lagoon and the offshore marine environment have an opportunity to recuperate from the stresses placed on them over the years. To perpetuate that degradation unnecessarily, when other more efficient, less damaging alternatives exist is inconsistent with Coastal Act policies and intent.

The Project is Oversized to Meet Its Stated Purpose:

At 50 MGD, the Poseidon Project is double the size of Poseidon's previous, unsuccessful attempt to construct a fully operational desal plant at Tampa Bay. If approved as designed, Carlsbad will be *the largest desal plant in the United States and the Western Hemisphere*. In addition, the plant is designed to be expanded.

There is considerable concern that the real destination for this water (or its market displacement via trading of water rights) resides outside of the area it purports to serve. A recent NYTimes article (10/21/2007), titled "The Future is Drying Up" states that one possible destination that could benefit from a desal plant on the California coast is Las Vegas: "*Wealth allows for the additional possibility of a sophisticated trading scheme whereby Las Vegas might pay for a desalination plant on the Pacific Coast that would transform seawater into potable water for use in California and Mexico.*"

If the project was downsized to meet its stated objectives to serve the local region, many of the impacts that are the direct result of the amount of produced water (50MGD or higher) could be significantly lessened. In addition, downsizing would remove Poseidon's contention that such a large scale facility is not feasible with newer state of the art subsurface intakes.

Promises of Low Cost Water May Be Premature:

Poseidon promises to deliver water at or below the cost of imported water. Many interpret this promise to indicate that Poseidon's water will be a low cost option for the SoCal region over the long term. These assurances are difficult to assess and verify. To point, the applicant has recently publicly stated that it soon expects the cost of imported water to increase to the point where the company's initial operating loss will be transformed into profit for the company.

According to an article published in the North County Times (11/11/2007) the desalinated water is initially expected to cost between \$800 and \$1,050, and Poseidon will sell the water at a loss. However, Poseidon executive MacLaggan was quoted in the same article to say that the company expects the cost of imported water to rise faster than the plant's, and that the company is confident it will earn a profit.

At a minimum, the agreements between the water agencies and Poseidon should be closely examined to determine the nature of the contracts and the likelihood that they will ensure the future customers are not required to bear unreasonable increased rates for water.

Privatization of a Public Trust Resource Demands Stringent Controls: Poseidon seeks to downplay its 'use' of a public trust resource for private profit by highlighting its contracts with public water agencies. However, it is essential that the Commission scrutinize both the company and its parent in order to avoid future problems. At a minimum, conditions that could preclude problems similar to those that occurred in Tampa Bay must be seriously considered.

In seeking investors and lobbying for support for its Carlsbad proposal, Poseidon boasts of its Tampa Bay desal plant experience. However, the public record on that experience contradicts Poseidon's assertion and is a cautionary tale that the Commission should consider in its deliberations. An extensive article (attached) that appeared in the San Diego Tribune (1/29-2004), "Troubles in Tampa Imperil Carlsbad Desal Plans," chronicled the serious problems associated with the plant, indicated that Tampa Bay water officials placed significant blame on Poseidon for the project's difficulties, and advised California officials to "take it slow" when considering a deal with Poseidon. One of the contractors who went bankrupt was quoted as saying that Poseidon's chief concern was to keep costs down to ensure profits: "Poseidon was strictly focused on the dollars and cents of the project."

Currently, Poseidon is owned by Warburg Pincus, one of the largest private equity investment firms with extensive international holdings. While this relationship removes much of the uncertainty about Poseidon's ability to raise funds to complete construction (a problem it faced in Tampa Bay), it raises additional concerns about who will actually control an important public trust resource that Californians are becoming increasingly dependent on for their drinking water.

In a trend seen up and down the coast that was recently profiled by the San Francisco Chronicle (11/12/2007) in an article entitled "Prospectors Claim Stretches of Ocean, Hoping to Harness Energy", private companies are seeking to lock up control over key parts of California's coastline. In this respect, Poseidon is a water prospector. As any private company wants and needs to do for the bottom line, it looks to minimize cost and maximize profit. At times, this goal

may serve as a disincentive for making decisions that are protective of the public interest. Turning over control of California's first large scale desalination facility to a for-profit venture requires that the Commission proceed carefully and cautiously. At a minimum, demanding that the first facility of its type on the California coast, whether it be public or private, adhere to state of the art standards and technology is an imperative.

Sincerely,

A handwritten signature in cursive script that reads "Susan Gordon". The signature is written in black ink and ends with a long, horizontal flourish.

The San Diego Union-Tribune

Troubles in Tampa imperil Carlsbad desalination deal

By Jose Luis Jiménez □ UNION-TRIBUNE STAFF WRITER

January 29, 2004

TAMPA, Fla. — Problems at a plant here that makes seawater drinkable were a major reason San Diego County officials are poised to withdraw from a \$270 million deal to build a similar facility in Carlsbad.

Boxes of documents in the Florida project paint a picture that made West Coast decision-makers squirm. Among them:

Two contractors hired to build the plant went bankrupt.

Poseidon Resources, the Connecticut-based company that proposed building the desalination plant, had trouble getting the financing it had promised. That forced Tampa Bay Water, the regional water authority, to sell public bonds to take over the project.

The plant was delivered five months behind schedule, and more than a year later it has delivered less water than promised, at higher operating costs.

Tampa officials say an agreement enabled Poseidon to hide the results of tests designed to predict the plant's performance. Had they been able to review the data, officials say, they could have averted many of the plant's problems.

Poseidon wanted the same kind of agreement in the project it proposed at the Encina Power Station in Carlsbad, and that led to the recent breakdown in talks, San Diego water representatives said.

The board of directors of the San Diego County Water Authority is

expected to vote today to suspend negotiations with Poseidon.

Although authority officials said they want to wait to see how the situation in Florida is resolved, Poseidon officials said the problems occurred after Poseidon left the project.

They say a plant in Carlsbad can be a success and that they intend to move ahead on their own with the project. They plan to sell the desalinated water to cities such as Carlsbad and Oceanside.

The goal of turning seawater into drinking water remains a part of the county's future, said Ken Weinberg, the authority's director of water resources. The question is when.

How it began

Following a severe drought in the 1990s, Tampa Bay Water embraced desalination as a new source to quench the thirst of the booming Tampa/St. Petersburg region.

For decades, the technology has served millions of people in arid regions of Europe and the Middle East. The U.S. Navy uses it for its fleet. There wasn't much interest in the United States because the cost of removing salt from seawater had long been nearly double that of traditional water sources. Recent advances, however, have dropped the price.

In 1998, Poseidon won an \$85 million contract in Tampa to design, build, own and operate a desalination plant, which was to be the largest such plant in North America. It was to be built next to an existing power plant, whose pipes would funnel in the seawater.

Tampa Bay Water was to buy the water at a guaranteed price for five years, then buy the desalination facility.

That was the same arrangement proposed for the Carlsbad project, with Poseidon building the plant and the San Diego County Water Authority taking ownership after several years.

The benefit of the Florida contract, water officials there said, was that it shifted the obtaining of numerous permits and securing of financing to Poseidon, a private company. If the plan failed, the arrangement would protect the public's money.

Things began to go wrong in 2000, two years into the contract, when Poseidon's business partner, Stone and Webster, declared bankruptcy; it was later liquidated. Poseidon chose New Jersey-based Covanta Energy Corp. as a new partner. The company had no experience in desalination, according to records filed by Covanta with the New York bankruptcy court in 2002.

In an interview earlier this month, Covanta spokesman John Phillips said Poseidon's chief concern was to keep costs down to ensure profits. "(Poseidon) was strictly focused on the dollars and cents of the project," he said.

By December 2001, the project had stalled because neither Covanta nor Poseidon had been able to get financing.

Poseidon blamed its financing problems on the bad economy after the Sept. 11, 2001, terrorist attacks. Peter MacLaggan, a Poseidon vice president, said the company got the loan it needed the week before the board voted to take over the project.

Tampa Bay Water bought out Poseidon anyway. By financing the project through government bonds, the agency said, it saved about \$1.5 million annually in taxes and profits to Poseidon.

Tampa Bay Water kept Covanta as the builder and hired Poseidon as a consultant. The plant was 90 percent designed and 35 percent built.

But things still did not go smoothly.

Covanta failed to meet the completion deadline of Dec. 31, 2002, and also missed subsequent deadline extensions, because the plant did not work as designed.

During one test, the plant reached its goal of producing 25 million gallons of water per day, but the process clogged key filters, which had to be replaced each week.

That added about \$1 million to the estimated \$10 million annual operating cost of the plant, said Neil Callahan, a water expert hired by Tampa Bay Water.

The filtration problems and their cost were glossed over by Poseidon. In a memo dated June 11, 2003, Poseidon called the test a success. In an interview last week, CEO Andrew Kingman said the test was deemed a success because the plant met the goals of water production, power consumption and chemical use.

Poseidon retracted the letter, at the request of Tampa Bay Water, and the company left the project a short time later.

In September, the plant failed another performance test. The Tampa Bay Water board responded by withholding payment to Covanta and voting to remove the contractor from the project.

The next month, Covanta declared bankruptcy. The company has ignored Tampa Bay Water's requests to leave the plant and cease operations. The agency's consultants fear that if the plant continues to run, the problems with the pre-treatment system could cause permanent damage to the remainder of the plant.

A bankruptcy judge in New York ordered both sides to work out their differences in mediation.

Focus on deadlines

Tampa Bay Water officials credit Poseidon with obtaining the permits and starting construction on schedule. But they say that, as the project developer, the company carries a large part of the blame for the plant's problems, including the selection of two construction partners that went bankrupt and trouble getting financing.

In its role as a construction consultant, it never raised concerns about changes to the design of the plant or flagged any construction defects, according to Tampa officials. The company's monthly reports focused on meeting construction deadlines; other problems were not deemed critical.

"Any of those references were in the category of passing comments," said water expert Callahan.

An example of a design change that has caused havoc at the plant is the way ocean water is pre-treated for desalination. Pre-treatment is important because it removes 95 percent of the impurities in the water. A recent tour of the Tampa plant showed the pretreatment process turning brown seawater clear.

But Tampa officials say too many smaller particles are slipping past the pre-treatment system, clogging fine filters designed to remove only salt. When Covanta entered the project, it changed the system from a proven technology to a design patented by one of its subsidiaries, said Jerry Maxwell, executive director of Tampa Bay Water.

That change in the pre-treatment process, and the failure to catch enough particles, are the Achilles heel of the project, Maxwell said. The change, he said, occurred on Poseidon's watch.

Poseidon officials say the pre-treatment system they designed works.

The problems, they said, come from changes made after they left. Tampa water officials believe Poseidon is rewriting history as it pitches multimillion dollar projects in California. They cite an episode at a November meeting of the San Diego County Water Authority as an example.

When the authority board started asking questions about the troubles in Tampa, Poseidon Vice President MacLaggan blamed the problems on the absence of a "static mixer" used to blend chemicals with the seawater to ease the removal of impurities during pre-treatment.

Tampa Bay Water officials say the static mixer was removed while Poseidon was the project developer and replaced by a "baffle wall" designed to mix the chemicals.

Two consultants and an engineer for the agency say the wall was installed according to plans designed under Poseidon's leadership, yet the plant still had trouble operating.

MacLaggan disagreed and said the design was changed after Poseidon left.

He added that if Tampa Bay Water had not bought out Poseidon and the company had been allowed to complete the project, the plant's problems would have been corrected.

Tampa Bay Water officials said the mixer issue illustrates Poseidon's role in the project's troubles.

"It's a bit of pre-emptive 'it isn't us' as they are pursuing projects in (California)," Callahan said. "It's an attempt to distance themselves from the project."

This give-and-take among professionals who worked on the Tampa project convinced San Diego water officials that they should take it

slow.

"We are all still trying to understand what happened" in Tampa, said the Water Authority's Weinberg. "We want to learn those lessons before we sit down and write a contract."

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October 21, 2007

Excerpted Quote: “Thanks to Las Vegas’s growth — the metro area is now at 1.8 million people — cost is currently no object. The city’s cash reserves have made it possible for Mulroy to pay Arizona \$330 million for water she can use in emergencies and to plan a controversial multibillion-dollar pipeline to east-central Nevada, where the water authority has identified groundwater it wants to extract and transport. Wealth allows for the additional possibility of a sophisticated trading scheme whereby Las Vegas might pay for a desalination plant on the Pacific Coast that would transform seawater into potable water for use in California and Mexico. In exchange, Nevada could get a portion of their Colorado River water in Lake Mead.”

Full article at: http://www.nytimes.com/2007/10/21/magazine/21water-t.html?_r=3&oref=slogin&pagewanted=print&oref=slogin

The Future Is Drying Up

By **JON GERTNER**

Correction Appended

Scientists sometimes refer to the effect a hotter world will have on this country’s fresh water as the *other* water problem, because global warming more commonly evokes the specter of rising oceans submerging our great coastal cities. By comparison, the steady decrease in mountain snowpack — the loss of the deep

accumulation of high-altitude winter snow that melts each spring to provide the American West with most of its water — seems to be a more modest worry. But not all researchers agree with this ranking of dangers. Last May, for instance, Steven Chu, a Nobel laureate and the director of the Lawrence Berkeley National Laboratory, one of the United States government's pre-eminent research facilities, remarked that diminished supplies of fresh water might prove a far more serious problem than slowly rising seas. When I met with Chu last summer in Berkeley, the snowpack in the Sierra Nevada, which provides most of the water for Northern California, was at its lowest level in 20 years. Chu noted that even the most optimistic climate models for the second half of this century suggest that 30 to 70 percent of the snowpack will disappear. "There's a two-thirds chance there will be a disaster," Chu said, "and that's in the best scenario."

In the Southwest this past summer, the outlook was equally sobering. A catastrophic reduction in the flow of the Colorado River — which mostly consists of snowmelt from the Rocky Mountains — has always served as a kind of thought experiment for water engineers, a risk situation from the outer edge of their practical imaginations. Some 30 million people depend on that water. A greatly reduced river would wreak chaos in seven states: Colorado, Utah, Wyoming, New Mexico, Arizona, Nevada and California. An almost unfathomable legal morass might well result, with farmers suing the federal government; cities suing cities; states suing states; Indian nations suing state officials; and foreign nations (by treaty, Mexico has a small claim on the river) bringing international law to bear on the United States government. In addition, a lesser Colorado River would almost certainly lead to a considerable amount of economic havoc, as the future water supplies for the West's industries, agriculture and growing municipalities are threatened. As one prominent Western water official described the possible

future to me, if some of the Southwest's largest reservoirs empty out, the region would experience an apocalypse, "an Armageddon."

One day last June, an environmental engineer named Bradley Udall appeared before a Senate subcommittee that was seeking to understand how severe the country's fresh-water problems might become in an era of global warming. As far as Washington hearings go, the testimony was an obscure affair, which was perhaps fitting: Udall is the head of an obscure organization, the Western Water Assessment. The bureau is located in the Boulder, Colo., offices of the National Oceanic and Atmospheric Administration, the government agency that collects obscure data about the sky and seas. Still, Udall has a name that commands some attention, at least within the Beltway. His father was Morris Udall, the congressman and onetime presidential candidate, and his uncle was Stewart Udall, the secretary of the interior under Presidents John F. Kennedy and Lyndon Johnson. Bradley Udall's great-great-grandfather, John D. Lee, moreover, was the founder of Lee's Ferry, a flyspeck spot in northern Arizona that means nothing to most Americans but holds near-mythic status to those who work with water for a living. Near Lee's Ferry is where the annual flow of the Colorado River is measured in order to divvy up its water among the seven states that depend on it. To many politicians, economists and climatologists, there are few things more important than what has happened at Lee's Ferry in the past, just as there are few things more important than what will happen at Lee's Ferry in the future.

The importance of the water there was essentially what Udall came to talk about. A report by the National Academies on the Colorado River basin had recently concluded that the combination of limited Colorado River water supplies, increasing demands, warmer temperatures and the prospect of recurrent

droughts “point to a future in which the potential for conflict” among those who use the river will be ever-present. Over the past few decades, the driest states in the United States have become some of our fastest-growing; meanwhile, an ongoing drought has brought the flow of the Colorado to its lowest levels since measurements at Lee’s Ferry began 85 years ago. At the Senate hearing, Udall stated that the Colorado River basin is already two degrees warmer than it was in 1976 and that it is foolhardy to imagine that the next 50 years will resemble the last 50. Lake Mead, the enormous reservoir in Arizona and Nevada that supplies nearly all the water for Las Vegas, is half-empty, and statistical models indicate that it will never be full again. “As we move forward,” Udall told his audience, “all water-management actions based on ‘normal’ as defined by the 20th century will increasingly turn out to be bad bets.”

A few weeks after his testimony, I flew to Boulder to meet with Udall, and we spent a day driving switchback roads high in the Rockies in his old Subaru. It had been a wet season on the east slope of the Rockies, but the farther west we went, the drier it became. Udall wanted to show me some of the local reservoirs and water systems that were built over the past century, so I could get a sense of their complexity as well as their vulnerability. As he put it, he wants to connect the disparate members of the water economy in a way that has never really been done before, so that utility executives, scientists, environmentalists, business leaders, farmers and politicians can begin discussing how to cope with the inevitable shortages of fresh water. In the American West, whose huge economy and political power derive from the ability of 20th-century engineers to conquer rivers like the Colorado and establish a reliable water supply, the prospect that there will be less water in the future, rather than the same amount, is unnerving. “We have a very short period of time here to get people educated on what this

means,” Udall told me as we drove through the mountains. “Then once that occurs, perhaps we can start talking about how do we deal with it.”

Udall suggested that I meet a water manager named Peter Binney, who works for Aurora, Colo., a city — the 60th-largest in the United States — that sprawls over an enormous swath of flat, postagricultural land south of the Denver airport. It may be difficult for residents of the East Coast to understand the political celebrity of some Western water managers, but in a place like Aurora, where water, not available land, limits economic growth, Binney has enormous responsibilities. In effect, the city’s viability depends on his wherewithal to conjure new sources of water or increase the output of old ones. As Binney told me when we first spoke, “We have to find a new way of meeting the needs of all this population that’s turning up and still satisfy all of our recreational and environmental demands.” Aurora has a population of 310,000 now, Binney said, but that figure is projected to surpass 500,000 by 2035.

I asked if he had enough water for that many people. “Oh, no,” he replied. He seemed surprised that someone could even presume that he might. In fact, he explained, his job is to figure out how to find more water in a region where every drop is already spoken for and at a moment when there is little possibility that any more will ever be discovered.

Binney and I got together outside Dillon, a village in the Colorado Rockies 75 miles from Aurora and just a few miles west of the Continental Divide. We met in a small parking lot beside Dillon Reservoir, which sits at the bottom of a bowl of snow-capped mountains. Binney, a thickset 54-year-old with dark red hair and a fair complexion, had driven up in a large S.U.V. He still carries a strong accent from his native New Zealand, and in conversation he comes across as less a utility

manager than a polymath with the combined savvy of an engineer, an economist and a politician. As we moved to a picnic table, Binney told me that we were looking at Denver's water, not Aurora's, and that it would eventually travel 70 miles through tunnels under the mountains to Denver's taps. He admitted that he would love to have this water, which is pure snowmelt. To people in his job, snowmelt is the best source of water because it requires little chemical treatment to bring it up to federal drinking standards. But this water wasn't available. Denver got here before him. And in Colorado, like most Western states, the rights to water follow a bloodline back to whoever got to it first.

One way to view the history of the American West is as a series of important moments in exploration or migration; another is to consider it, as Binney does, in terms of its water. In the 20th century, for example, all of our great dams and reservoirs were built — “heroic man-over-nature” achievements, in Binney's words, that control floods, store water for droughts, generate vast amounts of hydroelectric power and enable agriculture to flourish in a region where the low annual rainfall otherwise makes it difficult. And in constructing projects like the Glen Canyon Dam — which backs up water to create Lake Powell, the vast reservoir in Arizona and Utah that feeds Lake Mead — the builders went beyond the needs of the moment. “They gave us about 40 to 50 years of excess capacity,” Binney says. “Now we've gotten to the end of that era.” At this point, every available gallon of the Colorado River has been appropriated by farmers, industries and municipalities. And yet, he pointed out, the region's population is expected to keep booming. California's Department of Finance recently predicted that there will be 60 million Californians by midcentury, up from 36 million today. “In Colorado, we're sitting at a little under five million people now, on our way to eight million people,” Binney said. Western settlers, who apportioned the

region's water long ago, never could have foreseen the thirst of its cities. Nor, he said, could they have anticipated our environmental mandates to keep water "in stream" for the benefit of fish and wildlife, as well as for rafters and kayakers.

The West's predicament, though, isn't just a matter of limited capacity, bigger populations and environmental regulations. It's also a distributional one.

Seventy-five years ago, cities like Denver made claims on — and from the state of Colorado received rights to — water in the mountains; those cities in turn built reservoirs for their water. As a result, older cities have access to more surface water (that is, water that comes from rivers and streams) than newer cities like Aurora, which have been forced to purchase existing water rights from farmers and mining companies. Towns that rely on groundwater (water pumped from deep underground) face an even bigger disadvantage. Water tables all over the United States have been dropping, sometimes drastically, from overuse. In the Denver area, some cities that use only groundwater will almost certainly exhaust their accessible supplies by 2050.

The biggest issue is that agriculture consumes most of the water, as much as 90 percent of it, in a state like Colorado. "The West has gone from a fur-trapping, to a mining, to an agricultural, to a manufacturing, to an urban-centric economy," Binney explained. As the region evolved, however, its water ownership for the most part did not. "There's no magical locked box of water that we can turn to," Binney says of cities like Aurora, "so it's going to have to come from an existing use." Because the supply of water in the West can't really change, water managers spend their time looking for ways to adjust its allocation in their favor.

Binney knew all this back in 2002, when he took the job in Aurora after a long career at an engineering firm. Over the course of a century, the city had

established a reasonable water supply. About a quarter of its water is piped in from the Colorado River basin about 70 miles away; another quarter is taken from reservoirs in the Arkansas River basin far to the south. The rest comes from the South Platte, a lazy, meandering river that runs north through Aurora on its way toward Nebraska. Binney says he believes that a city like his needs at least five years of water in storage in case of drought; his first year there turned out to be one of the worst years for water managers in recorded history, and the town's reservoirs dropped to 26 percent of capacity, meaning Aurora had at most nine months of reserves and could not endure another dry spring. During the summer and fall, Binney focused on both supply and demand. He negotiated with neighboring towns to buy water and accelerated a program to pay local farmers to fallow their fields so the city could lease their water rights. Meanwhile, the town asked residents to limit their showers and had water cops enforce new rules against lawn sprinklers. ("It's interesting how many people were watering lawns in the middle of the night," Binney said.)

Water use in the United States varies widely by region, influenced by climate, neighborhood density and landscaping, among other things. In the West, Los Angelenos use about 125 gallons per person per day in their homes, compared with 114 for Tucson residents. Binney's customers generally use about 160 gallons per person per day. "In the depths of the drought," he said, "we got down to about 123 gallons."

Part of the cruelty of a Western drought is that a water manager never knows if it will last 1 year or 10. In 2002, Binney was at the earliest stages of what has since become a nearly continuous dry spell. Though he couldn't see that at the time, he realized Aurora faced a permanent state of emergency if it didn't boost its water

supplies. But how? One option was to try to buy water rights in the mountains (most likely from farmers who were looking to quit agriculture), then build a new reservoir and a long supply line to Aurora. Obvious hurdles included environmental and political resistance, as well as an engineering difficulty: water is heavy, far heavier than oil, and incompressible; a system to move it long distances (especially if it involves tunneling through mountains or pumping water over them) can cost billions. Binney figured that without the help of the federal government, which has largely gotten out of the Western dam-and-reservoir-building business, Aurora would be unwise to pursue such a project. Even if the money could be raised, building a system would take decades. Aurora needed a solution within five years.

Another practice, sometimes used in Europe, is to drill wells alongside a river and pull river water up through them, using the gravel of the riverbank as a natural filter — sort of like digging a hole in the sand near the ocean's edge as it fills from below. Half of Aurora's water rights were on the South Platte already; the city also pours its treated wastewater back into the river, as do other cities in the Denver metro area. This gives the South Platte a steady, dependable flow. Binney and the township reasoned that they could conceivably, and legally, go some 20 or 30 miles downstream on the South Platte, buy agricultural land near the river, install wells there and retrieve their wastewater. Thus they could create a system whereby Aurora would use South Platte water; send it to a treatment plant that would discharge it back into the river; go downstream to recapture water from the same river; then pump it back to the city for purification and further use. The process would repeat, ad infinitum. Aurora would use its share of South Platte water "to extinction," in the argot of water managers. A drop of the South Platte used by an Aurora resident would find its way back to the city's taps as a half-

drop in 45 to 60 days, a quarter-drop 45 to 60 days after that and so on. For every drop the town used from the South Platte, over time it would almost — as all the fractional drops added up — get another.

Many towns have a supply that includes previously treated water. The water from the Mississippi River, for instance, is reused many times by municipalities as it flows southward. But as far as Binney knew, no municipality in the United States had built the kind of closed loop that Aurora envisioned. Water from wells in the South Platte would taste different, because of its mineral and organic content, so Binney's engineers would have to make it mimic mountain snowmelt. More delicate challenges involved selling local taxpayers on authorizing a project, marketed to them as "Prairie Waters," that would capitalize on their own wastewater. The system, which meant building a 34-mile-long pipeline from the downstream South Platte riverbanks to a treatment facility in Aurora, would cost three-quarters of a billion dollars, making it one of the most expensive municipal infrastructure projects in the country.

When Binney and I chatted at the reservoir outside Dillon, he had already finished discussions with Moody's and Fitch, the bond-rating agencies whose evaluations would help the town finance the project. Groundbreaking, which would be the next occasion we would see each other, was still a month away. "What we're doing now is trading high levels of treatment and purification for building tunnels and chasing whatever remaining snowmelt there is in the hills, which I think isn't a wise investment for the city," he told me. "I would expect that what we're going to do is the blueprint for a lot of cities in California, Arizona, Nevada — even the Carolinas and the Gulf states. They're all going to be doing this in the future."

Water managers in the West tend to think in terms of “acre-feet.” One acre-foot, equal to about 326,000 gallons, is enough to serve two typical Colorado families for one year. When measurements of the Colorado River began near Lee’s Ferry in the early 1920s, the region happened to be in the midst of an extremely wet series of years, and the river was famously misjudged to have an average flow of 17 million acre-feet per year — when in fact its average flow would often prove to be significantly less. Part of the legacy of that misjudgment is that the seven states that divided the water in the 1920s entered into a legal partnership that created unrealistic expectations about the river’s capacity. But there is another, lesser-known legacy too. As the 20th century progressed, many water managers came to believe that the 1950s, which included the most severe drought years since measurement of the river began, were the marker for a worst-case situation.

But recent studies of tree rings, in which academics drill core samples from the oldest Ponderosa pines or Douglas firs they can find in order to determine moisture levels hundreds of years ago, indicate that the dry times of the 1950s were mild and brief compared with other historical droughts. The latest research effort, published in the journal *Geophysical Research Letters* in late May, identified the existence of an epochal Southwestern megadrought that, if it recurred, would prove calamitous.

When Binney and I met at Dillon Reservoir, he brought graphs of Colorado River flows that go back nearly a thousand years. “There was this one in the 1150s,” he said, tracing a jagged line downward with his finger. “They think that’s when the Anasazi Indians were forced out. We see drought cycles here that can go up to 60 years of below-average precipitation.” What that would mean today, he said, is that states would have to make a sudden choice between agriculture and people,

which would lead to bruising political debates and an unavoidable blow to the former. Binney says that as much as he believes that some farmers' water is ultimately destined for the cities anyway, a big jolt like this would be tragic. "You hope you never get to that point," he told me, "where you force those kinds of discussions, because they will change for hundreds of years the way that people live in the Western U.S. If you have to switch off agriculture, it's not like you can get back into it readily. It took decades for the agricultural industry to establish itself. It may never come back."

An even darker possibility is that a Western drought caused by climatic variation and a drought caused by global warming could arrive at the same time. Or perhaps they already have. This coming spring, the United Nations' Intergovernmental Panel on Climate Change will issue a report identifying areas of the world most at risk of droughts and floods as the earth warms. Fresh-water shortages are already a global concern, especially in China, India and Africa. But the I.P.C.C., which along with Al Gore received the 2007 Nobel Peace Prize earlier this month for its work on global-warming issues, will note that many problem zones are located within the United States, including California (where the Sierra Nevada snowpack is threatened) and the Colorado River basin. These assessments follow on the heels of a number of recent studies that analyze mountain snowpack and future Colorado River flows. Almost without exception, recent climate models envision reductions that range from the modest to the catastrophic by the second half of this century. One study in particular, by Martin Hoerling and Jon Eischeid, suggests the region is already "past peak water," a milestone that means the river's water supply will now forever trend downward.

Climatologists seem to agree that global warming means the earth will, on

average, get wetter. According to Richard Seager, a scientist at Columbia University's Lamont Doherty Earth Observatory who published a study on the Southwest last spring, more rain and snow will fall in those regions closer to the poles and more precipitation is likely to fall during sporadic, intense storms rather than from smaller, more frequent storms. But many subtropical regions closer to the equator will dry out. The models analyzed by Seager, which focus on regional climate rather than Colorado River flows, show that the Southwest will ultimately be subject to significant atmospheric and weather alterations. More alarming, perhaps, is that the models do not only concern the coming decades; they also address the present. "You know, it's like, O.K., there's trouble in the future, but how near in the future does it set in?" he told me. "In this case, it appears that it's happening right now." When I asked if the drought in his models would be permanent, he pondered the question for a moment, then replied: "You can't call it a drought anymore, because it's going over to a drier climate. No one says the Sahara is in drought."

Climate models tend to be more accurate at predicting temperature than precipitation. Still, it's hard to avoid the conclusion that "something is happening," as Peter Binney gently puts it. Everyone I spoke with in the West has noticed — less snow, earlier spring melts, warmer nights. Los Angeles this year went 150 days without a measurable rainfall. One afternoon in Boulder, I spent some time with Roger Pulwarty, a highly regarded climatologist at the National Oceanic and Atmospheric Administration. Pulwarty, who has spent the past few years assessing adaptive solutions to a long drought, has a light sense of humor and an air of optimism about him, but he acknowledged that the big picture is worrisome. Even if the precipitation in the West does not decrease, higher temperatures by themselves create huge complications. Snowmelt runoff

decreases. The immense reservoirs lose far more water to evaporation.

Meanwhile, demand increases because crops are thirstier. Yet importing water from other river basins becomes more difficult, because those basins may face shortages, too.

“You don’t need to know all the numbers of the future exactly,” Pulwarty told me over lunch in a local Vietnamese restaurant. “You just need to know that we’re drying. And so the argument over whether it’s 15 percent drier or 20 percent drier? It’s irrelevant. Because in the long run, that decrease, accumulated over time, is going to dry out the system.” Pulwarty asked if I knew the projections for what it would take to refill Lake Powell, which is at about 50 percent of capacity. Twenty years of average flow on the Colorado River, he told me. “Good luck,” he said. “Even in normal conditions we don’t get 20 years of average flow. People are calling for more storage on the system, but if you can’t fill the reservoirs you have, I don’t know how more storage, or more dams, is going to help you. One has to ask if the normal strategies that we have are actually viable anymore.”

Pulwarty is convinced that the economic impacts could be profound. The worst outcome, he suggested, would be mass migrations out of the region, along with bitter interstate court battles over the dwindling water supplies. But well before that, if too much water is siphoned from agriculture, farm towns and ranch towns will wither. Meanwhile, Colorado’s largest industry, tourism, might collapse if river flows became a trickle during summertime. Already, warmer temperatures have brought on an outbreak of pine beetles that are destroying pine forests; Pulwarty wonders how many tourists will want to visit a state full of dead trees. “A crisis is an interesting thing,” he said. In his view, a crisis is a point in a story, a moment in a narrative, that presents an opportunity for characters to think

their way through a problem. A catastrophe, on the other hand, is something different: it is one of several possible outcomes that follow from a crisis. “We’re at the point of crisis on the Colorado,” Pulwarty concluded. “And it’s at this point that we decide, O.K., which way are we going to go?”

It is all but impossible to look into the future of the Western states without calling on Pat Mulroy, the head of the Southern Nevada Water Authority. Mulroy has no real counterpart on the East Coast; her nearest analog might be Robert Moses, the notorious New York City planner who built massive infrastructure projects and who almost always found a way around institutional obstructions and financing constraints. She is arguably the most influential and outspoken water manager in the country — a “woman without fear,” as Pulwarty describes her. Pulwarty and Peter Binney respect her willingness to challenge historical water-sharing agreements that, in Mulroy’s view, no longer suit the modern West (meaning they don’t suit Las Vegas). According to Binney, however, Nevada’s scant resources give Mulroy little choice. She has to keep her city from drying out. That makes hers the most difficult job in the water business, he told me.

Las Vegas is almost certainly more vulnerable to water shortages than any metro area in the country. Partly that’s a result of the city’s explosive growth. But the state of Nevada has the historical misfortune of receiving a smaller share of Colorado River water (300,000 acre-feet annually) than the other six states with which it signed a water-sharing compact in the 1920s. That modest share, stored in Lake Mead along with water destined for Southern California, Arizona and northern Mexico, now means everything to Las Vegas. I traveled to Lake Mead on a 99-degree day last June. The narrow, 110-mile-long lake, which at full capacity holds 28 million acre-feet of water (making it the largest reservoir in the United

States), was at 49 percent of capacity. When riding into the valley and glimpsing it from afar — an astonishing slash of blue in the desert — my guide for the day, Bronson Mack of the Southern Nevada Water Authority, remarked that he had never seen it so low. The white bathtub ring on the sides of the canyon that marks the level of full capacity was visible about 100 feet above the water. “I have a photograph of my mother on her honeymoon, standing in front of the lake,” Mack, a Las Vegas native, said. That was in 1970. “It was almost that low, but not quite.”

Over the past year, it has become conceivable that the lake could eventually drop below the level of the water authority’s intake pipes, the straws that suck the water out for the Las Vegas Valley. The authority recently hired an engineering firm to drill through several miles of rock and create a deeper intake pipe near the bottom of the lake. To say the project is being fast-tracked is an understatement. The day after visiting Lake Mead, I met with Mulroy in her Las Vegas office. “We have everything in line to get it running by 2012,” she said of the new intake. But she added that she is looking to cut as much time off construction as possible. Building the new intake is a race against the clock, or rather a race against a lake that keeps going down, down, down.

Mulroy is not gambling the entire future of Las Vegas on this project. One catchphrase of the water trade is that water flows uphill toward money, which is another way of saying that a city with ample funds can, at least theoretically, augment its supplies indefinitely. In a tight water market like that of the West, this isn’t an absolute truth, but in many instances money can move rivers. The trade-off is that new water tends to be of lower quality (requiring more expensive purification) or far away (requiring more expensive transport). Thanks to Las

Vegas's growth — the metro area is now at 1.8 million people — cost is currently no object. The city's cash reserves have made it possible for Mulroy to pay Arizona \$330 million for water she can use in emergencies and to plan a controversial multibillion-dollar pipeline to east-central Nevada, where the water authority has identified groundwater it wants to extract and transport. Wealth allows for the additional possibility of a sophisticated trading scheme whereby Las Vegas might pay for a desalination plant on the Pacific Coast that would transform seawater into potable water for use in California and Mexico. In exchange, Nevada could get a portion of their Colorado River water in Lake Mead.

So money does make a kind of sustainability possible for Las Vegas. On the other hand, buying water is quite unlike buying anything else. At the moment, water doesn't really function like a private good; its value, which Peter Binney calls "infinite," is often only vaguely related to its price, which can vary from 50 cents an acre-foot (what Mulroy pays to take water from Lake Mead) to \$12,000 an acre-foot (the most Binney has paid farmers in Colorado for their rights). Moreover, water is so necessary to human life, and hence so heavily subsidized and regulated, that it can't really be bought and sold freely across state lines. (Enron tried to start a water market called Azurix in the late 1990s, only to see it fail spectacularly.) The more successful water markets have instead been local, like one in the late 1980s in California, where farmers agreed to reduce their water use and sell the savings to a state water bank. Mulroy and Binney each told me they think a true free-market water exchange would create too many winners and losers. "What you would have is affluent communities being able to buy the lifeblood right out from under those that are less well heeled," Mulroy said. More practical, in her mind, would be a regional market that gives states, cities and

farmers greater freedom to strike mutually beneficial agreements, but with protections so that municipalities aren't pitted against one another.

More-efficient water markets might ease shortages, but they can't replace a big city's principal source. What if, I asked Mulroy, Lake Mead drained nearly to the bottom? Even if drought conditions ease over the next year or two, several people I spoke with think the odds are greater that Lake Powell, the 27-million-acre-foot reservoir that supplies Lake Mead, will drop to unusable levels before it ever fills again. Mulroy didn't immediately dismiss the possibility; she is certain that the reduced circumstances of the two big Western reservoirs are tied to global warming and that Las Vegas is this country's first victim of climate change. An empty Lake Mead, she began, would mean there is nothing in Lake Powell.

"It's well outside probabilities," she said — but it could happen. "In that case, it's not just a Las Vegas problem. You have three entire states wiped out: Arizona, California and Nevada. Because you can't replace those volumes with desalted ocean water." What seems more likely, she said, is that the legal framework governing the Colorado River would preclude such a dire turn of events. Recently, the states that use the Colorado reached a tentative agreement that guarantees Lake Mead will remain partly full under current conditions, even if upstream users have to cut back their withdrawals as a result. The deal supplements a more fundamental understanding that dates to the 1920s. If the river is failing to carry a certain, guaranteed volume of water to Lee's Ferry, which is just below Lake Powell, the river's lower-basin states (Nevada, Arizona and California) can legally force the upper-basin states (Colorado, Wyoming, New Mexico and Utah) to reduce or stop their water withdrawals. This contingency, known as a "compact call," sets the lower-basin states against the upper, but it has never occurred; it is

deeply feared by many water managers, because it would ravage the fragile relationship among states and almost certainly lead to a scrum of lawsuits. Yet, last year water managers in Colorado began meeting for the first time to discuss the possibility. In our conversations, Mulroy denied that there would be a compact call, but she pointed out that Las Vegas's groundwater and desalination plans were going ahead anyway for precautionary reasons.

I asked if limiting the growth of the Las Vegas metro area wouldn't help. Mulroy bristled. "This country is going to have 100 million additional people in it in the next 25 to 30 years," she replied. "Tell me where they're supposed to go. Seriously. Every community says, 'Not here,' 'No growth here,' 'There's too many people here already.' For a large urban area that is the core economic hub of any particular area, to even attempt to throw up walls? I'm not sure it can be done." Besides, she added, the problem isn't growth alone: "We have an exploding human population, and we have a shrinking clean-water supply. Those are on colliding paths. This is not just a Las Vegas issue. This is a microcosm of a much larger issue." Americans, she went on to say, are the most voracious users of natural resources in the world. Maybe we need to talk about that as well. "The people who move to the West today need to realize they're moving into a desert," Mulroy said. "If they want to live in a desert, they have to adapt to a desert lifestyle." That means a shift from the mindset of the 1930s, when the federal government encouraged people to settle in the West, plant water-intensive crops and make it look like the East Coast. It means landscapes of parched dirt. It means mesquite bushes and palo verde trees for vegetation. It means recycled water. It means gravel lawns. It is the West's new deal, she seemed to be saying, and I got the feeling that for Mulroy it means that every blade of grass in her state would soon be gone.

The first impulse when confronted with the West's water problems may be to wonder how, as scarcity becomes more acute, the region will engineer its way back to health. What can be built, what can technology accomplish, to ease any shortages? Yet this is almost certainly the wrong way to think about the situation. To be sure, construction projects like a pipeline from east-central Nevada could help Las Vegas. But the larger difficulty facing Pat Mulroy and Peter Binney, as they describe it, is re-engineering the culture and conventions of the West before it becomes too late. Whether or not there is enough water in the region for, say, the next 30 or 50 years isn't necessarily a question with a yes-or-no answer. The water managers I spoke with believe the total volume of available water could be great enough to sustain the cities, many farms and perhaps the natural flow of the area's rivers. But it's not unreasonable to assume that if things continue as they have — with so much water going to agriculture; with conservation only beginning to take hold among residents, industry and farmers; with supplies diminishing slowly but steadily as the Earth warms; with the population growing faster than anywhere else in the United States; and with some of our most economically vital states constricted by antique water agreements — the region will become a topography of crisis and perhaps catastrophe. This is an old prophecy, dating back more than a century to one of the original American explorers of the West, John Wesley Powell, who doubted the territory could support large populations and intense development. (Powell presciently argued that river basins, not arbitrary mapmakers, should determine the boundaries of the Western states, in order to avoid inevitable conflicts over water.) An earlier explorer, J. C. Ives, visited the present location of Hoover Dam, between Arizona and Nevada, in 1857. The desiccated landscape was "valueless," Ives reported. "There is nothing there to do but leave."

Roger Pulwarty, for his part, rejects the notion of environmental determinism. Nature, in other words, isn't inexorably pushing the region into a grim, suffering century. Things can be done. Redoubling efforts to prevent further climate change, Pulwarty says, is one place to start; another is getting the states that share the Colorado River to reach cooperative arrangements, as they have begun to discuss, for coping with long-term droughts. Other parts of the solution are less obvious. To Peter Gleick, head of the Pacific Institute, a nonprofit based in Oakland, Calif., that focuses on global water issues, whether we can adapt to a drier future depends on whether we can rethink the functions, and value, of fresh water. Can we do the same things using less of it? How we use our water, Gleick believes, is considerably more complex than it appears. First of all, there are consumptive and nonconsumptive uses of water. Consumptive use, roughly speaking, refers to water taken from a reservoir that cannot be recovered. "It's embedded in a product like a liter of Coca-Cola, or it's contaminated so badly we can't reuse it," Gleick says. In agriculture, the vast majority of water use is also consumptive, because it evaporates or transpires from crops into the atmosphere. Evaporated water may fall as rain 1,000 miles away — that's how Earth's water cycle works — but it is gone locally. A similar consumptive process characterizes the water we put on our lawns or gardens: it mostly disappears. Meanwhile, most of the water used by metropolitan areas is nonconsumptive. It goes down the drain and empties into nearby rivers, like Colorado's South Platte, as treated wastewater.

Gleick calls the Colorado River "the most complicated water system in the world," and he isn't convinced it will be easy, or practical, to change the laws that govern its usage. "But I think it's less hard to change how we use water," he says. He accepts that climate change is confronting the West with serious problems. (He

was also one of the country's first scientists, in the mid-1980s, to point out that reductions in mountain snowpack could present huge challenges.) He makes a persuasive case, however, that there are immense opportunities — even in cities like Las Vegas, which has made strides in conservation — to reduce both consumptive and nonconsumptive demand for water. These include installing more low-flow home appliances and adopting more efficient irrigation methods. And they include economic tools too: for example, many municipalities have reduced consumption by making water more expensive (the more you use, the higher your per-gallon rate). The United States uses less water than it did 25 years ago, Gleick points out: “We haven’t even paid too much attention to it, and we’ve accomplished this.” To go further, he says he believes we could alter not only demand but also supply. “Treated wastewater isn’t a liability, it’s an asset,” he says. We don’t need potable water to flush our toilets or water our lawns. “One might say that’s a ridiculous use of potable water. In fact, I might say that. But that’s the way we’ve set it up. And that’s going to change, that’s got to change, in this century.”

Among Colorado’s water managers, Peter Binney’s Prairie Waters project is considered both innovative and important not on account of its technology but because it seems to mark a new era of finding water sources in the drying West. It also proves that the next generation’s water will not come cheap, or come easy. In late July, I went to Aurora to meet up again with Binney. It was the groundbreaking day for Prairie Waters, which had been on the local television news: Binney and several other officials grinned for the cameras and signed a section of six-foot steel pipe, the same kind that would transport water from the South Platte wells to the Aurora treatment facility. That evening, Binney and I had dinner together at a steakhouse in an Aurora shopping mall. When he

remarked that we may have exceeded what he calls the “carrying capacity” of the West, I asked him whether our desert civilizations could last. Binney seemed dubious. “Not the way we’ve got it set up,” he said. “We’ve decoupled land use from water use. Water is the limiting resource in the West. I think we need to match them back together again.” There was a decent amount of water out there, he went on to explain, but it was a false presumption that it could sustain all the farms, all the cities, all the rivers. Something will have to give. It was also wrong to assume, he said, that cities could continue to grow without experiencing something akin to a religious awakening about the scarcity of water. Soon, he predicted, we would talk about our “water footprint” just as we now talk about our carbon footprint.

Indeed, any conversations about the one will in short order expand to include the other, Binney went on to say. Many water managers have known this for a while. The two problems — water and energy — are so intimately linked as to make it exceedingly difficult to tackle one without the other. It isn’t just the matter of growing corn for ethanol, which is already straining water supplies. The less water in our rivers, for instance, the less hydropower our dams produce. The further the water tables sink, the more power it takes to pump water up. The more we depend on coal and nuclear power plants, which require huge amounts of water for cooling, the larger the burden we place on supplies.

Meanwhile, it is a perverse side effect of global warming that we may have to emit large volumes of carbon dioxide to obtain the clean water that is becoming scarcer because of the carbon dioxide we’ve already put into the atmosphere. A dry region that turns to desalination, for example, would need vast amounts of energy (and money) to purify its water. While wind-powered desalination could

perhaps meet this challenge — such a plant was recently built outside Perth, Australia — it isn't clear that coastal residents in, say, California would welcome such projects. Unclear, too, is how dumping the brine that is a by-product of the process back into the ocean would affect ecosystems.

Similar energy challenges face other plans. In past years, various schemes have arisen to move water from Canada or the Great Lakes to arid parts of the United States. Beyond the environmental implications and construction costs (probably hundreds of billions of dollars), such continental-scale plumbing would require stupendous amounts of electricity. And yet, fears that such plans will resurface in a drier, more populous world are partly behind current efforts by the Great Lakes states to certify a pact that protects their fresh water from outside exploitation.

Just pumping water from the Prairie Waters site to Aurora will cost a small fortune. Binney told me this the day after the groundbreaking, as we drove north from Aurora to the site. Along the 45-minute journey, Binney narrated where his pipeline would go — along the edge of the highway here, over in that field there and so on. Eventually we turned off the highway and onto a small country road, and Binney slowed down so I could take in the surroundings. “Here’s where you see it all coming together and all of it coming into conflict,” he told me. To him, it was a perfect tableau of the West in the 21st century. There was a housing development on one side of the road and fields of irrigated crops on the other. Farther ahead was a gravel pit, a remnant of the old Colorado mineral-extraction economy.

He drove on, and soon we turned onto a dirt road that bisected some open fields. We rumbled along for a quarter mile or so, spewing dust and passing over the South Platte in the process. Binney parked by a wire fence near a sign marking it

as Aurora property. We got out of the truck, hopped over a locked gate and walked into a farm field.

For miles along the highway, we passed barren acreage that formerly grew winter wheat but was now slated for new houses. The land we stood on once grew corn, but tangles of weeds covered it now. As we walked, Binney explained that the collection wells on the South Platte would soon be dug a few hundred yards away; that water would be pumped into collection basins on this field, where sand and gravel would purify it further. Then it would be pumped back to the chemical treatment plants in Aurora before being piped to residents. "We're standing 34 miles from there," Binney said.

It was a location as ordinary as I could have imagined, an empty place, far from anything, and yet Binney saw it as something else. Earlier, when we crossed over the gravel banks of the South Platte, I found the river disappointing: broad and shallow, dun-colored and slow-moving, its unimpressive flow somehow incorporating water Aurora had already used upstream. James Michener, in writing about this region years ago, was dead-on in calling it "a sad, bewildered nothing of a river." Still, the South Platte was dependable. It was also Aurora's lifeline, buying the city 20 or 30 years of time. "What I really like about it," Binney said, smiling as we walked from the field back to his truck, "is that it's wet."

Jon Gertner is a contributing writer for the magazine.

Correction: November 4, 2007

An article on Oct. 21 about the drought in the American West misstated the name of an organization that is a sponsor of Western Water Assessment, one of whose engineers testified before Congress about water shortages. It is the National Oceanic and Atmospheric Administration, not the National Oceanographic Atmospheric Administration.

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Venture capitalist sees profit in water Resource will be scarcer in future, Lagod says

November 12, 2007

By Joanna Xu

If water is a necessity for life and diamonds are not, then why are diamonds so much more expensive than water? Economists explain this paradox by saying that water is more available and easier to acquire, but the availability of water is about to change, Bay Area venture capitalist Martin Lagod told about 30 students at a Friday afternoon lecture.

The talk was the latest in a series hosted by the environmental engineering and science program (EES), a subprogram of the civil and environmental engineering (CEE) department.

As water becomes a scarcer resource, it may command a high price and become a source of investment, said Lagod, a managing director at Firelake Capital Management.

"There is a big market for water," he said, "but right now there is still a scarcity of experienced entrepreneur teams and big, innovative ideas to tap into that market."

Lagod emphasized that while the water market has potential for the future, this would involve a large-scale infrastructure construction.

"Water is an inherently local resource," Lagod said. "As of now, existing channels of water transport are not viable for large-scale entrepreneurship in the water market."

Lagod also emphasized that this entrepreneurship must begin in developed countries such as the U.S.

"In many developing countries the baseline is so low that the economy is still focusing on satisfying basic human needs," he explained. "There, the only way to initiate infrastructure would be individual projects, which would mean very high costs."

Because the seminar approached civil engineering from an entrepreneurial perspective, a handful of Graduate School of Business students joined CEE students at the event.

"I'm glad Martin came to speak about water," said Kelsey Lynn M.B.A. '08. "It's an overlooked area of clean-tech."

CEE students who attended the seminar said they appreciated hearing about the real-world applicability of what they learn in environmental engineering classes.

"It's interesting to listen to a discussion on water from a venture capital standpoint rather than from a technical standpoint," said CEE graduate student Holly Johnson. "In the engineering and science programs the classes are very rigorous and technical, so it's nice to get some financial exposure and real-life application."

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Ray Walker 13 minutes ago

Time to assist California ! MWD has been offered a new Source to investigate that will yield ONE MILLION acre feet of fresh water per year for California! MWD has a guarantee that the Source is legally & physically available, economically feasible to develop and environmentally acceptable. More importantly, development of the Source will not damage the water rights of anyone, anywhere ! When the Katrina of drought strikes California coupled with possible earthquake destruction, let the record show that the State of California and the MWD were offered a viable Source solution. Ray Walker (Retired Water Rights Analyst) waterrdw@yahoo.com

h2oguru less than a minute ago

Rather than looking at ways to develop more water . . . which will encourage more development, more population growth, more congestion and more over-taxed social services in California . . . venture capitalists would be better served if they figured out ways to divert that growth to regions and states that have the resources and the space.

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Prospectors claim stretches of ocean, hoping to harness wave energy

Charles Burress, Chronicle Staff Writer
Monday, November 12, 2007



A new California "gold rush" is on - to stake out claims to prime stretches of ocean along the coast where prospectors hope to harness waves to produce energy.

No one's succeeded in producing wave power commercially in the United States, but the lure of future feasibility as a clean source of energy is spurring potential developers to claim prime wave sites.

The latest entrant is Sonoma County, which is seeking to snare what would be the largest zone of coastal seawater ever reserved for wave energy on the West Coast.

The Sonoma County Water Agency plans this week to ask federal regulators for exclusive rights to study and develop wave-energy technology along the entire 41-mile county coastline, extending 12 miles out to sea, an expanse of about 490 square miles, said agency spokesman Cordel Stillman. The permit application to the Federal Energy Regulatory Commission follows a supervisors' vote approving the move Tuesday.

The holder of a FERC permit has exclusive rights to the claimed zone for three years for study and testing of the technology, and then may apply for a license to operate commercially. No operating licenses have been granted in the United States, and only one license application is pending - off the coast of Washington.

"There's been a kind of gold rush going on for wave-energy projects," said Tim Anderson, spokesman for the Sonoma County Water Agency. The most sought-after location in North America has been on the West Coast, along Northern California, Oregon and Washington.

Prototypes have been demonstrated in some other parts of the world, including Scotland, Portugal, Denmark, Norway and Australia, though the technology is "still very much in the test phase," according to Margot Gerritsen, assistant professor of energy resources engineering at Stanford University.

The world's first commercial deep-sea wave-energy device is expected to begin operating in Portugal within the next five months, said Uday Mathur, a specialist in new resource development for Pacific Gas

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Sonoma County's action was spurred in part by a desire to assert public control over the coastline before it is snagged by a growing tide of private-company claims to prime stretches of the coast, said Supervisor Mike Reilly, former chair of the state Coastal Commission.

"We've seen the progress of private companies and utility companies locking down the coast from Humboldt down to Mendocino, and we figured we'd probably be next," Reilly said.

PG&E has filed for permits for two areas off Mendocino and Humboldt counties, and a Chevron Corp. subsidiary, Chevron California Renewable Energy Inc., submitted an application for a segment of the Mendocino coast but later withdrew it.

Sonoma County's application will become the seventh pending wave-energy application for a segment of California coastline, according to FERC records. None has been granted. Oregon has seen four permits granted, with another three pending, according to FERC spokeswoman Celeste Miller.

FERC began seeing a large number of applications for what the industry calls "hydrokinetic" power in 2004, Miller said. Hydrokinetic refers to power generated by waves and water currents.

Until about a year ago, the applications were mostly for harnessing underwater currents, such as tidal and ocean currents, not waves. The only FERC hydrokinetic permit granted in California is for an underwater turbine to be turned by tidal currents somewhere near Golden Gate Bridge in San Francisco Bay or just outside the bay. Still in the study stage, it is a joint venture by the city of San Francisco, PG&E and Golden Gate Energy Co.

But in the past year, applications for wave-energy permits have been rolling in, Miller said.

Reilly said Sonoma County's water agency is filing for a permit because a public entity is in a better position to protect fisheries and marine habitats that could be affected by the wave machines, including their cables and huge concrete anchors.

"Most of the prospective areas for wave arrays are right in the middle of gray whale migratory pathways," said Richard Charter, a representative of the nonprofit Defenders of Wildlife. Wave-array anchors could also adversely affect local fisheries and alter seabed habitats, introducing artificial reefs that could draw predator fish that would feed on salmon smolts heading to sea. They could affect sand deposition, thus damaging beaches and seabed ecology, he said, adding that no adequate studies of the environmental impacts have been done.

Another potential problem emerged with last week's oil spill that spread from San Francisco Bay, Charter said. Not only would oil probably foul the wave machines and cables, but the arrays also would block skimmers trying to mop up oil.

PG&E plans to work with local agencies, environmental groups, the fishing industry and other community organizations to avoid detrimental environmental impacts, said Mathur.

"One of our primary goals is to preserve the environment," he said.

Mathur said PG&E's permit applications - filed in February for a 68-square-mile zone near Fort Bragg and a 136-square-mile zone near Eureka - would each seek locations for a 40-megawatt deep-sea array, located between 2 and 12 miles out to sea. Deployment would probably begin with a smaller, 5-megawatt pilot-project device covering about a square mile before moving to the full 40-megawatt machine, which would cover about 5 square miles and supply power for about 15,000 homes, he said.

Neither Sonoma County nor PG&E has decided what type of device they would test. That decision depends on studies yet to be completed, though both would be in deep water, as opposed to systems that operate close to shore.

Wave machines come in many forms, some resembling long segmented snakes or ribbon-like strands. Others resemble large buoys, while still others utilize columns of water or underwater pistons.

And they still face technical challenges. A prototype, the AquaBuOY by Finavera Renewables of Canada, sank off the Oregon coast last month. When its premiere was announced just the month before, Finavera called it "the first installation of a wave energy converter of this scale off the west coast of North America."

In contrast, Stanford's Gerritsen said she is "in favor of tidal energy machines." Mathur of PG&E said studies are still under way on where a tidal-energy turbine might be deployed near the Golden Gate Bridge.

An assessment published in June by the Electric Power Research Institute of Palo Alto estimated a large potential "that could be credibly harnessed" for both wave and tidal energy, with wave energy alone equal to all the conventional hydropower produced in 2004, or about 6.5 percent of the total U.S. electric supply. The potential power from tidal and in-stream river currents would be about 3.5 percent of the 2004 national electricity supply, the institute estimated.

Sonoma County Supervisor Tim Smith said he's optimistic about wave potential, and the county will devote intensive study to environmental impacts and technical feasibility.

"We want to be sure we do things right with the prototype we put forward," he said. "We're going to proceed very carefully and cautiously."

Canadian project: Energy companies are testing the potential of turbines and other technology to harness strong tides in the Bay of Fundy. **A9**

E-mail Charles Burress at cburress@sfchronicle.com.

<http://sfgate.com/cgi-bin/article.cgi?f=/c/a/2007/11/12/MNNPT8U6A.DTL>

This article appeared on page **A - 1** of the San Francisco Chronicle

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TO: Coastal Commissioners
Coastal Commission Staff

FROM: Tana Lorah, Staff

DATE: November 13, 2007

SUBJECT: Letters of Support for Carlsbad Desalination Plant Project

RECEIVED

NOV 14 2007

CALIFORNIA
COASTAL COMMISSION

In compliance with your ex parte communications requirements, please find enclosed a copy of **425 LETTERS OF SUPPORT** for the **Carlsbad Desalination Project** to be heard at your meeting on November 15, 2007.

Whenever possible the letters are double-sided. We would have sent these electronically if your requirements would allow for it.

Letters are still forthcoming and will be sent along as appropriate.

Enclosures: *425 Letters of Support from unique emails, home addresses and businesses in San Diego County*



"Building With Care"

November 13, 2007

Commissioners
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

Dear Honorable Commissioners:

As a resident of California, I would like to ask for your support of the Carlsbad Desalination Plant at your meeting on November 15.

The desalination plant will produce a locally-controlled, drought-proof supply of water that is essential to San Diego County's economic stability and public health. The project will generate up to 2,100 construction jobs and 400 new permanent jobs for local workers, and it will generate \$2 million per year of tax revenue for infrastructure improvements in the Coastal Zone.

The plant will also benefit our local environment by maintaining, restoring and enhancing 37 acres of new coastal wetlands habitat within the San Diego region. It will employ energy conservation technology and utilize sustainable energy sources, and it is consistent with State Assembly Bill 32 and will have a net zero carbon footprint.

Thank you for your consideration and your support for this extremely important project in our region.

Sincerely,



Phone: 6193189365
Fax: 18663266696

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NOV 13 2007

CALIFORNIA
COASTAL COMMISSION**FAX**

To: 14159045400
Re:

From: Harold Holmberg
Date: 11/13/2007 15:20:58 PST

All Members,

There is an opportunity to help California overcome the predicted water shortage. This Thursday there is a hearing scheduled for 8am in the Sheraton in San Diego by the California Coastal Commission about a desalination plant near Carlsbad, I would urge the Commission to approve desalination.

You know there are present and soon coming water shortages in California, the forecast is that water will be in short supply forever. We need to act now to remedy the problem through conservation and other measures, however in order to meet the long term supply problem throughout the country the real answer is desalination. This stands to reason and one factor is because of the rising seas and prediction of losing shoreline due to global warming. In other words we **MUST** use seawater, it is not just an option. According to reports the rising seas will happen no matter what we do to change the warming. **We really have no other real choice!**

Thank you,
Hal Holmberg

smiggs266@yahoo.com

.....
Be a better pen pal. Text or chat with friends inside Yahoo! Mail. [See how.](#)

PO Box 3942, Lacey, WA 98509

November 8, 2007

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CALIFORNIA
COASTAL COMMISSION

California Coastal Commission
Attn: TOM LUSTER
45 Fremont Street, Suite 2000
San Francisco, CA 94105 - 2219

RE: Th-7a, Application E-06-013, Poseidon Resources LLC, City of Carlsbad.

As a resident of Huntington Beach, CA, and with the basic knowledge of Poseidon as a large corporation, of this corporation's abominable history of promises not kept, multiple screwups, missed deadlines, and incredible cost overruns

I STRONGLY support the staff's recommendation to deny the project.

Privitizing our water is only the beginning.

Hopefully,



Jean Roberts
18900 Delaware Street, #101
Huntington Beach, CA 92648-1958

November 8, 2007

California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

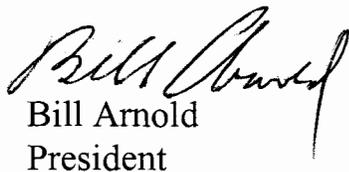
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Bill Arnold

IN FAVOR OF APPROVAL

See attached letter

Sincerely,


Bill Arnold
President

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CALIFORNIA
COASTAL COMMISSION

California Coastal Commission
45 Fremont St., Suite 2000
San Francisco, Ca. 94105-2219

November 8, 2007

Ladies and gentlemen of the Coastal Commission: Environmental issues have been in the forefront of citizens concerns over the past half century. The movement started in the 1960's. Legislation was then enacted followed by the inevitable bureaucracy to interpret and enforce the laws. We now find ourselves some fifty years later having to deal with issues that conflict with the obvious needs of our citizens. The "laws of good intentions", as someone coined, are now threatening our quality of life as respects adequate flows of potable water.

In my current role as a president of a homeowners association in Carlsbad, I've been involved in many meetings with various governmental agencies, both Federal and State over environmental concerns having to do with flood control for our community, dredging of streams and wildlife species protection. The agency(s) representatives strongly defended their positions and interpretation of the law. So far, in our individual case, compromise solutions have been reached, but not before intervention of higher authority. Therefore it came as no surprise to learn that the staff of your Commission has rejected the Carlsbad Desalination Project citing damage to marine species and water quality issues. They're just doing there job as they interpret it.

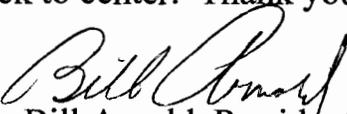
The judge who recently ruled, restricting the transfer of water into the system supplying Southern California residents is also in his judgment following the law protecting marine species. Should that ruling be upheld and your staff's rejection of this project prevail, the future supply of potable water to the citizens in this County could be seriously compromised. Rest assured if this happens, other measures will be undertaken by local authorities. Whether it will entail enlarging or building new reservoirs, constructing additional canals or pipelines or in extreme emergencies, trucking in potable water, all of these steps will have an environmental cost.

Desalination of sea water is a proven technology and an ongoing process in other parts of the world. The cost of producing potable water in this way is almost at par compared to the present delivery system now in place. Had this technology been available in the 1930's, no doubt it would have been the overwhelming choice of our leaders at that time. The water source is close by, and lack of adequate rain or snow-pack would never be an issue.

We here in San Diego County have just witnessed a second fire conflagration within four years that is now calling into question the government management of our forests and other open space areas. Rules enacted to preserve our forests and wildlife, such as restricting timber harvesting, controlled burns, etc. appear to be working at cross purposes with those goals and in the process destroying homes, neighborhoods and the livelihood of many.

I have observed in my lifetime various well meaning movements that have taken hold, obtained the force of law, that with all good intentions were enacted to correct a problem in our society. Whether it was collective bargaining for labor, welfare for the poor, discrimination in all its forms or the present subject of environmental protection, we have found out that the solutions drafted to solve these problems, oftentimes don't. It seems the pendulum swings from one extreme that led to legislative action, to the other of over regulation to the detriment at times of the original goals.

Members of this commission, it is your role to look at the big picture, seriously consider the needs of our citizenry, and weigh the consequences of your decisions in the light of all the relative facts. In my opinion its time the pendulum on environmentalism began moving back to center. Thank you



Bill Arnold, President

Rancho Carlsbad Owners Association

J.R. Filanc
Construction
Company, Inc.

November 13, 2007

2670 S. Avenue 9E
Yuma, AZ 85364

Tel. (928) 345-6732
Fax (928) 345-6704
License No. 134877

Commissioners
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

Dear Honorable Commissioners:

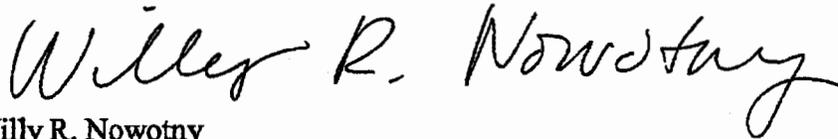
As a resident of California, I would like to ask for your support of the Carlsbad Desalination Plant at your meeting on November 15.

The desalination plant will produce a locally-controlled, drought-proof supply of water that is essential to San Diego County's economic stability and public health. The project will generate up to 2,100 construction jobs and 400 new permanent jobs for local workers, and it will generate \$2 million per year of tax revenue for infrastructure improvements in the Coastal Zone.

The plant will also benefit our local environment by maintaining, restoring and enhancing 37 acres of new coastal wetlands habitat within the San Diego region. It will employ energy conservation technology and utilize sustainable energy sources, and it is consistent with State Assembly Bill 32 and will have a net zero carbon footprint.

Thank you for your consideration and your support for this extremely important project in our region.

Sincerely,



Willy R. Nowotny
Director of Arizona Operations
J.R. Filanc Construction Company, Inc.



DRIVER COMMERCIAL GROUP

November 13, 2007

Commissioners
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

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Thank you for your consideration and your support for this extremely important project in our region.

Sincerely,

A handwritten signature in black ink, appearing to read "Lawrence F. McMahon".

Lawrence F. McMahon
First Vice President

SINCE 1852

J.R. Filanc
Construction
Company, Inc.

November 13, 2007

740 N. Andreasen Dr.
Escondido
California
92029-1418

Commissioners
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

(760) 941-7130
FAX (760) 941-3969
License No. 134877

Dear Honorable Commissioners:

As a resident of California, I would like to ask for your support of the Carlsbad Desalination Plant at your meeting on November 15.

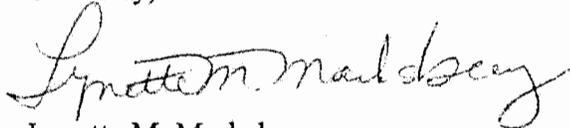
Offices:
San Diego
Phoenix

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Thank you for your consideration and your support for this extremely important project in our region.

Sincerely,



Lynette M. Marksberry

November 13, 2007

Commissioners
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

Dear Honorable Commissioners:

As a resident of Carlsbad, California, I would like to ask for your support of the Carlsbad Desalination Plant at your meeting on November 15.

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Thank you for your consideration and your support for this extremely important project in our region.

Sincerely,


George Baumbach
3270 Avenida Anacapa
Carlsbad, CA 92009

D.A. WHITACRE CONSTRUCTION INC.

1108 Greenfield Dr. El Cajon, CA
92021

CA (619) 444-4360 Fax (619) 444-4314 CA Lic. 468768
NV (702) 247-4244 Fax (702) 247-4218 NV Lic. 48416

November 13, 2007

Commissioners
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

Dear Honorable Commissioners:

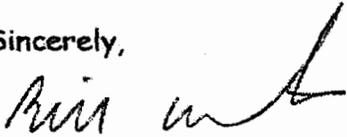
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Thank you for your consideration and your support for this extremely important project in our region.

Sincerely,



Bill Whitacre
President
D.A. Whitacre Construction



November 13, 2007

Corporate Office
10303 Channel Road
Lakeside, CA 92040
(619) 443-3891
(619) 443-0724/Fax

3600 East 48th Avenue
Denver, CO 80216
(303) 321-6680
(303) 321-6781/Fax

3582 County Road
Chino, CA 91710
(909) 628-7957
(909) 628-7967/Fax

8115 Boulder Hwy.
Las Vegas, NV 89122
(702) 649-4466
(702) 649-4366/Fax

Commissioners
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

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Thank you for your consideration and your support for this extremely important project in our region.

Sincerely,

ANDERSON DRILLING

Duane Phares
San Diego Regional Manager



ROSSIN STEEL, INC.



1880 NIRVANA AVE. • CNULA VISTA, CA. 91911 • TEL. (619) 656-9200 • LICENSE No. 869611

November 13, 2007

Commissioners
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

Dear Honorable Commissioners:

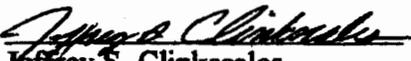
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Sincerely,


Jeffrey S. Clinkscales
Vice President

November 13, 2007

Commissioners
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

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Sincerely,

A handwritten signature in black ink, appearing to read "Steve Van Loan". The signature is fluid and cursive, with a large loop at the end.

Steve Van Loan

From: "Laura Mikels" <laura@sierrapacificwest.com>
To: <educate@biasd.org>
Date: 11/13/2007 9:19 AM

November 13, 2007

Commissioners
California Coastal Commission
15 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

Dear Honorable Commissioners:

As a resident of California, I would like to ask for your support of the Carlsbad Desalination Plant at your meeting on November 15.

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Sincerely,

Carlos Cota
Sierra Pacific West, Inc.

Laura L. Mikels
For Carlos Cota
lmikels@sierrapacificwest.com
P 760-599-0755
F 760-599-0789

Educate - BIA - Send Letter to Coastal Commission

From: "Elena Tastaman" <etastaman@filanc.com>
To: <educate@biasd.org>
Date: 11/13/2007 9:15 AM
Subject: Send Letter to Coastal Commission

November 13, 2007

Commissioners
California Coastal Commission
15 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

Dear Honorable Commissioners:

As a resident of California, I would like to ask for your support of the Carlsbad Desalination Plant at your meeting on November 15.

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Thank you for your consideration and your support for this extremely important project in our region.

Sincerely,

Elena Tastaman
I.R. Filanc Construction
Phone: 760-466-0519
Fax: 760-941-3969
www.filanc.com

From: Educate - BIA
Subject: Coastal Commission

>>> "Magdalena Cortez" <MCortez@filanc.com> 11/13/2007 9:16 AM >>>
November 13, 2007

Commissioners
California Coastal Commission
15 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

Dear Honorable Commissioners:

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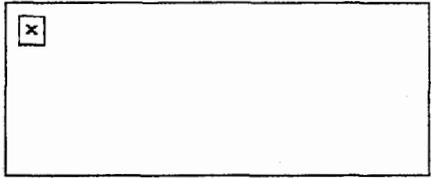
Sincerely,

Magdalena Cortez
Estimator
J. R. FILANC CONSTRUCTION
740 N. Andreasen Dr.
Escondido, Ca. 92029-1418
(760)941-7130

mcortez@filanc.com

Educate - BIA - call to action

From: "Pat Menzies" <Pmenzies@penhall.com>
To: <educate@biasd.org>
Date: 11/13/2007 10:37 AM
Subject: call to action



Concrete Sawing, Drilling and Breaking

November 13, 2007

Commissioners
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

Dear Honorable Commissioners:

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Thank you for your consideration and your support for this extremely important project in our region.

Sincerely,

Pat Menzies
Regional Project Manager

This message (including any attachments) contains confidential information intended for a specific individual and purpose, and is protected by law (Electronic Communications Privacy Act, 18 USC 2510). If you are not the intended recipient, you should delete this message and are hereby notified that any disclosure, copying, or distribution of this message, or the taking of any action based on it, is strictly prohibited. Penhall Company does not accept responsibility or liability for any loss or damage arising in any way from its receipt or use or for any errors or omissions in its contents which may arise as a result of its transmission.

HERZOG CONTRACTING CORP.



CA LIC. NO. 383493

1833 OCEANSIDE BLVD.
OCEANSIDE, CA 92054

P.O. BOX 2510
OCEANSIDE, CA 92051

WILLIAM E. HERZOG, PRESIDENT

(760) 966-0600 • FAX (760) 966-0900

RECEIVED

NOV 14 2007

CALIFORNIA
COASTAL COMMISSION

November 13, 2007

Commissioners
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

Dear Honorable Commissioners:

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Thank you for your consideration and your support for this extremely important project in our region.

Sincerely,

Herzog Contracting Corp.

A handwritten signature in cursive script that reads 'Michael W. Rogers'.

Michael W. Rogers
Regional Manager-Western Division



MILLENNIUM FIRE PROTECTION CORPORATION

November 13, 2007

Commissioners
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

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Thank you for your consideration and your support for this extremely important project in our region.

Sincerely,

A handwritten signature in black ink, appearing to read 'John Forsyth', is written over a light gray background.

John Forsyth
Chief Executive Officer



barnhart labor compliance services, inc.

November 13, 2007

Commissioners
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

Dear Honorable Commissioners:

As a resident of California, I would like to ask for your support of the Carlsbad Desalination Plant at your meeting on November 15, this desalination plant will produce a locally-controlled, drought-proof supply of water that is essential to San Diego County's economic stability and public health. The project will generate up to 2,100 construction jobs and 400 new permanent jobs for local workers, and it will generate \$2 million per year of tax revenue for infrastructure improvements in the Coastal Zone.

In addition to the above mentioned benefits to the local economy this visionary desalination plant will provide many apprentice job opportunities for the local work force. The contractors who employ these apprentices receive fair wages and employer paid Medical and pension benefits.

The plant will also benefit our local environment by maintaining, restoring and enhancing 37 acres of new coastal wetlands habitat within the San Diego region. It will employ energy conservation technology and utilize sustainable energy sources, and it is consistent with State Assembly Bill 32 and will have a net zero carbon footprint.

Thank you for your consideration and your support for this extremely important project in our region.

Sincerely,

A handwritten signature in black ink, appearing to read 'John F. Young', with a long horizontal flourish extending to the right.

John F. Young
BLCS-LCO

Corporate Office

10760 Thornmint Road, San Diego, California 92127

(858) 385-8200 • Fax (858) 385-8201 • www.debinc.com

Offices in Orange County, Palm Springs, Sacramento and San Diego, California

Hazard Construction Company

CONSTRUCTION • MANAGEMENT • SITE DEVELOPMENT



November 13, 2007

Commissioners
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

Dear Honorable Commissioners:

As a resident of San Diego County, I would like to ask for your support of the Carlsbad Desalination Plant at your meeting on November 15.

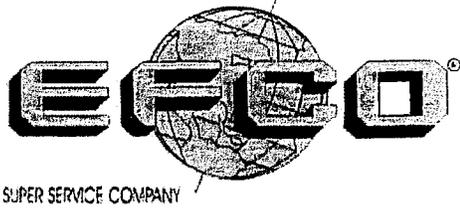
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Thank you for your consideration and your support for this extremely important project in our region.

Sincerely,

Monty Wilde



Systems for concrete construction
Home Office • Des Moines, Iowa, U.S.A.

ENGINEERED
EFFICIENCY

1290 Carbide Drive, Corona, CA 92881
Phone 951-280-9306 • Fax 951-280-9326

November 13, 2007

Commissioners
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

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Sincerely,

Hugo Alonso, Inc.

November 13, 2007

Commissioners
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

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Thank you for your consideration and your support for this extremely important project in our region.

Sincerely,
HUGO ALONSO, INC.



Hugo Alonso
President

HA:tt

Mailing Address: P.O. Box 1067, Spring Valley, CA 91979
Physical Address: 1371 Presioca Street, Spring Valley, CA 91977
Phone (619) 660-6255
Fax (619) 660-5397 or (619) 660-1655
Contractor's License #814970

Educate - BIA - Please Support the Carlsbad Desalination Plant Project

From: "Jase Prewett" <jprewett@brookfieldhomes.com>
To: <educate@biasd.org>
Date: 11/9/2007 1:37 PM
Subject: Please Support the Carlsbad Desalination Plant Project

****A copy of this letter has been delivered to California Coastal Commission Staff****

November 6, 2007

Supervisor Khatchik Achadjian, Commissioner
Mr. Steve Blank, Commissioner
Mr. Dale E. Bonner, Secretary
Dr. William A. Burke, Commissioner
Mr. Michael Chrisman, Secretary
Councilman Larry Clark, Commissioner
Councilman Ben Hueso, Commissioner
Mr. Steven Kram, Commissioner
Mr. Patrick Kruer, Chair
Ms. Bonnie Neely, Commissioner
Supervisor Dave Potter, Commissioner
Supervisor Mike Reilly, Commissioner
Ms. Mary K. Shallenberger, Commissioner
Mr. Paul Thayer, Commissioner
Ms. Sara Wan, Commissioner
Coastal Commission Staff

RE: Support for Carlsbad Desalination Project

Dear Honorable Commissioners*:

As a resident of California, I would like to ask for your support of the Carlsbad Desalination Plant at your meeting on November 15, 2007.

The desalination facility will produce a locally-controlled, drought-proof supply of water that is essential to San Diego County's economic stability and public health.

This is a great opportunity to help the residents of San Diego advance a regional infrastructure project with great importance to our local businesses, our region and our future.

The approval of the de-salination plant will also benefit our local environment

which include the following provisions:

- The project will maintain, restore and enhance 37 acres of new coastal wetlands habitat within the San Diego region.
- The project will employ energy conservation technology and utilize sustainable energy sources.
- The project is consistent with AB 32 and will have a net zero carbon footprint.

Thank you for your consideration and your support for this extremely important project in our region.

Sincerely,

Jase Prewett
1580 Union ST #1
San Diego, CA 92101

**In compliance with the Coastal Commission's ex parte communications requirements, service of this letter includes copies sent to the following:*

Commissioner Steve Blank
Commissioner Sara Wan
Commissioner Steven Kram
Commissioner Mary K. Shallenberger
Coastal Commission Staff
45 Fremont Street
Suite 2000
San Francisco, CA 94105-2219

Dr. William A. Burke, Commissioner
11110 West Ohio Ave., Suite 100
Los Angeles, CA 90025

Commissioner Patrick Kruer, Chair
The Monarch Group
7727 Herschel Ave.
La Jolla, CA 92037

Ms. Bonnie Neely, Commissioner
Board of Supervisors
825 Fifth Street, Room 111
Eureka, CA 95501

Supervisor Mike Reilly, Commissioner
County of Sonoma
575 Administration Drive, Rm. 100
Santa Rosa, CA 95403-2887

Supervisor Dave Potter, Commissioner
County of Monterey, District 5
1200 Aguajito Road, Suite 001
Monterey, CA 93940

Khatchik Achadjian, Commissioner
Board of Supervisors
1055 Monterey Street, Room D-430

San Luis Obispo, CA 93408

Councilman Larry Clark, Commissioner
City of Rancho Palos Verdes
30940 Hawthorne Blvd.
Rancho Palos Verdes, CA 90275

Councilman Ben Hueso, Commissioner
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Tom Luster

From: Lloyd, David [David.LLloyd@nrgenergy.com]
Sent: Wednesday, November 14, 2007 12:13 PM
To: Tom Luster
Cc: Peter MacLaggan
Subject: RE: Question about Encina and Agua Hedionda Lagoon

Tom:

As you are aware, this is a complicated question. As the owner of the property on which the Encina Station is located, as well as most of the Agua Hedionda Lagoon seabed, we anticipate maintaining the Lagoons so as to preserve the size of the existing tidal prism necessary for back-up cooling water in case the intake channel is blocked by a winter storm, so long as any of the five steam boilers are required to stay in service as reliability, must-run units. After the eventual retirement of the steam boilers, we expect to substitute steam cooling medium with air cooled condensers, similar to those described in the pending Application for Certification in 07-AFC-6, filed by Carlsbad Energy Center LLC, an affiliate of Cabrillo Power I LLC (which would replace the three oldest boilers or about 1/3 of the generating capacity of the Station). At that point, the State Lands Commission lease for the intake and discharge jetties would require restoration of the jetties to pre-construction conditions. In order to preserve the value of the uplands real estate, we anticipate a requirement for converting the use of the property from heavy industrial to a higher and better use, consistent with the coastal zone, that we continue the maintenance of the lagoons as they currently exist or at least to a state that remains consistent with preserving the value of the uplands property. In that respect, there are many residents along the edges of the three lagoons who would likely expect the City of Carlsbad to impose entitlement restrictions on us relative to the maintenance of the lagoon system. We would also expect that the Coastal Commission would be interested in continued support of sand transfer from the lagoons to the Carlsbad beaches. Sand replacement and nourishment of the beaches for Californians and the tourism industry continues to be an important public objective. Cabrillo Power has developed an environmentally acceptable process for sand dredging, transport to the beaches, and spreading on the beaches through a number of biennial dredge cycles, using an electric dredge and a delivery piping system, which works well. We would anticipate turning that function over to Poseidon, if its project proceeds, once our use of sea water for cooling terminates upon the retirement of the existing steam boilers. If the Poseidon project is not completed, we would look for continued lagoon maintenance either as a burden to our uplands property uses, or in cooperation with a third party who assumes that responsibility, assuming the State Lands Commission extends the jetties lease beyond that point. Approximately the north half of the intake jetty channel and the north beach of the inner lagoon between Carlsbad Boulevard and the Hubbs Sea World Hatchery is owned by San Diego Gas & Electric Company, and our use is pursuant to an easement for lagoon maintenance purposes.

David Lloyd, Secretary
Cabrillo Power I LLC
1817 Aston Avenue, Suite 104
Carlsbad, CA 92008
Cell: 760-535-2058
Office: 760-710-2147
Fax: 760-918-6950

Please note new mailing address.

From: Tom Luster [mailto:tluster@coastal.ca.gov]
Sent: Wednesday, November 14, 2007 10:23 AM
To: Lloyd, David
Subject: Question about Encina and Agua Hedionda Lagoon

Hi David,

I'm preparing for tomorrow's Coastal Commission hearing on the proposed Poseidon desalination project at NRG's Encina power plant, and would appreciate your help with some questions we've received. One of the concerns we've heard is when NRG's new dry-cooled power plant comes on-line and the existing power plant

11/14/2007

reduces and eventually discontinues its use of the power plant cooling water intake, that no one would maintain Agua Hedionda Lagoon unless Poseidon is able to use the intake.

We understand that NRG has expressed its interest in continued stewardship of the lagoon, both as landowner and as lessor of state tidelands used in part to maintain the lagoon's functions and beneficial uses. We would appreciate knowing if NRG intends to continue to maintain the lagoon through dredging or other means, whether it would allow other parties to perform necessary maintenance, or whether it will rely on Poseidon for any needed maintenance.

Thanks very much for any clarification you can provide, and please let me know if you have any questions.

Tom L.

Tom Luster
California Coastal Commission
45 Fremont St., Suite 2000
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November 13, 2007

Mr. Tom Luster
California Coastal Commission
25 Fremont Street, Suite 2000
San Francisco, California 94105-2219

Via Electronic Mail
tluster@coastal.ca.gov

Re: Carlsbad Desalination Project Coastal Development Permit Application
No. E-06-013, Agenda Item Th 7a
Surfrider Foundation, San Diego Coastkeeper Reply
Re: Poseidon's November 9, 2007 Letter and Attachments

Dear Mr. Luster:

Please accept these comments on behalf of the Surfrider Foundation and San Diego Coastkeeper in response to Poseidon Resource's November 9, 2007 correspondence (including attachments) responding to the Coastal Commission Staff Report for the above-referenced project.

For the record, it should be noted that these documents included significant new information and arguments, yet they were not available to the public until late afternoon on Friday, November 9th. Because the following Monday was a holiday (Veteran's Day), numerous interested parties did not receive the documents until Tuesday morning, November 13th. Given the gravity of the project at hand, and the significant precedential nature of the decision to be rendered by the Commission, every effort should be made to ensure adequate time for public response to new project information. As such, we believe it would be appropriate to continue the public hearing for a minimum of one month to afford such review.

The following points specifically address Poseidon's last minute offer of "Applicant's Proposed Coastal Development Permit Conditions" submitted less than one week prior to the Commission's scheduled hearing.

First, Surfrider and Coastkeeper would like to recognize Poseidon's apparent efforts to address issues raised in the Staff Report, including numerous violations of Coastal Act Chapter 3 policies. Nonetheless, most of these issues were not new to Poseidon, and in fact should have been readily apparent long ago. In other words, there is no justification for Coastal Development Permit special conditions being dropped on Staff and the public at the last minute. Beyond the extensive efforts of the Coastal Commission staff to resolve unanswered factual and legal questions, the environmental community has raised many of the issues cited in the Staff Report numerous times in desalination conferences, in comment letters to several regulatory agencies, and in direct communications with Poseidon.

Of particular concern in Poseidon's rebuttal to the Staff Report is the company's continued reliance on information and conclusions in the Final Environmental Impact Report (FEIR) that was certified by the City of Carlsbad. Poseidon repeatedly implies, and at times outright states, that objections to the analysis in the FEIR were successfully resolved prior to certification and that legal challenges to the FEIR were dismissed. In fact, the legal inadequacies of that document were never resolved on the merits, as the writ petition was dismissed on procedural grounds before the court received any substantive briefings. Further, while Poseidon claimed to have studied the stand-alone desalination plant in the Final EIR, the fact is that such analysis was provided as part of the City's "response to comments" on the EIR, and was done in a very summary format under the argument that such a condition was not reasonably foreseeable. The public never had a real bite at that apple, and Poseidon's continued reliance on that document as the basis for Coastal Act consistency should be considered highly suspect by the Commission.

Notwithstanding our appreciation of Poseidon's efforts to address concerns of Coastal Commission staff and the environmental community, Surfrider and Coastkeeper still have major disagreements regarding the design of the project and its consistency with Coastal Act policies. Please consider the following:

1. Timing

As noted above, Poseidon's recommendations come just one week before the Coastal Commission's final hearing on the CDP. This leaves very little, if any, time for the Coastal Commission staff and public to review the recommended conditions of approval.

And should Poseidon claim these conditions were foreseeable, we would respectfully disagree. The breadth and scope of the conditions simply cannot be considered insignificant amendments to the CDP. In fact, the amendments to the CDP that result from these conditions, inasmuch as they purport to resolve substantive Coastal Act compliance issues raised by staff, require significant investigation to determine whether they can meet such a claim. Staff's report was thoroughly researched and impacts well documented, and a similar effort is required in order to deem these impacts resolved by the special conditions.

Further, should these applicant-drafted conditions be considered and adopted at the dais during the hearing, Coastal Commission legal counsel will not have had adequate time to ensure that they comply with Coastal Act policies, that they are sufficiently binding on the applicant, and that they will continue as requirements of any eventual future owner of the desalination facility. At the very least, should the Commission choose to override staff's denial recommendation, appropriate findings of approval,

including conditions, would have to be drafted and brought back for subsequent consideration by the Commission.

In addition, the Commission should take caution not to conditionally approve the CDP until the conditions are fully vetted, the final findings are approved, and all contingencies are resolved. Poseidon has a history of representing finality in agency decision making despite significant reservations. For instance, Poseidon repeatedly claims to have received its NPDES permit, but fails to clearly articulate that the permit is not valid until the Regional Water Quality Control Board concludes review of Poseidon's Revised Flow, Entrainment and Impingement Minimization Plan. Because significant additional project conditions may result from the pending decisions by the Regional Board and State Lands Commission, the Coastal Commission would do well to postpone a decision until those processes are concluded.

Even more appropriately, the Coastal Commission could recommend denial of the project and require Poseidon to resubmit a completed, new application reflecting all the changes that have evolved over the last 18 months. An amended project description is warranted and the public should have a discrete project to review and evaluate.

2. Proposed Conditions May Not Be Sufficient For Coastal Act Compliance

Below is a non-exclusive list of specific concerns regarding Poseidon's proposed conditions of approval. Please note, Surfrider and Coastkeeper intend to comment further at the hearing on substantive and legal adequacy of the proposed conditions

a. Standard Conditions

The so-called "Standard Conditions" provide for entitlement to conduct the project in perpetuity. While the "assignment of the rights" language should be drafted to bind all successors, the way it is written it could be interpreted as authorization to conduct activities at the property beyond the 30 year life of the project. The Standard Conditions should be closely scrutinized by Coastal Commission legal counsel, and the State Lands Commission should be consulted to ensure consistency with the ultimate conditions of the lease of tidelands sought by Poseidon.

b. Special Condition: 2(a). Final Plans

This condition appears accurately reflects that "final plans" have, as yet, not been submitted to the Coastal Commission staff. Yet, the condition expressly limits the discretion of the Executive Director to review approve only those parts of the non-existent final plans in areas "located in the coastal zone." This provision appears to require the Coastal Commission to ignore its "federal consistency" authority, as well as its authority to regulate activities outside the coastal zone that could impact coastal resources. The condition should be clarified to allow review and approval of all project

components with impact to coastal resources.

c. Special Condition: 2(b). Final Plans

This condition of approval seems to suggest that final plans have not been completed for delivery of the product water, and that there is a potential for extending the delivery of the product water to, as yet, unspecified locations. Again, the expressed provisions in this condition limit the discretion of the Executive Director to consideration of only those changes within the coastal zone. This condition further appears to only apply to the expansion of physical distribution lines and does not allow further consideration of "paper transfers" of the water to areas inside or outside the coastal zone. With this ambiguity, it is impossible to discern whether the water would stay in the San Diego region for its stated purposes. Such "paper transfers," sometimes referred to as "wheeling the water", to developing regions such as Las Vegas would be growth inducing in the long-run.

d. Special Conditions: 3,7. Construction/Stormwater Plans

The construction erosion control/water quality/stormwater best management practices are not consistent with the requirements of the state General Construction Stormwater Permit, the San Diego Region Municipal Stormwater Permit, or Coastal Commission precedence on other large projects. Given the project's proximity to such sensitive resources, specific stormwater controls should be called out in a special conditions drafted following Commission approval, should it occur.

e. Special Condition: 4. Habitat Mitigation Plan

Poseidon appears for the first time to finally have committed to a single project as mitigation for impingement and entrainment impacts from continued use of the once-through cooling intake infrastructure. While we support commitment to mitigation, insufficient time has been allotted to assess whether the 37 acres of proposed restoration suffice for the production foregone due to entrainment impacts. Further, because no assessment has been provided regarding viability of performing the mitigation within the \$1.8M monetary cap Poseidon set on its mitigation efforts, it is still unclear whether and when the full restoration will occur. And even more importantly, Poseidon has yet to show that any compensatory mitigation mitigation scheme would be consistent with California Water Code section 13142.5(b) and its mandate to "...minimize the intake and mortality..." of marine life. In fact, a plain reading of that section requires best site location and best available technology to reduce the intake in the first place - not an attempt to mitigate for the harm after the fact. Finally, once again this condition of approval removes the authority primarily vested in the Coastal Commission and delegates it to the Executive Director.

f. Special Condition: 5. Climate Action Plan

Surfrider and Coastkeeper agree with Staff's analysis that greenhouse gas emissions and the enumerated consequences of global warming on protected coastal and ocean resources, as well as other Coastal Act policies, gives the Coastal Commission ample discretion to impose conditions to enforce those numerous Coastal Act policies.

Thus, characterization of the Climate Action Plan as "voluntary" and argument that the Commission has no authority under the Global Warming Solutions Act (AB 32) is irrelevant. While admittedly a case of first impression, the Coastal Act gives broad discretionary authority in and of itself to implement this condition. However, while we are encouraged to see the project proponent recommend the Climate Action Plan as a condition of approval, Poseidon has yet to identify more than a list of potential actions to reduce greenhouse gas emissions. In fact, there is significant dispute among the public, the State Lands Commission and Poseidon as to some basic elements necessary to even begin a Climate Action Plan - not the least of which is differences by experts in the field as to what the baseline emissions are today. Therefore, it is premature to accept the offer of this condition of approval because the details of how this would condition the DP to bring it in conformance with the Coastal Act policies are, as yet, speculative and undocumented. Finally, the Commission should require that the Poseidon facility achieve carbon neutrality on a "gross" basis, not as the difference between the energy used at the facility compared to imported water.

g. Special Condition: 8. Flow, Entrainment Minimization Plan

Surfrider and Coastkeeper disagree with Poseidon's assertion that the Coastal Commission has no authority over the NPDES permit and conditions issued by the San Diego Regional Water Quality Control Board. We support staff's analysis that the NPDES permit is incomplete without final approval of the "Flow, Entrainment & Impingement Minimization Plan" (Minimization Plan). Consequently, as staff cites, the Coastal Commission retains shared authority pursuant to the Coastal Act. Also, as noted above, the draft Minimization Plan does not meet the mandates of California Water Code section 13142.5(b) because it illegally relies on "after the fact mitigation" rather than complying with the clear mandate to locate this facility at the best site, using the best design and available technology to avoid the intake of marine life. This condition of approval appears to simply promise to submit evidence that the Minimization Plan has finally been approved by the Regional Water Quality Control Board - but adds an unacceptable condition that the "[Minimization Plan] shall be in substantial conformance with the Plan dated June 1, 2007." This "poison pill" virtually enshrines in the CDP a Minimization Plan that not only has not been reviewed and adopted by the Regional Board, but one that is plainly not in compliance with the clear language of the California Water Code. In effect, the Commission would be deferring their authority to a future decision by the Regional Water Board without any assurances

the Minimization Plan would be approved, or if approved would withstand judicial scrutiny.

h. Special Condition: 12(a) Timing of Dredging & Beach Deposition

Poseidon appears to be committing itself to conditions imposed on dredging the lagoon for the generator's cooling water intake. The implication is that Poseidon is simply stepping in for the Encina Power Station (EPS). Such is not the case. EPS was a facility constructed long before the enactment of the Coastal Act. The discontinuance of the EPS cooling water intake infrastructure renders the proposed desalination facility a new "stand alone" facility with it's own CDP. Different concerns arise from use of the site for this purpose. First, an off-shore "sub-seafloor intake" would dramatically reduce the need or dredging the lagoon (i.e., confine the dredging to the mouth of the lagoon) and could make other mitigation measures more viable in light of applicable Coastal Act policies. For example, the jetties for the intake could be re-configured so as to restore the natural flow of sediment in the local littoral zone and natural beach width, and consequently reduce the need for mechanical "replenishment." In short, time is needed to consider and finalize approval of the lagoon intake and its attendant necessity of dredging in sensitive habitat areas. These important considerations should be incorporated into a revised CDP application, and not left to a speculative future re-opening of the CDP for final approval.

i. Special Conditions: 14. Evidence of Other Agency Approvals

This condition on approval puts the cart squarely before the horse. There is a reason the Coastal Commission does not typically render CDP decisions until all other agency approvals are obtained. Until issues are resolved by agencies with primary consideration authority, the Coastal Commission is obligated to condition the project appropriately with the CDP in the first instance. Without the ability to rely on express conditions of approval arising from the NPDES permit and State Tidelands lease, the Commission must include substantive conditions to ensure all Coastal Act issues are addressed. Further, it is disingenuous for Poseidon to constantly refer to the FEIR, implying there were no significant impacts identified by the list of agencies in this condition of approval, and then turn around and ask for a CDP before the agencies have made their final decisions. Either the decisions have been made and should be provided to the Coastal Commission as part of Poseidon's project consideration, or the decision on the CDP is premature. The FEIR was not adequate for these purposes and was never reviewed as such, much less dismissed on the merits. Consequently, the Coastal Commission has to exercise independent review to ensure consistency with Coastal Act policies.

j. Missing Conditions

Several concerns have not been adequately addressed in the proposed conditions of

approval. For example, there should be a condition mandating that the desalination facility's CDP expire or require amendment should the quantity of water produced from this facility will be shown to be locally unnecessary. The project should not be allowed to continue if the water would be transferred out of the region or be shown to induce growth.

3. Responses to Exhibit B: Poseidon's Corrections to Misstatements

Please consider the following in response to Poseidon's "correction" to the Commission Staff Report.

Stand-Alone Analysis (p. 3 #8)

We agree with the Staff Report that the Carlsbad EIR did not contain sufficient analysis of a stand-alone desalination facility. The public was not involved in the analysis of the stand-alone option as Poseidon added the analysis at the last minute without any public comment or review. Poseidon states that no evidence of adverse impacts from the stand-alone scenario was presented, but the public was not afforded the luxury of responding to the stand-alone studies and conclusions which were added to the record the day of the certification of the EIR.

Further, the Coastal Commission also has authority under Pub. Res. Code Section 21080.5 to analyze information under its own environmental review process. Under either review of the EIR prepared by Carlsbad or by the Commission's environmental review process the analysis is insufficient. Poseidon relies on many documents either outside of the public record or prepared after the EIR was certified. Under Pub. Res. Code Section 21005, it is an abuse of discretion by the public agency if the agency fails to comply with the information disclosure provisions of CEQA. CEQA Guidelines Sections 15200, 15201 and 15203 make clear that public input and sufficient time for review and comment are essential to the environmental review and decision-making process. See *Concerned Citizens of Costa Mesa, Inc. v. 32nd District Agricultural Association*, 42 Cal. 3d. 929, 936 (1986); *Laurel Heights Improvement Association v. Regents of the University of California*, 47 Cal. 3d. 376, 392 (1988)

Existing Intake Structure (p. 3 #9)

As a result of the inadequate analysis of alternatives in the EIR, the conclusion that the current EPS intake is environmentally superior and would not result in any adverse impacts is fatally flawed. Poseidon relies on the assertion that the existing EPS intake does not result in adverse impacts and therefore the subsurface intakes could not be environmentally superior. The underlying assertion is incorrect as well as the preclusion of analysis of the subsurface intakes because of reduced intake volumes. Alternatives should be analyzed as to their impacts to the environment, not the volume of intake water Poseidon requires for economic feasibility.

316(b)/Riverkeeper II Application (p. 5-6 #12)

Poseidon asserts that Clean Water Act 316(b) does not apply to desalination facilities, but fails to consider the applicability of Porter-Cologne. The state courts will look to the federal court decision in Riverkeeper II in analyzing Porter-Cologne and applying the same best technology available standard. In using the same intake structure as power plants use for once-through cooling technology, the desalination plant will be subject to the same technology requirements as OTC power plants.

By definition, the best technology available is the best and most protective of the environment. Poseidon argues that ocean water can be extracted in an environmentally destructive manner irrespective of available environmentally superior technologies for performing the same function (drawing water from the ocean) as OTC so long as the water is used for a more worthy purpose. Thus, any application of the best technology available standard can be sidestepped by merely finding a new function for a destructive technology.

Further, if the assumption Poseidon relies upon is that withdrawing ocean water for desalination serves a higher purpose and therefore should be afforded greater leniency in applying environmental regulations, only 50 MGD of the water being withdrawn fits this definition and the other 200 MGD of dilution water and 50 MGD brine discharge are subject to stricter standards.

Lagoon Sedimentation (p. 7 #17)

Poseidon asserts that it is both innocent in contributing to the sediment problem in Agua Hedionda Lagoon (AHL) and that it would actually help that situation by performing dredging. In making this determination Poseidon relies on the 2006 Clean Water Act 303(d) List of Water Quality Limited Segments Requiring TMDLs, by the San Diego Regional Water Quality Control Board, June 28, 2007. This document states in table format that AHL potential sources for the sedimentation/siltation are non-point and point sources. However, Poseidon fails to mention that the technical report used for the lagoon and watershed models used to estimate existing pollutant loading, develop TMDLs, and conduct a source analysis for the waterbodies determined that data gaps prohibited detailed analysis of sediment in the lagoon and that several data elements would be useful to better understand the lagoon. Missing data specifically included in-lagoon sediment data and the report concluded that without collection of further data, TMDL development would not be possible. (Investigation Report No. R9-2006-0076 Technical Report, p. 14)

Impingement Rate (p. 9-10 #20-21)

The impingement and entrainment effects of a stand-alone facility are analyzed in a study submitted to the San Diego Regional Water Quality Control Board (Regional

Board) that has yet to be reviewed and accepted by the Regional Board. Poseidon provided the study in a letter to Coastal Commission staff dated June 1, 2007. In contrast to Poseidon's characterization in footnote 15 (page 22), the Flow, Entrainment and Impingement Minimization Plan has not been subjected to public comment or review and is not part of the EIR. If the study is to be considered as part of the Coastal Commission review process, it must be made available to the public for comment and review as required by Pub. Res. Code Section 21080.5(d)(3)(A) and (B).

In addition, the marine impacts Poseidon presents are not the only impacts of the stand-alone facility. If Encina no longer operates, or reduces flow, Poseidon will be responsible for most, if not all of the maintenance of the intake. Heat treatments are currently conducted by Encina every five weeks. (Proposal for Information Collection Clean Water Act 316(b), p. 2-9) The heat treatments are required because without these treatments, organic matter would grow along the intakes at the rate of 1000yd³ in six months. Id. These heat treatments kill a vast amount of marine life by heating the discharge water to 105 degrees Fahrenheit in a process that takes six hours from heating to cooling. Id. Poseidon fails to include the amount of marine life killed in such routine maintenance operations in the EIR. In the Minimization Plan, Poseidon provides such data. The reported loss of fishes, sharks, and rays impinged during normal operations at Encina from June 2004 to June 2005 was 19,408 samples weighing 351,672 grams. (Minimization Plan, p. 19-21). In contrast, the amount of loss attributed to heat treatments is 94,991 samples weighing 2,034,900 grams. The marine life lost during these routine heat treatments is almost five times the number and six times the mass of that lost during normal operations. These significant adverse impacts were not analyzed in the EIR because the heat treatments were not associated with Poseidon since the power plant performed the routine maintenance of the intakes. Once the power plant is shutdown, Poseidon will be responsible for these heat treatments and for the resulting fish-kills. The impacts associated with these treatments have not been presented for public comment and review and have not been analyzed whatsoever, resulting in a complete lack of avoidance or mitigation measures. A subsequent or supplemental EIR should be completed to remedy this omission in light of the certainty of the stand-alone scenario. Public Resources Code Section 15162(a).

Entrainment Study (p. 11 #23)

The survival rates of entrained phytoplankton and zooplankton from studies at Huntington Beach Generating Station and Ormond Beach Generating Station that show the vast majority of entrained organisms return to the discharge channel unaffected are based on studies that: were not incorporated into the Carlsbad EIR; have not been made available to the public for comment and review; and are not based on discharge in concentrated brine from desalination plants. One cannot be sure if entrainment deaths would be due to brine or intake processing - i.e. whether the animals make it through alive to the discharge point.

Commercial and Recreational Fishing Impact (p. 12 #26)

Poseidon states that less than 1 percent of entrained organisms have recreational and commercial value and thus the ecological impact resulting from entrainment is insignificant. This assertion is unsubstantiated because 1 percent of entrained organisms may constitute a large number, and should be viewed in context. Survival of the populations from which entrained organisms are taken does not ensure that the species' position in the food web will be protected. No assessment is made of the role of entrained larvae as prey for other species at various stage of its life. Again, this figure is pulled from the Minimization Plan that was not included in the EIR and has not been the subject of public comment and review.

Entrainment of large species (p. 14 #32)

Poseidon states that it has documented the velocity during stand-alone operation and that the velocity of the water at the entrance to the bar racks is at or below 0.5 feet per second (fps), and therefore the proposed operation would be consistent with what the U.S. EPA considers to be "best available technology" for cooling water intakes. Therefore, according to Poseidon, the impingement impacts and the potential for an incidental take associated with the stand-alone operation are less than significant.

The velocity documented by Poseidon is simply an assertion added to the Carlsbad EIR at the close of the comment period in response to comments on the day of the certification. Further, the velocity quoted by staff is more accurate than the Poseidon velocity. As stated by Encina Power Station (EPS) in its Proposal for Information Collection dated April 1, 2006, the approach velocity at pump 4 is 1.6 fps and the through-screen velocity is 2.9 fps. (Proposal for Information Collection Clean Water Act 316(b), p. 2-8 Table 2-1) Therefore, not only is the velocity cited by Poseidon inaccurate, any impingement analysis using this figure is inaccurate.

The actual impingement impacts to marine life, including the endangered sea turtles, will be much greater than opined by Poseidon, resulting in significant adverse environmental impacts that have thus far been ignored in the environmental review process.

Alternative Intake Structures (p. 19-20 #34)

Despite Poseidon's assertion that staff's belief of the superiority of the subsurface technologies is not substantiated, evidence in the record suggests otherwise. The open-ocean intake structure for a stand-alone desalination facility that has allegedly been the subject of the "comprehensive" study is not in the EIR and has not been subject to public comment and review. Furthermore, the assertion that subsurface intakes are not Best Technology Available (BTA) is wholly inconsistent with the court decision in *Riverkeeper II*. As of yet, no court decisions have invalidated the use of

subsurface intakes as inconsistent with BTA; the same cannot be said of open-ocean intakes. Though it may be true that subsurface intakes are not recognized as BTA under EPA 316(b) regulations, courts have stated that open-ocean intakes definitely *are not* BTA.

Feasibility of Minimization Procedures (p. 21-22 #36)

The Revised Flow, Entrainment and Impingement Minimization Plan submitted to the Regional Board in June 2007 is not subject to public review as the Regional Board is not currently taking comments on the revised plan and is not currently set to hold a public hearing on the Minimization Plan prior to approval. Poseidon's assertion (footnote 15) is completely unsubstantiated. In fact, the Regional Board website gives no indication that the plan is even being considered as the last correspondence posted from the Regional Board to Poseidon indicates that the Regional Board was delaying evaluation until June 2008. While we believe a subsequent letter was transmitted purporting to withdraw the Regional Board's assertion of deferred consideration, there still is no indication what process is being undertaken by the Board to reach a decision on the plan. At this point, any movement by the Regional Board in reviewing or accepting comments on the review of the Minimization Plan is wholly absent from the public arena.

(<http://www.waterboards.ca.gov/sandiego/misc/desalination/desalination.html>)

Further, any reliance upon this plan for alternatives analysis is inconsistent with CEQA or Coastal Commission environmental review because the Minimization Plan: has not been made available for public comment; was not included in the Carlsbad EIR; and does not contain adequate analysis of alternative intakes.

Salinity Discharges (p. 32-35 #43, #44)

The 19-day salinity study conducted by Poseidon is inconclusive at best. The purple sea urchin test species contained one mortality at each salinity level, thus the study concludes that the adjusted survival rate was also 100 percent. The elapsed time to the first mortality in the purple sea urchin group increased as salinity increased, which "is counterintuitive and indicates that salinity is not a factor causing sea urchin mortality in the tested salinity range." (Salinity Tolerance Investigations: A Supplemental Report for the Carlsbad, CA. Desalination Project, p. 6) The fact that salinity increased and the sea urchins still died does not mean that salinity is not a factor. This "counterintuitive" result signals at best an inconclusive result and should at least be repeated. The fact that one mortality occurred also gives no indication as to the survival rate as a percentage of the total population and also gives no indicia of reliability.

Furthermore, the study states that "species living within the ZID will show no effect at the proposed normal operating condition and will also tolerate salinities at or below 40 ppt." (Salinity Tolerance Investigation, p. 6) It is clear that the study did not anticipate

"normal operating condition" to mean a stand-alone facility as the 40 ppt was the extreme condition and maximum endpoint of the study. Reliance on a study that considered the stand-alone scenario as an extreme condition in a cursory manner does not satisfy the requirement of thorough investigation and runs counter to scientific method.

In addition, Poseidon's supplemental whole effluent toxicity (WET) test of chronic toxicity and a separate acute toxicity test were completed after the EIR was certified and were not available for public comment and review. Poseidon's response makes mere mention of the studies and provides no supplemental or supporting data or documentation.

Poseidon asserts that "results of the [Salinity Tolerance Investigation] and other studies formed the basis for the 40 ppt maximum salinity discharge limit established by the Regional Board [NPDES permit] (Order R9-2006-0065)." However, the NPDES permit was granted subject to review and acceptance of the Minimization Plan and before the Regional Board or the public knew that Encina was moving to dry-cooling. All of the studies performed by Poseidon before the NPDES permit was granted relied on a fully operational EPS scenario and did not consider a stand-alone option as reality or the norm. Therefore, the Regional Board's reliance on the studies is no longer a valid basis for attributing to them the credibility of studies reflecting the current situation. The studies subsequently undertaken by Poseidon have not been accepted by the Regional Board and should not be accepted as part of the EIR or CEQA review process until they have been made available for public comment and review.

Adverse Near-Shore Impacts (p. 38-39 #49)

Poseidon opines that in "issuing [the NPDES permit], the Regional Board adopted a finding that the permit will be fully protective of all beneficial uses applicable to the Pacific Ocean in the vicinity of the discharge including marine habitat," and this determination was "based on the multi-year, multi-disciplinary studies." Contrary to Poseidon's assertions, the NPDES permit was issued before the stand-alone scenario was considered and relied on studies that are no longer valid. The studies that address the current stand-alone situation have not been peer-reviewed, have not been open to public comment, and are not part of the EIR.

Lagoon Stewardship (p. 41-42 #52)

As we have seen from the beginning of this process, Poseidon consistently changes its position to achieve the most favorable outcome. In preparing the EIR, Poseidon stated that the stand-alone facility was mere speculation, and therefore only addressed in a cursory fashion in response to comments. However, it now asserts that the "seawater cooled power plant is expected to be decommissioned in the coming years, leaving the lagoon without an entity responsible for its long-term maintenance." (p. 42) In its

response to the staff report (p.2), Poseidon asserts that the two operating units that are not moving to dry-cooling will remain in service indefinitely. Poseidon eagerly presents the scenario of Encina moving to dry-cooling and completely shutting down when discussing the need for a lagoon steward. However, when it comes to discussing the project setting, Poseidon views Encina as being in service indefinitely. Similarly, for purposes of the original EIR, Poseidon vigorously denied that Encina was shutting down to ensure that the EIR did not fully address the now more than reasonably foreseeable shutdown of Encina and Poseidon as a stand-alone facility.

Agua Hedionda Lagoon Sedimentation (p. 43 #53)

As mentioned above, the 303(d) listing for Agua Hedionda Lagoon for sediment is not only for urban runoff. The technical report prepared by Tetra Tech for the TMDL process identified the data gaps missing from its analysis. One of these missing data sets was in-lagoon sediment information. The urban runoff from cities in the area is a contributing factor, but this does not disprove that the sediment problem in the lagoon could also be caused by the intake for Encina. The mere fact that dredging is required supports the contention that sedimentation from unnatural inflow to the lagoon contributes to the 303(d) listing.

Lagoon Dredging Conditions (p. 46 #58)

The purpose of CEQA is to review the environmental impacts of a project. A piecemeal approach prohibits adequate analysis of all the impacts associated with the proposed project. See *Laurel Heights Improvement Association v. Regents of the University of California*, 47 Cal. 3d. 376 (1988); *Del Mar Terrace Conservancy, Inc. v. City Council of the City of San Diego*, 10 Cal. App. 4th 712 (1992).

Poseidon suggests that any future dredging conducted will be conditioned upon future approval of a separate CDP. This fragmentation obscures the true environmental impacts of the entire project. Further, Poseidon specifically relies on the ability to undertake the dredging of the lagoon for its lagoon stewardship. Poseidon cannot first claim that Encina is not shutting down for purposes of the EIR, then claim that Encina is shutting down in order to prove the need for a new lagoon steward.

Similarly, Poseidon cannot rely upon the ability to dredge the lagoon in order to execute its stewardship and at the same time condition its project approval upon future issuance of the CDP for dredging. Such an argument is all too familiar. In the Carlsbad EIR, Poseidon argued that it is "reasonably foreseeable" that Encina will continue to operate and that if the desalination plant were [sic] to operate independently, Poseidon "would have to obtain new permits and undergo new CEQA compliance." (Additional Response to Comments on the Final EIR, June 13, 2006, p. 2) However, now that the stand-alone desalination plant is reasonably foreseeable and a supplemental or subsequent EIR should be conducted, Poseidon argues that the Encina shutdown is not new

information.

Carbon Emissions (p. 46-48 #59)

Poseidon claims that its emissions should be based on the SDGE emission factor because it plans to receive electricity from SDGE. No contract or source of reliability for this expectation has been provided by Poseidon; therefore it is completely appropriate for the Commission staff to rely on the California average rate of 804.54 lbs Co₂ per MWh.

Offshore Intake Alternative (p. 44-45 #56)

Poseidon asserts that an offshore intake is not a viable alternative. Some of the reasons given for the inadequacy of this alternative are:

Intake flows of 304 mgd for the stand alone desalination plant would produce flow velocities of only 0.66 ft/sec in the pipeline. These flows are insufficient to prevent the pipeline from developing a sand plug. Also, the DEIR gives no consideration to bio-fouling of the pipeline and the impacts associated with the repeated loss of marine life that would be routinely killed during de-fouling maintenance cycles of the pipeline. A stand-alone desalination plant would not have the option to de-foul the pipeline by heat-treatment, leaving chlorination as the only viable option, with all its associated polluting impacts, none of which are considered in the DEIR. (p. 44-45)

Without addressing the truth of Poseidon's assertions, it is clear that Poseidon's analysis proves the inadequacy of its own operation and intake. If a velocity of .66 ft/sec cannot prevent a sand plug, then Poseidon's asserted intake velocity of .5 ft/sec is insufficient as well. Further, Poseidon admits in this analysis that it plans to continue heat treatments that will result in the above-mentioned devastating fish-kills. While Poseidon purports to have studied alternative intake viability, its disclosures to the public have provided virtually no opportunity to test its study methodology and assumptions. This is particularly notable due to the fact that no post-EIR studies have been made available at all.

Carbon Emission Offsets (p. 52 #71)

Greenhouse gas (GHG) emissions from the production of desalinated product water should not be offset against the emissions from current water supplies. First, the goal of AB 32, the Global Warming Solutions Act is to reduce emissions to 1990 levels by 2020. This project would produce water in a more energy intensive manner than the currently most energy intensive method, water transport. This project would use technology that causes more emissions than our current supply. From a policy standpoint, this runs counter to the goals of AB 32 to reduce emissions. San Diego's

water supply should be less energy intensive, not more.

Poseidon claims that its product water replaces water that would otherwise have to be pumped into the region through either the State Water Project or the Colorado River Aqueduct. (p. 52) Thus, its Climate Action Plan only offsets emissions above and beyond current emissions. If California is to meet the goal of AB 32 in reducing overall emissions, simply offsetting an increase in emissions will not suffice. Moreover, the water provided by Poseidon is not replacement water. Contrary to the assertions of Poseidon and water agency partners, it is clear that this water is a supplement to current water supplies. Testimony from elected officials and community leaders at the State Lands Commission meeting on October 30, 2007 reflected the view that the desalinated water would help San Diego grow. The desalinated water is needed to enable future growth and will not be used as an offset.

In anticipation of the fact that the subscribing cities will use the delivered desalinated water as a supplement to their existing water supply, Poseidon states:

If the replaced water is pumped into the region for other uses, then the associated carbon emissions from such pumping should be and is the responsibility of the proponents of those other uses. Any other result would be an unfair and unwarranted "double counting" of carbon emissions, requiring Poseidon to offset emissions caused by other activities not associated with its own operations. (p. 52)

Poseidon's definition of double counting is, in reality, single counting. Poseidon is making new water. All emissions from making this water should be offset. Once the water is delivered to a region, Poseidon knows that it will be added to the existing water supply and Poseidon, along with the water agencies and cities, will have no further responsibility to offset remaining emissions. If Poseidon wishes to place the burden of offsetting emissions it creates in producing water, it should reflect this burden in its price of water. Otherwise, shifting the burden to the customer will be completely unregulated and in all likelihood, completely infeasible. Poseidon is taking a "hands-off" approach with respect to the ultimate use of its water. If Poseidon cannot ensure that its water will be used as replacement water, it is unreasonable to allow Poseidon to take emission offsets for that use.

Poseidon's approach to the end-use of its desalinated water is yet another example of the piecemeal approach to environmental impacts Poseidon encourages. All impacts associated with this project should be attributed to this project. Delaying the assessment of reasonably foreseeable environmental impacts and mitigation measures runs counter to the purpose of CEQA. *Laurel Heights Improvement Association v. Regents of the University of California*, 47 Cal. 3d. 376 (1988)(Laurel Heights I)

Significant Adverse Impacts (p. 55 #77)

Poseidon asserts "[n]o evidence was presented to the City that standalone operations would result in any adverse impacts, and the City's consultants did not find any such adverse impacts." (p. 55) No evidence of adverse impacts associated with stand-alone operations was admitted into the record before the City of Carlsbad and no evidence was incorporated into the final EIR. However, the stand-alone scenario was not analyzed in the EIR and was simply addressed on the day of the certification of the EIR in a response to comments document. (Additional Response to Comments on the Final EIR, June 13, 2006) To state that no evidence was provided to Carlsbad does not prove that there are not, in actuality, adverse environmental impacts associated with the project. The hasty inclusion of the Additional Response to Comments documents did not address Commission staff's concerns about the project, and therefore, staff is correct in stating that more information and analysis is needed. (Staff Report, p. 80) As also noted by staff, in preparing the EIR Carlsbad regarded the stand-alone scenario as "speculative" and therefore did not fully analyze the environmental impacts of the desalination plant as a stand-alone facility. (Staff Report, p. 79) Further, the record is replete with California Energy Commission documents identifying the widespread destruction of marine life attributable to once-through cooling, as well as the significance attached to such mortality. Poseidon's site-specific analysis was conducted in the same manner as other 316(b) studies, and is insufficient to overcome the BTA requirements of the California Water Code as interpreted consistent with *Riverkeeper II*.

Poseidon attempts to address the numerous significant environmental impacts of the stand-alone facility through documents introduced to the Coastal Commission staff after the certification of the EIR and not subject to public review and comment. This includes, among other things: salinity and toxicity; sedimentation; marine impacts; GHG emissions and energy impacts; intake alternatives; dredging impacts; and construction impacts.

The public comment and review component of CEQA is of the utmost importance in environmental review. The public holds a "privileged position" in the CEQA process. *Concerned Citizens of Costa Mesa, Inc. v. 32nd District Agricultural Association*, 42 Cal. 3d. 929, 936 (1986). The California Supreme Court has stated that CEQA procedures should be "scrupulously followed" so "the public will know the basis on which its responsible officials either approve or reject environmentally significant action" and will "respond accordingly to action with which it disagrees." *Laurel Heights I*, 47 Cal. 3d. 376, 392. Poseidon's attempt at circumventing both the purpose and the process of CEQA review should be addressed through a supplemental or subsequent EIR. If the environmental impacts of the project are truly not significant, the public should, at the least, be afforded the ability to assess and comment openly on the information.

4. Conclusion

Given the foregoing, Surfrider and Coastkeeper strongly urge the Commission not to approve the CDP and project at its November 15, 2007 hearing. Instead, the Commission should either deny the project as proposed by its staff, or defer approval until such time as the public and staff have sufficient opportunity to review recent documents submitted by Poseidon. These include, but are not limited to:

- Sep. 28, 2007: Comparative Analysis of Intake Flow Rate on Sand Influx Rates at Agua Hedionda Lagoon: Low-Flow vs. No-Flow Alternatives
- Oct. 8, 2007: Additional Analysis of Submerged Intake Gallery
- Oct. 8, 2007: Analysis of Offshore Intakes
- Oct. 8, 2007: Issues Related to the Use of the Agua Hedionda Inlet Jetty Extension EIR to Recommend An Alternative Seawater Intake for the Carlsbad Desalination Project
- Oct. 9, 2007: Coastal Habitat Restoration and Enhancement Plan
- Oct. 9, 2007: Updated Response to Coastal commission's September 28, 2007 Request for Additional Information
- Oct. 17, 2007: Intake Cost Estimates
- Oct. 18, 2007: Climate Action Registry CO2 Conversion Calculation
- Oct. 21, 2007: Updated Response to Coastal Commission's September 28, 2006 Request for Additional Information
- Oct. 22, 2007: GHG Emission Baseline Protocol
- Nov., 2007: Carlsbad Desalination Project Briefing Package, CDP Application No. E-06-013
- Nov. 7, 2007: Transmittal of Garibaldi Study and Coastal Development Permit for Southern California Edison and San Dieguito River Valley Joint Powers Authority San Dieguito Wetland Restoration Plan
- Nov. 8, 2007: Letter to State Lands Commission Executive Director re: Desalination Project's Impact on Imported Water Use

Sincerely,

COAST LAW GROUP LLP


Marco A. Gonzalez

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Th7a

November 14, 2007

TO: Coastal Commissioners and Interested Parties

FROM: Alison Dettmer, Deputy Director
Tom Luster, Environmental Scientist

SUBJECT: Additional Correspondence re: E-06-013 – Poseidon Resources (Channelside)
LOC / Cabrillo Power II LLC

On November 13, 2007, Commission staff received the attached e-mail with six attached issue papers from Marco Gonzalez of Coast Law Group.

Tom Luster

From: Marco Gonzalez [marco@coastlawgroup.com]
Sent: Tuesday, November 13, 2007 5:17 PM
To: Tom Luster
Subject: Environmental Community Concerns: Carlsbad Desal

Mr. Luster

For the record on attached please find copies of various issue papers to used by the environmental community, specifically Surfrider Foundation and San Diego Coastkeeper, to educate commissioners before the above referenced matter is heard.

-Marco Gonzalez



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FAILURE TO ADEQUATELY CONSIDER INTAKE ALTERNATIVES

1. Summary

Poseidon proposes to utilize the seawater intake system currently serving the Encina power plant, despite the fact that the power plant is slated to be decommissioned and the intake removed. The power plant is converting from "once-through cooling" at least in part due to the regulations that have evolved to counter the significant marine life mortality impacts caused by coastal power plants employing such technology.

Poseidon has never conducted a sufficiently detailed, publicly reviewed alternatives analysis, despite the availability of numerous options. Instead, Poseidon's dismissal of alternatives is based primarily upon a 12 page White Paper with little or no detail regarding assumptions and sources of information. CCC staff has identified significant flaws with the conclusions in the White Paper. Since Poseidon's 2004 White Paper was drafted, relatively large scale sub-surface ocean intakes have been proven feasible in Orange County (engineering study) and Japan (successful project implementation). Because the power plant is to be closed down, alternative sites that may be more amenable to sub-surface intakes should be considered as part of an appropriate alternatives analysis.

Legally, Poseidon must be required to implement the best available, least environmentally damaging alternative possible. **Before the project can be approved as proposed, a more detailed alternatives assessment must be completed and made available for public review.**

2. Violations of Law

- **Coastal Act 30230:** Marine resources shall be maintained, enhanced, restored. Biological productivity shall be sustained, including healthy populations of all species of marine organisms.
- **Coastal Act 30231:** Biological productivity and estuarine water quality shall be maintained and were feasible restored through minimization of entrainment.
- **Coastal Act 30233(a):** dredging of estuary permitted only where no feasible less environmentally damaging alternative; feasible mitigation measures required to minimize adverse impacts.
- **Ca. Water Code 13142.5(b):** industrial installation using seawater must utilize the best available site, design, technology, and mitigation measures feasible to minimize intake and mortality of all forms of marine life.

- **CEQA Guidelines 15162(a)(1-3):** Changes to the project, changes to circumstances surrounding the project, or the availability of new information related to mitigation or alternatives for the project require the production of a supplemental or subsequent Environmental Impact Report.

3. Poseidon Arguments and Surfrider/Coastkeeper Rebuttal

- Power plant intake infrastructure already exists, impacts are accepted, and therefore it is more convenient and inexpensive to use the power plant intake than to construct and permit a new one.

SF/CKPR: The legal standards requiring utilization of best available intake technology do not allow for the cost-benefit analyses that underlie Poseidon's reasons for discarding alternatives. Because the power plant will be removed in the foreseeable future, the desalination plant must be assessed and permitted as though it were a new use coming forward as a stand-alone proposal.

- Power plant entrainment impacts are not ecologically significant, therefore the desalination impacts will not be either.

SF/CKPR: Poseidon's determination of insignificance is based upon the incorrect and unsupportable assumption that compensatory mitigation is an appropriate response to the requirement that it use best available mitigation measures feasible to reduce intake and mortality. The mere fact that Poseidon must provide mitigation equivalent to 37 acres of foregone estuarine production contradicts its claim of insignificance, not to mention that there is no assurance that the mitigation program will achieve this goal.

- Intake alternatives are all too expensive.

SF/CKPR: Poseidon has not provided sufficient information from which to deduce whether alternative intake options are viable from a cost perspective. Other studies, particularly from Japan, Spain, and Dana Point, indicate that Poseidon's projected capital cost per gallon productivity are inappropriately inflated.

- Intake alternatives do not provide sufficient source water.

SF/CKPR: A decreased intake volume may provide alternative options for brine disposal, such as co-mingling with the nearby wastewater treatment plant discharge. Poseidon's desire to produce an average of 50mgd of water does not render a lesser volume infeasible or insignificant.

- Intake alternatives would all have significant environmental, aesthetic, and beach access impacts greater than continued use of the power plant intake.

SF/CKPR: Poseidon has not provided sufficient information and/or studies to support this assertion. In fact, the contrary is true based upon the 2005 State Lands Commission's EIR for the Agua Hedionda North Jetty extension. The CCC Staff Report identifies numerous instances where Poseidon's cursory assessment of alternative intakes presumes a worse case scenario that appears intended to render them infeasible. No honest assessment of alternatives has been provided.

- Desalination uses are not controlled by Clean Water Act 316(b) regulations and court decisions.

SF/CKPR: California Water Code 13142.5(b) cannot be interpreted less stringently than CWA section 316(b). There are no good arguments to support assertions that the reasoning applied by the courts in their 316(b) studies will not apply to the California Water Code.

- A supplemental or subsequent EIR is not required because the changed circumstances and new information do not identify or propose to mitigate significant environmental impacts.

SF/CKPR: Poseidon's determination of insignificance is based upon the incorrect and unsupportable assumption that compensatory mitigation is an appropriate response to the requirement that it use best available mitigation measures feasible to reduce intake and mortality. The mere fact that Poseidon must provide mitigation equivalent to 37 acres of foregone estuarine production contradicts its claim of insignificance, not to mention that there is no assurance that the mitigation program will achieve this goal.

4. Expanded/Additional Surfrider/Coastkeeper Arguments

- Utilizing the same reasoning put forth by the Court in *Riverkeeper II*, Ca. Water Code 13142.5(b) on its face precludes the use of open-ocean intakes coupled with compensatory mitigation. (See, Surfrider letter to SWRCB, dated May 30, 2007). A plain reading of the statute requires "mitigation" to minimize marine life mortality at intake, which is different than allowing restoration methods (e.g. purchase of mitigation lands or implementation of studies) to offset the impacts of entrainment. Minimization of marine life mortality at intake can be achieved by using a sub-surface intake alternative.

In early 2008, the State Water Resources Control Board (SWRCB) is expected to issue a statewide policy which will clarify the impact of *Riverkeeper II* on open ocean intakes for power plants and desalination facilities. It is not the CCC's practice, and it makes no practical sense, to approve a project that will be subsequently become subject to project-altering conditions by another state agency. The CCC should delay its decision on the proposal until fundamental project viability concerns are resolved pursuant to the SWRCB policy.

- Continuation of the destructive impacts of "once-through cooling" is absurd from a policy standpoint. The marine life devastation of this antiquated technology is no longer debatable, and approval of a water supply project that perpetuates such devastation, especially in light of available alternatives, flies in the face of reason. (See, Staff Report, pp. 29-31).
- The 2004 White Paper by Poseidon pales in comparison to Monterey's AMBAG study and Orange County's MWDOC study.

(See, Dana Point Ocean Desalination Project, Engineering Feasibility Report, March, 2007, Chapter 2 ("Feedwater Conveyance"); and, Desalination Feasibility Study for the Monterey Bay Region, Final Report, November 8, 2006, Section 5d ("Intake Related Impacts").

As the first large scale desalination plant to be considered by the CCC, Poseidon's project, including assessment of alternative intake feasibility, should be significantly more transparent. Because approval of this project will set the precedent for dozens of other projects in the near future, allowing Poseidon to provide only a cursory review of alternative intake options will result in co-location justifications for every remaining once-through cooled power plant.

- See, Staff Report Discussion of Entrainment Impact Avoidance, pp. 32-36.

Because Poseidon has not accurately captured the expected cost of pure water production and delivery (\$950 per acre foot claimed versus \$1,300 per acre foot expected), its claims of infeasibility of alternative intakes due to such "per unit" production costs are suspect. Ultimately, the future desire for desalinated water will be driven by the scarcity of and need for the resource, not its cost.

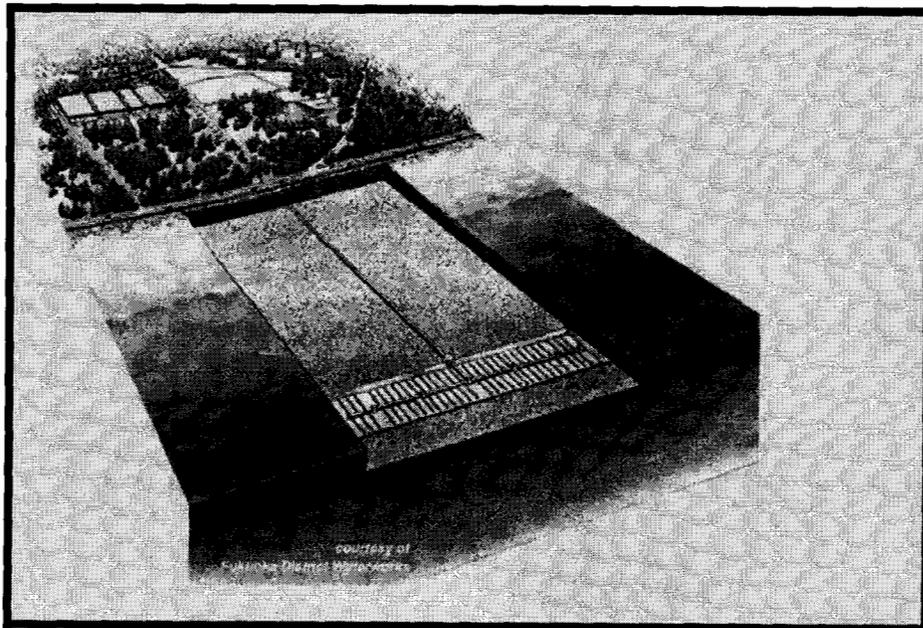
Environmental impacts from sub-surface alternative intake technologies are almost always less significant than entrainment impacts from open ocean intake. Sub-surface alternatives also provide a cleaner "source water", thus reducing pretreatment costs.

Significant construction impacts from sub-surface alternatives are typically localized and temporary.

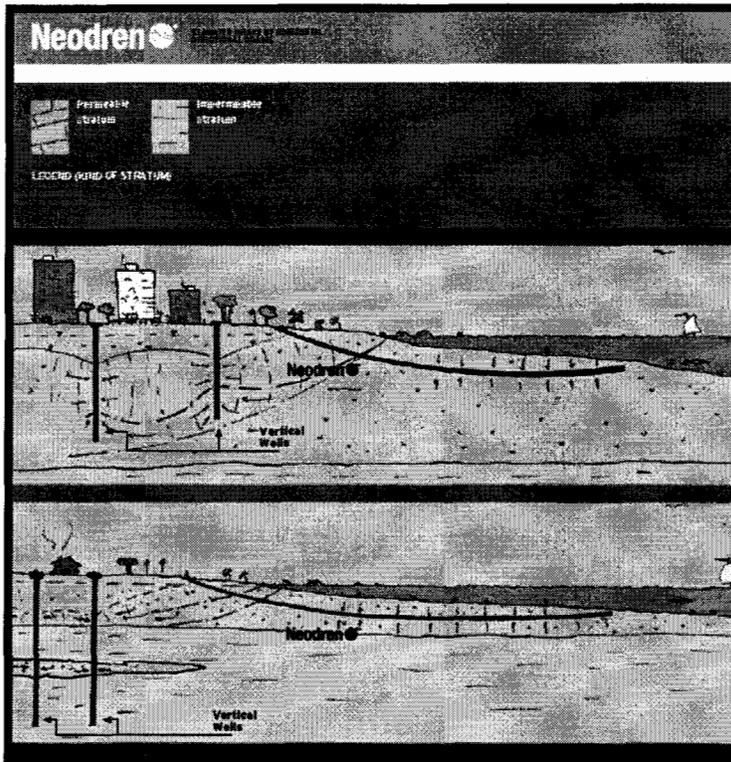
Slant drilled wells were proven technically feasible by MWDOC for use on a public beach in Dana Point. Poseidon's justifications for infeasibility assume worst-case design and location scenario, without sufficient detail to assess validity of options. Further, Poseidon's cost claims (and resulting conclusion of infeasibility) are not justified with any data and do not comport with the detailed assessment provided by MWDOC for its project.

Large scale infiltration galleries or other seabed filtration technologies would provide the most likely feasible alternative for the current proposed project. Poseidon's dismissal of such an alternative is based upon faulty assumptions and insufficient analysis, all of which is discussed within the CCC Staff Report (p.35). Examples of successful large seabed filtration intakes include Fukuoka, Japan (13.2 MGD) and San Pedro del Pinatar, Spain (45.6 MGD). (See, Monterey AMBAG study, p. 92)

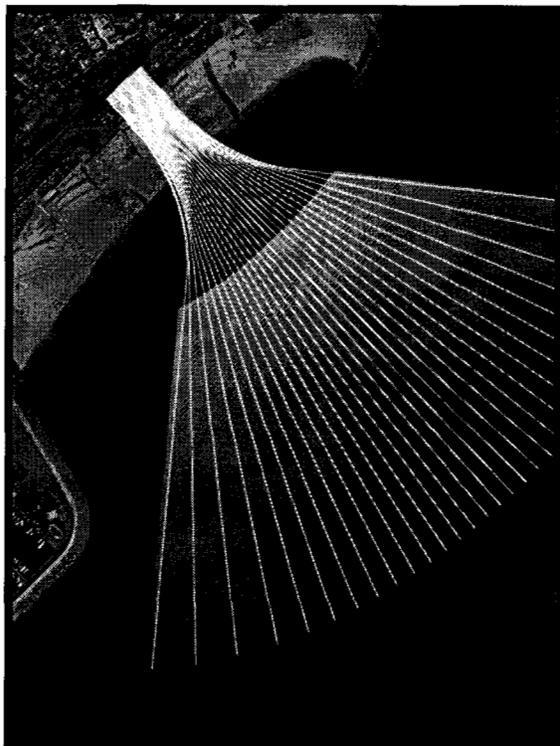
Without a more in-depth and honest analysis of such alternatives, it is impossible to ascertain the viability of scaling the technology to achieve Poseidon's stated goal of 50MGD of pure water. Again, given the precedent to be set by this first large-scale desalination facility in California, coupled with the requirement that Best Available Technology be utilized, a comprehensive alternatives analysis should be required.



Fukuoka, Japan Infiltration Gallery Schematic



Neodren, Spanish Company's Seabed Filtration Horizontal Micro-Tunnel Technology



Neodren's Horizontal Micro-Tunnel Technology (Scaled, Aerial View)

Coastal Dependent Use Exceptions (Coastal Act Section 30260)

Overview:

Ocean desalination facilities are, in part, reliant on “feedwater” being withdrawn from the ocean, aquifers underlying the ocean or man-made galleries that imitate seafloor substrata allowing ocean water to percolate into collection galleries.

However, besides the necessity to locate the intake structure in the coastal zone, there is nothing prohibiting the desalination facility itself to be built outside the coastal zone. In fact, in some cases it may be more feasible and cost effective to transport the “feedwater” to an inland facility closer to the final delivery point of the product water. It could also be an environmentally superior design to locate a seawater desalination facility closer to an existing sewage treatment facility to co-mingle the brine discharge and the freshwater discharge to reach salinity levels closer to ambient conditions – thereby minimizing both facilities’ impacts on marine living resources.

Coastal Act Section 30101 defines: “Coastal dependent development or use’ means any development or use which requires a site on, or adjacent to, the sea to be able to function at all.” In short, while the intake structure may be located under the ocean and buried below portions of the coastal zone, it is not necessary to locate developed desalination facility itself adjacent to the sea. Therefore, the definition of an ocean desalination facility as “coastal dependent” is questionable. The desalination facility itself more fits the definition in Section 30101.3: “Coastal-related development’ means any use that is dependent on a coastal-dependent development or use.”

Nonetheless, even assuming this particular project is “coastal-dependent,” Section 30260 does not relieve the project proponent of the mandates of other Coastal Act policies.

Section 30260 requires the showing of three conditions before the several Coastal Act policies implicated in this proposal can be overridden:

- 1) *“...that alternative locations are infeasible or more environmentally damaging.”*

Such is not the case here for either the intake or the facility. Sub-seafloor intakes are not only feasible for ocean desalination facilities, they significantly less destructive to the environmental. Other than temporary impacts during construction, the long term operation of sub-seafloor intakes eliminate many open ocean intake impacts, including entrainment – thereby meeting the mandates of Sections 30230 and 30231.

While Poseidon argues that these alternatives are either too expensive or cause more environmental harm than the open lagoon intake, the Staff Report adequately counters these arguments. Also, a downsized facility would alleviate some of the arguments presented.

- 2) *“...that adverse environmental impacts are mitigated to the maximum extent feasible.”*

Again, sub-seafloor intakes at this site would eliminate entrainment, minimize lagoon dredging, and mitigate energy consumption.

- 3) *“...to do otherwise would adversely effect the public welfare.”*

Poseidon argues this project is an irreplaceable component of the water supply portfolio in the San Diego region. However, many experts in the field have concluded that the region can meet its projected demand from increased investment in wastewater recycling, conservation and watershed restoration. In fact, studies show that these alternatives can offer additional “public welfare” benefits by reducing partially treated sewage discharges to the ocean, dramatically reducing polluted run-off and restoring habitat and open space in otherwise developed urban settings.

Conclusion:

- Coastal Act Section 30260 is either inapplicable to this project, or in the alternative, if it is applicable the project does not meet the 3-part test for exempting the project from all the policies of Chapter 3.
- To the extent sub-seafloor intakes may not meet the intake demand for the designed output of the facility, they could still meet the goal of supplying ocean desalination to the regional water portfolio – even if in a decreased capacity. A smaller desalination contribution limited capacity could easily be made up for with investments in conservation, wastewater recycling, watershed restoration and possibly additional desalination facilities in the region that are designed to meet the mandates of the Coastal Act.

Recommendations:

- The Commission should find that Section 30260 is inapplicable.
- The Coastal Development Permit should be conditioned upon the use of sub-seafloor intakes and, to the extent these intakes may or may not meet the designed capacity of the project proposal, mandate changes in the proposed product water output to meet the legal mandates of the Coastal Act.
- As a matter of policy, the Commission should take note that the Coastal Act Section 30231 encourages the use of wastewater reclamation and other management practices that would supplement the current water supply portfolio without the need for excessive reliance on ocean desalination.

FAILURE TO ADEQUATELY CONSIDER DISCHARGE-RELATED IMPACTS

1. Summary

Poseidon's desalination process results in a high salinity discharge that contains various chemicals and entrained marine life. Although the impacts of this discharge on receiving coastal waters have not been properly evaluated, the preliminary impacts analysis shows that Poseidon's discharge will have a significant adverse impact on marine life in the nearshore waters and the seafloor.

The salinity studies conducted by Poseidon are inadequate in their scope and underlying assumptions. Because the power plant is to be closed down, the salinity of the discharge will be higher than previously anticipated in environmental analysis. Poseidon's salinity study did not consider the stand-alone desalination plant as reasonably foreseeable. Consequently, the study assumed that elevated salinity levels would be temporary, when in fact they will be permanent. As a result, long-term analysis of continuously elevated salinity levels has not been conducted as required.

The test organisms used in the salinity study are also unrepresentative of the marine life in the nearshore waters and are more salinity tolerant than others. Furthermore, the threshold levels identified by Poseidon are higher than those calculated using EPA guidance. Thus, the discharge impacts associated with Poseidon's desalination process have been inadequately analyzed and new studies should be conducted for appropriate discharge impacts analysis.

Legally, Poseidon must avoid or mitigate environmental impacts on marine resources. Due to the inadequate study, the significant adverse impact of Poseidon's discharge was not considered and therefore remains unmitigated. **Before the project can be approved as proposed, a more detailed discharge impacts analysis must be completed and made available for public review.**

2. Violations of Law

- **Coastal Act 30230:** Marine resources shall be maintained, enhanced, restored. Biological productivity maintained.
- **Ca. Water Code 13142.5(b):** industrial installation using seawater must utilize the best available site, design, technology, and mitigation measures feasible to minimize intake and mortality of all forms of marine life.
- **CEQA Guidelines 15162(a)(1-3):** Changes to the project, changes to circumstances surrounding the project, or the availability of new

information related to mitigation or alternatives for the project require the production of a supplemental or subsequent Environmental Impact Report.

3. Poseidon Arguments and Surfrider/Coastkeeper Rebuttal

- The power plant's discharge will sufficiently dilute Poseidon's concentrated brine discharge to acceptable salinity levels.

SF/CKPR: The power plant pumps currently take in (and the plant discharges) an average of only 120mgd, whereas the desalination plant will require the intake to be immediately increased to at least 304mgd in order to achieve the 250mgd discharge that will meet salinity limits in the plant's NPDES permit. Upon cessation of the power plant operations in the near future, the 304mgd discharge will be wholly attributable to the desalination facility. Therefore, Poseidon will be directly responsible for the pumping of dilution water and will perpetuate the use of once-through cooling technology in order to supply this dilution water. As a result, the adverse marine life impacts associated with *all* of the intake dilution water will be attributable to Poseidon alone.

- Poseidon's Salinity Study found that the discharge salinity levels would not result in significant adverse impacts.

SF/CKPR: One of the biggest problems with the Salinity Study is that it was conducted in a tank, where affected species could not escape the uncomfortable conditions created. In the wild, while the high salinity may not cause acute toxicity, literature suggests it will result in habitat abandonment, essentially creating a desert throughout the zone of initial dilution.

The Salinity Study was inadequate in numerous other ways as well, including its reliance on false presumptions. The underlying data is flawed because the organisms studied had high salinity tolerances and were unrepresentative of marine life in the area. (Staff Report p.43) In addition, the Study assumed that the 40 ppt salinity level would occur with low probability and therefore would not be the normal operating condition. In fact, the purple sea urchin showed significant adverse impacts at 40 ppt. The Study considered the 40 ppt salinity level a "historical extreme" and therefore no data points above that salinity concentration were considered. (Salinity Tolerance Investigations: A Supplemental Report for the Carlsbad, CA. Desalination Project, March 7, 2005)

- The Coastal Commission cannot require mitigation measures above those required by the State Water Resources Control Board and regional boards.

SF/CKPR: There is no basis in law for such an argument. The Coastal Act contains independent obligations for the Coastal Commission to protect marine resources regardless of the actions of any other agency.

- A supplemental or subsequent EIR is not required because the changed circumstances and new information do not identify or propose to mitigate significant environmental impacts.

SF/CKPR: The fact that the desalination plant will not be able to achieve the same level of dilution expected when the EIR was produced is a significant change in circumstances. The fact that the higher persistent salinity levels (40 ppt) did result in negative impacts in at least one of the species studied suggests additional data is necessary before a claim of “insignificance” can be made. A subsequent EIR is necessary to correct the original EIR’s assessment of the expected “average day” condition.¹

4. Expanded/Additional Surfrider/Coastkeeper Arguments

- As noted in the Staff Report, the State Water Resources Control Board (State Board) and the Regional Water Quality Control Board (Regional Board) have not approved final conditions to the Poseidon NPDES Permit and therefore any mitigation measures imposed by the Coastal Commission would not conflict with Coastal Act Section 30412(b). (Staff Report pp. 44-45)

However, in the event that the Coastal Commission determines that deferral to the Regional Board for imposition of mitigation measures is warranted, deferral should be given with respect to all water quality impacts. The State Board is expected to issue a statewide policy which will clarify the impact of *Riverkeeper II* on open ocean intakes for power plants and desalination facilities. Therefore, the State Board’s policy should serve as the guide for appropriate and legally acceptable mitigation measures.

¹“Operation of the desalination plant under ‘typical’ conditions (modeled as the ‘average day’ scenario) would not result in salinity levels in excess of 36.2 ppt within the ZID. Therefore, operation of the desalination plant would not result in significant impacts related to elevated salinity levels.” (EIR p. 4.3-51)

Until a true analysis of discharge impacts on marine life is conducted, it is impossible to understand the scope and degree of adverse impacts associated with Poseidon's discharge. The data thus far shows that the impacts will be greater than reported in the EIR and will be adverse. However it remains to be determined how detrimental the discharge will be to marine life and what mitigation measures are appropriate.

Given the precedent to be set by this first large-scale desalination facility in California, coupled with the requirement that Best Available Technology be utilized, a new study of discharge impacts should be required.

.FAILURE TO ADEQUATELY CONSIDER & MINIMIZE ENERGY USE

1. Summary

Ocean desalination is the most energy intensive option for water supplies in the San Diego region. Poseidon estimates its facility will require 30 megawatts of electricity to operate. This demand results in an energy intensity calculation of 4,693 kilowatt-hours per acre foot of water produced. (See attached Powers Engineering Report: "Assessment of Energy Intensity and CO₂ Emissions Associated with Water Supply Options for San Diego County").

As noted in the Staff Report, one of the California's biggest overall energy uses, and the most intensive energy use, is moving water around the State. However, the energy intensity predicted for the Carlsbad-Poseidon Desalination Project is 47% greater than State Water Project deliveries to the San Diego region. More directly, the pilot desalination project at Doheny Beach conducted by multiple local, state and federal agencies is predicted to require approximately 8 megawatts of energy resulting in an energy intensity of 3800 kilowatt-hours per acre foot of water – a noteworthy decrease in energy intensity for ocean desalination from that proposed by Poseidon.

Poseidon has never conducted a sufficiently detailed, publicly reviewed analysis to inform the public of the expected energy intensity of its project. Nor has it studied available alternatives. Instead, Poseidon focuses solely on the role of this particular desalination plant in meeting goals embodied in broad and general water management documents which position ocean desalination as a necessary component of future water supply portfolios.

In effect, Poseidon presumes the facility is necessary to meet the objectives of these planning documents without providing any evidence to substantiate such a claim. No objective analysis is ever provided of alternative ways to satisfy ocean desalination goals, while also minimizing energy consumption.

Poseidon's proposed project will unquestionably exacerbate greenhouse gas emissions in the State. The dramatic increase of greenhouse gas emissions will contribute directly and indirectly to cumulatively significant impacts on resources protected in numerous policies contained in Chapter 3 of the Coastal Act.

Poseidon recently made vague public statements and promises to the State Lands Commission (SLC) that it will implement a Climate Action Plan to make the facility "carbon neutral." In response, the SLC instructed Poseidon to submit a detailed plan to meet this goal prior to final consideration of its state tidelands lease application. This plan, which may or may not resolve the issue of greenhouse gas emission impacts on coastal and ocean resources, has yet to be completed. Consequently, important and relevant information has not been disclosed and remains unavailable to the public and the Coastal Commission.

Much like the Staff Report on page 64, the SLC noted that the calculation of the baseline for the predicted greenhouse gas emissions from the project differed from those prepared by the public and SLC staff. The Commissioners insisted that these discrepancies be resolved before the lease is approved.

Legally, Poseidon must minimize its energy consumption, and must reduce and/or offset its greenhouse gas emissions to alleviate indirect violations of several Coastal Act policies.

For example: sea level rise will affect public access and recreation, coastal wetlands, ESHA, agriculture, natural land forms, and existing development. Also, ocean acidification and rising ocean temperature will affect protected marine living resources.

Before the project can be approved as proposed, a more detailed assessment of water supply alternatives and plant design to minimize energy consumption must be completed and made available for public review. The assessment of alternatives must include a detailed analysis of greenhouse gas emissions from water supply alternatives and alternative plant design and/or a detailed plan to reduce or offset greenhouse gas emissions from the project as proposed.

2. Violations of Law

- **Coastal Act 30253(4):** Minimize energy consumption.
- **Coastal Act 30230:** Marine resources shall be maintained, enhanced, restored. Biological productivity must be maintained.
- **Coastal Act 30210 – 30214:** Protect coastal access.
- **Coastal Act 30220 – 30222:** Protect land for recreational uses.
- **Coastal Act 30231:** Protect biological productivity of coastal waters, wetlands, estuaries, etc.
- **Coastal Act 30240:** Protect “environmentally sensitive habitat areas.”
- **Coastal Act 30241(e):** Protect agriculture from degraded air quality impacts.
- **Coastal Act 30251:** Development shall be designed to protect coastal visual resources and natural land forms.
- **Coastal Act 30253:** Minimize risk to life and property in areas of high geologic and flood hazard; neither create nor contribute to

erosion or geologic instability; not, in any way, require the construction of protective devices....

- **Greenhouse Gas Solutions Act (AB 32):** Reduce greenhouse gas emissions to 1990 levels by 2020. Regulatory implementation shall be no later than 2010 (about the time Poseidon will complete construction). Nothing in this Act shall prohibit early implementation -- and voluntary reductions shall receive appropriate credit.
- **CEQA Guidelines 15162(a)(1-3):** Changes to the project, changes to circumstances surrounding the project, or the availability of new information related to mitigation or alternatives for the project require the production of a supplemental or subsequent Environmental Impact Report.

3. Poseidon Arguments and Surfrider/Coastkeeper Rebuttal

- Poseidon proposes a "Climate Action Plan" to make the facility "carbon-neutral." The promise is to look at several alternatives for reducing energy demand and off-setting carbon dioxide emissions. Water transported to the region via energy intensive pipelines and canals will be replaced by this new local supply, and hence, an offset should be credited against their greenhouse gas emissions.

SF/CKPR: Poseidon's statement that "carbon-neutral" means it will not emit more carbon than is expended to transport an equivalent amount of water from the Colorado River or the San Francisco Bay Delta is patently disingenuous. This standard presumes desalinated water will replace future supplies from these sources. No legal mechanism exists to ensure such status for the desalinated water. Further, arguments in favor of the project often focus on the need to provide a new source to accommodate expected growth, with is inconsistent with the notion that the desalinate water will "replace" other sources. Hence, carbon-neutrality calculation must be "gross," not "net."

- All the desalination product water is necessary to meet projected demands in addition to existing supplies and other alternative water supply options (ie. conservation, wastewater recycling, watershed restoration, etc).

SF/CKPR: Unless and until conservation and water recycling are maximized, or at least significantly increased, arguments of near-term demand for desalinated water are speculative and self-serving. Studies indicate we have more than 20 years worth of sufficient water supplies if conservation and recycling are increased. Nonetheless, the inclusion of ocean desalinated water in water supply portfolios is a function of choice, not necessity.

- Poseidon asserts it can reduce energy consumption through energy recovery devices in the Reverse Osmosis process.

SF/CKPR: Some of these energy recovery devices are experimental and Poseidon has yet to commit to using any of them.

- Poseidon contends a supplemental or subsequent EIR is not required because the changed circumstances and new information do not identify or propose to mitigate significant environmental impacts.

SF/CKPR: Poseidon's proposed "Climate Action Plan" is a new mitigation proposal that has not been publicly reviewed as required by CEQA.

4. Expanded/Additional Surfrider/Coastkeeper Arguments

- As the first large scale desalination plant to be considered by the CCC, Poseidon's project, including assessment of its energy recovery systems and Climate Action Plan, should be thoroughly documented and enforceable before approval of a Coastal Development Permit. Because approval of this project will set the precedent for dozens of other projects in the near future, Poseidon should be compelled to provide more than unenforceable promises and reliance on untested energy recovery devices.
- The Dana Point Pilot Project has shown that an ocean desalination facility can be built with sub-seafloor intakes with less energy demand and lower greenhouse gas emissions than the facility design proposed by Poseidon.
- The Climate Action Plan has not been prepared, much less reviewed by the State Lands Commission, Coastal Commission, or the public. It is premature to allow credit for a plan that has yet to be produced or peer-reviewed.
- There are no assurances that Poseidon, or the San Diego County Water Authority, will reduce its use of imported water. In fact, Poseidon has told Coastal Commissioners in ex parte communications that the project would not induce growth because all the water from the desalination plant, in combination with the water from the other projects in the County Water Authority's projected portfolio, would only meet future demand projections. As noted by Staff, given real cost estimates for the water produced by Poseidon, the contracted agencies would choose the cheaper imported supply.

- Poseidon has not factored in the energy demand for the pumps and necessary conveyance system to provide the water to the inland agencies with which it has contracted. The San Diego County Water Authority has neither received the necessary funding for this conveyance system, nor has this integral project component been reviewed for its foreseeable environmental impacts under CEQA.
- Poseidon should not be credited for reducing the regional energy demand from projects like increased investment in conservation, recycling and canal lining. Each of these projects, including Poseidon's desalination facility, should be evaluated for its energy consumption and greenhouse gas emissions individually. Poseidon's project is adding energy demand to a portfolio that would otherwise reduce cumulative energy demand.

Approval of Poseidon's project would be premature without a more in-depth and honest analysis of:

- **alternative water supply options to meet the regional demand that reduce energy consumption;**
- **a thorough evaluation of alternative desalination plant designs that reduce the energy demand of Poseidon's design;**
- **actual finalized plans that can be peer-reviewed for accuracy and subsequently enforced to reduce energy demand from the project and the associated greenhouse gas emissions,**

MARINE LIFE MORTALITY FROM ENTRAINMENT

1. Summary

100% of the marine life sucked into the desalination plant will be killed, just as it is with the existing power plant.

The devastating effects of once-through cooling systems' entrainment of marine life are widely known and no longer credibly debatable. The most recent report from the California Energy Commission notes:

"The once-through cooling systems used by 19 California power plants along the coast are now understood by scientists and regulators to be major contributors to the degradation of marine and estuarine ecosystems. As stated in the Energy Commission's 2005 staff report on once-through cooling, 'California marine and estuarine environments are in decline and the once-through cooling systems of coastal power plants are contributing to the degradation of our coastal waters.' Since the 2005 Integrated Energy Policy Report, significant regulatory and legal actions have occurred that will likely lead to an eventual phase out of this cooling technology at most, if not all, of the 17 fossil-fueled coastal power plants in California." (2007 Environmental Performance Report of California's Electrical Generation System, California Energy Commission Draft Staff Report, November 2007, p.45; emphasis added)

From a public policy perspective, including consideration of both the broad and the specific goals of the Coastal Act, given the availability of feasible intake alternatives, it makes absolutely no sense to allow the emerging desalination industry to continue this paradigm of excessive marine life mortality. Ultimately, if the applicant believes it would be too expensive to construct the desalination project correctly, then society simply does not yet need the water badly enough.

Poseidon proposes to continue the use of the Encina Power Station's once-through cooling seawater intake infrastructure despite the fact that the power plant has agreed to discontinue use of the intake in the foreseeable future. To support its desire not to have to construct an alternative intake, Poseidon puts forth an entrainment impacts assessment utilizing a methodology identical to the once-through cooled power plants. Not surprisingly, Poseidon concludes that with approximately 36-37 acres of mitigation, the entrainment impacts will not be ecologically significant. Poseidon's findings fly in the face of widely accepted scientific findings, evolving regulatory restrictions, and common sense.

Recent decisions in CWA 316(b) once-through cooling court decisions have corollary applications to California state law. As a result of the *Riverkeeper* decisions, California Water Code section 13142.5(b) can no longer be read to support the use of restorative mitigation measures to compensate for entrainment losses, whether the water is used for power plant cooling or

desalination. Instead, Poseidon must show that its proposed plant would be located on the best available site, utilizing the best available design, incorporating the best available technology, and implementing the best available mitigation measures feasible to minimize intake and mortality of all marine organisms. Poseidon has not met this burden.

2. Violations of Law

- **Coastal Act 30230:** Marine resources shall be maintained, enhanced, restored. Biological productivity shall be sustained, including healthy populations of all species of marine organisms.
- **Coastal Act 30231:** Biological productivity and estuarine water quality shall be maintained and where feasible restored through minimization of entrainment.
- **Ca. Water Code 13142.5(b):** industrial installation using seawater must utilize the best available site, design, technology, and mitigation measures feasible to minimize intake and mortality of all forms of marine life.
- **CEQA Guidelines 15162(a)(1-3):** Changes to the project, changes to circumstances surrounding the project, or the availability of new information related to mitigation or alternatives for the project require the production of a supplemental or subsequent Environmental Impact Report.

3. Poseidon Arguments and Surfrider/Coastkeeper Rebuttal

- Desalination uses are not controlled by Clean Water Act 316(b) regulations and court decisions.

SF/CKPR: California Water Code 13142.5(b) cannot be interpreted less stringently than CWA section 316(b). There are no good arguments to support assertions that the reasoning applied by the courts in their 316(b) studies will not apply to the California Water Code. Entrainment, whether from power plants or desalination plants have the same negative impacts on marine life, and therefore the public policy reasons underlying the OTC regulations and court decisions are applicable.

- Entrainment mortality from the project will be ecologically insignificant because the vast majority of marine life to be killed is "surplus production" that would not have survived in nature anyway.

SF/CKPR: Nature does not waste, nor does it produce surplus. Everything has an ecological function. Simply arguing that 99 percent of the populations from which marine life larvae is

harvested through entrainment would die before reaching reproduction age anyway does not account for the role of the individuals at various life stages in the food chain. Just as an example 1, 5, and 20 day old fish larvae may be eaten by totally different predators, regardless of whether the prey ever reaches reproduction age. Widespread killing of a population that happens to be entrained at an early life stage would preclude realization of appropriate ecological function. The notion of "surplus production" as applied in Poseidon's entrainment studies does not appropriately assess this issue.

- All of the entrained species are abundant throughout the lagoon and near the intake, and therefore depletion of stocks due to entrainment will not affect the health of species populations.

SF/CKPR: Again, this argument relies on the notion of surplus production. Further, it is reasonable to believe that the more highly valuable commercial and recreational species cannot survive at sufficient numbers to achieve optimum populations given the long-term nature of OTC impacts in the lagoon. The widespread negative impacts of OTC are well known and no longer debatable.

- Ca. Water Code 13142.5(b) allows compensatory mitigation to minimize the impact of entrainment mortality.

SF/CKPR: Such a reading of State Law would render it less stringent than the federal Clean Water Act, which would be illegal. The reasoning behind the 316(b) cases is directly applicable to California state law, and inconsistent with this assertion.

- Overall, the desalination plant will enhance or maintain the current health of the lagoon, and therefore entrainment impacts should balance out.

SF/CKPR: The appropriate baseline between the current condition and the stand-alone desalination facility has not been assessed. Poseidon's project will result in a 254% increase in seawater intake compared to average power plant intake in the first half of 2007. There is no evidence to suggest Poseidon's assertion is correct.

- Provision of mitigation equivalent to match the "habitat foregone" of approximately 37 acre of shoreline, eel grass, and open water habitat will adequately compensate for entrained marine life.

SF/CKPR: Poseidon does not provide sufficient detail to ensure such mitigation will ever be produced, let alone be successful. Poseidon intends to put money into a trust fund (approximately \$1.8M) from which various projects will be funded to achieve this

mitigation goal. These projects are not all going to be located in the Agua Hedionda Lagoon, and hence they cannot adequately mitigate for impacts that occur there.

4. Expanded/Additional Surfrider/Coastkeeper Arguments

- ***Riverkeeper I & II* and Ca. Water Code section 13142.5 preclude the use of Compensatory Mitigation.**
 - *Riverkeeper, Inc. v. United States EPA*, 358 F.3d 174, 189 (2d Cir. 2004) ("*Riverkeeper I*")
 - *Riverkeeper, Inc. v. United States EPA*, 475 F.3d 83, 97 (2d Cir. 2007) ("*Riverkeeper II*")

The language of California Water Code section 13142.5 parallels the language in section 316(b) of the Clean Water Act in many ways. Section 316(b) requires the "location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact." Similarly, section 13142.5 of Porter-Cologne requires, "the best available site, design, technology, and mitigation measures feasible shall be used to minimize the intake and mortality of all forms of marine life." Thus, both acts require "best technology," "design" and "location" or "site" to "minimize" the environmental impact.

Yet, there are subtle differences in Porter-Cologne. Section 13142.5 includes the phrase "mitigation measures feasible shall be used to minimize intake and mortality..." This raises the question of whether "restorative measures" are mitigation measures which can be used to "minimize the intake and mortality of all forms of marine life." The answer is no. As discussed in *Riverkeeper I* and *Riverkeeper II*, restorative measures cannot be used to achieve compliance with the requirements of 316(b), and therefore cannot be used to comply with Section 13142.5 of the Porter-Cologne Act.

The Court in both *Riverkeeper I* and *Riverkeeper II*, noted that the unambiguous language of Section 316(b) precluded the use of restorative measures to achieve compliance. (*Riverkeeper I*, supra, 358 F.3d at 189; *Riverkeeper II*, supra, 475 F.3d at 108-09). In *Riverkeeper I*, the Court found restorative measures were not the "location, design, construction, and capacity of cooling water intake structures" and therefore "restorative measures" were not a means of complying with 316(b). (*Riverkeeper I*, supra, 358 F. 3d at 189). The Court specifically noted that restorative measures "... do not minimize those impacts in the first place." (Id.)

The EPA, apparently in an attempt to subvert the ruling in *Riverkeeper I*, attempted to define the word "minimize adverse environmental impacts" as permitting the agency "to minimize adverse environmental impact by compensating for those impacts after the fact," (Id. at 189 (quoting 69 Fed. Reg. 41576, at 41628)). The Court flatly rejected such argument, quoting the dictionary definition of "minimize" is "to reduce to the smallest possible extent," (Id. (citing Webster's Third New Int'l Dictionary 1438 (1986))).

The importance of this holding cannot be overstated. Water Code section 13142.5 uses the same or similar language to Section 316(b) of the Clean Water Act. Like Section 316(b), Section 13142.5 does not include any language which expressly permits restorative measures. Like 316(b), Section 13142.5 requires power plants and other industrial installations to use the "best available" measures to "minimize the intake and mortality of all forms of marine life." Also, pursuant to the NPDES permitting structure, the California Water Code can be more stringent than the Federal Clean Water Act, but it cannot be less so. Hence, the unambiguous applicability of section 13142.5 to power plants, in addition to other industrial facilities, means that the state law section must track the interpretation of the federal statute.

Clearly, under the holding of *Riverkeeper II*, restoration measures cannot be the best available technology to minimize the impacts of impingement and entrainment. Only alternative intake systems, such as infiltration galleries and other subsurface intakes for desalination can comply with the California Water Code.

LAGOON SEDIMENTATION IMPACTS

1. Summary

The Agua Hedionda Lagoon is listed on the Clean Water Act 303(d) list as having beneficial uses impaired due to sedimentation, including in the west basin affected by the existing power plant and proposed desalination facility. The significant impacts occur both when suspended sand is transported into the lagoon and deposited on the lagoon bottom, and when periodic dredging occurs to remove this sand.

The following describes how and why sand unnaturally accumulates in the lagoon as a function of the existing seawater intake infrastructure:

“... at Agua Hedionda Lagoon the effectiveness of the Lagoon's natural sedimentation process is increased by the presence of the Station that relies on seawater for cooling purposes. Peak operations of the Station can require more than 800 million gallons per day (gpd) of seawater for cooling purposes. Seawater enters the Lagoon through the inlet channel created by the inlet jetties. Seawater used by the Station for cooling is discharged through a set of jetties known as the outlet jetties. Thus, because most of the seawater that enters the lagoon is discharged through the outlet jetties, the prevailing direction of seawater flow is through the inlet channel. The net result of this is that the Lagoon is flood dominated, which is to say that more water and sand flow into the lagoon than is flushed out each day. Over time, the diminished sediment carrying efficiency of ebbing tides results in the accumulation of sand in the outer basin of the Lagoon.” (State Lands Commission Northern Inlet Jetty Restoration Project EIR/EA, January 2005)

Studies show that the health of the lagoon would be enhanced by minimizing the flow of sand into the lagoon, and thereby, reducing the frequency and size of dredging operations. In the above-referenced EIR, the State Lands Commission (SLC) found that the environmentally preferred alternative with regard to sedimentation would be to construct an offshore intake and alter the dredging regime to include only minimal annual maintenance dredging to ensure sufficient tidal influx and outflow.

2. Violations of Law

- **Coastal Act 30233(a):** Dredging of estuaries is permitted only where there is no feasible less environmentally damaging alternative and where feasible mitigation measures will minimize adverse environmental impacts.
- **Coastal Act 30233(b):** Dredging must avoid significant disruption to marine and wildlife habitats and water circulation.

- **Coastal Act 30233(c):** Dredging of special status areas must be limited to “very minor incidental public facilities, restorative measures, and nature study.”
- **CEQA Guidelines 15162(a)(1-3):** Changes to the project, changes to circumstances surrounding the project, or the availability of new information related to mitigation or alternatives for the project require the production of a supplemental or subsequent Environmental Impact Report.

3. Poseidon Arguments and Surfrider/Coastkeeper Rebuttal

- Poseidon will continue to conduct dredging operations just as the power plant has done.

SF/CKPR: No one debates whether some maintenance dredging is necessary. Instead, the relevant question is how much dredging is appropriate given the lagoon’s impairment for sedimentation and the ecological impacts of dredge activities. The impacts from the contemplated dredging of more than 100,000 yds³/yr (average) to support a stand-alone desalination facility have not been measured up against the impacts likely from the 20,000 yds³/yr deemed optimum to maintain healthy lagoon functions in the SLC EIR.

- Pumping seawater through the existing intake is necessary to protect the health of the lagoon; failure to keep the lagoon in its current state will result in the periodic blockage of the lagoon mouth, and thus, numerous negative impacts to lagoon resources (biological, recreational, commercial, scientific, etc.).

SF/CKPR: Poseidon’s argument presumes that the only way for maintenance dredging to occur is as a function of mitigation for seawater intake from the west basin. In other words, if there were no intake, there would be no dredging. This argument ignores the fact that sedimentation is significantly worse in the west basin as a direct result of the intake itself. Maintenance dredging to support desired appropriate tidal exchange, such as occurs at Bataquitos Lagoon, San Elijo Lagoon, and is planned for the restored San Dieguito Lagoon can be funded in any number of ways.

- Operation of the 304mgd desalination intake alone, versus no intake in the west basin, will result in approximately 16,000 yds³/yr of *additional* sedimentation in the lagoon. (90,000 yds³/yr without the intake versus 106,000 yds³/yr with intake) Poseidon concludes this net increase in sedimentation would have no discernible impact on the lagoon.

SF/CKPR: Poseidon’s conclusion is inconsistent with the SLC EIR’s findings regarding how much sediment would need to be dredged to

maintain a healthy lagoon and how much sediment Poseidon stated would need to be dredged to maintain a stand-alone desalination facility. Poseidon does not address the SLC's findings regarding the benefits of minimizing excess dredging in the lagoon.

4. Expanded/Additional Surfrider/Coastkeeper Arguments

- All of the Poseidon studies utilized a baseline condition of average power plant intake of 530mgd (1981-2000 average). However, for the first half of 2007, the power plant utilized significantly less than this amount, averaging instead only 120mgd. Hence, the environmental baseline applied for the evaluations is incorrect because the stand alone facility was evaluated as a *57% reduction in flows over historic conditions*, as opposed to a *253% increase in flows over current conditions*.
- Poseidon's most recent study is dated September 28, 2007, and though submitted to CCC staff for review, has not been made available to the public at any point. The changed circumstance of an altered sedimentation regime warrants additional environmental review pursuant to CEQA. While this is essentially a State Lands Commission issue, the CCC should be concerned with the public's lack of access to the documentation.
- The SLC EIR's conclusion that relocation of the estuarine intake offshore would be a feasible and environmentally superior alternative to continued seawater intake in the lagoon has not been adequately addressed by Poseidon. The EIR concluded that such a change would decrease impacts to aesthetics, recreation, hydrology, water quality, and biological resources. (See, Staff Report at p. 49) The availability of a less environmentally damaging alternative renders continued seawater intake from the lagoon's west basin a violation of Coastal Act 30233(a) as a matter of law.
- Poseidon never addresses the added environmental benefit to long-shore transport of beach sediments if an open ocean intake is developed as suggested in the SLC EIR. Removal of some portion of the intake and outflow jetties would be possible if the intake was moved.
- Continued dredging at Poseidon's proposed levels despite a less damaging alternative violates Coastal Act 30233(b) because it does not avoid significant disruption to marine and wildlife habitats. The fact that Poseidon proposes to mitigate its impacts by some day providing funding to acquire the equivalent of 37 acres of habitat is irrefutable proof that its project does not avoid significant disruption to marine and wildlife habitats. The fact that the actual mitigation projects have not even been identified (only examples of types of projects have been given), and thus sufficiency

of the proposed mitigation program cannot be verified, further supports Surfrider/Coastkeeper's claim that the project will violate section 30233(b).

- Because Agua Hedionda is specifically referenced in the California Department of Fish and Game's report, Acquisition Priorities for the Coastal Wetlands of California, continued dredging in the lagoon as proposed by Poseidon would violate Coastal Act 30233(c) as a matter of law. (See, Staff Report at 50) Proposed mitigation efforts, no matter how extensive or successful, cannot overcome this strict prohibition.

Because section 30233(c) only allows dredging in the Agua Hedionda lagoon for very minor incidental public facilities, restorative measures, and nature study, and dredging to support Poseidon's seawater intake does not meet any of these criteria, the project cannot be approved.