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August 15, 2008

SEE PROOF OF SERVICE FOR DELIVERY METHODS

Mr. J. Mike Monasmith
Siting project Manager
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

**Re: Carlsbad Energy Center Project (07-AFC-6)
National Pollutant Discharge Elimination System Permit Application
Submitted to the San Diego Regional Water Quality Control Board**

Dear Mr. Monasmith:

Enclosed please find a copy of the above-referenced document, which was also submitted to the San Diego Regional Water Quality Control Board August 15, 2008. Should you have any questions regarding this document, please contact John A. McKinsey or Robert Mason.

Very truly yours,

Kimberly Hellwig
Senior Paralegal

KJH:kjh
cc: See Proof of Service

Oregon
Washington
California
Utah
Idaho
Colorado
Minnesota

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA

APPLICATION FOR CERTIFICATION
FOR THE *CARLSBAD ENERGY CENTER PROJECT*

Docket No. 07-AFC-6 PROOF OF SERVICE
(Revised 7/31/2008)

Carlsbad Energy Center LLC's NPDES Permit Application Submitted to the San Diego Regional Water Quality Control Board

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 07-AFC-6
1516 Ninth Street, MS-15
Sacramento, CA 95814-5512
docket@energy.state.ca.us

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DECLARATION OF SERVICE

I, Elizabeth Y. Hecox, declare that on August 15, 2008, I deposited copies of the attached document in the United States mail at Sacramento, California, with first-class postage thereon fully prepaid and addressed to those identified on the Proof of Service list above.

OR

Transmission via electronic mail was consistent with the requirements of California Code of Regulations, title 20, sections 1209, 1209.5, and 1210. All electronic copies were sent to all those identified on the Proof of Service list above.

I declare under penalty of perjury that the foregoing is true and correct.

Elizabeth Hecox

Elizabeth Y. Hecox

NPDES PERMIT APPLICATION
for the Carlsbad Energy Center LLC,
Carlsbad Energy Center Project, San Diego County

Submitted to the
San Diego Regional Water Quality Control Board
August 15, 2008

The Carlsbad Energy Center, LLC is submitting this NPDES Permit Application, dated August 15, 2008 for the proposed Carlsbad Energy Center Project, to be located in Carlsbad, CA, in San Diego County. The following California and Federal application forms are enclosed:

- **Signatory and Certification Statement to NPDES Permit Applications**
- **State Water Resources Control Board Form 200**
- **EPA Form 1**
- **EPA Form 2D**

These applications contain the following Attachments and Appendices:

State Water Resources Control Board Form 200:

1. Attachment 1: Section VI-Plant and Operations Description
    a. Hydrodynamic Analysis of Near-shore Dispersion and Dilution of Concentrated Sea Water from Closed-Cycle Cooling Systems at Encina Generating Station, Carlsbad, CA, May 9, 2008
    b. Attached to this application are the following U.S. EPA applications:
        i. Form 1
        ii. Form 2D

        These forms and their attachments provide a complete characterization of the proposed waste discharge, and include:

        a. EPA Form 1:
            i. Attachment 1: Site Mapping
                A. Figure 1.2-2:Project Location Map
                B. Figure 1.2-3: Site Vicinity Location Map
                C. Figure 2.2-1B: Plot Plan, showing location of Cooling Water intake and Discharge Point locations

        b. EPA Form 2D
            i. Attachment 1: Section III A & B:Flows, Sources of Pollution, Treatment Technologies, including:
                A. Figure 2.2-6a: Water Balance with Power Augmentation
                B. Figure 2.2-6b: Water Balance without Power Augmentation
            ii. Appendices
                A. Encina Power Station Intake Water Analysis, April 26 2004
                B. CECP Analysis of Reverse Osmosis Brine Wastes from Desalination Plant

SWRCB

FORM 200

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

State of California
Regional Water Quality Control Board

APPLICATION/REPORT OF WASTE DISCHARGE GENERAL INFORMATION FORM FOR WASTE DISCHARGE REQUIREMENTS OR NPDES PERMIT

I. FACILITY INFORMATION

A. Facility:

Name: CARLSBAD ENERGY CENTER PROJECT			
Address: 4600 CARLSBAD BOULEVARD			
City: CARLSBAD	County: SAN DIEGO	State: CA	Zip Code: 92008
Contact Person: SHEILA HENIKA		Telephone Number: 760-268-4018	

B. Facility Owner:

Name: CARLSBAD ENERGY CENTER LLC			Owner Type (Check One)
Address: 4600 CARLSBAD BLVD			1. ☐ Individual 2. ☐ Corporation
City: CARLSBAD	State: CA	Zip Code: 92008	3. ☐ Governmental Agency 4. ☐ Partnership
Contact Person: TIM HEMIG		Telephone Number: 760-710-2144	5. ☑ Other: LLC
		Federal Tax ID: 26-2075294	

C. Facility Operator (The agency or business, not the person):

Name: NRG CABRILLO POWER OPERATIONS INC.			Operator Type (Check One)
Address: 4600 CARLSBAD BOULEVARD			1. ☐ Individual 2. ☑ Corporation
City: CARLSBAD	State: CA	Zip Code: 92008	3. ☐ Governmental Agency 4. ☐ Partnership
Contact Person: SHEILA HENIKA		Telephone Number: 760-268-4018	5. ☐ Other:

D. Owner of the Land:

Name: CABRILLO POWER I LLC			Owner Type (Check One)
Address: 4600 CARLSBAD BOULEVARD			1. ☐ Individual 2. ☐ Corporation
City: CARLSBAD	State: CA	Zip Code: 92008	3. ☐ Governmental Agency 4. ☐ Partnership
Contact Person: KEITH RICHARDS		Telephone Number: 760-710-2146	5. ☑ Other: LLC

E. Address Where Legal Notice May Be Served:

Address: 1817 ASTON AVENUE SUITE 104		
City: CARLSBAD	State: CA	Zip Code: 92008
Contact Person: MIKE TIERNEY		Telephone Number: 760-710-2187

F. Billing Address:

Address: 4600 CARLSBAD BOULEVARD		
City: CARLSBAD	State: CA	Zip Code: 92008
Contact Person: SHEILA HENIKA		Telephone Number: 760-268-4018

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

State of California
Regional Water Quality Control Board

APPLICATION/REPORT OF WASTE DISCHARGE GENERAL INFORMATION FORM FOR WASTE DISCHARGE REQUIREMENTS OR NPDES PERMIT

II. TYPE OF DISCHARGE

Check Type of Discharge(s) Described in this Application (A or B):

☐ **A. WASTE DISCHARGE TO LAND** ☑ **B. WASTE DISCHARGE TO SURFACE WATER**

Check all that apply:

☐ Domestic/Municipal Wastewater Treatment and Disposal	☐ Animal Waste Solids	☐ Animal or Aquacultural Wastewater
☐ Cooling Water	☐ Land Treatment Unit	☐ Biosolids/Residual
☐ Mining	☐ Dredge Material Disposal	☐ Hazardous Waste (see instructions)
☐ Waste Pile	☐ Surface Impoundment	☐ Landfill (see instructions)
☐ Wastewater Reclamation	☑ Industrial Process Wastewater	☐ Storm Water

☐ Other, please describe: ______

III. LOCATION OF THE FACILITY

Describe the physical location of the facility.

1. Assessor's Parcel Number(s)	2. Latitude	3. Longitude
Facility: 210-01-41	**Facility:** 33° 08' 22" N	**Facility:** 117° 20' 01" W
Discharge Point: 210-010-29	**Discharge Point:** 33° 08' 17" N	**Discharge Point:** 117° 20' 22" W

IV. REASON FOR FILING

☑ New Discharge or Facility	☐ Changes in Ownership/Operator (see instructions)
☐ Change in Design or Operation	☐ Waste Discharge Requirements Update or NPDES Permit Reissuance
☐ Change in Quantity/Type of Discharge	☐ Other: ______

V. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Name of Lead Agency: California Energy Commission (CEC)

Has a public agency determined that the proposed project is exempt from CEQA? ☐ **Yes** ☑ **No**

If Yes, state the basis for the exemption and the name of the agency supplying the exemption on the line below.

Basis for Exemption/Agency: ______

Has a "Notice of Determination" been filed under CEQA? ☐ **Yes** ☑ **No**

If Yes, enclose a copy of the CEQA document, Environmental Impact Report, or Negative Declaration. If no, identify the expected type of CEQA document and expected date of completion.

The CEQA equivalent document issued by the CEC is the "Staff Analysis Report"

Expected CEQA Documents:

☐ **EIR** ☐ **Negative Declaration**

Expected CEQA Completion Date: 03/30/2009

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

State of California
Regional Water Quality Control Board

APPLICATION/REPORT OF WASTE DISCHARGE GENERAL INFORMATION FORM FOR WASTE DISCHARGE REQUIREMENTS OR NPDES PERMIT

VI. OTHER REQUIRED INFORMATION

Please provide a COMPLETE characterization of your discharge. A complete characterization includes, but is not limited to, design and actual flows, a list of constituents and the discharge concentration of each constituent, a list of other appropriate waste discharge characteristics, a description and schematic drawing of all treatment processes, a description of any Best Management Practices (BMPs) used, and a description of disposal methods.

Also include a site map showing the location of the facility and, if you are submitting this application for an NPDES permit, identify the surface water to which you propose to discharge. Please try to limit your maps to a scale of 1:24,000 (7.5' USGS Quadrangle) or a street map, if more appropriate.

VII. OTHER

Attach additional sheets to explain any responses which need clarification. List attachments with titles and dates below:

1. Hydrodynamic Analysis of Near-shore Dispersion and Dilution of Concentrated Sea Water from Closed-Cycle Cooling Systems at Encina Generating Station, Carlsbad, CA, May 9, 2008

You will be notified by a representative of the RWQCB within 30 days of receipt of your application. The notice will state if your application is complete or if there is additional information you must submit to complete your Application/Report of Waste Discharge, pursuant to Division 7, Section 13260 of the California Water Code.

VIII. CERTIFICATION

"I certify under penalty of law that this document, including all attachments and supplemental information, were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

Print Name: KEITH S RICHARDS   Title: VICE PRESIDENT - CARLSBAD ENERGY CENTER LLC

Signature: Keith S Richards   Date: AUGUST 13, 2008

FOR OFFICE USE ONLY

Date Form 200 Received:	Letter to Discharger:	Fee Amount Received:	Check #:

FORM 200

ATTACHMENT 1: SECTION IV: PLANT & OPERATIONS DESCRIPTION

SWRCB Form 200
Attachment 1
Section VI. – Waste Discharge Characterization and Site Maps

1. Project Summary

In 2007 the Carlsbad Energy Center, LLC submitted to the California Energy Commission an Application For Certification (AFC) for the construction and operation of the Carlsbad Energy Center Project (CECP). CECP will be a 540.4 megawatt (MW) net/558 MW gross combined-cycle generating facility configured using two trains with one natural-gas-fired combustion turbine and one steam turbine per train (or unit).

The 2007 AFC proposed using Reverse Osmosis (R/O) and Ion Exchange (I/E) to demineralize the City of Carlsbad reclaimed water to produce the high purity water required for the power plant's heat recovering steam generators (HRSGs) and other process uses. The resulting R/O reject stream, consisting of the reclaimed water's concentrated constituents, would be discharged to the City of Carlsbad's sanitary sewer system in accordance with the Encina Wastewater Authority Pretreatment Ordinance.

An ocean water purification system is proposed as an alternative source of industrial water for CECP in addition to the use of California Code of Regulations (CCR) Title 22 reclaimed water. An alternative industrial wastewater discharge path through the existing Encina Power Station ocean water discharge system is offered in addition to the plan to discharge CECP industrial wastewater through the City's system. These alternatives resolve any issues related to the City's position that it has insufficient quantities of CCR Title 22 reclaimed water to meet the industrial water requirements for the Project, and the City's position that it does not have sufficient capacity for CECP to discharge industrial wastewater to the City's existing sanitary/industrial sewer system.

2. Facility Description

The CECP site is located within the existing Encina Power Station (Encina Power Station), which is adjacent to Agua Hedionda Lagoon and across Carlsbad Boulevard from the Pacific Ocean and Carlsbad State Beach (refer to EPA Form 1, Figures 1.2.1. and 1.2.2). The CECP will be a 540.4 megawatt (MW) net (rated at an average annual ambient temperature of 60.97 degrees Fahrenheit [°F] with steam power augmentation and evaporative air cooling) and 558 MW gross combined-cycle generating facility configured using two trains with one natural-gas-fired combustion turbine and one steam turbine per train (or unit).

The CECP units will connect to the electrical transmission system via 138-kilovolt (kV) and230-kV lines that connect to the respective, nearby existing SDG&E switchyards at the existing Encina Power Station. Natural Gas will be provided from the existing Southern California Gas Company (SoCalGas) transmission pipeline (Line TL 2009, “Rainbow line”) which is located immediately adjacent to the CECP site, on the west side parallel to the existing rail line via a 1,100 foot long interconnection pipeline. On the CECP site, the gas will flow through a flow-metering station, a fuel gas compressor station, gas scrubber/filtering equipment, a gas pressure control station, and electric-driven booster compressors prior to entering the combustion turbines. With the exception of short, onsite interconnections, no offsite transmission or gas supply lines are required for the project (refer to EPA Form 1, Figure 2.2-1B: Plot Plan).

The ocean water purification system will use Reverse Osmosis (R/O) and Ion Exchange (I/E) to produce the high purity industrial water required for the power plant’s heat recovering steam generators (HRSGs) and other process uses. The purification of ocean water will provide a reliable supply of source water to be used at the CECP facility and demineralization of this source water to produce the high purity industrial water required for the CECP’s processes, including evaporative cooling water, miscellaneous plant uses (e.g., equipment wash water), and possibly onsite irrigation. Revised Figure 2.2-6a: CECP Water Balance with 8 Hr/Day Power Augmentation (PAG), and Revised Figure 2.2-6b: CECP Water Balance-No Power Augmentation, provide the schematics of the ocean water purification and demineralization processes (refer to EPA Form 2D, Attachment 1).

Water requirements for CECP are presented in Table 2 -1. Annual average water use is based on the desalination plant operating 40% of the time. Daily peak water (purified ocean water and potable) use (3.8 acre feet per day) is based on a 24-hr a day of plant output. Under these annualized conditions, CECP would require up to 567 acre-feet of water per year.

TABLE 2-1
Daily and Annual Water Use for CECP Operations

Water Use	Water Source	Daily Use (gpm)		Annual Use (afy)	
		Average[1]	Maximum[2]	Without PAG	With PAG
Industrial Processes	Purified Ocean Water	420	848	270.9	547.0
Potable Water (non-fire)	Offsite	12	12	19.4	

1: Without PAG
2: With PAG
GPM = gallons per minute
AFY = acre-feet per year (based on an annual operation of 3,504 hours/year (i.e., operating 40% of the time)

The intake for the ocean water purification system will be from the existing Encina Power Station's once through cooling water discharge channel, upstream of any process wastewater discharge into the discharge channel from the Encina Power Station. The Encina Power Station is permitted for a maximum combined discharge flow rate of 863.142 Million Gallons/Day (MGD). This includes 857.29 MGD of once through cooling water. The remainder consists of low volume wastes, metal cleaning wastes, and stormwater runoff. Domestic wastewater is discharged to the municipal sewer system for treatment and disposal. The CECP's maximum daily intake of ocean water for purification would range between 604,500 gallons per day (GPD) without Power Augmentation (PAG) and 1.22 MGD with PAG operating 8 hours per day, plus additional seawater for mixing at the outfall totaling a maximum of 4.32 MGD.

The CECP's ocean water purification process will consist of an Ultra Filtration system installed upstream of the first stage R/O system with a storage tank to permit continuous operation regardless of the power plant's operating mode. The ocean water purification system will operate on average 40% of the time to support power production and plant operation. The first stage R/O treated ocean water will pass through a second stage R/O system, then the second stage R/O permeate will be further demineralized by treatment using ion-exchange to produce purified industrial water suitable for injection to the HRSGs.

There will be no onsite preparation, regeneration or disposal of the CECP's ion-exchange system's spent resin. The ion-exchange system will utilize a completely contained mobile modular demineralization system provided and maintained by a third part vendor. The vendor will deliver the mobile demineralizer unit to the site; set the enclosed trailer in place and connect the demineralization system to the second stage R/O treatment unit's permeate. The process will use one demineralizer trailer to produce 200 GPM of high purity industrial water (<0.05 ppm total dissolved solids, TDS) starting with ocean water that contain approximately 33,000 ppm TDS. Once the resin system has become spent, the vendor will remove the spent resin unit for regeneration offsite and replace the spent system with a fresh, regenerated resin trailer.

3. Discharge Description

The first-stage R/O process will generate an aqueous wastestream highly concentrated in dissolved solids (i.e., brine or R/O reject). The CECP discharge will consist solely of the first-stage R/O brine. As previously discussed, the CECP desalination system would draw source water off the existing Encina Power Station once-through cooling water discharge channel. The source water intake flow for the CECP power plant will be 3,000 GPM and assumes a 24-hour, seven day operating schedule. The concentration factor of the first-stage R/O brine is estimated to be 1.679. Based on an average ambient ocean salinity of 33.52 ppt[1], the salinity of the first stage R/O brine is estimated to average 56.29 ppt. The first-stage R/O brine will be further diluted by mixing the R/O reject wastestream with residual source water from the 3,000 GPM intake flow prior to being discharged back to the Encina Power Station cooling water discharge channel.

[1] The mean seawater salinity between 1980 through 2000 reported by the Encina Power Station

Based on 3,000 GPM intake flow, the estimated volume and salinity concentrations of the CECP first stage R/O reject wastestream would be the following:

Table 3-2
CECP First Stage R/O Reject Wastestream

1st Stage R/O Reject Properties[1]	Operating Condition	
	With PAG	**Without PAG**
Desalination system draw from source water intake of 3,000 GPM	848 GPM	420 GPM
Residual source water for dilution prior to discharge to Encina Power Station discharge channel	2,152 GPM	2,580 GPM
R/O Reject volume	505 GPM	275 GPM
Dilution factor from mixing R/O reject with residual source water[2]	4.26:1	9.38:1
R/O Reject salinity prior to dilution[3]	56.29 ppt	56.29 ppt
R/O Reject salinity after dilution and at the point of discharge into the Encina Power Station discharge channel	37.84 ppt	35.71 ppt
CECP combined discharge to Encina Power Station cooling water discharge channel	2,657 GPM	2,855 GPM

Notes: 1- Refer to the Water Balances
2- Dilution Factor = Residual Source Water volume/ R/O Reject Volume
3- Assumes intake ocean water with average salinity of 33.5 ppt and concentration factor of 1.679

Assuming that the discharge from the Encina Power Station discharge channel to the Pacific Ocean is made up of only the CECP's combined discharge, nowhere in the near-shore environment would salinity values in the combined discharge brine plume approach the threshold (38-40 ppt) for hyper-salinity tolerance of local marine organisms ((Jenkins and Wasyl (2008)-Attachment 1a). Kelp beds and tide pools to the south of the Encina Power Station discharge would experience salinity elevations from brine plume impingements that are no greater than what occurs inter-annually under natural seasonal fluctuations of ocean salinity.

EPA From 2D, Section V: Effluent Characteristics lists the type, concentration and mass load of the pollutant constituents anticipated to be discharged (i.e., R/O brine) from the CECP facility. The R/O brine waste profile is based on the water quality of the ocean water at the Encina Power Station's cooling water intake structure (refer to EPA Form 2D, Appendix A: ESP Intake Water Analysis, Reported April 26, 2004). Reported concentrations and mass loads assume that the pollutant constituent concentrations reported in Appendix A are in the dissolved form (refer to EPA Form 2D, Appendix B: CECP Analysis of Reverse Osmosis Brine Wastes from Desalination Plant).

In addition to the first-stage R/O brine, the Ultra Filtration (U/F) system will produce an aqueous wastestream highly concentrated with suspended and settleable solids. The concentrated wastestream will be further treated onsite using a dewatering process that recycles liquids back to the ocean water storage tank and produces a filtered solids cake that will be suitable for disposal as a solid waste at a Class II or Class III landfill. Based on an assumed worst-case scenario of 30 ppm total suspended solids (TSS) for the U/F influent, the estimated quantity of wastes generated is:

Table 3-3
Desalination Process: Ultra Filtration Wastes

Operating Condition[1]	Concentrated Solids Wastes[2]	Filtered Solids Cake[3]	
With PAG	48 GPM	Dry	300 lbs/day
		Wet[4]	600 lbs/day
Without PAG	30 GPM	Dry	150 lbs/day
		Wet[4]	300 lbs/day

Notes:

1. Refer to Water Balances
2. Aqueous wastestream from U/F process
3. Solid wastestream from dewatering waste treatment process
4. Assumes up to 50% moisture content, the maximum moisture content permitted for disposal as a solid waste to a Class II or III landfill

4. Description of Receiving Waters

The Carlsbad Energy Center, LLC proposes to construct and operate the Carlsbad Energy Center Project on a 23-acre parcel within the site of the Encina Power Station. The Encina Power Station generates up to 939 megawatts of electrical power using five steam generators and one gas turbine generator. The Encina Power Station steam generators are cooled by a once through seawater flow system. Encina Power Station cooling water is discharged to the Pacific Ocean under the requirements established in Regional Water Board Order No.2006-0043.

4.1 Hydrologic Setting

The CECP site is in the City of Carlsbad, located in northern San Diego County. Carlsbad is located within the Agua Hedionda Lagoon watershed, which has a total drainage area of approximately 29 square miles in the cities of Carlsbad, Vista, Oceanside, and San Diego County. Annual precipitation ranges from 10 to 13 inches per year, most of which falls between November and February. The climate of San Diego County is characterized by long, warm, dry summers and mild, and sometimes wet winters. The average mean temperature for the area is approximately 65°F in the coastal zone and 57° F in the surrounding hills.

4.2 Surface Waters

The CECP site is located between the San Luis Rey River to the north and the San Marcos Creek to the south. It is situated within the Agua Hedionda Lagoon watershed. The main stream in the watershed is Agua Hedionda Creek, which begins on the southwestern slopes of the San Marcos Mountains in northern San Diego County, flowing generally southwestward to the Agua Hedionda Lagoon and the Pacific Ocean. The nearest surface water drainage to the CECP site is Agua Hedionda Creek. As described in the San Diego Regional Water Board Basin Plan, beneficial uses of Agua Hedionda Creek include municipal and domestic supply, agricultural, industrial services, contact and non-contact water recreation, and wildlife and warm freshwater habitat.

Coastal waters in the vicinity of the project include the Pacific Ocean and Agua Hedionda Lagoon. The existing beneficial uses of San Diego County beaches and near-shore areas include water contact recreation (e.g., surfing, swimming), non-contact recreation (e.g., walking, jogging), sport fishing, aquaculture, shellfish harvesting, municipal and domestic supply, preservation of rare and endangered species, marine and wildlife habitat, areas of special biological significance, and navigation.

The Agua Hedionda Lagoon is listed on the State Water Resources Control Board's 2006 303(d) List of Impaired Water Bodies for bacteria and sediments. Agua Hedionda Lagoon is designated as an estuarine habitat and has the same beneficial uses as the Pacific Ocean except for commercial fishing, areas of special biological significance, spawning of aquatic organisms, and navigation.

4.3 Marine Setting

A geophysical survey of the near-shore vicinity of the Encina Power Station was conducted by Coastal Environments (Elwany et al., 1998a and b) to characterize topography, habitat types, and sediment thickness for a sediment transport study. In general, the seafloor topography gently slopes offshore to the southwest. The near-shore area up-coast of the Encina Power Station intake channel consists of predominantly rocky outcrops, with the offshore areas almost exclusively sand. The northern rocky-outcrop area extends fewer than 1,000 feet down-coast (south) of the inlet channel. The downcast bottom, extending approximately 1,000 feet past the Encina Power Station discharge channel, is entirely sandy until the rocky outcrops of the Terra Mar headlands are reached. Offshore sediment depth is generally less than four feet thick at a water depth of about 48 feet. There are some exceptions, such as deeper pockets between the northern and southern outcrop areas. These may be associated with erosional channels created in the lagoon watershed when the sea level was lower. Sediment thickness is deeper farther offshore, to greater than 12 feet in about 70 feet of water.

Hydrodynamic Analysis of Near-shore Dispersion and Dilution of Concentrated Sea Water from Closed-Cycle Cooling Systems at Encina Generating Station, Carlsbad, CA

Submitted by:
Scott A. Jenkins, Ph. D. and Joseph Wasyl
Dr. Scott A. Jenkins Consulting
14765 Kalapana Street, Poway, CA 92064

Submitted to:
Tenera Environmental
141 Suburban Rd., Suite A2
San Luis Obispo, CA 93401

Submitted: 9 May 2008
Revised: 13 May 2008

TABLE OF CONTENTS:

ABSTRACT:

This study invokes a well-tested and peer-reviewed hydrodynamic model (SEDXPORT) to assess dispersion and dilution of concentrated sea water (brine) arising from the production of make-up water for a closed-cycle cooling system at Encina Generating Station. The make-up water would be produced by a small reverse osmosis desalination system that would draw source water off the existing sea water circulation system at Encina. The source water intake flow will be 3,000 gpm. The make-up water desalination system will draw 848 gpm off this source water stream and will produce 505 gpm of brine by-product. The concentration factor of the 505 gpm of brine is only 1.679, as compared to a concentration factor of 2.0 for the Carlsbad Desalination Project that was issued a certified EIR, (referred to as EIR, 2005, herein). For an average ambient ocean salinity of 33.52 ppt, the salinity of the brine reject from the closed-cycle cooling system will average 56.29 ppt (as compared to 67.04 ppt for brine produced by the Carlsbad Desalination Project). The brine from closed-cycle cooling will be mixed with a residual source water throughput of 2,152 gpm, producing a combined discharge of 2,657 gpm through the jetty fortified discharge channel. The combined discharge in the discharge channel will have an average salinity of 37.84 ppt.

Even for the worst-case outcome (an event with a probability of 0.013% occurrence), the hydrodynamic model analysis finds that hyper-salinity impacts and suppressed dilution rates arising from brine discharge by the closed-cycle cooling system are benign. Nowhere in the nearshore environment do salinity values in the brine plume approach the threshold (38-40 ppt) for hyper-salinity tolerance of local marine organisms. Kelp beds and tide pools to the south of the Encina discharge will experience salinity elevations from brine plume

impingement that are no greater than what occurs inter-annually under natural seasonal fluctuations of ocean salinity. The strictest standards contemplated for discharges from ocean desalination plants under proposed amendments to the California Ocean Plan are generally satisfied, even in the worst-case assessment. Only the strictest proposed standard (a 36.5 ppt numeric limit) is slightly exceeded in a small localized area of surfzone seabed amounting to 1.44 acres. The less severe 10% over background standard being proposed for the California Ocean Plan is satisfied everywhere in worst-case. Existing NPDES discharge permit limits on minimum dilution presently applied to thermal effluent are also satisfied everywhere by the brine discharge along the perimeter of the "zone of initial dilution" (ZID) under worst-case conditions.

In addition to the worst-case scenario, as many as 7,523 modeled cases were evaluated using ocean water mass properties and mixing conditions from the same 20.5-year long period of record as used in the certified EIR (2005). From these large numbers of solutions, high resolution histograms (probability density functions) were constructed of salinity and dilution factor. On average, the long term simulations show that only 0.31 acres of the sub-tidal beach face and sandy bottom nearshore habitat immediately seaward of the discharge jetties would experience salinity that would exceed (slightly) the 36.5 ppt discharge limit proposed as an amendment to the California Ocean Plan. Further offshore, in the middle of the ZID, the long term median salinity was found to be 34.2 ppt, which is a value in the range of naturally occurring salinity in the coastal ocean off Carlsbad. The maximum salinity in the middle of the ZID was found to be 35.8 ppt, which is well within the salinity tolerance of the local keystone species. At the outer edge of the ZID, median salinity is within 0.14 ppt of average ocean salinity off Carlsbad, and the maximum salinity is only 34.5 ppt, roughly equivalent to the maximum naturally occurring value in these coastal waters. Over this representative 20.5 year long period of record, there is a 90% probability that maximum salinity on the edge of the ZID will not exceed 33.87 ppt. This is well within in the range of natural seasonal variability of ambient ocean salinity for this coastal region.

Dilution factors of the brine discharged from closed-cycle cooling operations are considerably better than what was found for the Carlsbad Desalination Project. In the middle of the ZID, minimum dilution was typically 33.5 to 1, and at the outer edge of the ZID minimum dilution climbs to a median value of 162 to 1, with worst-case here being no less than 23.2 to 1. In 90% of the model runs, minimum dilution of brine at the edge of the ZID exceeds 98 to 1.

We conclude that closed-cycle cooling operations at Encina will produce brine plume effects that are well below what could be tolerated by indigenous marine organisms, and are within the strictest standards being contemplated through amendments to the California Ocean Plan. In addition, minimum dilution levels of the brine discharge will also satisfy present NPDES discharge limits permitted for the Encina thermal effluent.

1) Introduction:

This study invokes a well-tested and peer-reviewed hydrodynamic model (SEDXPORT) to assess dispersion and dilution of concentrated sea water (brine) arising from the production of make-up water for a closed-cycle cooling system at Encina Generating Station. The make-up water would be produced by a small reverse osmosis desalination system that would draw source water off the existing sea water circulation system at Encina. The required flow to the desalination system will be 848 gpm and will produce 505 gpm of brine by-product having an initial salinity of 56.29 ppt before being recombined with the residual source water stream. The available source water intake flow will be 3,000 gpm. The 505 gpm of brine by-product would be blended with a residual 2,152 gpm of source water and subsequently discharged into the nearshore through the existing discharge channel at a combined rate of 2,657 gpm and salinity of 37.85 ppt.

The dilution and dispersion of this discharge in the nearshore environment was studied using the same models, ocean forcing functions and water mass properties applied in the certified EIR for the much larger Carlsbad Desalination Project, (referenced herein as EIR, 2005). However, the proposed study will evaluate the brine discharges from closed-cycle cooling operations at Encina as a stand alone process, independent of any hyper-saline discharges from the Carlsbad Desalination Project. We ultimately compare the model results against criteria for hyper-salinity tolerance of local marine species (as adopted in the certified EIR of the Carlsbad Desalination Project); as well as considering potential compliance with proposed amendments to the California Ocean Plan that would set salinity discharge limits on coastal desalination plants (see Appendix A, Issue 10).

2) Technical Approach

This study addresses the concerns of brine dilution by utilizing a coupled set of numerical tidal and wave transport models. The numerical model used to simulate tidal currents in the nearshore and shelf region of Encina Generating Station is the finite element model TIDE_FEM. Wave-driven currents are computed from the shoaling wave field by a separate model, OCEANRDS. The dispersion and transport of concentrated seawater and backwash discharge by the wave and tidal currents is calculated by the finite element model known as SEDXPORT.

A) Model Pedigree: Besides being validated in coastal waters of southern California, the SEDXPORT modeling system has been extensively peer reviewed. Although some of the early peer review was confidential and occurred inside the Office of Naval Research and the Naval Research Laboratory, the following is a listing of 5 independent peer review episodes of SEDXPORT that were conducted by 9 independent experts and can be found in the public records of the State Water Resources Control Board, the California Coastal Commission and the City of Huntington Beach.

1997- Reviewing Agency: State Water Resources Control Board

Project: NPDES 316 a/b Permit renewal, Encina Power Plant, Carlsbad, CA

Reviewer: Dr. Andrew Lissner, SAIC, La Jolla, CA

1998- Reviewing Agency: California Coastal Commission

Project: Coastal Development Permit, San Dieguito Lagoon Restoration

Reviewers: Prof. Ashish Mehta, University of Florida, Gainesville

Prof. Paul Komar, Oregon State University, Corvallis; Prof. Peter Goodwin, University of Idaho, Moscow

2000- Reviewing Agency: California Coastal Commission

Project: Coastal Development Permit, Crystal Cove Development

Reviewers: Prof. Robert Wiegel, University of California, Berkeley

Dr. Ron Noble, Noble Engineers, Irvine, CA

2002- Reviewing Agency: California Coastal Commission

Project: Coastal Development Permit, Dana Point Headland Reserve

Reviewers: Prof. Robert Wiegel, University of California, Berkeley ;

Dr. Richard Seymour, University of California, San Diego

2003- Reviewing Agency: City of Huntington Beach

Project: EIR Certification, Poseidon Desalination Project

Reviewer: Prof. Stanley Grant, University of California, Irvine

B) Model Architecture: The model has been built in a modular computational architecture (see Jenkins and Wasyl, 2005 a & b). The modules are divided into two major clusters: 1) those which prescribe hydrodynamic forcing functions; and, 2) those which prescribe the mass sources acted upon by the hydrodynamic forcing to produce dispersion and transport. The cluster of modules for hydrodynamic forcing ultimately prescribes the velocities and diffusivities induced by wind, waves, and tidal flow for each depth increment at each node in the grid network.

The finite element research model, TIDE_FEM, (Jenkins and Wasyl, 1990; Inman and Jenkins, 1996) was employed to evaluate the tidal currents within the Oceanside Littoral Cell. TIDE_FEM was built from some well-studied and proven computational methods and numerical architecture that have done well in predicting shallow water tidal propagation in Massachusetts Bay (Connor and Wang, 1974) and along the coast of Rhode Island, (Wang, 1975), and have been reviewed in basic text books (Weiyan, 1992) and symposia on the subject, e.g., Gallagher (1981). The governing equations and a copy of the core portion of the TIDE_FEM FORTRAN code are found in Jenkins and Wasyl, 2005 a & b. TIDE_FEM employs a variant of the vertically integrated equations for shallow water tidal propagation after Connor and Wang (1975). These are based upon the Boussinesq approximations with Chezy friction and Manning's roughness. The finite element discretization is based upon the commonly used Galerkin weighted residual method to specify integral functionals that are minimized in each finite element domain using a variational scheme, see Gallagher (1981). Time integration is based upon the simple trapezoidal rule (Gallagher, 1981).

The computational architecture of TIDE_FEM is adapted from Wang (1975), whereby a transformation from a global coordinate system to a natural coordinate system based on the unit triangle is used to reduce the weighted residuals to a set of order-one ordinary differential equations with constant coefficients. These coefficients (influence coefficients) are posed in terms of a shape function derived from the natural coordinates of each nodal point in the computational grid. The resulting systems of equations are assembled and coded as banded matrices and subsequently solved by Cholesky's method, see Oden and Oliveira (1973) and Boas (1966). The hydrodynamic forcing used by TIDE_FEM is based upon inputs of the tidal constituents derived from Fourier decomposition of tide gage records. Tidal constituents are input into the module TID_DAYS, which resides in the hydrodynamic forcing function cluster (see Jenkins and Wasyl, 2005 a & b for a listing of TID_DAYS code). TID_DAYS computes the distribution of sea surface elevation variations in Oceanside Littoral Cell based on the tidal constituents derived from the Scripps Pier tide gage station (NOAA #941-0230). Forcing for TIDE_FEM is applied by the distribution in sea surface elevation across the deep water boundary of the computational domain.

Wave driven currents were calculated from wave measurements by the Coastal Data Information Program (CDIP) arrays and/or buoys (CDIP, 2004). These measurements were back refracted out to deep water to correct for island sheltering effects between the monitoring sites and Carlsbad. The waves were then forward refracted onshore to give the variation in wave heights, wave lengths and directions throughout the nearshore around Carlsbad and the surrounding areas of Oceanside Littoral Cell. The numerical refraction-diffraction code used for both the back refraction from these wave monitoring sites out to deep water, and the forward refraction to the Carlsbad site is OCEANRDS and may be found in Jenkins and Wasyl, 2005 a & b. This code calculates the simultaneous refraction and diffraction patterns of the swell and wind wave components propagating over bathymetry replicated by the OCEANBAT code found in Jenkins and Wasyl, 2005 a & b. OCEANBAT generates the associated depth fields for the computational grid networks of both TID_FEM and OCEANRDS using packed bathymetry data files derived from the National Ocean Survey (NOS) depth soundings. The structured depth files written by OCEANBAT are then throughput to the module OCEANRDS, which performs a refraction-diffraction analysis from deep water wave statistics. OCEANRDS computes local wave heights, wave numbers, and directions for the swell component of a two-component, rectangular spectrum.

The wave data are throughput to a wave current algorithm in SEDXPORT (see Jenkins and Wasyl, 2005 b) which calculates the wave-driven longshore currents, v(r). These currents were linearly superimposed on the tidal current. The wave-driven longshore velocity, v(*r*), is determined from the longshore current theories of Longuet-Higgins (1970). Once the tidal and wave driven currents are resolved by TIDE_FEM and OCEANRDS, the dilution and dispersion of brine and backwash constituents is computed by the stratified transport algorithms in SEDXPORT . The SEDXPORT code is a time stepped finite element model which solves the advection-diffusion equations over a fully configurable 3-dimensional grid. The vertical dimension is treated as a two-layer ocean, with a surface mixed layer and a bottom layer separated by a pycnocline interface. The code accepts any arbitrary density and velocity contrast between the mixed layer and bottom layer that satisfies the Richardson number stability criteria and composite Froude number condition of hydraulic state.

The SEDXPORT codes do not time split advection and diffusion calculations, and will compute additional advective field effects arising from spatial gradients in eddy diffusivity, (the so-called “gradient eddy diffusivity velocities” after Armi, 1979). Eddy mass diffusivities are calculated from momentum diffusivities by means of a series of Peclet number corrections based upon TSS and TDS mass and upon the mixing source. Peclet number corrections for the surface and bottom boundary layers are derived from the work of Stommel (1949) with modifications after Nielsen (1979), Jensen and Carlson (1976), and Jenkins and Wasyl (1990). Peclet number correction for the wind-induced mixed layer diffusivities are calculated from algorithms developed by Martin and Meiburg (1994), while Peclet number corrections to the interfacial shear at the pycnocline are derived from Lazara and Lasheras (1992a;1992b). The momentum diffusivities to which these Peclet number corrections are applied are due to Thorade (1914), Schmidt (1917), Durst (1924), and Newman (1952) for the wind-induced mixed layer turbulence and to Stommel (1949) and List, et al. (1990) for the current-induced turbulence.

SEDXPORT solves the eddy gradient form of the advection diffusion equation for the water column density field:

$$\frac{\partial \rho}{\partial t} = \left(\vec{u} \bullet \nabla \varepsilon\right) \bullet \nabla \rho - \varepsilon \nabla^2 \rho + \rho_b Q_b / V_b \qquad (1)$$

where $\vec{u}$ is the vector velocity from a linear combination of the wave and tidal currents, ε is the mass diffusivity, ∇ is the vector gradient operator and ρ is the water mass density in the nearshore dilution field; and ρ_b is the density of the combined discharge flowing at a rate Q_b through a discharge channel of volume V_b. In (1) the term $\nabla \varepsilon$ acts much like an additional advective field in the direction of high to low eddy diffusivity. This additional "gradient eddy diffusivity velocity" is the result of local variations in current shear and wave boundary layer thickness. Both are bathymetrically controlled and the latter is associated with the refraction/diffraction pattern and is strongest in the wave shoaling region nearshore.

Both the density of the receiving water ρ and the density of the discharge fluid ρ_b is a function of temperature, *T*, and salinity, *S*, according to the equation of state expressed in terms of the specific volume, $\alpha = 1/\rho$ and $\alpha_b = 1/\rho_b$ or:

$$\frac{d\alpha}{\alpha} = \frac{1}{\alpha}\frac{\partial \alpha}{\partial T} dT + \frac{1}{\alpha}\frac{\partial \alpha}{\partial S} dS \qquad (2)$$

$$\frac{d\alpha_b}{\alpha_b} = \frac{1}{\alpha_b}\frac{\partial \alpha}{\partial T} dT_b + \frac{1}{\alpha_b}\frac{\partial \alpha}{\partial S} dS_Q$$

where dS_Q is the salinity contrast between the combined discharge and the ambient ocean water. The factor $\partial\alpha/\partial T$, which multiplies the differential temperature changes, is known as the coefficient of thermal expansion and is typically 2×10^{-4} per ^{o}C for seawater; the factor $\partial\alpha/\partial S$ multiplying the differential salinity changes, is the coefficient of saline contraction and is typically 8×10^{-4} per part per thousand (ppt) where 1.0 ppt = 1.0 g/L of total dissolved solids (TDS). For a standard seawater, the specific volume has a value α = 0.97264 cm^3/g. If the percent change in specific volume by equation (3) is less than zero, then the water mass is heavier than standard seawater, and lighter if the percent change is greater than zero.

Solutions to the density field of the discharge plume from the outfall are calculated from equation (1) by SEDXPORT, from which computations of local discharge salinity, $S(x, y, z)$, can be made using equation (3). The salinity field of the discharge plume can be used to solve for the dilution factor $D_b(x, y, z)$ of the brine effluent according to:

$$D_b(x, y, z) = \frac{S_b - S_o}{S_o - S(x, y, z)} \qquad (3)$$

where S_o is the ambient seawater salinity in ppt, S_b is the salinity of the brine, and $S(x, y, z)$ is the local salinity in the discharge plume from the model solution in ppt. Model solutions will find a significant variation in the salinity with water depth, *z*. Therefore we introduced a depth-averaged dilution factor,

$$\overline{D}(x,y,H) = \frac{1}{H(x,y)} \int_0^H D(x,y,z)\,dz \qquad (4)$$

Where $H = (Hx, y) = h + \eta$ is the local water depth, h is the local water depth below mean sea level and η is the tidal amplitude.

Solutions for the density and concentration fields calculated by the SEDXPORT codes from equations (1)-(2), are throughput to the dilution codes of MULTINODE to resolve dilution factors according to (3)-(4). These codes solve for the dilution factor (mixing ratio) for each cell in the finite element mesh of the nearshore computational domain based on a mass balance between imported exported and resident mass of that cell (see Jenkins and Wasyl, 2005 a & b). The diffusivity, ε, in (1) controls the strength of mixing and dilution of the seawater and storm water constituents in each cell and varies with position in the water column relative to the pycnocline interface. Vertical mixing includes two mixing mechanisms at depths above and below the pycnocline: 1) fossil turbulence from the bottom boundary layer, and 2) wind mixing in the surface mixed layer. The pycnocline depth is treated as a zone of hindered mixing and varies in response to the wind speed and duration. Below the pycnocline, only turbulence from the bottom wave/current boundary layer contributes to the local diffusivity. In the nearshore, breaking wave activity also contributes to mixing. The surf zone (zone of initial dilution) is treated as a line source of turbulent kinetic energy by the subroutine SURXPORT (see Jenkins and Wasyl, 2005 a & b). This subroutine calculates seaward mixing from fossil surf zone turbulence, and seaward advection from rip currents embedded in the line source. Both the eddy diffusivity of the line source and the strength and position of the embedded rip currents are computed from the shoaling wave parameters evaluated at the breakpoint, as throughput of OCEANRDS.

3) Initial Conditions:

Uninterrupted, long-term monitoring of ocean properties has not been maintained at Encina, but are available from the nearby Scripps Pier. The Scripps Pier site has many physical features in common with the nearshore area around Encina. Both sites have a narrow shelf and a submarine canyon nearby. Consequently, internal waves are an active mechanism at both sites in causing daily (diurnal) variations in salinity, temperature, and other ocean properties. The longer period variations at seasonal and multiple year time scales are the same at both sites due to their proximity. The Scripps Pier Shore Station data (SIO, 2001) and the Coastal Data Information Program monitoring at Scripps Pier (CDIP, 2004) are used as surrogates for long term records of physical ocean properties at Encina. These properties exhibit considerable natural variability over the period of record from 1980 to mid 2000 due to daily and seasonal changes, as well as climate cycles.

A) Flow Rates and Discharge Salinity: The existing sea water circulation system of the power plant draws source water from the lagoon, which is subsequently discharged into the ocean through an independent discharge channel located between Middle Beach and South Beach. The existing cascade of circulation and service water pumps available at Encina Generating Station can provide a maximum once-through flow rate of 808 million gallons per day (mgd). The make-up water would be produced by a small reverse osmosis desalination system that would draw source water off this existing sea water circulation system. The source water intake flow will be 3,000 gallons per minute (gpm). The make-up water desalination system will draw 848 gpm off this source water stream and will produce 505 gpm of brine by-product. The concentration factor of the 505 gpm of brine is only 1.679 (40.45% recovery), as compared to a concentration factor of 2.0 (50.0% recovery) for the Carlsbad Desalination Project, (EIR, 2005). For an average ambient ocean salinity of $S_0 = 33.52$ ppt, the salinity of the brine reject from the closed-cycle cooling system will average $S_b = 56.29$ ppt (as compared to 67.04 ppt for brine produced by the Carlsbad Desalination Project). The brine from closed-cycle cooling will be mixed with a residual source water throughput of 2,152 gpm, producing a combined discharge of $Q_b = 2{,}657$ gpm through the jetty fortified discharge channel. The combined discharge in the discharge channel will have an average salinity of $S_Q = 37.84$ ppt.

B) Environmental Variables: Altogether there are six environmental variables that enter into the computer model for resolving the dispersion and dilution of the unheated concentrated seawater by-product discharged from the stand-alone desalination plant. These environmental variables may be organized into *boundary conditions* and *forcing functions*. The boundary conditions include: ocean salinity, ocean temperature and ocean water levels. The forcing function variables include waves, currents, and winds. For the present analysis, we use the same set of environmental variables applied to the dilution analysis in the certified EIR for the Carlsbad Desalination Project.

Overlapping 20.5 year long records of the boundary condition and forcing function variables are reconstructed in Sections 3.1 and 3.2 of Jenkins and Wasyl (2005) found in Appendix E of the certified EIR (2005). These records contain 7,523 consecutive daily observations of each variable between 1980 and the middle of 2000. For clarity, these long term records are plotted here in Figures 1 and 2. We search this 20.5 year long period of record for the historical combination of these variables that give a worst-case day, generally defined by benign ocean conditions that minimize mixing and dilution rates. We then overlay

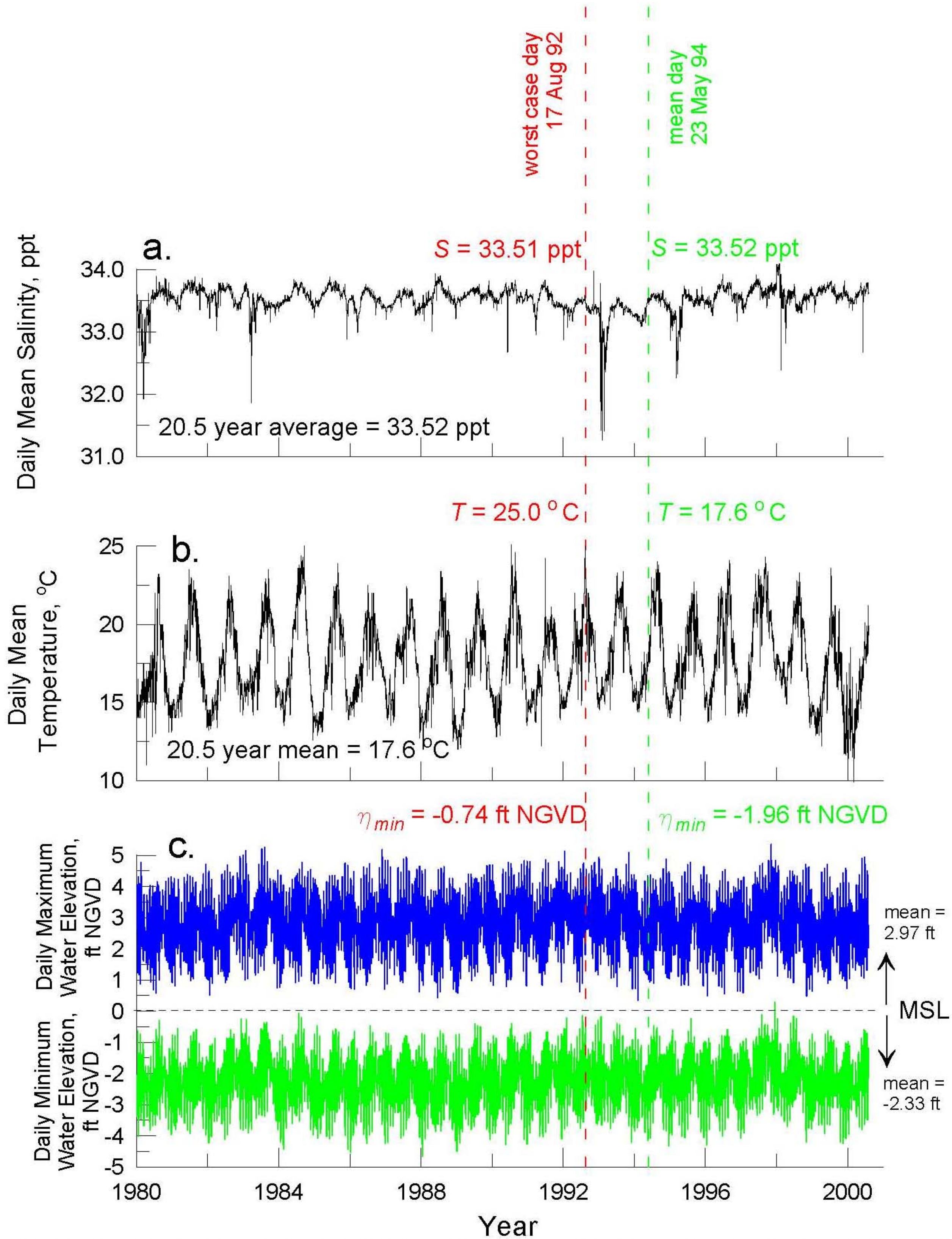

Figure 1. Period of record of boundary conditions, Encina Power Plant, 1980-2000.5: a) daily mean salinity, b) daily mean temperature, and c) daily high and low ocean water level elevations.

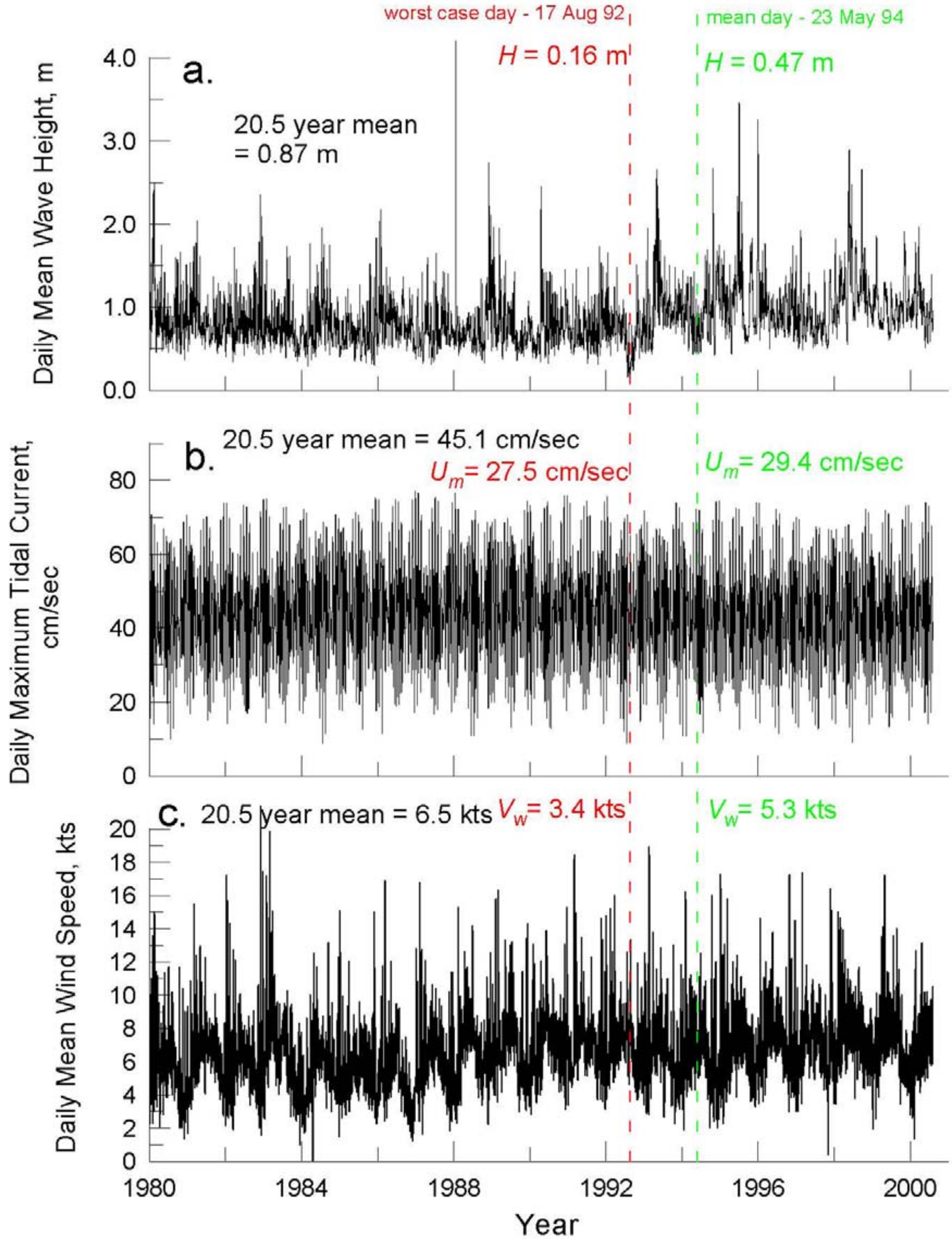

Figure 2. Period of record of forcing functions in the nearfield of Encina Power Plant, 1980-2000.5: a) daily mean wave height, b) daily maximum tidal current velocity, and c) daily mean wind.

the brine discharge scenario for the closed-cycle cooling system on those extremely benign ocean conditions. The criteria for the historical extreme day was based on the simultaneous occurrence of the environmental variables having the highest combination of absolute salinity and temperature during the periods of minimal wave, wind, currents, and ocean water levels (including both tidal oscillations and climatic sea level anomalies). We repeat the analysis using average ocean mixing conditions. The average day scenarios were based on the 20.5 yr mean of the 6 environmental variables.

C) Worst-Case Assignments: The 20.5 year long records of the boundary condition variables in Figure 1 and the forcing function variables in Figure 2 were subjected to a joint probability analysis for the simultaneous occurrence of the "*worst-case*" combination of these variables. The criteria used to define worst-case combinations of environmental variables for this analysis is outlined in Table 1. The joint probability analysis involved 7,523 historic combinations of ocean salinity, temperature, wave, current and wind variables, for which the maximization/minimization criteria in Table 1 were applied. The joint probability analysis produced a worst-case day solution for 17 August 1992. This day is represented by the vertical dashed red line in Figures 1 and 2. The monthly periods containing these extreme events are shown in Figures 3 and 4. The environmental factors of this day were associated with a building El Niño that subsequently climaxed in the winter of 1993. The ocean salinity was 33.51ppt, (about the same as the long term mean), but the ocean temperature was 25.0 ^{o}C, within 0.1 ^{o}C of the 20.5 year maximum. The waves were only 0.16 m, which was the 20.5 year minimum. Winds were 3.4 knots and the maximum tidal current in the offshore domain was only 27.5 cm/sec (0.53 knots). The sluggish tidal current was due to neap tides occurring on this day with a minimum water level of -0.74 ft NGVD.

Table 1: Search Criteria and Ecological Significance for Worst-Case Combinations of Environmental Variables.

Variable	Search Criteria	Ecological Significance
Ocean Salinity	Maximize	Higher salinity leads to higher concentrations of RO by-product causing greater stress on marine biology
Ocean Temperature	Maximize	Higher temperature leads to greater stress on marine biology
Ocean Water Levels	Minimize	Lower water levels result in less initial dilution in the discharge channel
Waves	Minimize	Smaller waves result in less mixing in surfzone and less inshore dilution
Currents	Minimize	Weaker currents result in less advection and less offshore dilution
Winds	Minimize	Weaker winds result in less surface mixing and less dilution in both the inshore and offshore

This combination of environmental variables represents a situation that would place maximum thermal stress on the marine biology; and one in which the dilution of the concentrated seawater by-product of the closed-cycle cooling system would occur very slowly due to minimal ocean mixing. The probability of occurrence of these worst-case mixing conditions is 1day in 7,523 days, or 0.013%.

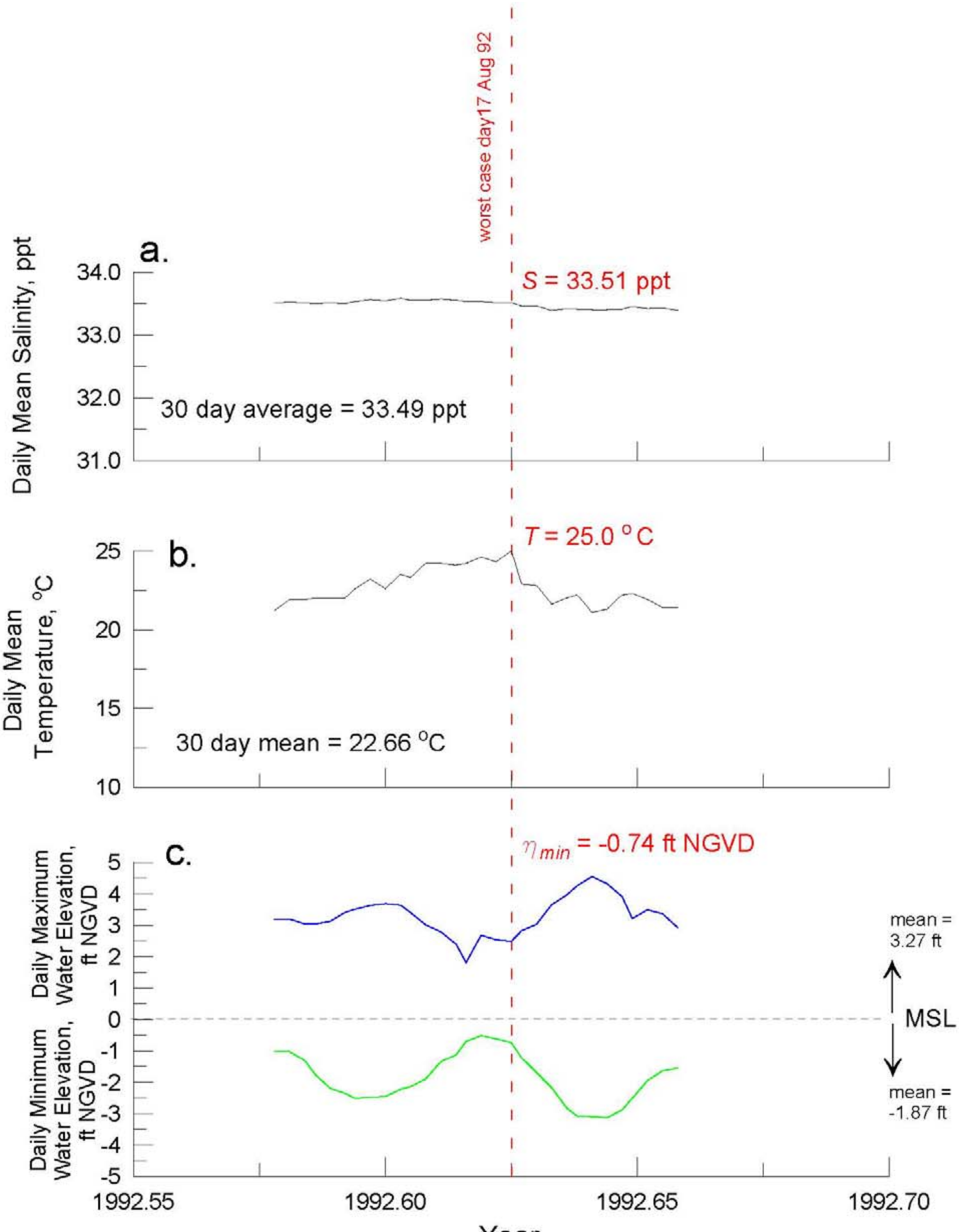

Figure 3. Boundary conditions in the nearfield of the Encina Power Plant: worst case 30 day period: a) daily mean salinity, b) mean temperature, and c) high and low ocean water elevations.

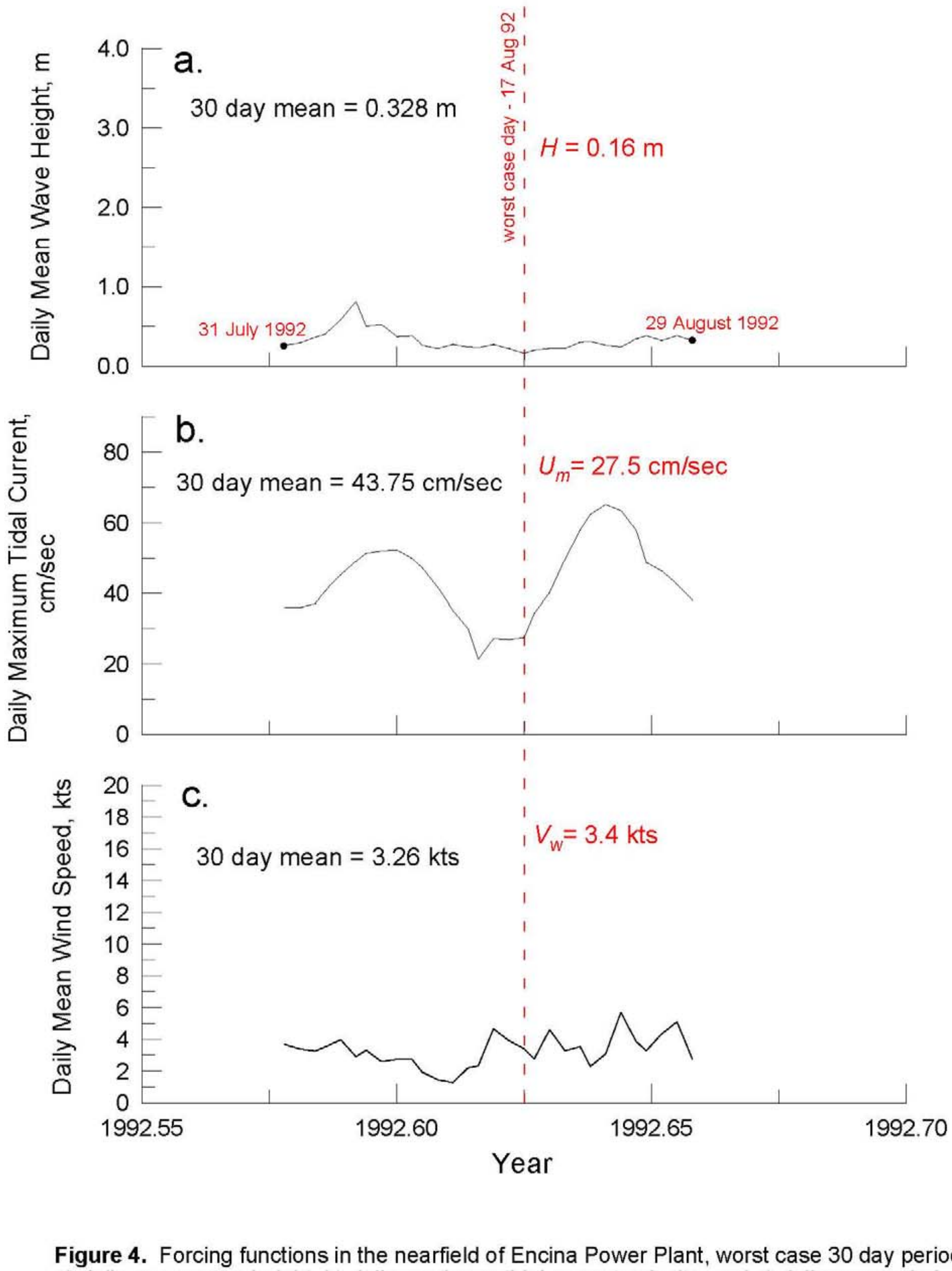

Figure 4. Forcing functions in the nearfield of Encina Power Plant, worst case 30 day period: a) daily mean wave height, b) daily maximum tidal current velocity, and c) daily mean wind.

D) Average Case Assignments: The average daily combination of the 7 controlling variables over the 20.5 year period of record was found to be represented by the conditions on 23 May 1994. This day is represented in Figures 1 and 2 by the vertical dashed green line. This was a spring day with moderate temperature, winds, waves, and currents. The Southern Oscillation Index (SOI) was zero indicating that the oceanic conditions relative to El Niño were in a neutral phase. Ocean salinity was 33.52 ppt and ocean temperature was 17.6 ^{o}C, both identically the 20.5 year mean. Wave heights were 0.65 m, slightly below the 20.5 year mean, and maximum tidal currents reached 29.4 cm/sec (0.57 knots), also less than the 20.5 year mean. The daily low water level at -1.96 ft NGVD was very close to the mean low tide (MLT). Winds were 5.3 knots, slightly above the 20.5 year mean.

3) Results:

Results are presented for worst-case and average conditions in terms of four principle model outputs: 1) salinity of the combined discharge on the sea floor, 2) dilution factors for the raw concentrate at the sea floor, 3) depth-averaged salinity of the combined discharge, and 4) depth-averaged dilution factors for the raw concentrate in the water column.

Salinity fields are contoured in parts per thousand (ppt) according to the color bar scale at the bottom of each plot. For purposes of comparing scenarios, the salinity scale range spans from 33.5 ppt to 38.0 ppt. Ambient ocean salinity is stated in the caption of each salinity field plot. Of particular concern in dilution analyses of preceding desalination projects has been areas in which the discharge plume elevates the local salinity above 38- 40 ppt. When salinities rise above 38 to

40 ppt, increases in mortality and reductions in reproductive rates have been found in some marine organisms (see Graham, EIR, 2005). However, in the present analysis this concern is not a factor because discharge salinities at end-of-pipe remain below 38 ppt (cf. Section 3a). However, there have been recent proposed amendments to the California Ocean Plan that would either set numeric limits on discharges from ocean desalination plants at 36.5 ppt (see Appendix A, Issue 10, Alternative 3); or set relative limits on discharges at 10% over natural background (see Appendix A, Issue 10, Alternative 2). The 10% over background standard would place discharge limits on a plant sited in Carlsbad at 37 ppt. Therefore we will pay particular attention to any portion of the discharge plume that exceeds 36.5 ppt - 37 ppt.

The dilution fields in the following sections are contoured in base-10 log according to the color bar scale at the bottom of each plot, with a scale range that spans from 10^0 to 10^7. We are particularly concerned about the dilution factor of the raw concentrate in the water column at the edge of the "zone of initial dilution" (ZID), 1000 ft in any direction from the mouth of the discharge channel. The present NPDES permit for the thermal effluent requires a dilution factor of 15 to 1 at the edge of the ZID, and this standard might possibly be applied to the brine by-product of a closed-cycle cooling system at Encina.

A) Worst-Case Hyper-Saline Effects and Dilution Rates: The combined brine discharge effluent flowing from the discharge channel at $Q_b = 2{,}657$ gpm and salinity of $S_Q = 37.84$ ppt is heavier than the ambient ocean water, which has a salinity of 33.51 ppt and a temperature of 25.0 ^{o}C on the worst-case day (represented by proxy, 17 August 1992). As a result, the brine plume concentrates on the seabed, flowing down-slope along the beach and subtidal bathymetry as a gravity flow. This action causes the highest salinity anywhere in the

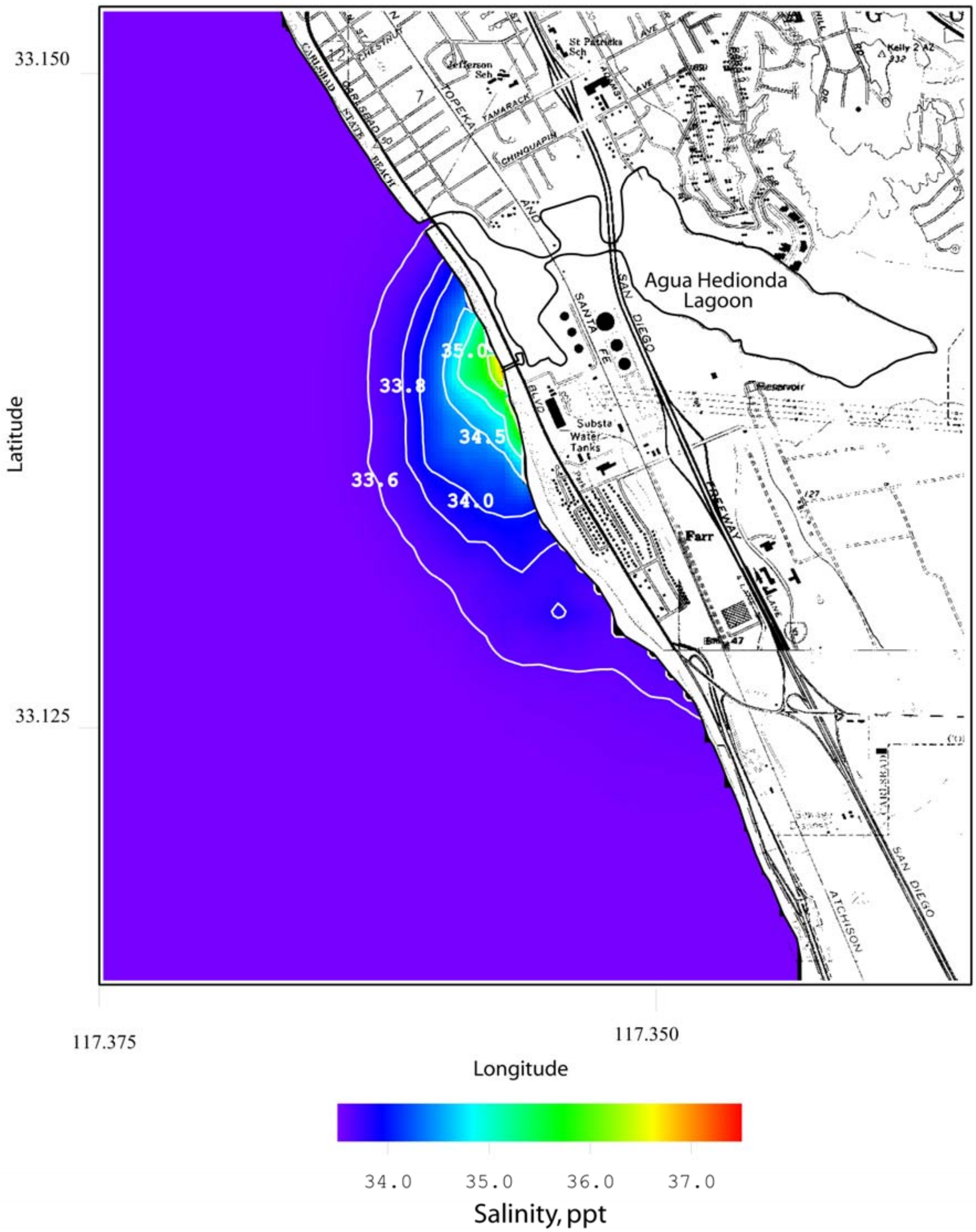

Figure 5. Daily average of bottom salinity due to concentrated seawater discharge from closed-cycle cooling system at Encina Generating Station. Plant inflow rate = 3,000 gpm, R.O. production rate = 343 gpm. Combined discharge = 2,657 gpm @ 37.85 ppt end-of-pipe. Ambient ocean salinity = 33.51 ppt, ocean conditions, 17 August 1992, representing worst case.

receiving water to be found in the brine footprint on the seafloor. Figure 5 gives the salinity field in the hyper-saline bottom boundary layer as it spreads down-slope (seaward) across on the sea floor under the worst-case mixing conditions. Out of 7,523, modeled outcomes, no other results are more extreme in terms of hyper-salinity impacts than what is shown in Figure 5. The salinity field is averaged over a 24 hour period. The inner core of the hyper-saline bottom boundary layer (contoured in yellow immediately seaward of the head of the discharge jetties) is at a maximum salinity of 36.61 ppt, and 1.44 acres in the inner core is at a salinity that exceeds the proposed numeric limit of 36.5 ppt. This 1.44 acres that exceeds the proposed numeric limits is well inside the ZID. Maximum bottom salinity found anywhere along the boundaries of the ZID is 34.5 ppt, occurring 1000 ft directly offshore of the discharge channel. This ZID boundary maximum is a value that is approached as a result of the natural variability of coastal ocean temperatures, (where the maximum value recorded in Figure 1a is 34.44 ppt). The brine plume in the bottom boundary layer follows a general southward trajectory, but only produces elevated salinity on the order of 0.1 ppt to 0.4 ppt above ambient in either the offshore kelp beds or the tide pools to the south near Terra Mar. This is well within the range of inter-annual variability. Bottom dilution factors for the raw concentrate are shown in Figure 6 for worst-case ambient mixing. Minimum dilution on the sea bed at the edge of the ZID is 23.2 to 1 for worst-case, providing a comfortable margin over the minimum 15 to 1 prescribed by the present NPDES discharge permit on the Encina thermal effluent. It should be noted that these ultimate worst-case outcomes for salinity maximums and dilution minimums on the seafloor are extremely rare and non-persistent, representing an event with a 0.013% chance of occurrence. The relatively higher salinity found in the brine plume on the seabed is confined to a thin bottom

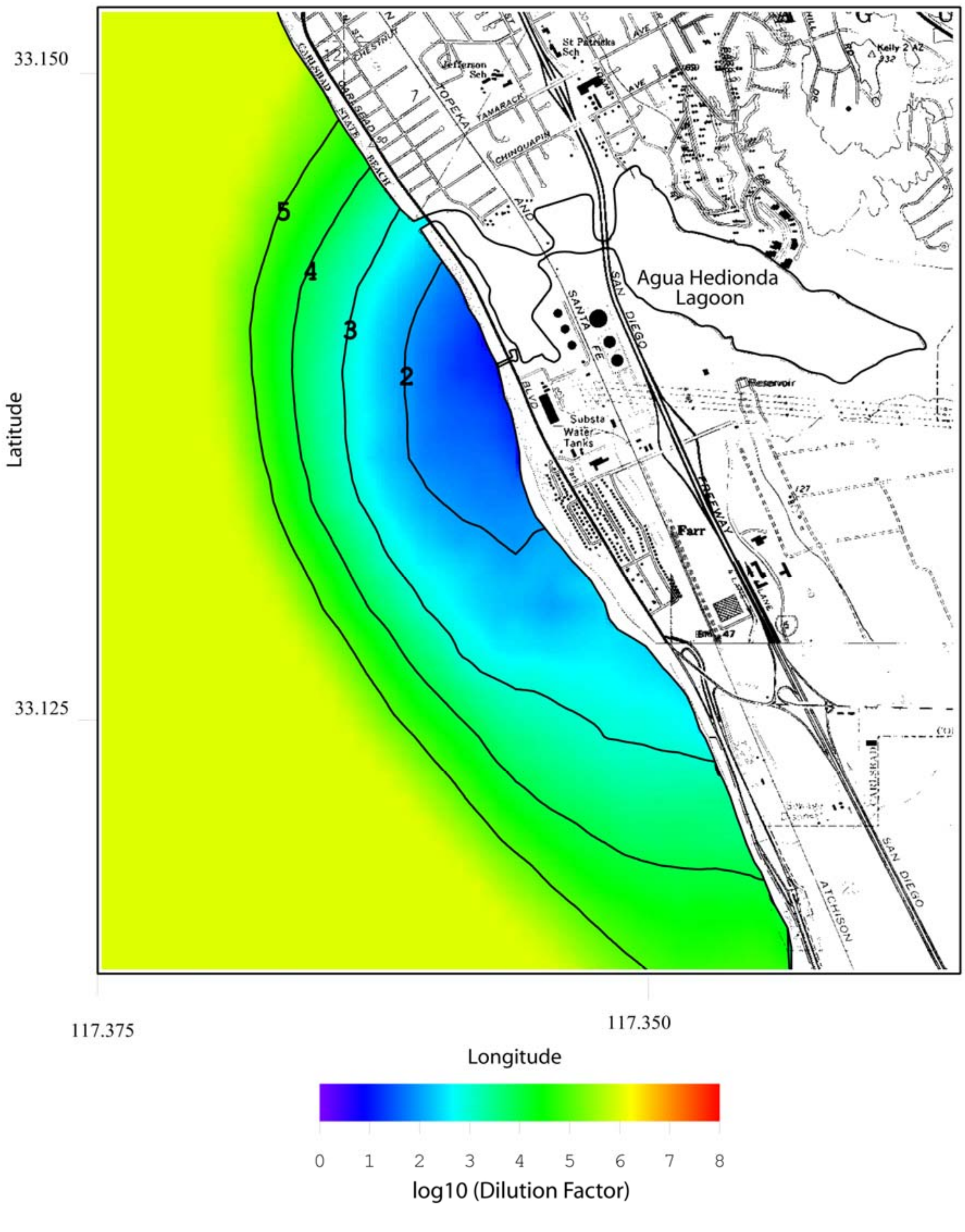

Figure 6. Daily average of bottom dilution due to concentrated seawater discharge from closed-cycle cooling system at Encina Generating Station. Plant inflow rate = 3,000 gpm, R.O. production rate = 343 gpm. Combined discharge = 2,657 gpm @ 37.85 ppt end-of-pipe. Ambient ocean salinity = 33.51 ppt, ocean conditions, 17 August 1992, representing worst case.

boundary layer that is constrained from mixing significantly upward into the water column. This is a consequence of the small bottom stresses and low eddy diffusivity that prevail during the worst-case mixing conditions. Above this bottom boundary layer the salinity drops rapidly. Maximum salinity in the water column for worst-case is found to be 34.0 ppt in the surfzone immediately seaward of the discharge jetty (Figure 7). The pelagic area subject to salinity in excess of 40 ppt is 3.3 acres. About 28 acres of pelagic habitat are subjected to salinity reaching 10% over ambient. Maximum water column salinity at the edge of the ZID is 33.9 ppt, found in the surf zone 1000 ft to the south of the discharge channel. These values are all within the range of typical inter-annual variability associated with higher evaporation rates during summer months. Figure 8 shows that in the water column, where 316(A) dilution standards apply, minimum dilutions improve to 59.9 to 1 at the edge of the ZID, significantly higher than the 15 to 1 prescribed by the present NPDES discharge permit on the Encina thermal effluent.

In summary, the worst-case outcome for hyper-salinity impacts and suppressed dilution rates arising from brine discharge by a closed-cycle cooling system are found to be benign. Nowhere in the nearshore environment do salinity values in the brine plume approach the threshold (38-40 ppt) for hyper-salinity tolerance of local marine organisms. Kelp beds and tide pools to the south of the Encina discharge will experience salinity elevations from brine plume impingement that are no greater than what occurs inter-annually under natural seasonal fluctuations of ocean salinity. Even the strictest standards contemplated for discharges from ocean desalination plants under proposed amendments to the California Ocean Plan are generally satisfied. Only the strictest proposed standard (a 36.5 ppt numeric limit) is slightly exceeded in a small localized area of surfzone seabed amounting to 1.44 acres. The less severe 10% over background standard

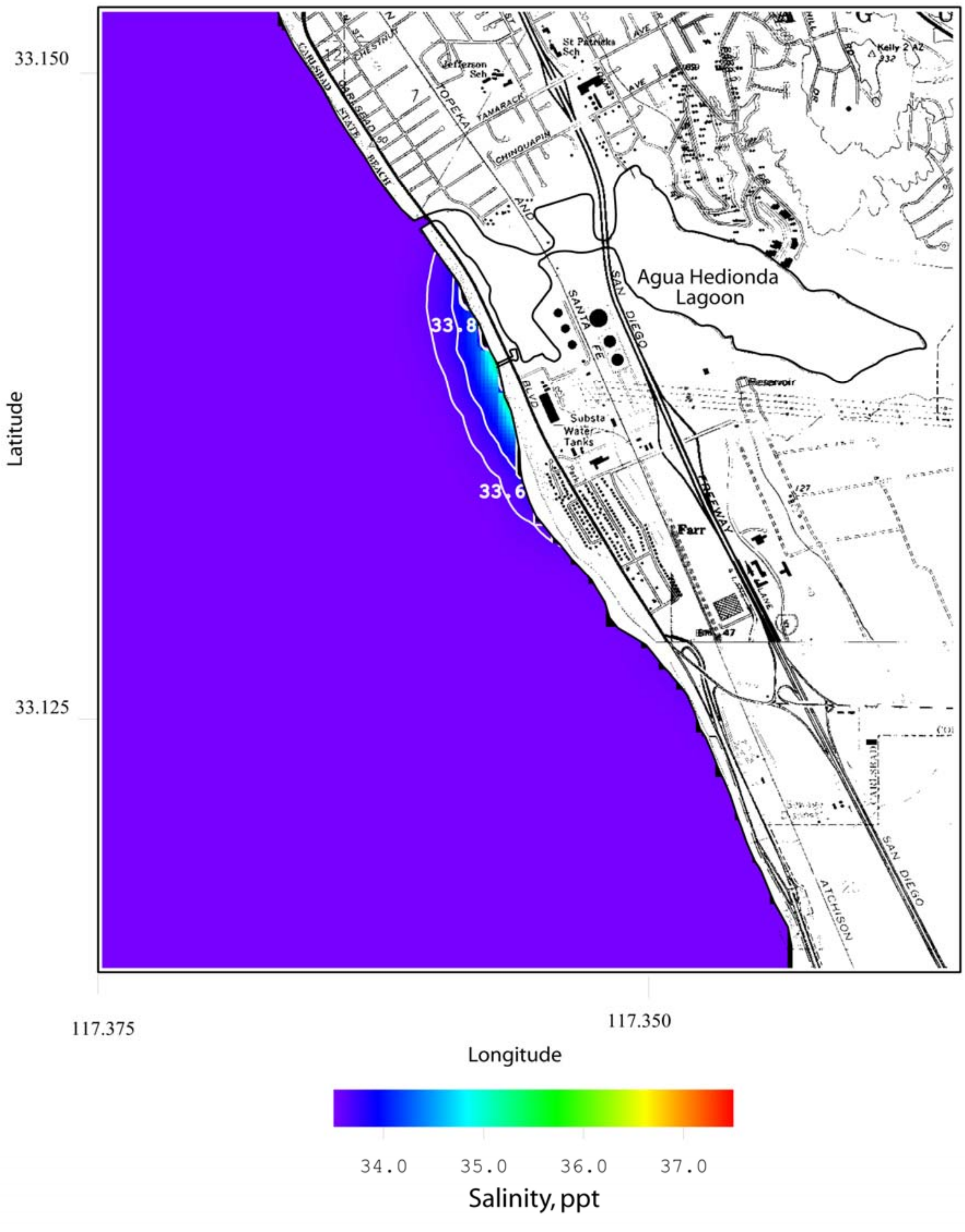

Figure 7. Daily average of depth-averaged salinity due to concentrated seawater discharge from closed-cycle cooling system at Encina Generating Station. Plant inflow rate = 3,000 gpm, R.O. production rate = 343 gpm. Combined discharge = 2,657 gpm @ 37.85 ppt end-of-pipe. Ambient ocean salinity = 33.51 ppt, ocean conditions, 17 August 1992, representing worst case.

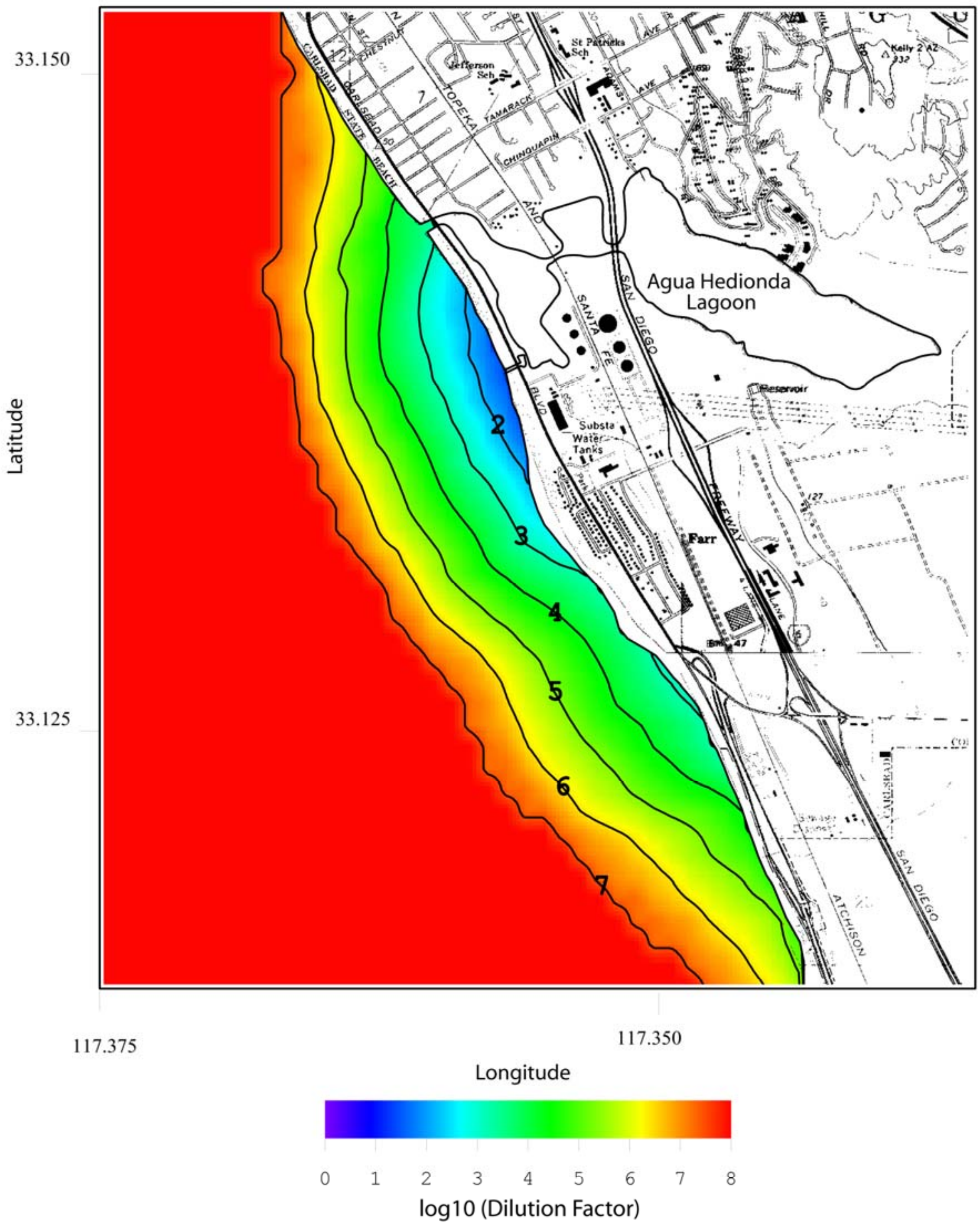

Figure 8. Daily average of depth-averaged dilution due to concentrated seawater discharge from closed-cycle cooling system at Encina Generating Station. Plant inflow rate = 3,000 gpm, R.O. production rate = 343 gpm. Combined discharge = 2,657 gpm @ 37.85 ppt end-of-pipe. Ambient ocean salinity = 33.51 ppt, ocean conditions, 17 August 1992, representing worst case.

being proposed for the California Ocean Plan is satisfied everywhere in worst-case outcomes. Existing NPDES discharge permit limits on minimum dilution presently applied to thermal effluent are satisfied everywhere by the brine discharge along the perimeter of the ZID under worst-case conditions.

B) Average Case Hyper-Saline Effects and Dilution Rates: Figure 9 shows the salinity field on the sea floor resulting from brine dispersion from the closed-cycle cooling system under average case mixing conditions (as represented by proxy records from 23 May 1994). The salinity field is averaged over a 24 hour period. Maximum bottom salinities reach 36.5 ppt over an area of 0.31 acres of the sub-tidal beach face and sandy bottom nearshore habitat immediately seaward of the discharge jetties. Nowhere is any benthic habitat subjected to salinity elevated 10 % above ambient ocean conditions. Only 7.3 acres in the inner portion of the ZID are subjected to bottom salinity that exceeds the upper limit of natural variability (34.44 ppt). Maximum bottom salinity found anywhere along the boundaries of the ZID is 33.66 ppt, occurring at the shoreline 1000 ft south of the discharge channel. Bottom dilution factors for the raw concentrate in Figure 10 indicate that minimum dilution on the sea bed at the south end of the ZID at the shoreline is 162 to 1 under average mixing conditions. Therefore in-place NPDES discharge permit limits on minimum dilution are satisfied for the brine effluent by a wide margin under average conditions.

Maximum salinity in the water column for average case conditions is found in Figure 11 to be 35.2 ppt in the surfzone immediately seaward of the discharge jetty. No pelagic area is subject to brine salinity in excess of any of discharge limits being proposed under amendments to the California Ocean Plan. Maximum water column salinity under average conditions at the edge of the ZID is 33.6 ppt,

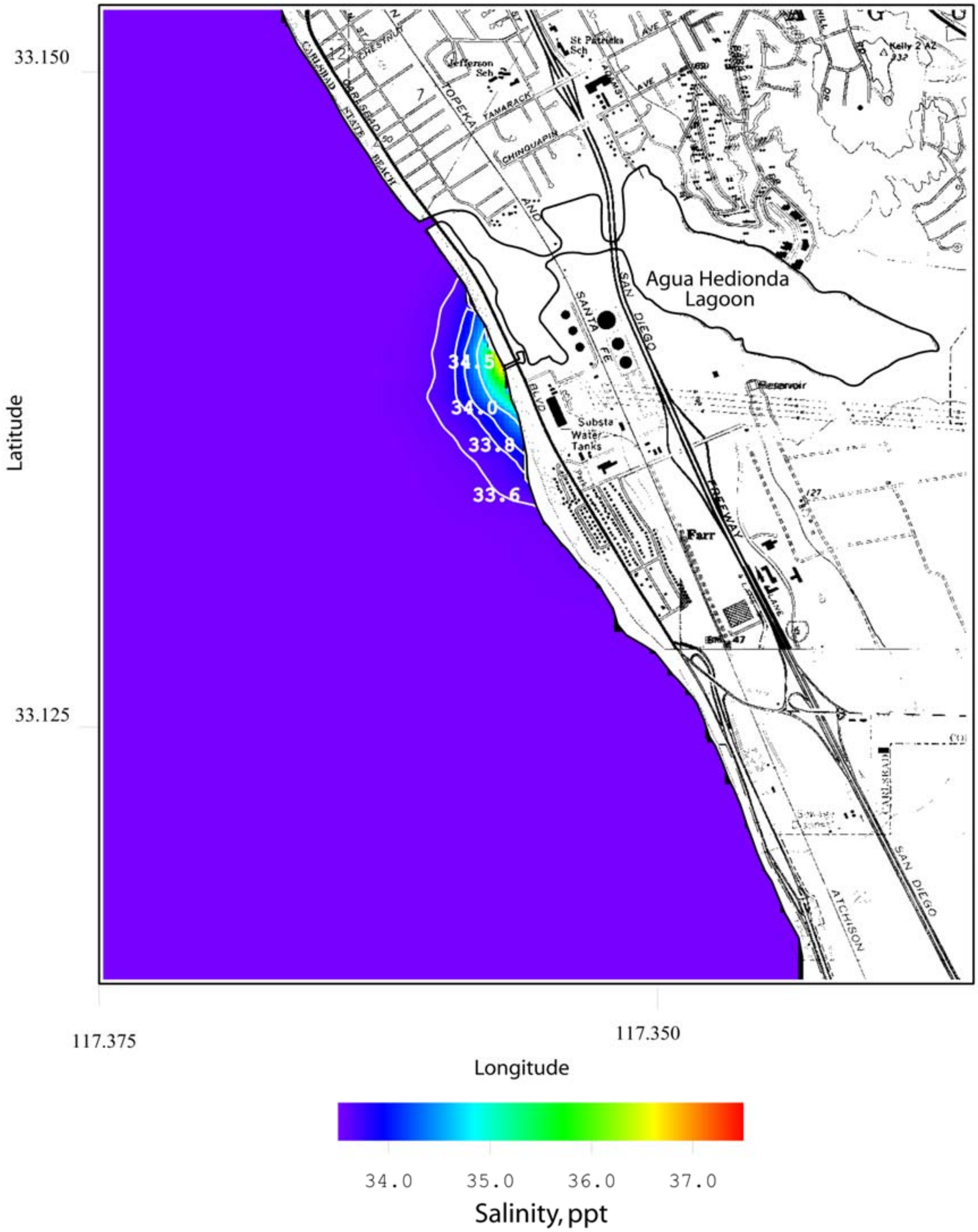

Figure 9. Daily average of bottom salinity due to concentrated seawater discharge from closed-cycle cooling system at Encina Generating Station. Plant inflow rate = 3,000 gpm, R.O. production rate = 343 gpm. Combined discharge = 2,657 gpm @ 37.85 ppt end-of-pipe. Ambient ocean salinity = 33.52 ppt, ocean conditions, 23 May 1994, representing average case.

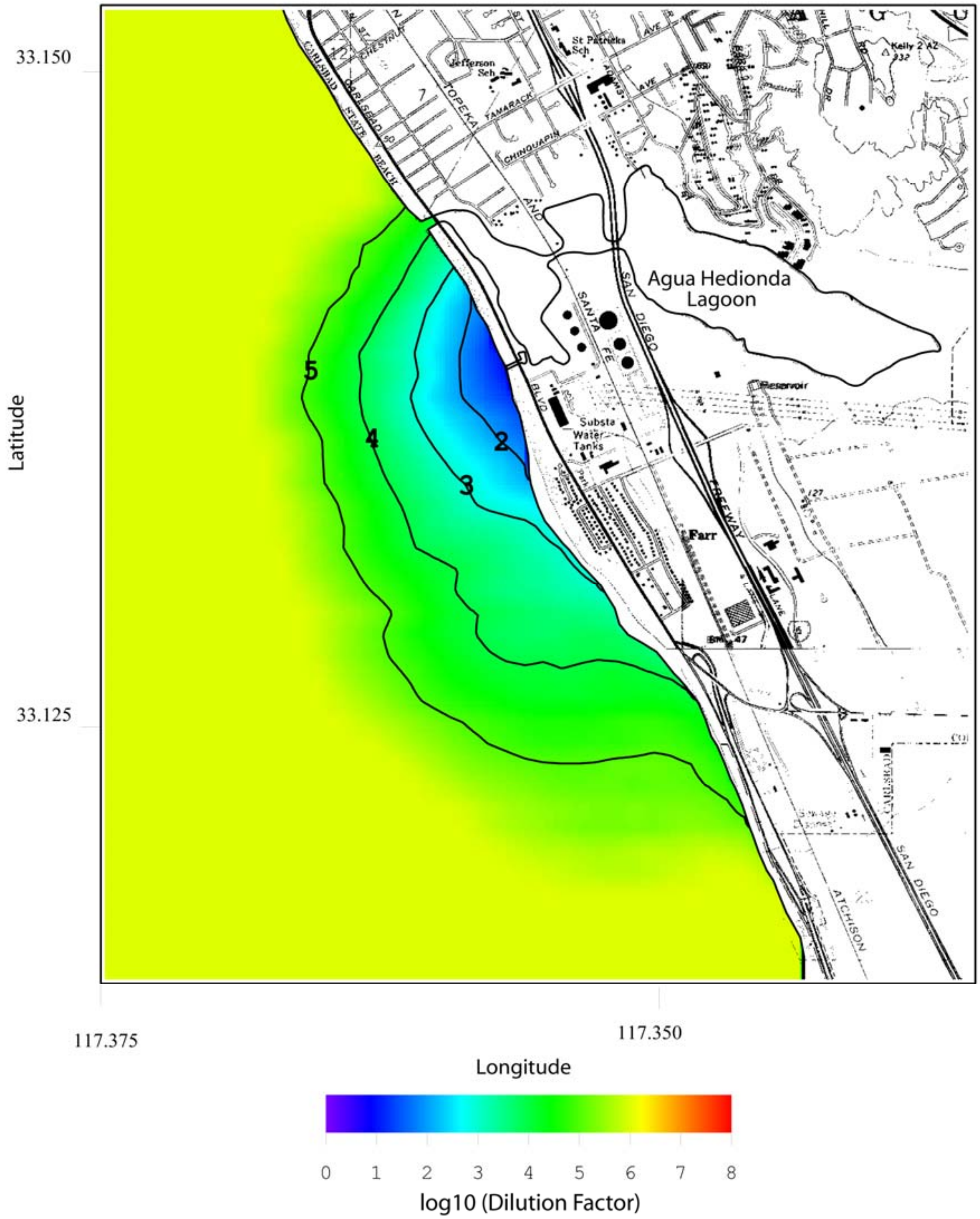

Figure 10. Daily average of bottom dilution due to concentrated seawater discharge from closed-cycle cooling system at Encina Generating Station. Plant inflow rate = 3,000 gpm, R.O. production rate = 343 gpm. Combined discharge = 2,657 gpm @ 37.85 ppt end-of-pipe. Ambient ocean salinity = 33.52 ppt, ocean conditions, 23 May 1994, representing average case.

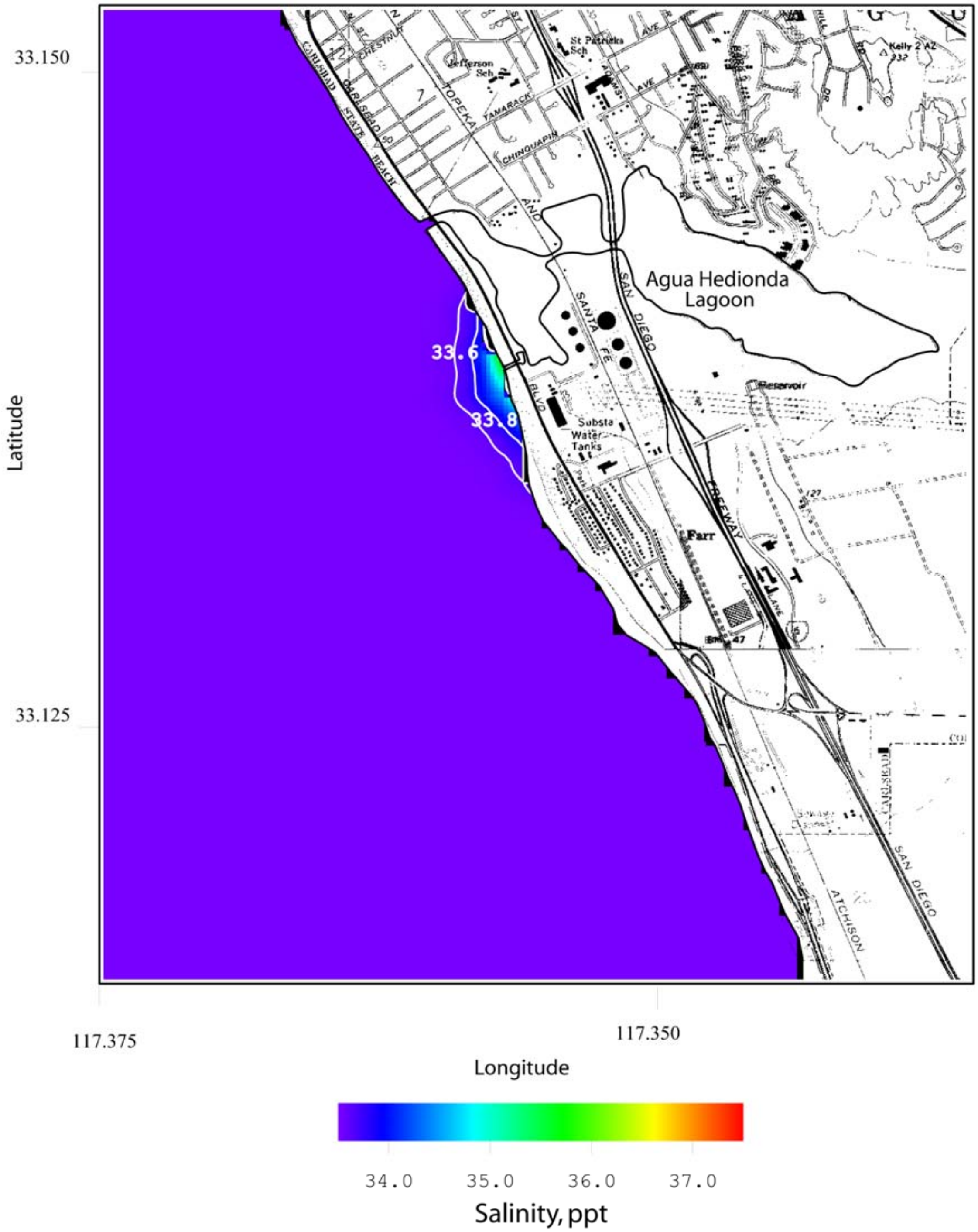

Figure 11. Daily average of depth-averaged salinity due to concentrated seawater discharge from closed-cycle cooling system at Encina Generating Station. Plant inflow rate = 3,000 gpm, R.O. production rate = 343 gpm. Combined discharge = 2,657 gpm @ 37.85 ppt end-of-pipe. Ambient ocean salinity = 33.52 ppt, ocean conditions, 23 May 1994, representing average case.

found in the surf zone at the shoreline 1000 ft south of the discharge channel. Figure 12 shows that in the water column, where 316(A) dilution standards apply, minimum dilutions are 285 to 1 at the south end of the ZID.

In summary, brine dispersion under average case conditions results in no instances of elevated salinity outside the ZID that exceed the range of natural seasonal variability. Inside the ZID only 7.3 acres are subjected to bottom salinity that exceeds the upper limit of natural variability, and only 0.31 acres of the sub-tidal beach face and sandy bottom nearshore habitat immediately seaward of the discharge jetties would experience salinity that would exceed (slightly) the strictest proposed discharge limit to the California Ocean Plan (36.5 ppt discharge limit). No pelagic area is subject to brine salinity in excess of any of discharge limits being proposed under amendments to the California Ocean Plan. Existing NPDES discharge permit limits on minimum dilution presently applied to thermal effluent are satisfied everywhere by a wide margin for brine discharges under average conditions.

C) Long-Term Salinity and Dilution Statistics: Here we solve the brine dilution problem utilizing all 7,523 possible combinations of fluid forcing and water mass properties from the 1980-2000 period of record (Figures 1& 2). Among these 7,523 dispersion and dilution solutions are the worst-case scenarios shown in Figures 5- 8, along with all the other more common outcomes. From this large ensemble of dilution calculations we are able to construct probability density functions that quantify both the extremes and the means of the envelope of possible outcomes. The purpose of this long-term continuous modeling exercise was to both establish the viability of the event analysis presented in the preceding sections, as well as to explore the persistence of all the intermediate outcomes occurring

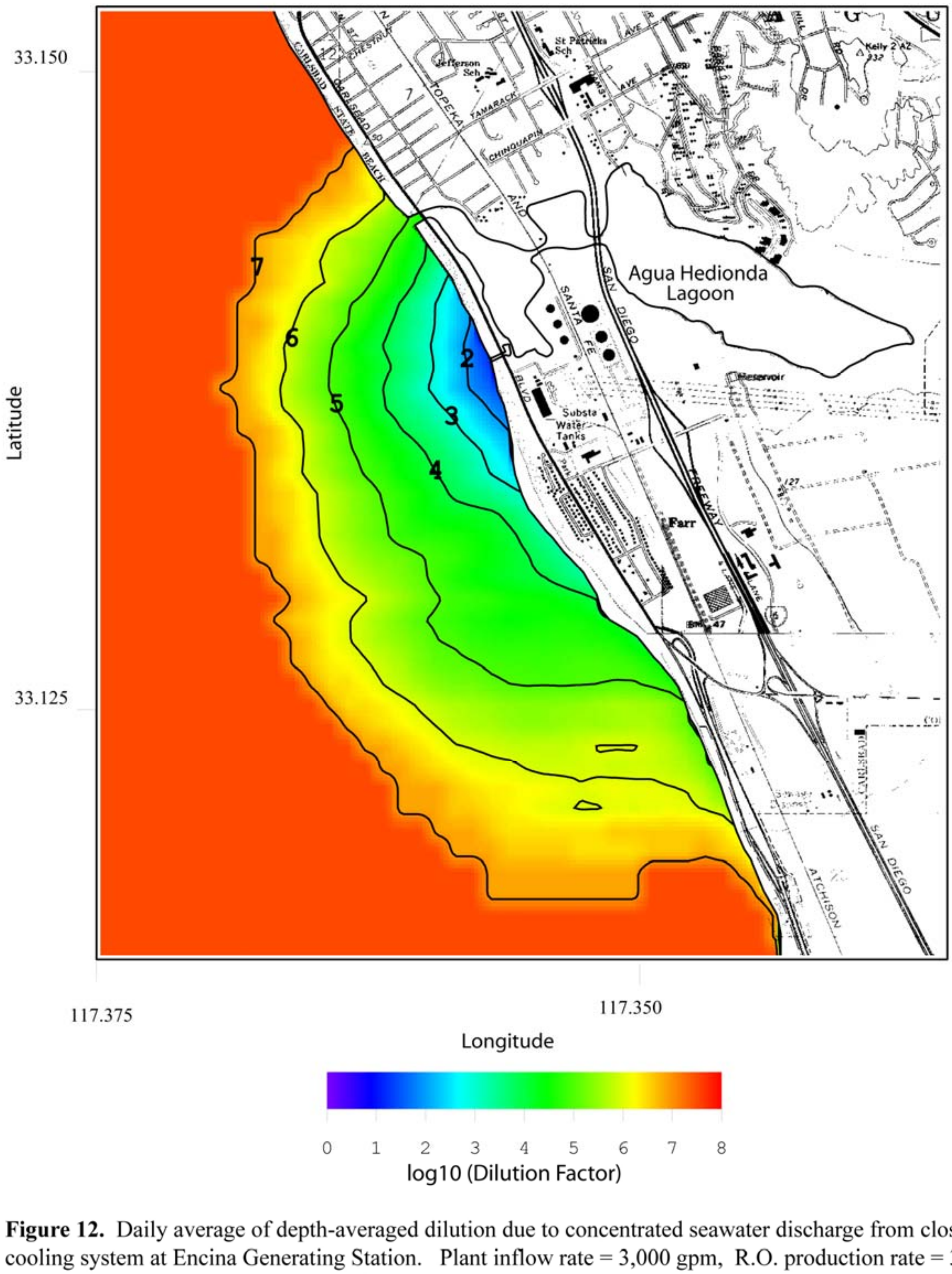

Figure 12. Daily average of depth-averaged dilution due to concentrated seawater discharge from closed-cycle cooling system at Encina Generating Station. Plant inflow rate = 3,000 gpm, R.O. production rate = 343 gpm. Combined discharge = 2,657 gpm @ 37.85 ppt end-of-pipe. Ambient ocean salinity = 33.52 ppt, ocean conditions, 23 May 1994, representing average case.

between worst and average cases. Our focus here is what goes on inside and along the perimeter of the ZID, as these are the areas of the solution space where the highest salinity and lowest dilution were found by the preceding event analyses.

The historic boundary conditions from Figure 1 and the forcing functions from Figure 2 were sequentially input to the model, producing daily solutions for the brine plume. This input stream of variables produced 7,523 daily solutions for the salinity and dilution fields. A numerical scan of each of these daily solutions searched for the maximum salinity and minimum dilution anywhere on the seabed or in the water column at distances of 500 and 1000 ft from the head of the discharge jetties. For each of these search radii, the largest salinity and smallest dilution found in any direction away from the discharge channel was entered into a histogram bin for ultimately assembling a probability density function and cumulative probability from the 7,523 outcomes. Histogram bins were constructed at salinity increments of 0.05 ppt and dilution factor increments of 5:1. The bins were summed to calculate the cumulative probability distribution.

Figure 13 shows that the median salinity in the middle of the ZID was 34.2 ppt, which is a value that occurs naturally (on occasions) in the coastal ocean off Carlsbad. The maximum salinity in the middle of the ZID was found to be 35.8 ppt, which is well within the salinity tolerance of the keystone species targeted by the certified EIR (2005) and less the 36.5 ppt numeric discharge limit being proposed as an amendment to the California Ocean Plan. The long term model simulations prove there is a 90% probability that maximum salinity levels in the middle of the ZID will not exceed 34.72 ppt. At the outer edge of the ZID in Figure 14, median salinity is 33.66 ppt, or within 0.14 ppt of average ocean salinity off Carlsbad; and the maximum salinity is only 34.5 ppt, roughly equivalent to the

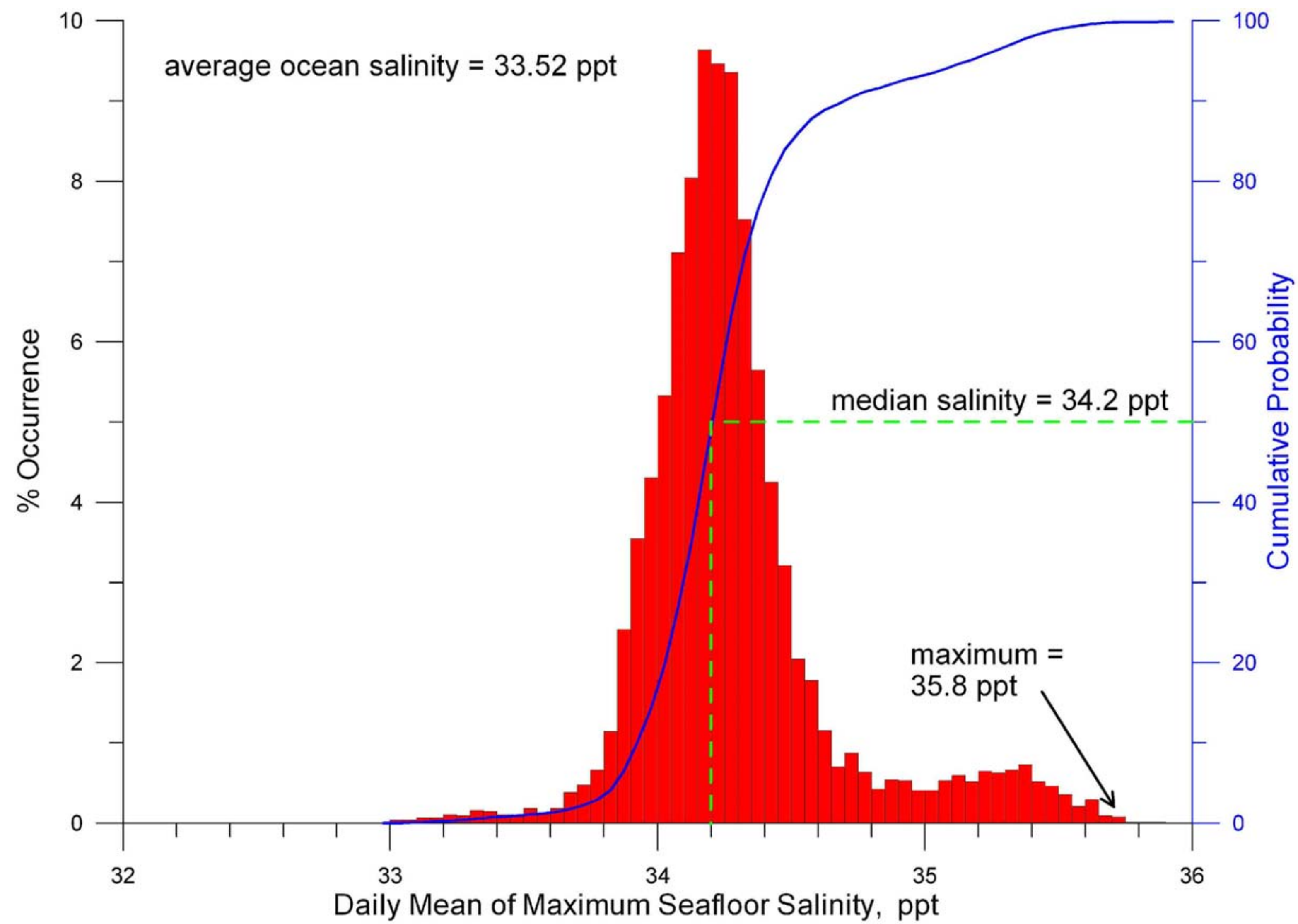

Figure 13. Histogram of maximum seafloor salinity at 500 ft from the discharge (middle of zone of initial dilution, ZID). Model results based on concentrated seawater discharge from closed-cycle cooling system, plant inflow rate = 3,000 gpm, R.O. production rate = 343 gpm, combined discharge = 2,657 gpm @ 37.85 ppt, end of pipe, applied to ocean mixing, and water mass properties, 1980-2000. Cumulative probability shown in blue.

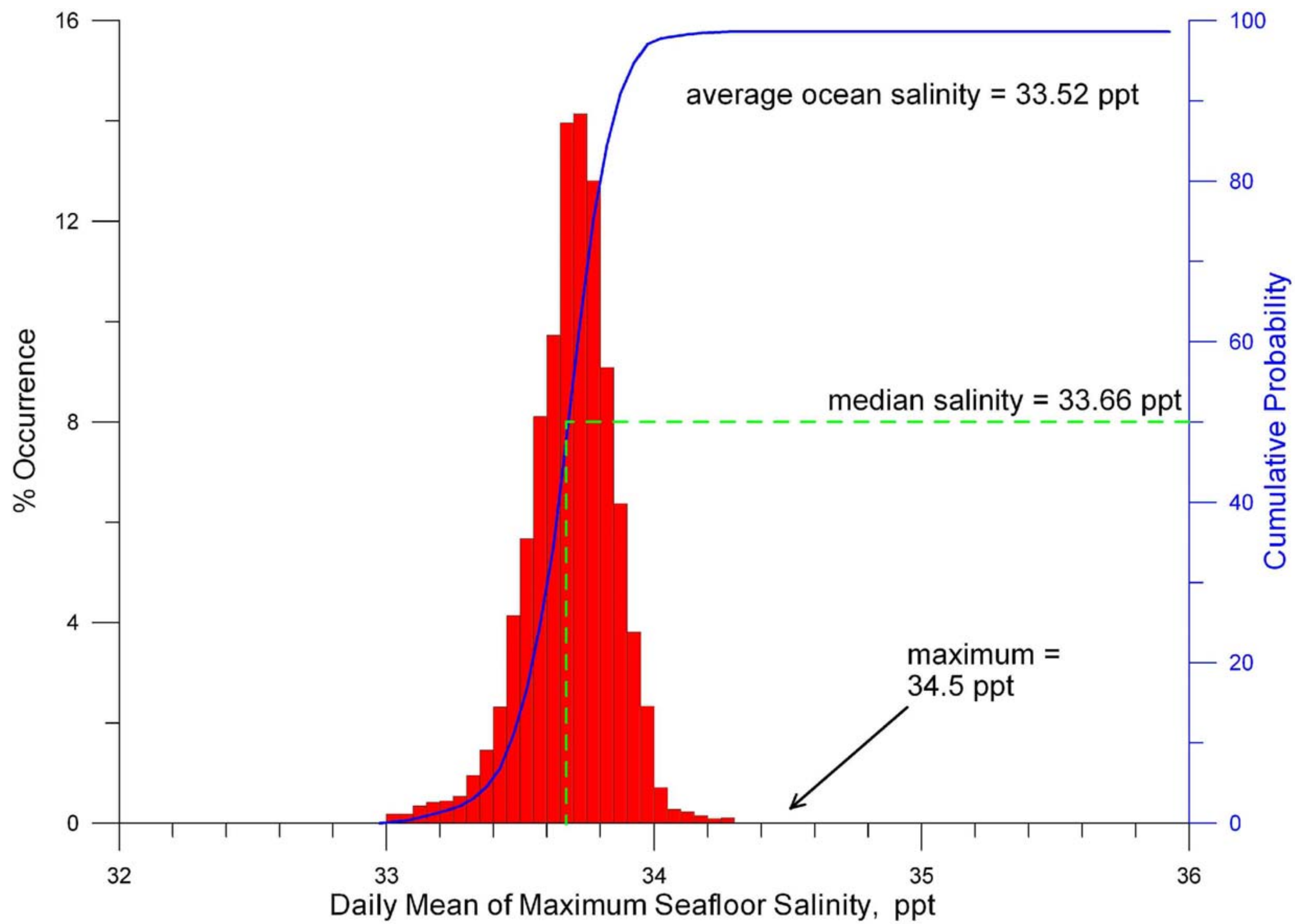

Figure 14. Histogram of maximum seafloor salinity at 1000 ft from the discharge (outer edge of zone of initial dilution, ZID). Model results based on concentrated seawater discharge from closed-cycle cooling system, plant inflow rate = 3,000 gpm, R.O. production rate = 343 gpm, combined discharge = 2,657 gpm @ 37.85 ppt, end of pipe, applied to ocean mixing, and water mass properties, 1980-2000. Cumulative probability shown in blue.

maximum naturally occurring value in these coastal waters. Over this representative 20.5 year long period of record, there is a 90% probability that maximum salinity on the edge of the ZID will not exceed 33.87 ppt.

Dilution factors of the brine discharged from the closed-cycle cooling operations are considerably better than what was found for the Carlsbad Desalination Project. In the middle of the ZID (Figure 15) minimum dilution was found to have a median value of 33.5 to 1. Ninety percent of the time, the minimum dilution would exceed 17.5 to 1, even greater than the 15 to 1 required by the NPDES permit at the edge of the ZID, another 500 ft further away from the discharge jetties. The smallest minimum dilution in the middle of the ZID was found to be 9.9 to 1 for the worst-case mixing event (with a 0.013% probability of occurrence). This does not represent a violation of the NPDES permit standard for the thermal effluent because it occurs inside the ZID. The point to be acknowledged here is that the brine dilution inside the ZID remains impressively large. At the outer edge of the ZID (Figure 16) minimum dilution climbs to a median value of 162 to 1, with the lowest dilution factor here being no less than 23.2 to 1 for the worst-case mixing scenario. This result does not stand out in Figure 16 because worst-case is so rare, but it is note worthy that the next most impaired dilution events still produce minimum dilutions on the order of 50 to 1, comfortably above the NPDES limit of 15 to 1 set on thermal effluent. Ninety percent of the time, minimum dilution of brine at the edge of the ZID exceeds 98 to 1.

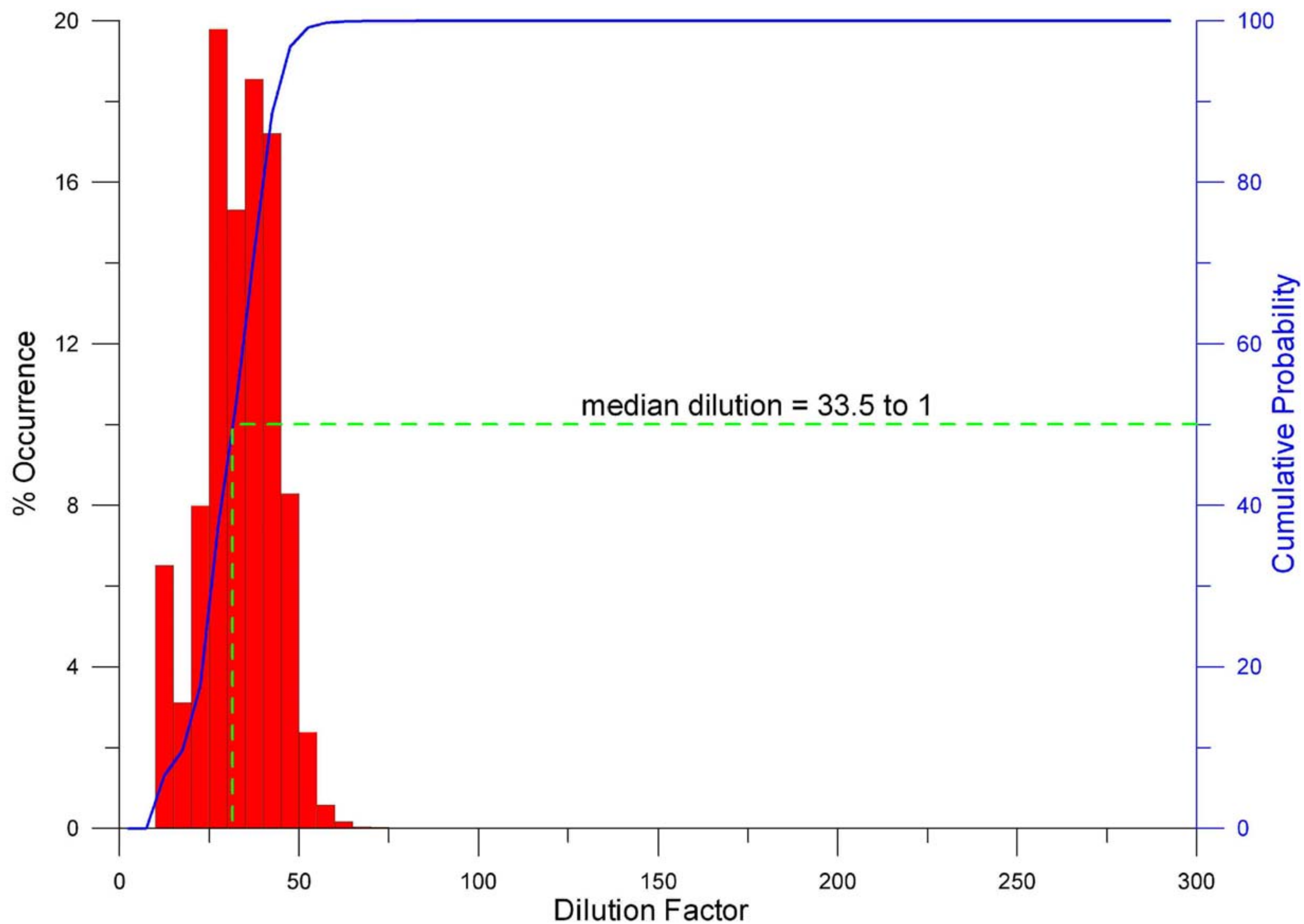

Figure 15. Histogram of minimum dilution of brine at 500 ft from the discharge (middle of zone of initial dilution, ZID). Model results based on concentrated seawater discharge from closed-cycle cooling system, plant inflow rate = 3,000 gpm, R.O. production rate = 343 gpm, combined discharge = 2,657 gpm @ 37.85 ppt, end of pipe, applied to ocean mixing, and water mass properties, 1980-2000. Cumulative probability shown in blue.

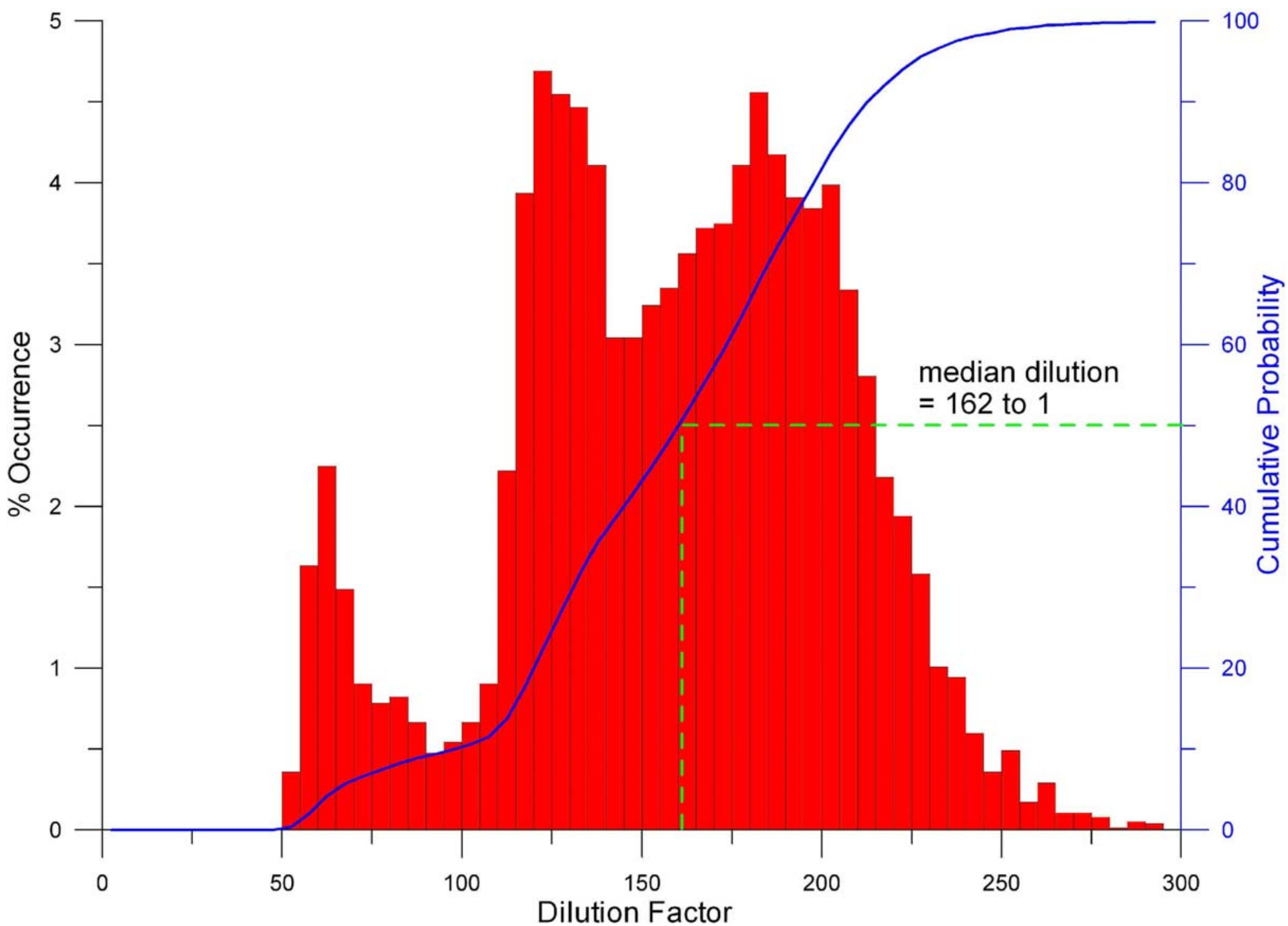

Figure 16. Histogram of minimum dilution of brine at 1000 ft from the discharge (outer edge of zone of initial dilution, ZID). Model results based on concentrated seawater discharge from closed-cycle cooling system, plant inflow rate = 3,000 gpm, R.O. production rate = 343 gpm, combined discharge = 2,657 gpm @ 37.85 ppt, end of pipe, applied to ocean mixing, and water mass properties, 1980-2000. Cumulative probability shown in blue.

4) Summary and Conclusions:

This study invokes a well-tested and peer-reviewed hydrodynamic model (SEDXPORT) to assess dispersion and dilution of concentrated sea water (brine) arising from the production of make-up water for a closed-cycle cooling system at Encina Generating Station. The make-up water would be produced by a small reverse osmosis desalination system that would draw source water off the existing sea water circulation system at Encina. The source water intake flow will be 3,000 gpm. The make-up water desalination system will draw 848 gpm off this source water stream and will produce 505 gpm of brine by-product. The concentration factor of the 505 gpm of brine is only 1.679, as compared to a concentration factor of 2.0 for the Carlsbad Desalination Project that was issued a certified EIR, (referred to as EIR, 2005, herein). For an average ambient ocean salinity of 33.52 ppt, the salinity of the brine reject from the closed-cycle cooling system will average 56.29 ppt (as compared to 67.04 ppt for brine produced by the Carlsbad Desalination Project). The brine from closed-cycle cooling will be mixed with a residual source water throughput of 2,152 gpm, producing a combined discharge of 2,657 gpm through the jetty fortified discharge channel. The combined discharge in the discharge channel will have an average salinity of 37.84 ppt.

Even for the worst-case outcome (an event with a probability of 0.013% occurrence), the hydrodynamic model analysis finds that hyper-salinity impacts and suppressed dilution rates arising from brine discharge by the closed-cycle cooling system are benign. Nowhere in the nearshore environment do salinity values in the brine plume approach the threshold (38-40 ppt) for hyper-salinity tolerance of local marine organisms. Kelp beds and tide pools to the south of the Encina discharge will experience salinity elevations from brine plume impingement that are no greater than what occurs inter-annually under natural seasonal fluctuations of ocean salinity. The strictest standards contemplated for discharges from ocean desalination plants under proposed amendments to the California Ocean Plan are generally satisfied even in the worst-case assessment. Only the strictest proposed standard (a 36.5 ppt numeric limit) is slightly exceeded in a small localized area of surfzone seabed amounting to 1.44 acres. The less severe 10% over background standard being proposed for the California Ocean Plan is satisfied everywhere in worst-case. Existing NPDES discharge permit limits on minimum dilution presently applied to thermal effluent are also satisfied everywhere by the brine discharge along the perimeter of the zone of initial dilution (ZID) under worst-case conditions.

Brine dispersion under average case conditions results in no instances of elevated salinity outside the ZID that exceed the range of natural seasonal variability. Inside the ZID only 7.3 acres are subjected to bottom salinity that exceeds the upper limit of natural variability, and only 0.31 acres of the sub-tidal beach face and sandy bottom nearshore habitat immediately seaward of the discharge jetties would experience salinity that would exceed (slightly) the strictest proposed discharge limit to the California Ocean Plan (36.5 ppt discharge limit). No pelagic area is subject to brine salinity in excess of any of the discharge limits being proposed under amendments to the California Ocean Plan. Existing NPDES discharge permit limits on minimum dilution presently applied to thermal effluent are satisfied everywhere by a wide margin for brine discharges under average conditions.

In addition to the worst-case and average case scenarios, as many as 7,523 modeled cases were evaluated using ocean water mass properties and mixing conditions from the same 20.5-year long period of record as used in the certified

EIR (2005). From these large numbers of solutions, high resolution histograms (probability density functions) were constructed of salinity and dilution factor. On average, the long term simulations show that only 0.31 acres of the sub-tidal beach face and sandy bottom nearshore habitat immediately seaward of the discharge jetties would experience salinity that would exceed (slightly) the 36.5 ppt discharge limit proposed as an amendment to the California Ocean Plan. Further offshore, in the middle of the ZID, the long term median salinity was found to be 34.2 ppt, which is a value in the range of naturally occurring salinity in the coastal ocean off Carlsbad. The maximum salinity in the middle of the ZID was found to be 35.8 ppt, which is well within the salinity tolerance of the local keystone species. At the outer edge of the ZID, median salinity is within 0.14 ppt of average ocean salinity off Carlsbad, and the maximum salinity is only 34.5 ppt, roughly equivalent to the maximum naturally occurring value in these coastal waters. Over this representative 20.5 year long period of record, there is a 90% probability that maximum salinity on the edge of the ZID will not exceed 33.87 ppt, well within in the range of natural seasonal variability of ambient ocean salinity for this coastal region.

Dilution factors of the brine discharged from closed-cycle cooling operations are considerably better than what was found for the Carlsbad Desalination Project. In the middle of the ZID, minimum dilution was typically 33.5 to 1, and at the outer edge of the ZID minimum dilution climbs to a median value of 162 to 1, with worst-case here being no less than 23.2 to 1. In 90% of the model runs, minimum dilution of brine at the edge of the ZID exceeds 98 to 1.

We conclude that closed-cycle cooling operations at Encina will produce brine plume effects that are well below what could be tolerated by indigenous marine organisms, and within the strictest standards being contemplated through amendments to the California Ocean Plan. In addition minimum dilution levels of the brine discharge will also satisfy present NPDES discharge limits permitted for the Encina thermal effluent.

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APPENDIX A: 2007 Proposed Desalination Amendments to the California Ocean Plan

Scoping Document

Amendment of

The Water Quality Control Plan

Ocean Waters of California

June 2007

Water Boards

For information, please contact:
Shakoora Azimi-Gaylon
State Water Resources Control Board
Division of Water Quality
1001 I Street, Floor 15
Sacramento, CA 95814
(916) 341-5508
Email: sagaylon@waterboards.ca.gov

ANALYSIS

Alternative 1: No Action. Do not change the existing Ocean Plan: As noted above, the current Ocean Plan is outdated and is not protective of beneficial uses. If the Ocean Plan is not amended it will not be consistent with water quality laws governing vessel waste discharges. Inconsistency between the plan and state and federal laws will pose substantial difficulties for both dischargers and water quality regulators in interpretation, implementation, and compliance with these regulatory requirements.

Alternative 2: Amend the Ocean Plan to delete the exclusion for vessel wastes and to reflect current state and federal requirements governing vessel wastes. This option provides a much greater degree of protection for beneficial uses than is currently required in the Ocean Plan. This approach is consistent with the statutes and would ameliorate inconsistencies between the Ocean Plan and state and federal laws. This would aid both dischargers and water quality regulators in interpretation, implementation, and compliance, and thus ensure that the Ocean Plan's provisions facilitate discharger compliance. Furthermore, this option would not be disruptive to the State's marine economy.

Alternative 3: Prohibit all waste discharges from all vessels, regardless of size or type (e.g., commercial, private recreational, barges, military vessels, etc.), with the exception of passive discharges from hulls. This alternative would be difficult if not impossible for the regulated community to fully comply with due to excessive costs, absence of suitable replacement vessels, or technological retrofit solutions designed to prevent the discharge of the various waste streams described above.

For example, container vessels are generally designed to carefully manage ballast water loads to maintain stability while the vessel is being off-loaded, on-loaded, and while underway (e.g., due to swells and adverse weather conditions at sea). Commercial vessels generally have a useful life of 20-30 years, and each vessel costs millions of dollars to replace.

PRELIMINARY RECOMMENDATION

Alternative 2: Amend the Ocean Plan to delete the exclusion for vessel wastes and to reflect current state and federal requirements governing vessel wastes.

Issue 10. DESALINATION FACILITIES AND BRINE DISPOSAL

PROBLEM

Currently, there is no Ocean Plan objective that applies specifically to brine waste discharges from desalination plants or groundwater desalination facilities. Untreated brine waste discharges into the ocean have different physical and chemical properties than either wastewater treatment plant freshwater effluent or brine waste-freshwater mixtures. Brine wastes discharged into the ocean may form a dense plume that tends to settle to the ocean floor prior to eventual mixing with ocean water. The resulting effect of exposing benthic marine life to a dense, highly saline plume is not well understood, but staff is concerned about potential harmful effects.

Average ocean salinity worldwide is about 35 parts per thousand, or grams per kilogram (g/kg). The coastal marine waters of California generally have lower salinity than open ocean waters, due to runoff. 33.5 g/kg may be used as an approximate ocean salinity for California near coastal marine waters.

Preliminary studies on the effect of increased salinity to marine species were conducted by the Southern California Coastal Water Research Project (SCCWRP) in 1992. Percent normal development of purple sea urchin (*Strongylocentrotus purpuratus*) embryos were reduced 56 to 75 percent in salinities of 36.5 g/kg.

ALTERNATIVES

1. No Action. Do not change the existing Ocean Plan.
2. Establish a narrative water quality objective where salinity should not exceed a certain percentage of natural background.
3. Establish a numeric water quality objective.

ANALYSIS

Alternative 1: No Action. Do not change the existing Ocean Plan. This alternative would keep the Ocean Plan as it currently exists and it would not provide guidance for brine waste discharges necessary for protection of beneficial uses.

Alternative 2: Establish a narrative water quality objective where salinity should not exceed a certain percentage of natural background. Additional toxicological studies would need to be reviewed by staff from the scientific literature to firmly determine a percentage of natural background that is protective of beneficial uses. This option would provide protection for benthic marine organisms and other beneficial uses while also providing flexibility to Regional Water Boards for addressing the natural background, or where a site-specific desalination water quality objective is needed.

Alternative 3: Establish a numeric water quality objective. This alternative would set an absolute upper limit on saline discharges. A preliminary numeric water quality objective of 36.5 g/kg may be justified from the SCCWRP 1992 sea urchin embryo study. Additional toxicological studies would need to be reviewed by staff from the scientific literature. This option may be too prescriptive for Regional Water Boards in addressing the natural background (different in different portions of the State's ocean waters).

PRELIMINARY RECOMMENDATION

Alternative 2: Establish a narrative water quality objective where salinity should not exceed a certain percentage of natural background.

Issue 13. REVIEW TABLE B WATER QUALITY OBJECTIVES

PROBLEM

Staff considered the Table B objectives in order to identify any obvious deficiencies, and has determined that the radioactivity objective is not adequate. The Table B marine aquatic life objective for radioactivity in the 2005 Ocean Plan states: "Not to exceed limits specified in Title 17, Division 1, Chapter 5, Subchapter 4, Group 3, Article 3, Section 30253 of the California Code of Regulations. Reference to Section 30253 is prospective, including future changes to any incorporated provisions of federal law, as the changes take effect." However the citation in Title 17 refers to human exposure (through occupational exposure) and references federal regulations on the same subject. The referenced section may have originally contained the radioactivity criteria for drinking water, which has since been moved to Title 22.

The current objective therefore may not provide protection for aquatic life, is instead applicable to human health, and is difficult to follow. A new objective is needed.

ALTERNATIVES

1. No Action. Do not amend the numeric radioactivity objective.
2. Adopt human health based objectives.
3. Adopt water quality objectives for aquatic life based on the standards proposed by the U.S. Department of Energy in 10 CFR Part 834.
4. Review literature and independently develop standards.

ANALYSIS

Alternative 1: No Action. Do not amend the numeric radioactivity objective. This alternative would keep the Ocean Plan as it currently exists and it would perpetuate the inadequate and confusing nature of this objective.

Alternative 2: Adopt human health based objectives. These are readily available in both federal and state regulatory standards. State and federal drinking water regulations have both gross radiation and specific isotope standards. USEPA approved (40 CFR) test methods exist for these parameters and the standards are in units applicable to water analysis. However, these existing regulations do

EPA FORM 1

Please print or type in the unshaded areas only. Form Approved. OMB No. 2040-0086.

FORM 1 GENERAL

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY
GENERAL INFORMATION
Consolidated Permits Program
(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER

S		T/A	C
F			D
1	2 — 13	14	15

LABEL ITEMS	
I. EPA I.D. NUMBER	PLEASE PLACE LABEL IN THIS SPACE
III. FACILITY NAME	
V. FACILITY MAILING ADDRESS	
VI. FACILITY LOCATION	

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill-in area(s) below. If the label is complete and correct, you need not complete Items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of **bold-faced terms**.

SPECIFIC QUESTIONS	YES	NO	FORM ATTACHED
A. Is this facility a **publicly owned treatment works** which results in a **discharge** to **waters of the U.S.**? (FORM 2A)	(16)	X (17)	(18)
B. Does or will this facility *(either existing or proposed)* include a **concentrated animal feeding operation** or **aquatic animal production facility** which results in a **discharge** to **waters of the U.S.**? (FORM 2B)	(19)	X (20)	(21)
C. Is this a facility which currently results in **discharges** to **waters of the U.S.** other than those described in A or B above? (FORM 2C)	(22)	X (23)	(24)
D. Is this a proposed facility *(other than those described in A or B above)* which will result in a **discharge** to **waters of the U.S.**? (FORM 2D)	X (25)	(26)	(27)
E. Does or will this facility treat, store, or dispose of **hazardous wastes**? (FORM 3)	(28)	X (29)	(30)
F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)	(31)	X (32)	(33)
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)	(34)	X (35)	(36)
H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)	(37)	X (38)	(39)
I. Is this facility a proposed **stationary source** which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)	(40)	X (41)	(42)
J. Is this facility a proposed **stationary source** which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment area**? (FORM 5)	(43)	X (44)	(45)

III. NAME OF FACILITY

C 1 SKIP (15, 16 – 29, 30–69): CARLSBAD ENERGY CENTER PROJECT

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*	B. PHONE *(area code & no.)*
C 2: HENIKA, SHEILA, PLANT ENGINEER (15, 16–45)	(760) 268-4018 (46–48, 49–51, 52–55)

V. FACILTY MAILING ADDRESS

A. STREET OR P.O. BOX

C 3: 4600 CARLSBAD BOULEVARD (15, 16–45)

B. CITY OR TOWN	C. STATE	D. ZIP CODE
C 4: CARLSBAD (15, 16–40)	CA (41–42)	92008 (47–51)

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER

C 5: 4600 CARLSBAD BOULEVARD (15, 16–45)

B. COUNTY NAME

SAN DIEGO (46–70)

C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE *(if known)*
C 6: CARLSBAD (15, 16–40)	CA (41–42)	92008 (47–51)	(52–54)

CONTINUED FROM THE FRONT

VII. SIC CODES *(4-digit, in order of priority)*

A. FIRST		B. SECOND	
7 4911	*(specify)* ELECTRIC POWER GENERATION	7	*(specify)* N/A

C. THIRD		D. FOURTH	
7	*(specify)* N/A	7	*(specify)* N/A

VIII. OPERATOR INFORMATION

A. NAME: 8 NRG CABRILLO POWER OPERATIONS INC

B. Is the name listed in Item VIII-A also the owner? ☐ YES ☑ NO

C. STATUS OF OPERATOR *(Enter the appropriate letter into the answer box: if "Other," specify.)*

F = FEDERAL
S = STATE
P = PRIVATE
M = PUBLIC *(other than federal or state)*
O = OTHER *(specify)*

Answer: P *(specify)*

D. PHONE *(area code & no.)*: A (760) 268-4018

E. STREET OR P.O. BOX: 4600 CARLSBAD BLVD

F. CITY OR TOWN	G. STATE	H. ZIP CODE	IX. INDIAN LAND
B CARLSBAD	CA	92008	Is the facility located on Indian lands? ☐ YES ☑ NO

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES *(Discharges to Surface Water)*: 9 N N/A	D. PSD *(Air Emissions from Proposed Sources)*: 9 P N/A
B. UIC *(Underground Injection of Fluids)*: 9 U N/A	E. OTHER *(specify)*: 9 N/A *(specify)*
C. RCRA *(Hazardous Wastes)*: 9 R N/A	E. OTHER *(specify)*: 9 *(specify)*

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers, and other surface water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS *(provide a brief description)*

CONVERSION OF CHEMICAL ENERGY INTO ELECTRICAL ENERGY. In 2007 the Carlsbad Energy Center LLC (Applicant) prepared and submitted an Application for Certification (AFC) for the Carlsbad Energy Center Project (CECP) in accordance with the California Energy Commission's (CEC) Power Plant Site Certification Regulations.The CECP project is located on approximately 23 acres of the existing Encina Power Station (WDR ORDER NO. R9-2006-0043, NPDES NO. CA0001350).The Applicant proposes to develop a natural gas-fired generating facility . The CECP will utilize technology that provides rapid response to demand, while at the same time providing combined-cycle efficiencies. The CECP will consist of a 540.4-megawatts (MW) net (at 73.6 degrees Fahrenheit [°F] with steam power augmentation and evaporative cooling) 558 MW gross combined-cycle generating facility configured using two trains with one natural-gas-fired combustion turbine generators (CTG) and one steam turbine generator (STG) per train (or unit). The generating facility will consist of two power blocks, each having one CTG equipped with Ultra Low Nitrogen oxide (ULN) combustors; one heat recovery steam generator (HRSG); one condensing STG;an air-cooled fin-fan cooler; and associated support equipment.

Another critical component of the CECP generating units is that the project will be air cooled, thereby avoiding the need to connect to the existing Encina Power Station's sea water once-through cooling system. For the project's high quality water needs, CECP will purify the Encina Power Station's Units 4 and 5 once-through cooling water discharge by desalination(Ultrafiltration followed by Reverse Osmosis) and demineralization(2nd stage R/O followed by Ion/Exchange), minimizing its use of potable water.

XIII. CERTIFICATION *(see instructions)*

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE *(type or print)*	B. SIGNATURE	C. DATE SIGNED
KEITH S RICHARDS, VICE PRESIDENT CARLSBAD ENERGY CENTER LLC	Keith S Richards	8/13/2008

COMMENTS FOR OFFICIAL USE ONLY

C

EPA FORM 1

ATTACHMENT 1: SITE MAPPING

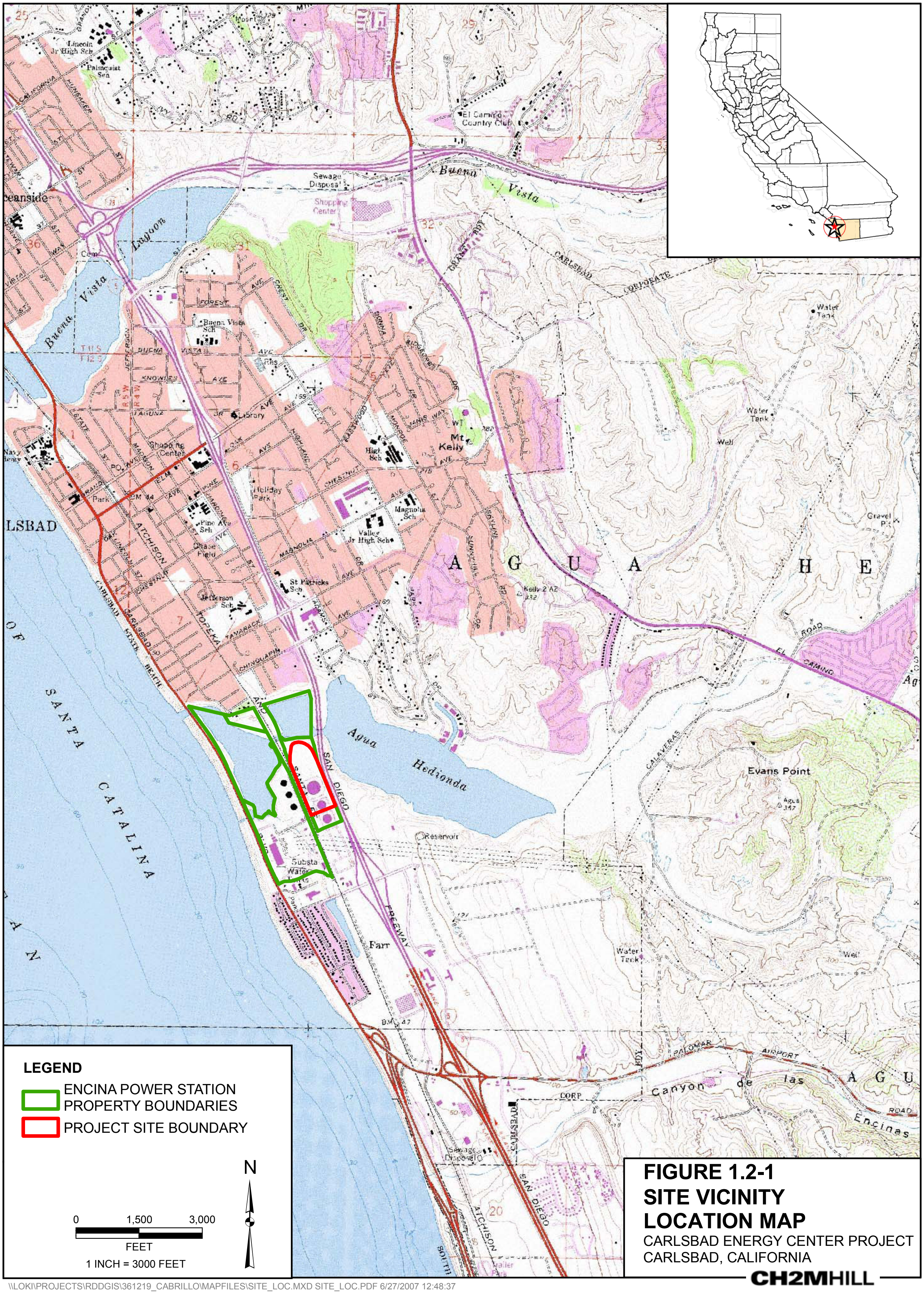

FIGURE 1.2-1
SITE VICINITY LOCATION MAP
CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CALIFORNIA

CH2MHILL

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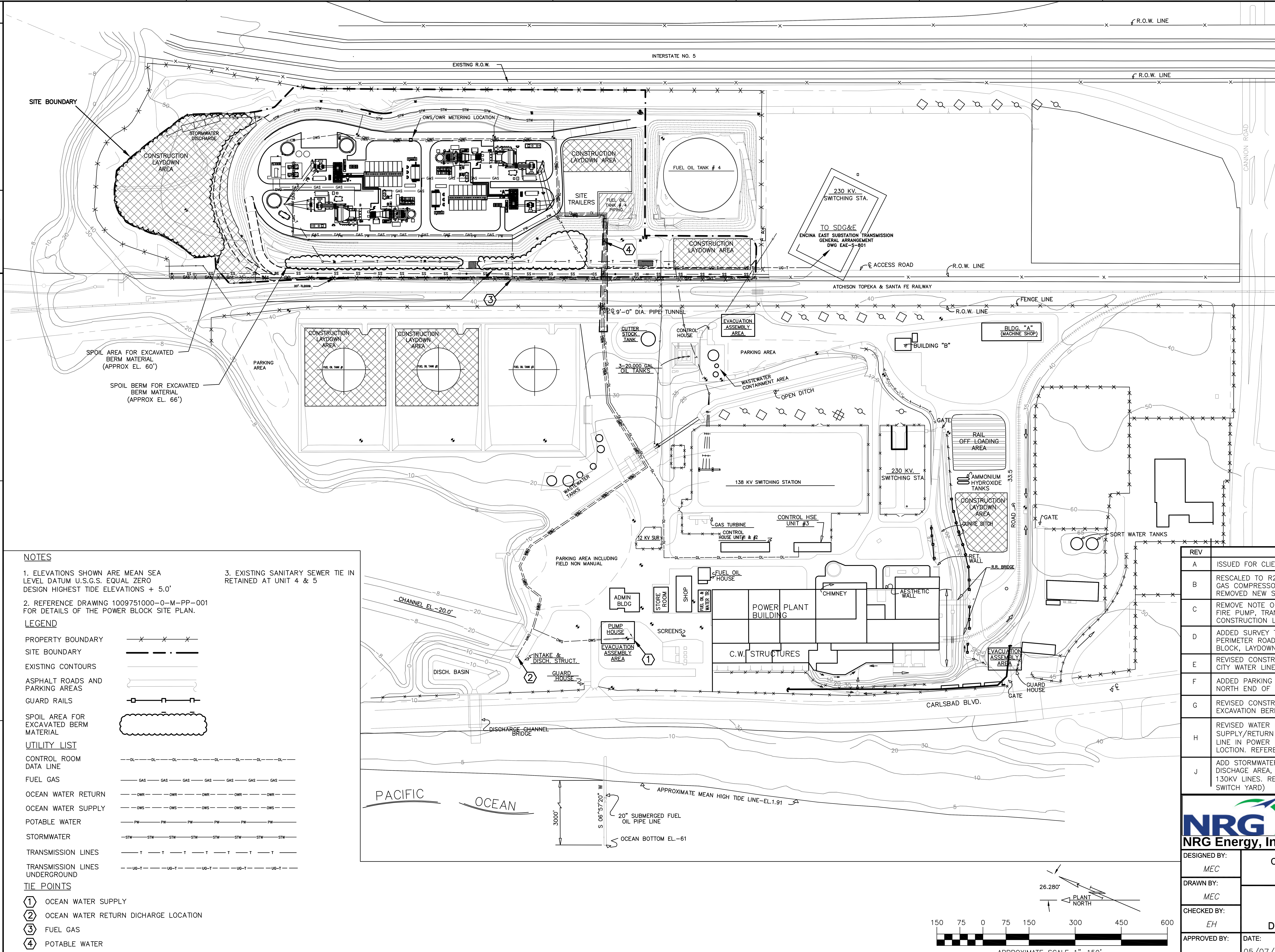


NOTES

1. ELEVATIONS SHOWN ARE MEAN SEA LEVEL DATUM U.S.G.S. EQUAL ZERO DESIGN HIGHEST TIDE ELEVATIONS + 5.0'
2. REFERENCE DRAWING 1009751000-0-M-PP-001 FOR DETAILS OF THE POWER BLOCK SITE PLAN.
3. EXISTING SANITARY SEWER TIE IN RETAINED AT UNIT 4 & 5

LEGEND

- PROPERTY BOUNDARY
- SITE BOUNDARY
- EXISTING CONTOURS
- ASPHALT ROADS AND PARKING AREAS
- GUARD RAILS
- SPOIL AREA FOR EXCAVATED BERM MATERIAL

UTILITY LIST

- CONTROL ROOM DATA LINE — DL —
- FUEL GAS — GAS —
- OCEAN WATER RETURN — OWR —
- OCEAN WATER SUPPLY — OWS —
- POTABLE WATER — PW —
- STORMWATER — STW —
- TRANSMISSION LINES — T —
- TRANSMISSION LINES UNDERGROUND — UG-T —

TIE POINTS

1. OCEAN WATER SUPPLY
2. OCEAN WATER RETURN DICHARGE LOCATION
3. FUEL GAS
4. POTABLE WATER

REFERENCE DRAWINGS

1. EXISTING RECLAIM WATER PLAN SOURCE: CARLSBAD MUNICIPAL WATER DISTRICT, CMWD PROJECT NOS. (88-602) AND (92-406) SHEET 3 OF 17.
2. EXISTING CITY (POTABLE) WATER LINE SOURCE: CABRILLO POWER I LLC, PROJECT NO. 13-7292, DRAWING NO. M-661, SHEET 1 OF 1, TRACKING NO. R96B0389.DWG.

REV	DESCRIPTION / ISSUE	DATE	APPROVED
A	ISSUED FOR CLIENT REVIEW	06/05/07	EH
B	RESCALED TO R2C2 CHECK POINTS, RELOCATED GAS COMPRESSORS, ADD FIRE WATER TANK, REMOVED NEW SWITCHYARD, ADD TIE POINTS INFO.	06/20/07	EH
C	REMOVE NOTE ON EXISTING EMERGENCY DIESEL FIRE PUMP, TRANSMISSION LINES ON HOLD, ADDED CONSTRUCTION LAYDOWN, RAIL OFF LOADING AREAS.	07/06/07	EH
D	ADDED SURVEY TOPO, HEAVY HAUL RAMP, PERIMETER ROAD TO NORTH. UPDATED POWER BLOCK, LAYDOWN AREAS, TRANSMISSION LINES.	08/01/07	EH
E	REVISED CONSTRUCTION LAY-DOWN AREAS, REVISED CITY WATER LINE TIE POINT.	08/08/07	EH
F	ADDED PARKING AREAS, REVISED SPOIL AREA NORTH END OF SITE.	08/13/07	EH
G	REVISED CONSTRUCTION LAYDOWN AREA AND EXCAVATION BERM MATERIAL AREA.	12/13/07	EH
H	REVISED WATER LINE FEEDS TO OCEAN WATER SUPPLY/RETURN LINES. DELETED SANITARY SEWER LINE IN POWER BLOCK. ADD OWS/OWR METERING LOCTION. REFERENCE NEW SWITCH YARD FIGURE.	04/30/08	EH
J	ADD STORMWATER PIPING TO STORMWATER DISCHAGE AREA, REWORK ELECTRICAL 230KV AND 130KV LINES. REMOVE NOTE 4. (REFERENCE NEW SWITCH YARD)	05/12/08	EH

NRG Energy, Inc — Shaw Stone & Webster, Inc.

DESIGNED BY: MEC	CARLSBAD ENERGY CENTER PROJECT CARLSBAD, CA
DRAWN BY: MEC	ENCINA POWER STATION PLOT PLAN FIGURE 2.2-1B DUAL R2C2 COMBINED CYCLE PLANT
CHECKED BY: EH	
APPROVED BY: __	DATE: 05/07/08 — SCALE: 1"=150' — DRAWING NO. 1009751000_0_M_PP_006_J — REV. NO. J

DRAWING NUMBER 1009751000_0_M_PP_006_J — J
OFFICE Centennial, CO

EPA FORM 2D

Form Approved. OMB No. 2040-0086. Approval expires 8-31-98.

Please print or type in the unshaded areas only	EPA I.D. NUMBER (*copy from Item 1 of Form 1*)	

Form **2D** NPDES

New Sources and New Dischargers Application for Permit to Discharge Process Wastewater

I. Outfall Location

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water.

Outfall Number (*list*)	Latitude			Longitude			Receiving Water (*name*)
	Deg.	Min.	Sec.	Deg.	Min.	Sec.	
OUTFALL 001	33.00	8.00	17.00	117.00	20.00	22.00	PACIFIC OCEAN

II. Discharge Date (When do you expect to begin discharging?)

03/01/2011

III. Flows, Sources of Pollution, and Treatment Technologies

A. For each outfall, provide a description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional sheets if necessary.

Outfall Number	1. Operations Contributing Flow (*List*)	2. Average Flow (*Include Units*)	3. Treatment (*Description or List codes from Table 2D-1*)
001	DESALINATION BRINE/RO REJECT	2,657 GPM(W/PAG)	4A- DISCHARGE TO SURFACE WATER-SEE ATTACHED WATER BALANCES & DESCRIPTION
001	DESALINATION BRINE/RO REJECT	2,855 GPM (w/out PAG)	4A- DISCHARGE TO SURFACE WATER-SEE ATTACHED WATER BALANCES & DESCRIPTION

B. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item III-A. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a water balance cannot be determined (e.g., for certain mining activities), provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures.

C. Except for storm runoff, leaks, or spills, will any of the discharges described in Items III-A be intermittent or seasonal?

☐ YES (*complete the following table*) ☑ NO (*go to Section IV*)

Outfall Number	1. Frequency		2. Flow		
	a. Days Per Week (*specify average*)	b. Months Per Year (*specify average*)	a. Maximum Daily Flow Rate (*in mgd*)	b. Maximum Total Volume (*specify with units*)	c. Duration (*in days*)

IV. Production

If there is an applicable production-based effluent guideline or NSPS, for each outfall list the estimated level of production (projection of actual production level, not design), expressed in the terms and units used in the applicable effluent guideline or NSPS, for each of the first 3 years of operation. If production is likely to vary, you may also submit alternative estimates (attach a separate sheet).

Year	A. Quantity Per Day	B. Units Of Measure	c. Operation, Product, Material, etc. (*specify*)
			N/A* 40CFR 423: Steam Electric Power Generating Point Source Category

 CONTINUE ON NEXT PAGE

CONTINUED FROM THE FRONT	EPA I.D. NUMBER (*copy from Item 1 of Form 1*)	Outfall Number
		001

V. Effluent Characteristics

A and B: These items require you to report estimated amounts (*both concentration and mass*) of the pollutants to be discharged from each of your outfalls. Each part of this item addresses a different set of pollutants and should be completed in accordance with the specific instructions for that part. Data for each outfall should be on a separate page. Attach additional sheets of paper if necessary.

General Instructions *(See table 2D-2 for Pollutants)*
Each part of this item requests you to provide an estimated daily maximum and average for certain pollutants and the source of information. Data for all pollutants in Group A, for all outfalls, must be submitted unless waived by the permitting authority. For all outfalls, data for pollutants in Group B should be reported only for pollutants which you believe will be present or are limited directly by an effluent limitations guideline or NSPS or indirectly through limitations on an indicator pollutant.

1. Pollutant	2. Maximum Daily Value *(include units)*	3. Average Daily Value *(include units)*	4. Source *(see instructions)*
BOD	<2.0 MG/L	< 2.0 MG/L	3:ESP Intake Water Analysis, 4/26/2004
BOD	<11.6 LBS	<4.6 LBS	3:ESP Intake Water Analysis, 4/26/2004
COD	70 MG/L	70 MG/L	3:ESP Intake Water Analysis, 4/26/2004
COD	405 LBS	162 LBS	3:ESP Intake Water Analysis, 4/26/2004
TOC	1.8 MG/L	1.8 MG/L	3:ESP Intake Water Analysis, 4/26/2004
TOC	10.4 LBS	4.2 LBS	3:ESP Intake Water Analysis, 4/26/2004
TSS	3.4 MG/L	3.4 MG/L	3:ESP Intake Water Analysis, 4/26/2004
TSS	19.7 LBS	7.9 LBS	3:ESP Intake Water Analysis, 4/26/2004
AMMONIA, AS N	<.050 MG/L	<.050 MG/L	3:ESP Intake Water Analysis, 4/26/2004
AMMONIA, AS N	<.3 LBS	<.1 LBS	3:ESP Intake Water Analysis, 4/26/2004
pH, STANDARD UNITS	8-8.2	8-8.2	3:ESP Intake Water Analysis, 4/26/2004
TEMPRATURE (WINTER)	16.9 C	16.9 C	3:ESP Intake Water Analysis, 4/26/2004
TEMPRATURE (SUMMER)	20.3 C	20.3 C	3:ESP Intake Water Analysis, 4/26/2004
FLOW, W/PAG	3.8 MGD	1.5 MGD	4:Water Balance, 6/10/08
FLOW, W/OUT PAG	4.1 MGD	1.6 MGD	4: water Balance, 6/10/08
BROMIDE	66.6 MG/L	66.6 MG/L	3:ESP Intake Water Analysis, 4/26/2004
BROMIDE	678.26 LBS	271.3 LBS	3:ESP Intake Water Analysis, 4/26/2004
FECAL COLIFORM	30 MPN/100ml	30 MPN/100ml	3:ESP Intake Water Analysis, 4/26/2004
OIL & GREASE	2.5 MG/L	2.5 MG/L	3:ESP Intake Water Analysis, 4/26/2004
OIL & GREASE	15.5 LBS	5.8 LBS	3:ESP Intake Water Analysis, 4/26/2004
SULFATE(SO4)	2500 MG/L	2500 MG/L	3:ESP Intake Water Analysis, 4/26/2004
SULFATE(SO4)	7.2 TONS	2.9 TONS	3:ESP Intake Water Analysis, 4/26/2004

CONTINUED FROM THE FRONT	EPA I.D. NUMBER (*copy from Item 1 of Form 1*)	Outfall Number
		001

V. Effluent Characteristics

A and B: These items require you to report estimated amounts (*both concentration and mass*) of the pollutants to be discharged from each of your outfalls. Each part of this item addresses a different set of pollutants and should be completed in accordance with the specific instructions for that part. Data for each outfall should be on a separate page. Attach additional sheets of paper if necessary.

General Instructions *(See table 2D-2 for Pollutants)*
Each part of this item requests you to provide an estimated daily maximum and average for certain pollutants and the source of information. Data for all pollutants in Group A, for all outfalls, must be submitted unless waived by the permitting authority. For all outfalls, data for pollutants in Group B should be reported only for pollutants which you believe will be present or are limited directly by an effluent limitations guideline or NSPS or indirectly through limitations on an indicator pollutant.

1. Pollutant	2. Maximum Daily Value *(include units)*	3. Average Daily Value *(include units)*	4. Source *(see instructions)*
BARIUM	.0071 MG/L	.0071 MG/L	3:ESP Intake Water Analysis, 4/26/2004
BARIUM	.07 LBS	.03 LBS	3:ESP Intake Water Analysis, 4/26/2004
BORON	3.9 MG/L	3.9 MG/L	3:ESP Intake Water Analysis, 4/26/2004
BORON	39.7 LBS	15.9 LBS	3:ESP Intake Water Analysis, 4/26/2004
IRON	.039 MG/L	.039 MG/L	3:ESP Intake Water Analysis, 4/26/2004
IRON	.40 LBS	.16 LBS	3:ESP Intake Water Analysis, 4/26/2004
MAGNESIUM	1200 MG/L	1200 MG/L	3:ESP Intake Water Analysis, 4/26/2004
MAGNESIUM	6.1 TONS	2.4 TONS	3:ESP Intake Water Analysis, 4/26/2004
MANGANESE	.0045 MG/L	.0045 MG/L	3:ESP Intake Water Analysis, 4/26/2004
MANGANESE	.05 LBS	.02 LBS	3:ESP Intake Water Analysis, 4/26/2004
ANTIMONY	.054 MG/L	.054 MG/L	3:ESP Intake Water Analysis, 4/26/2004
ANTIMONY	.55 LBS	.22 LBS	3:ESP Intake Water Analysis, 4/26/2004
SELENIUM	.062 MG/L	.062 MG/L	3:ESP Intake Water Analysis, 4/26/2004
SELENIUM	.63 LBS	.25 LBS	3:ESP Intake Water Analysis, 4/26/2004
TIN	.13 MG/L	.13 MG/L	3:ESP Intake Water Analysis, 4/26/2004
TIN	1.32 LBS	.53 LBS	3:ESP Intake Water Analysis, 4/26/2004
PHENOLS	.002 MG/L	.002 MG/L	3:ESP Intake Water Analysis, 4/26/2004
PHENOLS	.01 LBS	.004 LBS	3:ESP Intake Water Analysis, 4/26/2004

CONTINUED FROM THE FRONT	EPA I.D. NUMBER (*copy from Item 1 of Form 1*)	

C. Use the space below to list any of the pollutants listed in Table 2D-3 of the instructions which you know or have reason to believe will be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it will be present.

1. Pollutant	2. Reason for Discharge
N/A	

VI. Engineering Report on Wastewater Treatment

A. If there is any technical evaluation concerning your wastewater treatment, including engineering reports or pilot plant studies, check the appropriate box below.

☐ Report Available ☑ No Report

B. Provide the name and location of any existing plant(s) which, to the best of your knowledge resembles this production facility with respect to production processes, wastewater constituents, or wastewater treatments.

Name	Location
POSEIDON RESOURCES CORP CARLSBAD DESALINATION PROJECT WDR ORDER R9-2006-005 NPDES CA0109223	4600 CARLSBAD BLVD CARLSBAD CA 92008 SAN DIEGO CA 92008

EPA I.D. NUMBER (*copy from Item 1 of Form 1*)

VII. Other Information *(Optional)*

Use the space below to expand upon any of the above questions or to bring to the attention of the reviewer any other information you feel should be considered in establishing permit limitations for the proposed facility. Attach additional sheets if necessary.

1. SECTION III:ATTACHMENT 1-Flows, Sources of Pollution, and Treatment Technologies

2. SECTION IV: 40 CFR 423 DOES NOT ESTABLISH AN APPLICABLE PRODUCTION-BASED EFFLUENT GUIDELINE OR NSPS FOR LOW-VOLUME WASTES

3. SECTION V, A-C:
a. CONCENTRATIONS AND QUANTITIES REPORTED BASED ON OPERATION WITH POWER AUGMENTATION, REFER TO WATER BALANCES, FIGURE 2.2-6A AND 2.2-6B, APPENDIX B

b. REPORTED VALUES BASED ON ANALYSIS OF INTAKE SEA WATER REPORTED 4/26/2004 (SEE APPENDIX A) AND MADE A PART OF THE ENCINA POWER STATION'S 2004 NPDES PERMIT NO. CA0001350 RENEWAL APPLICATION, SUBMITTED 6/23/2004 AND REISSUED 8/16/2006, ORDER R9-2006-0043

VIII. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. Name and Official Title (*type or print*)	B. Phone No.
C. Signature	D. Date Signed

EPA FORM 2D

ATTACHMENT 1

FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

EPA FORM 2D

ATTACHMENT 1

SECTION III.A AND III.B

FLOWS, SOURCES OF POLLUTION AND TREATMENT TECHNOLOGIES

This attachment addresses sections III.A and III.B: *Flows, Sources of Pollution, and Treatment Technologies* of EPA Form 2D. As required in section III.A, revised Figure 2.2-6a: CECP Water Balance with 8 Hr/Day Power Augmentation (PAG), and Revised Figure 2.2-6b: CECP Water Balance-No Power Augmentation, provide the schematics of the ocean water purification and demineralization processes.

Treatment of the R/O reject is limited to dilution. The first-stage R/O process will generate an aqueous waste stream with high concentration of dissolved solids (i.e., brine or R/O reject). The CECP ocean water purification system would draw source water off the existing Encina Power Station's once-through cooling water discharge channel. The source water intake flow for the CECP power plant will be 3,000 GPM and assumes a maximum 24-hour, seven day operating schedule. The concentration factor of the first-stage R/O brine is estimated to be 1.679. Based on an average ambient ocean salinity of 33.52 ppt[1] the salinity of the first stage R/O brine is estimated to average 56.29 ppt. The first-stage R/O brine will be further diluted by mixing the R/O reject waste stream with residual source water from the 3,000 GPM intake flow prior to being discharged back to the Encina Power Station's once-through cooling water discharge channel.

Based on the 3,000 GPM intake flow, the estimated volume and salinity concentrations of CECP's first stage R/O reject wastestreams are shown in the following table:

CECP First Stage R/O Reject Waste stream		
1st Stage R/O Reject Properties[1]	**Operating Condition**	
	With PAG	**Without PAG**
Ocean water purification system drawn from source water intake of 3,000 GPM	848 GPM	420 GPM
Residual source water for dilution prior to discharge to EPS discharge channel	2,152 GPM	2,580 GPM
R/O Reject (brine) volume	505 GPM	275 GPM
Dilution factor from mixing R/O reject with residual source water[2]	4.26:1	9.38:1
R/O Reject salinity prior to dilution[3]	56.29 ppt	56.29 ppt

[1] The mean seawater salinity between 1980 through 2000 reported by the EPS

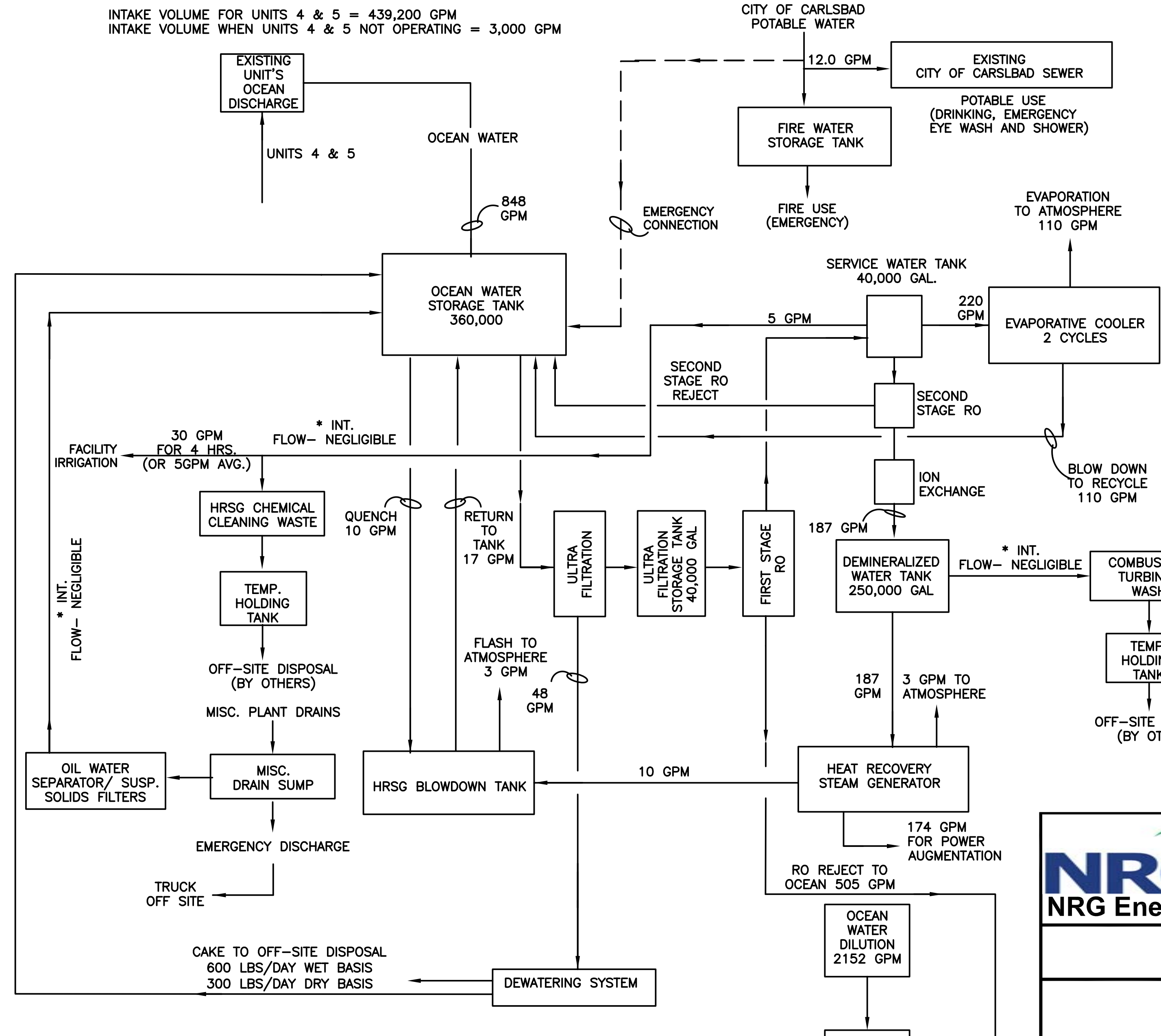
CECP First Stage R/O Reject Waste stream		
1st Stage R/O Reject Properties[1]	Operating Condition	
	With PAG	Without PAG
R/O Reject salinity after dilution and at the point of discharge into the EPS discharge channel	37.84 ppt	35.71 ppt
CECP combined discharge to EPS cooling water discharge channel	2,657 GPM	2,855 GPM

Notes:
1- Refer to the Water Balances
2- Dilution Factor = Residual Source Water volume/ R/O Reject Volume
3- Assumes intake ocean water with average salinity of 33.5 ppt and concentration factor of 1.679

File: T:\Power_Projects\NRG\Encina_CECP_1009715000\CAD\csa\vendor\Shaw\Ranjit-Sinha\ENC-PFD-002-06-10-08.dwg

Plot Date/Time: Jun 10, 2008 – 12:46pm
Plotted By: andrew.schaaf

OFFICE	DATE	DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER	ENC-PFD-002
Trenton, NJ	06/10/08	Source/ R.S.	A. Schaaf	E. Holden	R. Sinha		



UNDER NORMAL OPERATIONS RO REJECT IS MIXED WITH UNITS 4 & 5 DISCHARGE. WHEN UNITS 4 & 5 ARE NOT OPERATING DILUTION IS BASED ON USE OF 3,000 GPM INTAKE VOLUME.
WATER DILUTION = 3000 – 848 = 2152 GPM
RO REJECT = 505 GPM; DILUTION FACTOR = 2152:505 = 4.26

NOTES:

1. POWER AUGMENTATION (PAG) ON 8-HRS/DAY, EVAP COOLER ON 24-HRS/DAY
2. REFERENCED PFD BASED ON SIEMENS POWER GENERATION COMPANY.
3. TEMPERATURES AND RELATIVE HUMIDITY
   a) DBT – 104°F, RH – 11.8%
   b) ULTRA FILTRATION INFLUENT WATER TEMPERATURE– 104°F MAX
4. * INT. = INTERMITTENT FLOWS
5. MAXIMUM DAILY CONSUMPTION
   a) OCEAN WATER 1,221,120 GALS./DAY
   b) POTABLE WATER – 17,200 GALS./DAY (NON-FIRE USE)
   c) POTABLE WATER – EMERGENCY ONLY (FIRE USE)
   d) FIRE WATER STORAGE REFILL – 500GPM MINIMUM (240,000 GAL./DAY)
   e) BRINE DISCHARGE TO OCEAN – 727,200 GAL/DAY
6. FLOW RATE (GPM) IS DAILY MAXIMUM WITH PAG ON.

NRG Energy, Inc

Shaw® Stone & Webster, Inc.

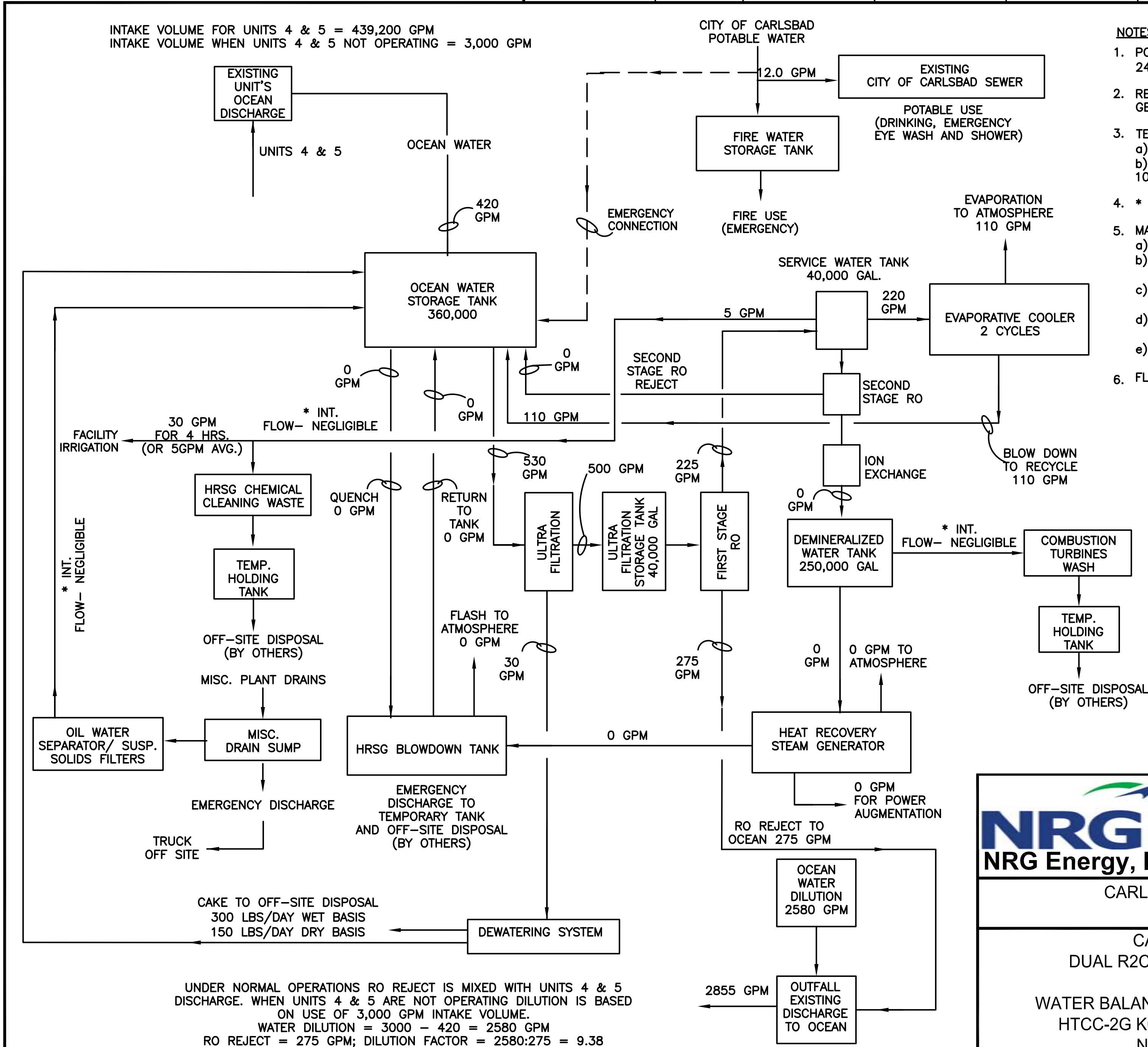
CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CA

CALRSBAD ENERGY CENTER
DUAL R2C2 COMBINED CYCLE PLANT
FIGURE 2.2-6a
WATER BALANCE DIAGRAM FOR TWO 1x1 SCC6-5000F HTCC-2G K023 UNITS - MAXIMUM DAILY FLOWS
(8 HOUR/DAY POWER AUGMENTATION)

File: T:\Power_Projects\NRG\Encina_CECP_1009715000\CAD\csa\vendor\Shaw\Ranjit-Sinha\ENC-PFD-004 06-10-08.dwg

Plot Date/Time: Jun 10, 2008 – 2:56pm
Plotted By: andrew.schaaf

OFFICE	DATE	DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
Trenton, NJ	06/10/08	Source/ R.S.	A. Schaaf	E. Holden	R. Sinha	ENC-PFD-004



NOTES:

1. POWER AUGMENTATION (PAG) OFF, EVAP COOLER ON 24–HRS/DAY
2. REFERENCED PFD BASED ON SEIMENS POWER GENERATION COMPANY.
3. TEMPERATURES AND RELATIVE HUMIDITY
   a) DBT – 104°F, RH – 11.8%
   b) ULTRA FILTRATION INFLUENT WATER TEMPERATURES– 104°F MAX
4. * INT. = INTERMITTENT FLOWS
5. MAXIMUM DAILY CONSUMPTION
   a) OCEAN WATER 604,500 GAL./DAY
   b) POTABLE WATER – 17,200 GALS./DAY (NON–FIRE USE)
   c) POTABLE WATER – EMERGENCY ONLY (FIRE USE)
   d) FIRE WATER STORAGE REFILL – 500GPM MINIMUM (240,000 GAL./DAY)
   e) BRINE DISCHARGE TO OCEAN – 396,000 GAL/DAY
6. FLOW RATE (GPM) IS DAILY AVERAGE WITH PAG OFF.

NRG Energy, Inc

Shaw® Stone & Webster, Inc.

CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CA

CARLSBAD ENERGY CENTER
DUAL R2C2 COMBINED CYCLE PLANTFIGURE
FIGURE 2.2-6b
WATER BALANCE DIAGRAM FOR TWO 1x1 SCC6-5000F HTCC-2G K023 UNITS - AVERAGE DAILY FLOWS
NO POWER AUGMENTATION

EPA FORM 2D

APPENDIX A

EPS INTAKE WATER ANALYSIS, 4/26/2004

ENCINA NDPES RECERTIFICATION - 2004
<u>SUMMARY REPORT</u>

Pollutant	Intake	Discharge	Units	Reporting Limit
Biochemical Oxygen Demand	nd	nd	mg/L	2.0
Chemical Oxygen Demand	70	68	mg/L	20.0
Total Organic Carbon	1.8	1.7	mg/L	1.0
Total Suspended Solids	3.4	4.4	mg/l	0.2
Ammonia as N	nd	nd	ug/l	50.0
pH - Grab No. 1	8.15	8.16	pH Units	---
pH - Grab No. 2	8.07	8.06	pH Units	---
pH - Grab No. 3	8.18	8.16	pH Units	---
pH - Grab No. 4	8.10	8.14	pH Units	---
Bromide	66.6	65.6	mg/L	1.0
Chlorine, Total Residual - Grab No. 1	nd	nd	ug/l	40
Chlorine, Total Residual - Grab No. 2	nd	nd	ug/l	40
Chlorine, Total Residual - Grab No. 3	nd	nd	ug/l	40
Chlorine, Total Residual - Grab No. 4	nd	nd	ug/l	40
Color	nd	nd	color units	3
Fecal Coliform - Grab No. 1	40	70	MPN/100ml	---
Fecal Coliform - Grab No. 2	30	50	MPN/100ml	---
Fecal Coliform - Grab No. 3	30	30	MPN/100ml	---
Fecal Coliform - Grab No. 4	30	23	MPN/100ml	---
Fluoride	nd	nd	mg/L	0.01
Nitrate as N	nd	nd	mg/L	0.02
Nitrite as N	nd	nd	mg/L	0.02
Nitrogen, Total Organic (as N)	nd	nd	mg/L	0.10
Oil and Grease - Grab No. 1	2.5	1.2	mg/l	0.4
Oil and Grease - Grab No. 2	0.59	1.8	mg/l	0.4
Oil and Grease - Grab No. 3	0.71	0.78	mg/l	0.4
Oil and Grease - Grab No. 4	0.9	nd	mg/L	0.4
Phosphorus, (as P) Total	nd	nd	mg/L	0.06
Sulfate (SO4)	2500	2500	mg/L	0.03
Sulfide (as S)	nd	nd	mg/L	0.1
Sulfite (as SO3)	nd	nd	mg/L	2.0
Surfactants	nd	nd	mg/L	0.05
Aluminum, Total	nd	nd	mg/L	0.48
Barium, Total	0.0071	0.0073	mg/L	0.006
Boron, Total	3.9	4.1	mg/L	0.024
Cobalt, Total	nd	nd	mg/L	0.036
Iron, Total	0.039	0.055	mg/L	0.0066
Magnesium, Total	1200	1200	mg/L	0.45
Molybdenum, Total	nd	nd	mg/L	0.035
Manganese, Total	0.0045	nd	mg/L	0.0035
Tin, Total	130	150	mg/L	36.0
Titanium, Total	nd	nd	mg/L	0.05

ENCINA NDPES RECERTIFICATION - 2004

SUMMARY REPORT

Metals, Cyanide, and Total Phenols	Intake	Discharge	Units	Reporting Limit
Total Antimony	0.054	0.085	mg/L	0.031
Total Arsenic	nd	nd	ug/l	0.50
Total Beryllium	nd	nd	mg/L	0.0015
Total Cadmium	nd	nd	ug/l	0.50
Total Chromium	nd	nd	ug/l	0.50
Total Copper	nd	nd	ug/l	2.5
Total Lead	nd	nd	ug/l	2.5
Total Mercury	nd	nd	ug/l	0.10
Total Nickel	nd	nd	ug/l	2.5
Total Selenium	0.062	0.097	mg/L	0.057
Total Silver	nd	nd	ug/l	0.50
Total Thallium	nd	nd	mg/L	0.086
Total Zinc	nd	nd	mg/L	0.0081
Total Cyanide	nd	nd	ug/l	5.0
Total Phenols - Grab No. 1	2		ug/l	1.0
Total Phenols - Grab No. 2	nd		ug/l	1.0
Total Phenols - Grab No. 3	nd		ug/l	1.0
Total Phenols - Grab No. 4	2		ug/l	1.0
GC/MS Fraction - Volatile Compounds				
acrolein	nd	nd	ug/l	20
acrylonitrile	nd	nd	ug/l	20
benzene	nd	nd	ug/l	5.0
bromoform	nd	nd	ug/l	5.0
carbon tetrachloride	nd	nd	ug/l	5.0
chlorobenzene	nd	nd	ug/l	5.0
chlorodibromomethane	nd	nd	ug/l	5.0
chloroethane	nd	nd	ug/l	5.0
2-chloroethylvinyl ether	nd	nd	ug/l	10
chloroform	nd	nd	ug/l	5.0
dichlorobromomethane	nd	nd	ug/l	5.0
1,1-dichloroethane	nd	nd	ug/l	5.0
1,2-dichloroethane	nd	nd	ug/l	5.0
1,1-dichloroethylene	nd	nd	ug/l	5.0
1,2-dichloropropane	nd	nd	ug/l	5.0
1,3-dichloropropylene	nd	nd	ug/l	5.0
ethylbenzene	nd	nd	ug/l	5.0
methyl bromide (bromomethane)	nd	nd	ug/l	5.0
methyl chloride (chlormethane)	nd	nd	ug/l	5.0
methylene chloride	nd	nd	ug/l	25
1,1,2,2-tetrachloroethane	nd	nd	ug/l	5.0
tetrachloroethylene	nd	nd	ug/l	5.0
toluene	nd	nd	ug/l	5.0
1,2-trans-dichloroethylene (trans-1,2-dichloroethene)	nd	nd	ug/l	5.0
1,1,1-trichloroethane	nd	nd	ug/l	5.0
1,1,2-trichloroethane	nd	nd	ug/l	5.0
trichloroethylene	nd	nd	ug/l	5.0
vinyl chloride	nd	nd	ug/l	5.0
tributyltin	nd	nd	ng/l	1.0

ENCINA NDPES RECERTIFICATION - 2004

SUMMARY REPORT

GC/MS Fraction - Acid Compounds	Intake	Discharge	Units	Reporting Limit
2-chlorophenol	nd	nd	ug/l	3.3
2,4-dichlorophenol	nd	nd	ug/l	2.7
2,4-dimethylphenol	nd	nd	ug/l	2.7
4,6-dinitro-o-cresol (4,6-dinitro-2-methylphenol)	nd	nd	ug/l	24
2,4-dinitrophenol	nd	nd	ug/l	42
2-nitrophenol	nd	nd	ug/l	3.6
4-nitrophenol	nd	nd	ug/l	2.4
p-chloro-m-cresol (4-chloro-3-methylpheno)	nd	nd	ug/l	3.0
pentachlorophenol	nd	nd	ug/l	3.6
phenol	nd	nd	ug/l	1.5
2,4,6-trichlorophenol	nd	nd	ug/l	2.7
GC/MS Fraction - Base/Neutral Compounds				
acenaphthene	nd	nd	ug/l	1.9
acenaphthylene	nd	nd	ug/l	3.5
anthracene	nd	nd	ug/l	1.9
benzidine	nd	nd	ug/l	10.0
benzo(a)anthracene	nd	nd	ug/l	7.8
benzo(a)pyrene	nd	nd	ug/l	7.8
3,4-benzofluoranthene (Benzo (b) fluoranthene)	nd	nd	ug/l	4.8
benzo(ghi)perylene	nd	nd	ug/l	4.1
benzo(k)fluoranthene	nd	nd	ug/l	2.5
bis(2-chloroethoxy)methane	nd	nd	ug/l	5.3
bis(2-chloroethyl)ether	nd	nd	ug/l	5.7
bis(2-chloroisopropyl)ether	nd	nd	ug/l	5.7
bis(2-ethylhexyl)phthalate	nd	nd	ug/l	12
4-bromophenyl phenyl ether	nd	nd	ug/l	1.9
butylbenzyl phthalate	nd	nd	ug/l	2.5
2-chloronaphthalene	nd	nd	ug/l	10.0
4-chlorophenyl phenyl ether	nd	nd	ug/l	4.2
chrysene	nd	nd	ug/l	2.5
dibenzo(a,h)anthracene	nd	nd	ug/l	2.5
1,2-dichlorobenzene	nd	nd	ug/l	1.9
1,3-dichlorobenzene	nd	nd	ug/l	1.9
1,4-dichlorobenzene	nd	nd	ug/l	4.4
3,3-dichlorobenzidine	nd	nd	ug/l	16
diethyl phthalate	nd	nd	ug/l	1.9
dimethyl phthalate	nd	nd	ug/l	1.6
di-n-butyl phthalate	nd	nd	ug/l	2.5
2,4-dinitrotoluene	nd	nd	ug/l	5.7
2,6-dinitrotoluene	nd	nd	ug/l	1.9
di-n-octyl phthalate	nd	nd	ug/l	2.5
1,2-diphenylhydrazine (as azobenzene)	nd	nd	ug/l	10
fluoranthene	nd	nd	ug/l	2.2
fluorene	nd	nd	ug/l	1.9
hexachlorobenzene	nd	nd	ug/l	1.9
hexachlorobutadiene	nd	nd	ug/l	0.90
hexachlorocyclopentadiene	nd	nd	ug/l	10
hexachloroethane	nd	nd	ug/l	1.6
indeno(1,2,3-cd)pyrene	nd	nd	ug/l	3.7
isophorone	nd	nd	ug/l	2.2

ENCINA NDPES RECERTIFICATION - 2004

SUMMARY REPORT

GC/MS Fraction - Base/Neutral Compounds	Intake	Discharge	Units	Reporting Limit
naphthalene	nd	nd	ug/l	1.6
nitrobenzene	nd	nd	ug/l	1.9
N-nitrosodimethylamine	nd	nd	ug/l	10
N-nitrosodi-n-propylamine	nd	nd	ug/l	10
N-nitrosodiphenylamine	nd	nd	ug/l	10
phenanthrene	nd	nd	ug/l	5.4
pyrene	nd	nd	ug/l	1.9
1,2,4-trichlorobenzene	nd	nd	ug/l	1.9
GC/MS Fraction - Pesticide Compounds				
aldrin	nd	nd	ug/l	0.04
alpha-BHC	nd	nd	ug/l	0.03
beta-BHC	nd	nd	ug/l	0.06
gamma-BHC	nd	nd	ug/l	0.09
delta-BHC	nd	nd	ug/l	0.04
chlordane	nd	nd	ug/l	1.00
4,4-DDT	nd	nd	ug/l	0.11
4,4-DDE	nd	nd	ug/l	0.04
4,4-DDD	nd	nd	ug/l	0.12
dieldrin	nd	nd	ug/l	0.02
alpha-endosulfan (endosulfan I)	nd	nd	ug/l	0.14
beta-endosulfan (endosulfan II)	nd	nd	ug/l	0.04
endosulfan sulfate	nd	nd	ug/l	0.66
endrin	nd	nd	ug/l	0.06
endrin aldehyde	nd	nd	ug/l	0.23
heptachlor	nd	nd	ug/l	0.03
heptachlor epoxide	nd	nd	ug/l	0.83
PCB-1242	nd	nd	ug/l	1.00
PCB-1254	nd	nd	ug/l	1.00
PCB-1221	nd	nd	ug/l	1.00
PCB-1232	nd	nd	ug/l	1.00
PCB-1248	nd	nd	ug/l	1.00
PCB-1260	nd	nd	ug/l	1.00
PCB-1016	nd	nd	ug/l	1.00
toxaphene	nd	nd	ug/l	1.00
Additional Compounds				
Methoxychlor	nd	nd	ug/l	1.76
Dibutyltin	nd	nd	ng/l	1.0
Monobutytin	nd	nd	ng/l	1.0
Tetrabutyltin	nd	nd	ng/l	1.0
	nd	nd	ng/l	1.0

26 April 2004

Sheila Henika
Cabrillo Power 1, LLC
4600 Carlsbad Boulevard
Carlsbad, CA 92008-4301

RE: Encina NDPES Recertification - 2004

Enclosed are the results of analyses for samples received by the laboratory on 03/09/04 12:53. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

4/27/04
Authorized Signature

Randal L. Calentine
Environmental Laboratory
Team Leader
Name / Title

San Diego Gas & Electric
ELAP Certificate No. 1289

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

6555 Nancy Ridge Drive
Suite 300
San Diego, CA 92121-3221
Tel: 619.260.5747 / Fax: 858.514.0154

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Intake-Composite	0403049-01	Water	03/09/04 08:00	03/09/04 12:53
Discharge-Composite	0403049-02	Water	03/09/04 08:20	03/09/04 12:53
Intake-Grab 1	0403049-03	Water	03/08/04 07:15	03/09/04 12:53
Intake-Grab 2	0403049-04	Water	03/08/04 12:42	03/09/04 12:53
Intake-Grab 3	0403049-05	Water	03/08/04 18:50	03/09/04 12:53
Intake-Grab 4	0403049-06	Water	03/09/04 01:05	03/09/04 12:53
Discharge-Grab 1	0403049-07	Water	03/08/04 07:37	03/09/04 12:53
Discharge-Grab 2	0403049-08	Water	03/08/04 13:05	03/09/04 12:53
Discharge-Grab 3	0403049-09	Water	03/08/04 19:10	03/09/04 12:53
Discharge-Grab 4	0403049-10	Water	03/09/04 01:27	03/09/04 12:53
Trip Blank	0403049-11	Water	03/02/04 10:00	03/09/04 12:53
Intake-Grab 1	0403049-12	Water	03/08/04 07:05	03/09/04 12:53
Discharge-Grab 1	0403049-13	Water	03/08/04 07:25	03/09/04 12:53
Intake-Grab 2	0403049-14	Water	03/08/04 12:50	03/09/04 12:53
Discharge-Grab 2	0403049-15	Water	03/08/04 13:15	03/09/04 12:53
Intake-Grab 3	0403049-16	Water	03/08/04 19:00	03/09/04 12:53
Discharge-Grab 3	0403049-17	Water	03/08/04 19:25	03/09/04 12:53
Intake-Grab 4	0403049-18	Water	03/09/04 01:15	03/09/04 12:53
Discharge-Grab 4	0403049-19	Water	03/09/04 01:22	03/09/04 12:53

This replaces the report isssued on April 8, 2004. Please refer to report comment 1.b and 4.d.

Report Comments

1. a. Chemical Oxygen Demand (COD) and Total Organic Carbon (TOC) were subcontracted out to Environmental Engineering Laboratory for analyses, however one day before the holding time expiration for these samples we were notified that EEL could not perform these analyses due to chloride interferences. We were able to analyze the COD within the holding time from aliquots that we had on had, but did not have time to find another laboratory that could perform the TOC analysis. The COD results are included in the SDG&E Environmental Laboratory report.

b. TOC was resampled on 4/13/04 and analyzed on 4/15/04.

2. For the following analyses, four grab samples were taken in the field with a composite done in the laboratory for one analysis per sample location.
   a. EPA 608 - Pesticides/PCBs
   b. EPA 625 - Semi-volatile Organic Compounds
   c. EPA 8260 - Volatile Organic Compounds

3. The following analyses were subcontracted; please refer to the attached reports
   a. CRG Marine Laboratory - ELAP# 2261
      1. Tributyltin by GC/FPD
   b. Environmental Engineering Laboratory - ELAP#1738:
      1. EPA 405.1 - Biological Oxygen Demand
      2. EPA 415.2 - Total Organic Carbon
      3. SM 2120B - Color
      4. EPA 351.3 - Total Kjeldahl Nitrogen
      5. EPA 376.1 - Sulfide
      6. EPA 377.1 - Sulfite
      7. SM 5540C - Surfactants (MBAS)
      8. EPA 420.1 - Total Phenols
   c. Motile Laboratory - ELAP# 2457
      1. SM 9221C - Fecal Coliform
   d. Associated Laboratories - ELAP# 1338
      1. EPA 415.1 - Total Organic Carbon

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Environmental Analysis Laboratory
San Diego Gas & Electric

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Intake-Composite (0403049-01) Water	**Sampled: 03/09/04 08:00**		**Received: 03/09/04 12:53**						
Silver	ND	0.50	ug/l	1	4C11009	03/11/04	03/19/04	EPA 272.2	
Aluminum	ND	0.48	mg/l	"	4C11008	03/11/04	03/17/04	EPA 200.7	
Ammonia as N	ND	50	ug/l	"	4C15009	03/15/04	03/16/04	EPA 350.2	
Arsenic	ND	0.50	"	"	4C11009	03/11/04	03/21/04	SM 3114B; 4d	
Boron	**3.9**	0.024	mg/l	"	4C11008	03/11/04	03/22/04	EPA 200.7	
Barium	**0.0071**	0.0060	"	"	"	"	03/17/04	"	
Beryllium	ND	0.0015	"	"	"	"	"	"	
Bromide	**66.6**	1.00	"	"	4C10011	03/10/04	03/10/04	EPA 300.0	
Cadmium	ND	0.50	ug/l	"	4C11009	03/11/04	03/18/04	EPA 213.2	
Cobalt	ND	0.036	mg/l	"	4C11008	03/11/04	03/17/04	EPA 200.7	
Chemical Oxygen Demand	**70**	20	"	"	4D07014	04/05/04	04/05/04	SM 5220D	
Chromium	ND	0.50	ug/l	"	4C11009	03/11/04	03/19/04	EPA 218.2	
Copper	ND	2.5	"	"	"	"	03/18/04	EPA 220.2	
Cyanide (total)	ND	0.0050	mg/l	"	4C19001	03/17/04	03/17/04	EPA 335.2	
Iron	**0.039**	0.0066	"	"	4C11008	03/11/04	03/17/04	EPA 200.7	
Fluoride	ND	0.0100	"	"	4C10014	03/10/04	03/10/04	EPA 300.0	
Mercury	ND	0.10	ug/l	"	4C10005	03/10/04	03/11/04	EPA 245.1	
Magnesium	**1200**	0.45	mg/l	10	4C11008	03/11/04	03/17/04	EPA 200.7	
Manganese	**0.0045**	0.0035	"	1	"	"	03/22/04	"	
Molybdenum	ND	0.035	"	"	"	"	03/17/04	"	
Nickel	ND	2.5	ug/l	"	4C11009	03/11/04	03/19/04	EPA 249.2	
Nitrate as N	ND	0.020	mg/l	"	4C10009	03/10/04	03/11/04	EPA 300.0	
Nitrite as N	ND	0.0200	"	"	4C10007	03/10/04	03/10/04	"	
Phosphorus	ND	0.060	"	"	4C11008	03/11/04	03/22/04	EPA 200.7	
Lead	ND	2.5	ug/l	"	4C11009	03/11/04	03/17/04	EPA 239.2	
Antimony	**0.054**	0.031	mg/l	"	4C11008	03/11/04	03/17/04	EPA 200.7	
Selenium	**0.062**	0.057	"	"	"	"	"	"	
Tin	**130**	36	ug/l	"	"	"	03/22/04	"	
Total Suspended Solids	**3.4**	0.20	mg/l	"	4C11007	03/11/04	03/12/04	EPA 160.2	
Sulfate as SO4	**2500**	0.030	"	"	4C10015	03/10/04	03/10/04	EPA 300.0	
Titanium	ND	0.050	"	"	4C11008	03/11/04	03/17/04	EPA 200.7	
Thallium	ND	0.086	"	"	"	"	"	"	
Zinc	ND	0.0081	"	"	"	"	03/22/04	"	

Environmental Analysis Laboratory
San Diego Gas & Electric

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Intake-Grab 1 (0403049-03) Water	**Sampled: 03/08/04 07:15**	**Received: 03/09/04 12:53**							
HEM	**2.5**	0.40	mg/l	1	4C11001	03/11/04	03/11/04	EPA 1664A	
Intake-Grab 2 (0403049-04) Water	**Sampled: 03/08/04 12:42**	**Received: 03/09/04 12:53**							
HEM	**0.59**	0.40	mg/l	1	4C11001	03/11/04	03/11/04	EPA 1664A	
Intake-Grab 3 (0403049-05) Water	**Sampled: 03/08/04 18:50**	**Received: 03/09/04 12:53**							
HEM	**0.71**	0.40	mg/l	1	4C11001	03/11/04	03/11/04	EPA 1664A	
Intake-Grab 4 (0403049-06) Water	**Sampled: 03/09/04 01:05**	**Received: 03/09/04 12:53**							
HEM	**0.90**	0.40	mg/l	1	4C11001	03/11/04	03/11/04	EPA 1664A	
Discharge-Grab 1 (0403049-07) Water	**Sampled: 03/08/04 07:37**	**Received: 03/09/04 12:53**							
HEM	**1.2**	0.40	mg/l	1	4C11001	03/11/04	03/11/04	EPA 1664A	
Discharge-Grab 2 (0403049-08) Water	**Sampled: 03/08/04 13:05**	**Received: 03/09/04 12:53**							
HEM	**1.8**	0.40	mg/l	1	4C11001	03/11/04	03/11/04	EPA 1664A	
Discharge-Grab 3 (0403049-09) Water	**Sampled: 03/08/04 19:10**	**Received: 03/09/04 12:53**							
HEM	**0.78**	0.40	mg/l	1	4C11001	03/11/04	03/11/04	EPA 1664A	
Discharge-Grab 4 (0403049-10) Water	**Sampled: 03/09/04 01:27**	**Received: 03/09/04 12:53**							
HEM	ND	0.40	mg/l	1	4C11001	03/11/04	03/11/04	EPA 1664A	
Intake-Grab 1 (0403049-12) Water	**Sampled: 03/08/04 07:05**	**Received: 03/09/04 12:53**							
Chlorine Residual	ND	40	ug/l	1	4C11005	03/08/04	03/08/04	SM 4500-Cl G	
pH	**8.15**		pH Units	"	4C11004	"	"	EPA 150.1	

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Organochlorine Pesticides and PCBs by EPA Method 608

San Diego Gas & Electric

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Intake-Grab 1 (0403049-03) Water	**Sampled: 03/08/04 07:15**		**Received: 03/09/04 12:53**						
Aldrin	ND	0.0400	ug/l	1	4C12007	03/12/04	03/16/04	EPA 608	
alpha-BHC	ND	0.0300	"	"	"	"	"	"	
beta-BHC	ND	0.0600	"	"	"	"	"	"	
delta-BHC	ND	0.0900	"	"	"	"	"	"	
gamma-BHC (Lindane)	ND	0.0400	"	"	"	"	"	"	
Chlordane (tech)	ND	1.00	"	"	"	"	"	"	
4,4′-DDD	ND	0.110	"	"	"	"	"	"	
4,4′-DDE	ND	0.0400	"	"	"	"	"	"	
4,4′-DDT	ND	0.120	"	"	"	"	"	"	
Dieldrin	ND	0.0200	"	"	"	"	"	"	
Endosulfan I	ND	0.140	"	"	"	"	"	"	
Endosulfan II	ND	0.0400	"	"	"	"	"	"	
Endosulfan sulfate	ND	0.660	"	"	"	"	"	"	
Endrin	ND	0.0600	"	"	"	"	"	"	
Endrin aldehyde	ND	0.230	"	"	"	"	"	"	
Heptachlor	ND	0.0300	"	"	"	"	"	"	
Heptachlor epoxide	ND	0.830	"	"	"	"	"	"	
Methoxychlor	ND	1.76	"	"	"	"	"	"	
Toxaphene	ND	1.00	"	"	"	"	"	"	
PCB-1016	ND	1.00	"	"	"	"	"	"	
PCB-1221	ND	1.00	"	"	"	"	"	"	
PCB-1232	ND	1.00	"	"	"	"	"	"	
PCB-1242	ND	1.00	"	"	"	"	"	"	
PCB-1248	ND	1.00	"	"	"	"	"	"	
PCB-1254	ND	1.00	"	"	"	"	"	"	
PCB-1260	ND	1.00	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*60.5 %*	*10-124*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*112 %*	*10-133*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Acid and Base/Neutral Extractables by EPA Method 625

San Diego Gas & Electric

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Intake-Grab 1 (0403049-03) Water	**Sampled: 03/08/04 07:15**	**Received: 03/09/04 12:53**							
4-Chlorophenyl phenylether	ND	4.2	ug/l	1	4C12003	03/11/04	03/22/04	EPA 625	
N-Nitrosodimethylamine	ND	10	"	"	"	"	"	"	
Phenol	ND	1.5	"	"	"	"	"	"	
Aniline	ND	10	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	5.7	"	"	"	"	"	"	
2-Chlorophenol	ND	3.3	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.9	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	4.4	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.9	"	"	"	"	"	"	
Benzyl alcohol	ND	10	"	"	"	"	"	"	
2-Methylphenol	ND	10	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	5.7	"	"	"	"	"	"	
4-Methylphenol	ND	10	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	10	"	"	"	"	"	"	
Hexachloroethane	ND	1.6	"	"	"	"	"	"	
Nitrobenzene	ND	1.9	"	"	"	"	"	"	
Isophorone	ND	2.2	"	"	"	"	"	"	
2-Nitrophenol	ND	3.6	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	2.7	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	5.3	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.9	"	"	"	"	"	"	
Benzoic acid	ND	10	"	"	"	"	"	"	
Naphthalene	ND	1.6	"	"	"	"	"	"	
4-Chloroaniline	ND	10	"	"	"	"	"	"	
Hexachlorobutadiene	ND	0.90	"	"	"	"	"	"	
2-Methylnaphthalene	ND	10	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	2.7	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	3.0	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	10	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	2.7	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	25	"	"	"	"	"	"	
2-Chloronaphthalene	ND	10	"	"	"	"	"	"	
2-Nitroaniline	ND	25	"	"	"	"	"	"	
Dimethyl phthalate	ND	1.6	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	1.9	"	"	"	"	"	"	
Acenaphthylene	ND	3.5	"	"	"	"	"	"	
3-Nitroaniline	ND	25	"	"	"	"	"	"	
Acenaphthene	ND	1.9	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	42	"	"	"	"	"	"	
4-Nitrophenol	ND	2.4	"	"	"	"	"	"	
Dibenzofuran	ND	10	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	5.7	"	"	"	"	"	"	

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Acid and Base/Neutral Extractables by EPA Method 625

San Diego Gas & Electric

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
:ntake-Grab 1 (0403049-03) Water	**Sampled: 03/08/04 07:15**		**Received: 03/09/04 12:53**						
)iethyl phthalate	ND	1.9	ug/l	1	4C12003	03/11/04	03/22/04	EPA 625	
?luorene	ND	1.9	"	"	"	"	"	"	
I-Chlorophenyl phenyl ether	ND	4.2	"	"	"	"	"	"	
I-Nitroaniline	ND	25	"	"	"	"	"	"	
I,6-Dinitro-2-methylphenol	ND	24	"	"	"	"	"	"	
V-Nitrosodiphenylamine	ND	10	"	"	"	"	"	"	
\zobenzene	ND	10	"	"	"	"	"	"	
I-Bromophenyl phenyl ether	ND	1.9	"	"	"	"	"	"	
Iexachlorobenzene	ND	1.9	"	"	"	"	"	"	
?entachlorophenol	ND	3.6	"	"	"	"	"	"	
?henanthrene	ND	5.4	"	"	"	"	"	"	
\nthracene	ND	1.9	"	"	"	"	"	"	
)i-n-butyl phthalate	ND	2.5	"	"	"	"	"	"	
?luoranthene	ND	2.2	"	"	"	"	"	"	
3enzidine	ND	10	"	"	"	"	"	"	
?yrene	ND	1.9	"	"	"	"	"	"	
3utyl benzyl phthalate	ND	2.5	"	"	"	"	"	"	
3enzo (a) anthracene	ND	7.8	"	"	"	"	"	"	
Chrysene	ND	2.5	"	"	"	"	"	"	
;,3'-Dichlorobenzidine	ND	16	"	"	"	"	"	"	
3is(2-ethylhexyl)phthalate	ND	12	"	"	"	"	"	"	
)i-n-octyl phthalate	ND	2.5	"	"	"	"	"	"	
3enzo (b) fluoranthene	ND	4.8	"	"	"	"	"	"	
3enzo (k) fluoranthene	ND	2.5	"	"	"	"	"	"	
3enzo (a) pyrene	ND	7.8	"	"	"	"	"	"	
ndeno (1,2,3-cd) pyrene	ND	3.7	"	"	"	"	"	"	
)ibenz (a,h) anthracene	ND	2.5	"	"	"	"	"	"	
3enzo (g,h,i) perylene	ND	4.1	"	"	"	"	"	"	
;urrogate: 2-Fluorophenol		*46.7 %*	*0-200*		"	"	"	"	
;urrogate: Phenol-d6		*39.6 %*	*0-200*		"	"	"	"	
;urrogate: Nitrobenzene-d5		*48.4 %*	*0-200*		"	"	"	"	
;urrogate: 2-Fluorobiphenyl		*44.0 %*	*0-200*		"	"	"	"	
;urrogate: 2,4,6-Tribromophenol		*64.2 %*	*0-200*		"	"	"	"	
;urrogate: Terphenyl-dl4		*82.0 %*	*0-200*		"	"	"	"	

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Volatile Organic Compounds by EPA Method 8260B

San Diego Gas & Electric

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Intake-Grab 1 (0403049-03) Water	**Sampled: 03/08/04 07:15**	**Received: 03/09/04 12:53**							
Acrolein	ND	20	ug/l	1	4C17002	03/17/04	03/17/04	EPA 8260B	
Acrylonitrile	ND	20	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	5.0	"	"	"	"	"	"	
Acetone	ND	50	"	"	"	"	"	"	
Methylene chloride	ND	25	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	5.0	"	"	"	"	"	"	
2-Butanone	ND	10	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	5.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	5.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	5.0	"	"	"	"	"	"	
Benzene	ND	5.0	"	"	"	"	"	"	
Trichloroethene	ND	5.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	5.0	"	"	"	"	"	"	
2-Chloroethylvinyl ether	ND	10	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	10	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.0	"	"	"	"	"	"	
Tetrachloroethene	ND	5.0	"	"	"	"	"	"	
2-Hexanone	ND	10	"	"	"	"	"	"	
Dibromochloromethane	ND	5.0	"	"	"	"	"	"	
Chlorobenzene	ND	5.0	"	"	"	"	"	"	
Ethylbenzene	ND	5.0	"	"	"	"	"	"	
Styrene	ND	5.0	"	"	"	"	"	"	
Bromoform	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	5.0	"	"	"	"	"	"	
o-Xylene	ND	5.0	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*101 %*	*86-118*		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

San Diego Gas & Electric

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
ntake-Grab 1 (0403049-03) Water	**Sampled: 03/08/04 07:15**	**Received: 03/09/04 12:53**							
ïurrogate: 1,2-Dichloroethane-d4		*96.4 %*	*80-120*		*4C17002*	*03/17/04*	*03/17/04*	*EPA 8260B*	
ïurrogate: Toluene-d8		*100 %*	*88-110*		*"*	*"*	*"*	*"*	
ïurrogate: 4-Bromofluorobenzene		*98.4 %*	*86-115*		*"*	*"*	*"*	*"*	
)ischarge-Grab 1 (0403049-07) Water	**Sampled: 03/08/04 07:37**	**Received: 03/09/04 12:53**							
\crolein	ND	20	ug/l	1	4C17002	03/17/04	03/17/04	EPA 8260B	
\crylonitrile	ND	20	"	"	"	"	"	"	
:hloromethane	ND	5.0	"	"	"	"	"	"	
/inyl chloride	ND	5.0	"	"	"	"	"	"	
3romomethane	ND	5.0	"	"	"	"	"	"	
:hloroethane	ND	5.0	"	"	"	"	"	"	
[richlorofluoromethane	ND	5.0	"	"	"	"	"	"	
.,1-Dichloroethene	ND	5.0	"	"	"	"	"	"	
\cetone	ND	50	"	"	"	"	"	"	
/Iethylene chloride	ND	25	"	"	"	"	"	"	
rans-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
,1-Dichloroethane	ND	5.0	"	"	"	"	"	"	
:-Butanone	ND	10	"	"	"	"	"	"	
:is-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
:hloroform	ND	5.0	"	"	"	"	"	"	
.,1,1-Trichloroethane	ND	5.0	"	"	"	"	"	"	
:arbon tetrachloride	ND	5.0	"	"	"	"	"	"	
.,2-Dichloroethane	ND	5.0	"	"	"	"	"	"	
3enzene	ND	5.0	"	"	"	"	"	"	
[richloroethene	ND	5.0	"	"	"	"	"	"	
.,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
3romodichloromethane	ND	5.0	"	"	"	"	"	"	
:-Chloroethylvinyl ether	ND	10	"	"	"	"	"	"	
rans-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
-Methyl-2-pentanone	ND	10	"	"	"	"	"	"	
'oluene	ND	5.0	"	"	"	"	"	"	
:is-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
,1,2-Trichloroethane	ND	5.0	"	"	"	"	"	"	
'etrachloroethene	ND	5.0	"	"	"	"	"	"	
:-Hexanone	ND	10	"	"	"	"	"	"	
)ibromochloromethane	ND	5.0	"	"	"	"	"	"	
:hlorobenzene	ND	5.0	"	"	"	"	"	"	
:thylbenzene	ND	5.0	"	"	"	"	"	"	
;tyrene	ND	5.0	"	"	"	"	"	"	
3romoform	ND	5.0	"	"	"	"	"	"	
,3-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
,4-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	

Cabrillo Power I, LLC 4600 Carlsbad Boulevard Carlsbad CA, 92008-4301	Project: NPDES Waste Water Project Number: Encina NDPES Recertification - 2004 Project Manager: Sheila Henika	Reported: 04/26/04 09:37

Volatile Organic Compounds by EPA Method 8260B

San Diego Gas & Electric

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
[T]rip Blank (0403049-11) Water	**Sampled: 03/02/04 10:00**	**Received: 03/09/04 12:53**							
[E]thylbenzene	ND	5.0	ug/l	1	4C17002	03/17/04	03/17/04	EPA 8260B	
[S]tyrene	ND	5.0	"	"	"	"	"	"	
[B]romoform	ND	5.0	"	"	"	"	"	"	
[1],3-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
[1],4-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
[1],2-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
[1],1,2,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
[m],p-Xylene	ND	5.0	"	"	"	"	"	"	
[o]-Xylene	ND	5.0	"	"	"	"	"	"	
[S]urrogate: Dibromofluoromethane		*99.8 %*	*86-118*		"	"	"	"	
[S]urrogate: 1,2-Dichloroethane-d4		*93.8 %*	*80-120*		"	"	"	"	
[S]urrogate: Toluene-d8		*101 %*	*88-110*		"	"	"	"	
[S]urrogate: 4-Bromofluorobenzene		*98.4 %*	*86-115*		"	"	"	"	

Environmental Analysis Laboratory - Quality Control
San Diego Gas & Electric

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4C10005 - EPA 245.1										
Blank (4C10005-BLK1)				Prepared: 03/10/04 Analyzed: 03/11/04						
Mercury	ND	0.10	ug/l							
LCS (4C10005-BS1)				Prepared: 03/10/04 Analyzed: 03/11/04						
Mercury	5.76	0.10	ug/l	5.00		115	80-120			
Matrix Spike (4C10005-MS1)	Source: 0403049-02			Prepared: 03/10/04 Analyzed: 03/11/04						
Mercury	4.07	0.10	ug/l	5.00	ND	81.4	75-125			
Matrix Spike Dup (4C10005-MSD1)	Source: 0403049-02			Prepared: 03/10/04 Analyzed: 03/11/04						
Mercury	4.32	0.10	ug/l	5.00	ND	86.4	75-125	5.96	20	
Batch 4C10007 - No Prep. Wet Chem										
Blank (4C10007-BLK1)				Prepared & Analyzed: 03/10/04						
Nitrite as N	ND	0.0200	mg/l							
LCS (4C10007-BS1)				Prepared & Analyzed: 03/10/04						
Nitrite as N	28.6	0.0200	mg/l	30.4		94.1	80-120			
Duplicate (4C10007-DUP1)	Source: 0403049-02			Prepared & Analyzed: 03/10/04						
Nitrite as N	ND	0.0200	mg/l		ND				20	
Matrix Spike (4C10007-MS1)	Source: 0403049-01			Prepared & Analyzed: 03/10/04						
Nitrite as N	1240	0.0200	mg/l	1220	ND	102	75-125			
Matrix Spike Dup (4C10007-MSD1)	Source: 0403049-01			Prepared & Analyzed: 03/10/04						
Nitrite as N	1240	0.0200	mg/l	1220	ND	102	75-125	0.00	20	

Batch 4C10009 - No Prep. Wet Chem

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San Diego Gas & Electric

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4C10009 - No Prep. Wet Chem										
Blank (4C10009-BLK1)				Prepared: 03/10/04 Analyzed: 03/11/04						
Nitrate as N	ND	0.020	mg/l							
LCS (4C10009-BS1)				Prepared: 03/10/04 Analyzed: 03/11/04						
Nitrate as N	21.3	0.020	mg/l	22.6		94.2	80-120			
Duplicate (4C10009-DUP1)		Source: 0403049-02		Prepared: 03/10/04 Analyzed: 03/11/04						
Nitrate as N	ND	0.020	mg/l		ND				20	
Matrix Spike (4C10009-MS1)		Source: 0403049-01		Prepared: 03/10/04 Analyzed: 03/11/04						
Nitrate as N	171	0.020	mg/l	181	ND	94.5	75-125			
Matrix Spike Dup (4C10009-MSD1)		Source: 0403049-01		Prepared: 03/10/04 Analyzed: 03/11/04						
Nitrate as N	171	0.020	mg/l	181	ND	94.5	75-125	0.00	20	
Batch 4C10011 - No Prep. Wet Chem										
Blank (4C10011-BLK1)				Prepared & Analyzed: 03/10/04						
Bromide	ND	1.00	mg/l							
LCS (4C10011-BS1)				Prepared & Analyzed: 03/10/04						
Bromide	94.3	1.00	mg/l	100		94.3	80-120			
Duplicate (4C10011-DUP1)		Source: 0403049-02		Prepared & Analyzed: 03/10/04						
Bromide	62.0	1.00	mg/l		65.6			5.64	20	
Matrix Spike (4C10011-MS1)		Source: 0403049-01		Prepared & Analyzed: 03/10/04						
Bromide	837	1.00	mg/l	800	66.6	96.3	75-125			
Matrix Spike Dup (4C10011-MSD1)		Source: 0403049-01		Prepared & Analyzed: 03/10/04						
Bromide	834	1.00	mg/l	800	66.6	95.9	75-125	0.359	20	

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4C10011 - No Prep. Wet Chem										
Matrix Spike Dup (4C10011-MSD1)	**Source: 0403049-01**			Prepared & Analyzed: 03/10/04						
Batch 4C10014 - No Prep. Wet Chem										
Blank (4C10014-BLK1)				Prepared & Analyzed: 03/10/04						
Fluoride	ND	0.0100	mg/l							
LCS (4C10014-BS1)				Prepared & Analyzed: 03/10/04						
Fluoride	18.8	0.0100	mg/l	20.0		94.0	80-120			
Duplicate (4C10014-DUP1)	**Source: 0403049-02**			Prepared & Analyzed: 03/10/04						
Fluoride	ND	0.0100	mg/l		ND				20	
Matrix Spike (4C10014-MS1)	**Source: 0403049-01**			Prepared & Analyzed: 03/10/04						
Fluoride	157	0.0100	mg/l	160	ND	98.1	75-125			
Matrix Spike Dup (4C10014-MSD1)	**Source: 0403049-01**			Prepared & Analyzed: 03/10/04						
Fluoride	156	0.0100	mg/l	160	ND	97.5	75-125	0.639	20	
Batch 4C10015 - No Prep. Wet Chem										
Blank (4C10015-BLK1)				Prepared & Analyzed: 03/10/04						
Sulfate as SO4	ND	0.030	mg/l							
LCS (4C10015-BS1)				Prepared & Analyzed: 03/10/04						
Sulfate as SO4	143	0.030	mg/l	150		95.3	90-110			
Duplicate (4C10015-DUP1)	**Source: 0403049-02**			Prepared & Analyzed: 03/10/04						
Sulfate as SO4	2510	0.030	mg/l		2500			0.399	20	
Matrix Spike (4C10015-MS1)	**Source: 0403049-01**			Prepared & Analyzed: 03/10/04						

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4C10015 - No Prep. Wet Chem										
Matrix Spike (4C10015-MS1)		**Source: 0403049-01**		Prepared & Analyzed: 03/10/04						
Sulfate as SO4	3690	0.030	mg/l	1200	2500	99.2	80-120			
Matrix Spike Dup (4C10015-MSD1)		**Source: 0403049-01**		Prepared & Analyzed: 03/10/04						
Sulfate as SO4	3690	0.030	mg/l	1200	2500	99.2	80-120	0.00	20	
Batch 4C11001 - No Prep. - TO										
Blank (4C11001-BLK1)				Prepared & Analyzed: 03/11/04						
HEM	ND	0.40	mg/l							
LCS (4C11001-BS1)				Prepared & Analyzed: 03/11/04						
HEM	19.9	0.40	mg/l	20.0		99.5	80-120			
LCS Dup (4C11001-BSD1)				Prepared & Analyzed: 03/11/04						
HEM	19.7	0.40	mg/l	20.0		98.5	80-120	1.01	20	
Batch 4C11007 - No Prep. -TG										
Blank (4C11007-BLK1)				Prepared: 03/11/04 Analyzed: 03/12/04						
Total Suspended Solids	ND	0.20	mg/l							
Duplicate (4C11007-DUP1)		**Source: 0403049-02**		Prepared: 03/11/04 Analyzed: 03/12/04						
Total Suspended Solids	4.10	0.20	mg/l		4.4			7.06	20	
Reference (4C11007-SRM1)				Prepared & Analyzed: 03/05/04						
Total Suspended Solids	49.4	0.20	mg/l	48.2		102	83-107			
Batch 4C11008 - EPA 200 Series										
Blank (4C11008-BLK1)				Prepared: 03/11/04 Analyzed: 03/22/04						

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Batch 4C11008 - EPA 200 Series

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (4C11008-BLK1)				Prepared: 03/11/04 Analyzed: 03/22/04						
Phosphorus	0.138	0.060	mg/l							A-01
Aluminum	ND	0.48	"							
Antimony	ND	0.031	"							
Barium	ND	0.0060	"							
Beryllium	ND	0.0015	"							
Boron	ND	0.024	"							
Cobalt	ND	0.036	"							
Iron	ND	0.0066	"							
Magnesium	ND	0.045	"							
Manganese	ND	0.0035	"							
Molybdenum	ND	0.035	"							
Selenium	ND	0.057	"							
Thallium	ND	0.086	"							
Tin	ND	36	ug/l							
Titanium	ND	0.050	mg/l							
Zinc	ND	0.0081	"							
LCS (4C11008-BS1)				Prepared: 03/11/04 Analyzed: 03/22/04						
Phosphorus	16.3	0.060	mg/l	15.0		109	80-120			
Aluminum	1.14	0.48	"	1.00		114	80-120			
Antimony	1.06	0.031	"	1.00		106	80-120			
Barium	1.07	0.0060	"	1.00		107	80-120			
Beryllium	1.04	0.0015	"	1.00		104	80-120			
Boron	1.03	0.024	"	1.00		103	80-120			
Cobalt	1.05	0.036	"	1.00		105	80-120			
Iron	1.04	0.0066	"	1.00		104	80-120			
Magnesium	1.02	0.045	"	1.00		102	80-120			
Manganese	1.03	0.0035	"	1.00		103	80-120			
Molybdenum	1.05	0.035	"	1.00		105	80-120			
Selenium	1.07	0.057	"	1.00		107	80-120			
Thallium	1.03	0.086	"	1.00		103	80-120			
Tin	1060	36	ug/l	1000		106	85-115			
Titanium	1.08	0.050	mg/l	1.00		108	80-120			
Zinc	1.06	0.0081	"	1.00		106	80-120			
Matrix Spike (4C11008-MS1)	**Source: 0403049-02**			Prepared: 03/11/04 Analyzed: 03/22/04						

Environmental Analysis Laboratory - Quality Control
San Diego Gas & Electric

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4C11008 - EPA 200 Series										
Matrix Spike (4C11008-MS1)		**Source: 0403049-02**		Prepared: 03/11/04	Analyzed: 03/22/04					
Phosphorus	16.6	0.060	mg/l	15.0	ND	111	75-125			
Aluminum	0.985	0.48	"	1.00	ND	98.5	75-125			
Antimony	1.09	0.031	"	1.00	0.085	100	75-125			
Barium	0.988	0.0060	"	1.00	0.0073	98.1	75-125			
Beryllium	0.873	0.0015	"	1.00	ND	87.3	75-125			
Boron	4.82	0.024	"	1.00	4.1	72.0	75-125			QM-02
Cobalt	0.998	0.036	"	1.00	ND	99.8	75-125			
Iron	1.00	0.0066	"	1.00	0.055	94.5	75-125			
Magnesium	1200	0.45	"	1.00	1200	0.00	75-125			QM-02
Manganese	0.891	0.0035	"	1.00	ND	89.1	75-125			
Molybdenum	0.986	0.035	"	1.00	ND	98.6	75-125			
Selenium	1.18	0.057	"	1.00	0.097	108	75-125			
Thallium	1.16	0.086	"	1.00	ND	116	75-125			
Tin	1180	36	ug/l	1000	150	103	75-125			
Titanium	0.984	0.050	mg/l	1.00	ND	98.4	75-125			
Zinc	0.974	0.0081	"	1.00	ND	97.4	75-125			
Matrix Spike Dup (4C11008-MSD1)		**Source: 0403049-02**		Prepared: 03/11/04	Analyzed: 03/22/04					
Phosphorus	16.6	0.060	mg/l	15.0	ND	111	75-125	0.00	15	
Aluminum	1.03	0.48	"	1.00	ND	103	75-125	4.47	20	
Antimony	1.12	0.031	"	1.00	0.085	104	75-125	2.71	20	
Barium	1.03	0.0060	"	1.00	0.0073	102	75-125	4.16	20	
Beryllium	0.900	0.0015	"	1.00	ND	90.0	75-125	3.05	20	
Boron	4.95	0.024	"	1.00	4.1	85.0	75-125	2.66	20	
Cobalt	1.02	0.036	"	1.00	ND	102	75-125	2.18	20	
Iron	1.04	0.0066	"	1.00	0.055	98.5	75-125	3.92	20	
Magnesium	1150	0.45	"	1.00	1200	NR	75-125	4.26	20	QM-02
Manganese	0.889	0.0035	"	1.00	ND	88.9	75-125	0.225	20	
Molybdenum	1.04	0.035	"	1.00	ND	104	75-125	5.33	20	
Selenium	1.20	0.057	"	1.00	0.097	110	75-125	1.68	20	
Thallium	1.17	0.086	"	1.00	ND	117	75-125	0.858	20	
Tin	1120	36	ug/l	1000	150	97.0	75-125	5.22	20	
Titanium	1.02	0.050	mg/l	1.00	ND	102	75-125	3.59	20	
Zinc	0.969	0.0081	"	1.00	ND	96.9	75-125	0.515	20	

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4C11009 - EPA 200 Series										
Blank (4C11009-BLK1)				Prepared: 03/11/04 Analyzed: 03/21/04						
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.50	"							
Chromium	ND	0.50	"							
Copper	ND	2.5	"							
Lead	ND	2.5	"							
Nickel	ND	2.5	"							
Silver	ND	0.50	"							
LCS (4C11009-BS1)				Prepared: 03/11/04 Analyzed: 03/21/04						
Arsenic	5.12	0.50	ug/l	5.00		102	80-120			
Cadmium	4.92	0.50	"	5.00		98.4	80-120			
Chromium	50.2	0.50	"	50.0		100	80-120			
Copper	47.3	2.5	"	50.0		94.6	80-120			
Lead	43.6	2.5	"	50.0		87.2	80-120			
Nickel	23.4	2.5	"	25.0		93.6	80-120			
Silver	12.0	0.50	"	12.5		96.0	80-120			
Matrix Spike (4C11009-MS1)	Source: 0403049-02			Prepared: 03/11/04 Analyzed: 03/21/04						
Arsenic	4.88	0.50	ug/l	5.00	ND	97.6	75-125			
Cadmium	3.21	0.50	"	5.00	ND	64.2	75-125			QM-12
Chromium	45.1	0.50	"	50.0	ND	90.2	75-125			
Copper	45.2	2.5	"	50.0	ND	90.4	75-125			
Lead	32.3	2.5	"	50.0	ND	64.6	75-125			QM-12
Nickel	18.8	2.5	"	25.0	ND	75.2	75-125			
Silver	6.52	0.50	"	12.5	ND	52.2	75-125			QM-12
Matrix Spike Dup (4C11009-MSD1)	Source: 0403049-02			Prepared: 03/11/04 Analyzed: 03/21/04						
Arsenic	4.62	0.50	ug/l	5.00	ND	92.4	75-125	5.47	20	
Cadmium	3.26	0.50	"	5.00	ND	65.2	75-125	1.55	20	QM-12
Chromium	44.9	0.50	"	50.0	ND	89.8	75-125	0.444	20	
Copper	42.7	2.5	"	50.0	ND	85.4	75-125	5.69	20	
Lead	31.4	2.5	"	50.0	ND	62.8	75-125	2.83	20	QM-12
Nickel	17.4	2.5	"	25.0	ND	69.6	75-125	7.73	20	QM-12
Silver	7.73	0.50	"	12.5	ND	61.8	75-125	17.0	20	QM-12

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4C15009 - General Preparation										
Blank (4C15009-BLK1)				Prepared: 03/15/04 Analyzed: 03/16/04						
Ammonia as N	ND	50	ug/l							
LCS (4C15009-BS1)				Prepared: 03/15/04 Analyzed: 03/16/04						
Ammonia as N	2010	50	ug/l	2000		100	80-120			
Matrix Spike (4C15009-MS1)		**Source: 0403049-01**		Prepared: 03/15/04 Analyzed: 03/16/04						
Ammonia as N	1870	50	ug/l	2000	ND	93.5	75-125			
Matrix Spike Dup (4C15009-MSD1)		**Source: 0403049-01**		Prepared: 03/15/04 Analyzed: 03/16/04						
Ammonia as N	1980	50	ug/l	2000	ND	99.0	75-125	5.71	20	
Batch 4C19001 - General Preparation										
Blank (4C19001-BLK1)				Prepared & Analyzed: 03/17/04						
Cyanide (total)	ND	0.0050	mg/l							
LCS (4C19001-BS1)				Prepared & Analyzed: 03/17/04						
Cyanide (total)	0.319	0.0050	mg/l	0.301		106	80-120			
Matrix Spike (4C19001-MS1)		**Source: 0403049-02**		Prepared & Analyzed: 03/17/04						
Cyanide (total)	0.334	0.0050	mg/l	0.301	ND	111	75-125			
Matrix Spike Dup (4C19001-MSD1)		**Source: 0403049-02**		Prepared & Analyzed: 03/17/04						
Cyanide (total)	0.325	0.0050	mg/l	0.301	ND	108	75-125	2.73	20	
Batch 4D07014 - General Preparation										
Blank (4D07014-BLK1)				Prepared & Analyzed: 04/05/04						
Chemical Oxygen Demand	ND	20	mg/l							

Environmental Analysis Laboratory - Quality Control
San Diego Gas & Electric

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4D07014 - General Preparation										
LCS (4D07014-BS1)				Prepared & Analyzed: 04/05/04						
Chemical Oxygen Demand	39.1	20	mg/l	37.5		104	80-120			
Matrix Spike (4D07014-MS1)		Source: 0403049-02		Prepared & Analyzed: 04/05/04						
Chemical Oxygen Demand	168	20	mg/l	46.5	68	215	75-125			QM-12
Matrix Spike Dup (4D07014-MSD1)		Source: 0403049-02		Prepared & Analyzed: 04/05/04						
Chemical Oxygen Demand	165	20	mg/l	46.0	68	211	75-125	1.80	20	QM-12

Organochlorine Pesticides and PCBs by EPA Method 608 - Quality Control
San Diego Gas & Electric

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4C12007 - GC										
Blank (4C12007-BLK1)				Prepared: 03/12/04 Analyzed: 03/15/04						
Aldrin	ND	0.0400	ug/l							
alpha-BHC	ND	0.0300	"							
beta-BHC	ND	0.0600	"							
delta-BHC	ND	0.0900	"							
gamma-BHC (Lindane)	ND	0.0400	"							
Chlordane (tech)	ND	1.00	"							
4,4'-DDD	ND	0.110	"							
4,4'-DDE	ND	0.0400	"							
4,4'-DDT	ND	0.120	"							
Dieldrin	ND	0.0200	"							
Endosulfan I	ND	0.140	"							
Endosulfan II	ND	0.0400	"							
Endosulfan sulfate	ND	0.660	"							
Endrin	ND	0.0600	"							
Endrin aldehyde	ND	0.230	"							
Heptachlor	ND	0.0300	"							
Heptachlor epoxide	ND	0.830	"							

Organochlorine Pesticides and PCBs by EPA Method 608 - Quality Control

San Diego Gas & Electric

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4C12007 - GC										
Blank (4C12007-BLK1)				Prepared: 03/12/04 Analyzed: 03/15/04						
Methoxychlor	ND	1.76	ug/l							
Toxaphene	ND	1.00	"							
PCB-1016	ND	1.00	"							
PCB-1221	ND	1.00	"							
PCB-1232	ND	1.00	"							
PCB-1242	ND	1.00	"							
PCB-1248	ND	1.00	"							
PCB-1254	ND	1.00	"							
PCB-1260	ND	1.00	"							
Surrogate: Tetrachloro-meta-xylene	*0.153*		*"*	*0.200*		*76.5*	*10-124*			
Surrogate: Decachlorobiphenyl	*0.212*		*"*	*0.200*		*106*	*10-133*			
LCS (4C12007-BS1)				Prepared: 03/12/04 Analyzed: 03/15/04						
Aldrin	0.422	0.0400	ug/l	0.500		84.4	42-122			
gamma-BHC (Lindane)	0.491	0.0400	"	0.500		98.2	32-127			
4,4'-DDT	1.06	0.120	"	1.00		106	25-160			
Dieldrin	1.06	0.0200	"	1.00		106	36-146			
Endrin	1.11	0.0600	"	1.00		111	30-147			
Heptachlor	0.468	0.0300	"	0.500		93.6	34-111			
Surrogate: Tetrachloro-meta-xylene	*0.114*		*"*	*0.200*		*57.0*	*10-124*			
Surrogate: Decachlorobiphenyl	*0.222*		*"*	*0.200*		*111*	*10-133*			
LCS Dup (4C12007-BSD1)				Prepared: 03/12/04 Analyzed: 03/15/04						
Aldrin	0.430	0.0400	ug/l	0.500		86.0	42-122	1.88	200	
gamma-BHC (Lindane)	0.483	0.0400	"	0.500		96.6	32-127	1.64	200	
4,4'-DDT	1.06	0.120	"	1.00		106	25-160	0.00	200	
Dieldrin	1.02	0.0200	"	1.00		102	36-146	3.85	200	
Endrin	1.08	0.0600	"	1.00		108	30-147	2.74	200	
Heptachlor	0.473	0.0300	"	0.500		94.6	34-111	1.06	200	
Surrogate: Tetrachloro-meta-xylene	*0.145*		*"*	*0.200*		*72.5*	*10-124*			
Surrogate: Decachlorobiphenyl	*0.228*		*"*	*0.200*		*114*	*10-133*			

Organochlorine Pesticides and PCBs by EPA Method 608 - Quality Control

San Diego Gas & Electric

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4C12007 - GC										
Matrix Spike (4C12007-MS1)		**Source: 0403049-07**		Prepared: 03/12/04	Analyzed: 03/15/04					
Aldrin	0.450	0.0400	ug/l	0.500	0.00	90.0	42-122			
gamma-BHC (Lindane)	0.472	0.0400	"	0.500	0.00	94.4	32-127			
4,4′-DDT	1.05	0.120	"	1.00	0.00	105	25-160			
Dieldrin	1.03	0.0200	"	1.00	0.00	103	36-146			
Endrin	1.07	0.0600	"	1.00	0.00	107	30-147			
Heptachlor	0.498	0.0300	"	0.500	0.00	99.6	34-111			
Surrogate: Tetrachloro-meta-xylene	*0.117*		"	*0.200*		*58.5*	*10-124*			
Surrogate: Decachlorobiphenyl	*0.223*		"	*0.200*		*112*	*10-133*			
Matrix Spike Dup (4C12007-MSD1)		**Source: 0403049-07**		Prepared: 03/12/04	Analyzed: 03/15/04					
Aldrin	0.448	0.0400	ug/l	0.500	0.00	89.6	42-122	0.445	200	
gamma-BHC (Lindane)	0.466	0.0400	"	0.500	0.00	93.2	32-127	1.28	200	
4,4′-DDT	1.02	0.120	"	1.00	0.00	102	25-160	2.90	200	
Dieldrin	1.01	0.0200	"	1.00	0.00	101	36-146	1.96	200	
Endrin	1.04	0.0600	"	1.00	0.00	104	30-147	2.84	200	
Heptachlor	0.550	0.0300	"	0.500	0.00	110	34-111	9.92	200	
Surrogate: Tetrachloro-meta-xylene	*0.109*		"	*0.200*		*54.5*	*10-124*			
Surrogate: Decachlorobiphenyl	*0.223*		"	*0.200*		*112*	*10-133*			
Reference (4C12007-SRM1)				Prepared: 03/12/04	Analyzed: 03/15/04					
PCB-1260	ND	1.00	ug/l	250			0-200			
Surrogate: Tetrachloro-meta-xylene	*0.120*		"	*0.200*		*60.0*	*10-124*			
Surrogate: Decachlorobiphenyl	*0.231*		"	*0.200*		*116*	*10-133*			

Acid and Base/Neutral Extractables by EPA Method 625 - Quality Control

San Diego Gas & Electric

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Acid and Base/Neutral Extractables by EPA Method 625 - Quality Control

San Diego Gas & Electric

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
3atch 4C12003 - EPA 5030 Water MS										
3lank (4C12003-BLK1)				Prepared: 03/11/04 Analyzed: 03/22/04						
--Chlorophenyl phenylether	ND	4.2	ug/l							
4-Nitrosodimethylamine	ND	10	"							
'henol	ND	1.5	"							
\niline	ND	10	"							
3is(2-chloroethyl)ether	ND	5.7	"							
.-Chlorophenol	ND	3.3	"							
,3-Dichlorobenzene	ND	1.9	"							
,4-Dichlorobenzene	ND	4.4	"							
,2-Dichlorobenzene	ND	1.9	"							
ienzyl alcohol	ND	10	"							
-Methylphenol	ND	10	"							
iis(2-chloroisopropyl)ether	ND	5.7	"							
-Methylphenol	ND	10	"							
I-Nitrosodi-n-propylamine	ND	10	"							
[exachloroethane	ND	1.6	"							
[itrobenzene	ND	1.9	"							
;ophorone	ND	2.2	"							
-Nitrophenol	ND	3.6	"							
,4-Dimethylphenol	ND	2.7	"							
·is(2-chloroethoxy)methane	ND	5.3	"							
,2,4-Trichlorobenzene	ND	1.9	"							
;enzoic acid	ND	10	"							
[aphthalene	ND	1.6	"							
-Chloroaniline	ND	10	"							
[exachlorobutadiene	ND	0.90	"							
-Methylnaphthalene	ND	10	"							
,4-Dichlorophenol	ND	2.7	"							
-Chloro-3-methylphenol	ND	3.0	"							
:exachlorocyclopentadiene	ND	10	"							
,4,6-Trichlorophenol	ND	2.7	"							
,4,5-Trichlorophenol	ND	25	"							
-Chloronaphthalene	ND	10	"							
-Nitroaniline	ND	25	"							
imethyl phthalate	ND	1.6	"							
6-Dinitrotoluene	ND	1.9	"							
cenaphthylene	ND	3.5	"							
-Nitroaniline	ND	25	"							
cenaphthene	ND	1.9	"							

Acid and Base/Neutral Extractables by EPA Method 625 - Quality Control
San Diego Gas & Electric

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4C12003 - EPA 5030 Water MS										
Blank (4C12003-BLK1)				Prepared: 03/11/04 Analyzed: 03/22/04						
2,4-Dinitrophenol	ND	42	ug/l							
4-Nitrophenol	ND	2.4	"							
Dibenzofuran	ND	10	"							
2,4-Dinitrotoluene	ND	5.7	"							
Diethyl phthalate	ND	1.9	"							
Fluorene	ND	1.9	"							
4-Chlorophenyl phenyl ether	ND	4.2	"							
4-Nitroaniline	ND	25	"							
4,6-Dinitro-2-methylphenol	ND	24	"							
N-Nitrosodiphenylamine	ND	10	"							
Azobenzene	ND	10	"							
4-Bromophenyl phenyl ether	ND	1.9	"							
Hexachlorobenzene	ND	1.9	"							
Pentachlorophenol	ND	3.6	"							
Phenanthrene	ND	5.4	"							
Anthracene	ND	1.9	"							
Di-n-butyl phthalate	ND	2.5	"							
Fluoranthene	ND	2.2	"							
Benzidine	ND	10	"							
Pyrene	ND	1.9	"							
Butyl benzyl phthalate	ND	2.5	"							
Benzo (a) anthracene	ND	7.8	"							
Chrysene	ND	2.5	"							
3,3'-Dichlorobenzidine	ND	16	"							
Bis(2-ethylhexyl)phthalate	ND	12	"							
Di-n-octyl phthalate	ND	2.5	"							
Benzo (b) fluoranthene	ND	4.8	"							
Benzo (k) fluoranthene	ND	2.5	"							
Benzo (a) pyrene	ND	7.8	"							
Indeno (1,2,3-cd) pyrene	ND	3.7	"							
Dibenz (a,h) anthracene	ND	2.5	"							
Benzo (g,h,i) perylene	ND	4.1	"							
Surrogate: 2-Fluorophenol	*56.5*		*"*	*100*		*56.5*	*0-200*			
Surrogate: Phenol-d6	*44.5*		*"*	*100*		*44.5*	*0-200*			
Surrogate: Nitrobenzene-d5	*30.9*		*"*	*50.0*		*61.8*	*0-200*			
Surrogate: 2-Fluorobiphenyl	*31.7*		*"*	*50.0*		*63.4*	*0-200*			

Cabrillo Power 1, LLC
4600 Carlsbad Boulevard
Carlsbad CA, 92008-4301

Project: NPDES Waste Water
Project Number: Encina NDPES Recertification - 2004
Project Manager: Sheila Henika

Reported:
04/26/04 09:37

Acid and Base/Neutral Extractables by EPA Method 625 - Quality Control
San Diego Gas & Electric

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4C12003 - EPA 5030 Water MS										
Blank (4C12003-BLK1)				Prepared: 03/11/04 Analyzed: 03/22/04						
Surrogate: 2,4,6-Tribromophenol	*84.5*		*ug/l*	*100*		*84.5*	*0-200*			
Surrogate: Terphenyl-dl4	*44.0*		*"*	*50.0*		*88.0*	*0-200*			
LCS (4C12003-BS1)				Prepared: 03/11/04 Analyzed: 03/22/04						
Phenol	41.1	1.5	ug/l	100		41.1	5-112			
Bis(2-chloroethyl)ether	54.6	5.7	"	100		54.6	12-158			
2-Chlorophenol	52.8	3.3	"	100		52.8	23-134			
1,3-Dichlorobenzene	45.0	1.9	"	100		45.0	1-172			
1,4-Dichlorobenzene	44.4	4.4	"	100		44.4	20-124			
1,2-Dichlorobenzene	46.9	1.9	"	100		46.9	32-129			
Bis(2-chloroisopropyl)ether	60.1	5.7	"	100		60.1	36-166			
N-Nitrosodi-n-propylamine	72.1	10	"	100		72.1	1-230			
Hexachloroethane	39.0	1.6	"	100		39.0	40-113			A-01a
Nitrobenzene	60.9	1.9	"	100		60.9	35-180			
Isophorone	101	2.2	"	100		101	21-196			
2-Nitrophenol	59.9	3.6	"	100		59.9	29-182			
2,4-Dimethylphenol	42.6	2.7	"	100		42.6	32-119			
Bis(2-chloroethoxy)methane	69.6	5.3	"	100		69.6	33-184			
1,2,4-Trichlorobenzene	53.9	1.9	"	100		53.9	44-142			
Naphthalene	61.9	1.6	"	100		61.9	21-133			
Hexachlorobutadiene	45.1	0.90	"	100		45.1	24-116			
2,4-Dichlorophenol	64.0	2.7	"	100		64.0	39-135			
4-Chloro-3-methylphenol	79.2	3.0	"	100		79.2	22-147			
2,4,6-Trichlorophenol	74.0	2.7	"	100		74.0	37-144			
Dimethyl phthalate	17.0	1.6	"	100		17.0	1-112			
2,6-Dinitrotoluene	91.1	1.9	"	100		91.1	50-158			
Acenaphthylene	81.1	3.5	"	100		81.1	33-145			
Acenaphthene	81.5	1.9	"	100		81.5	47-145			
2,4-Dinitrophenol	96.1	42	"	100		96.1	1-191			
4-Nitrophenol	70.7	2.4	"	100		70.7	1-132			
2,4-Dinitrotoluene	102	5.7	"	100		102	39-139			
Diethyl phthalate	33.1	1.9	"	100		33.1	1-114			
Fluorene	89.0	1.9	"	100		89.0	59-121			
4-Chlorophenyl phenyl ether	86.8	4.2	"	100		86.8	25-128			
4,6-Dinitro-2-methylphenol	88.3	24	"	100		88.3	1-181			
4-Bromophenyl phenyl ether	92.2	1.9	"	100		92.2	53-127			
Hexachlorobenzene	91.7	1.9	"	100		91.7	1-152			

Acid and Base/Neutral Extractables by EPA Method 625 - Quality Control

San Diego Gas & Electric

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4C12003 - EPA 5030 Water MS										
LCS (4C12003-BS1)				Prepared: 03/11/04 Analyzed: 03/22/04						
Pentachlorophenol	104	3.6	ug/l	100		104	14-176			
Phenanthrene	97.7	5.4	"	100		97.7	54-120			
Anthracene	96.4	1.9	"	100		96.4	27-133			
Di-n-butyl phthalate	86.0	2.5	"	100		86.0	1-118			
Fluoranthene	101	2.2	"	100		101	26-137			
Pyrene	108	1.9	"	100		108	52-115			
Butyl benzyl phthalate	86.6	2.5	"	100		86.6	1-152			
Benzo (a) anthracene	106	7.8	"	100		106	33-143			
Chrysene	104	2.5	"	100		104	17-168			
3,3'-Dichlorobenzidine	88.0	16	"	70.0		126	1-262			
Bis(2-ethylhexyl)phthalate	111	12	"	100		111	8-158			
Benzo (b) fluoranthene	116	4.8	"	100		116	24-159			
Benzo (k) fluoranthene	90.6	2.5	"	100		90.6	11-162			
Benzo (a) pyrene	101	7.8	"	100		101	17-163			
Indeno (1,2,3-cd) pyrene	115	3.7	"	100		115	1-171			
Dibenz (a,h) anthracene	114	2.5	"	100		114	1-227			
Benzo (g,h,i) perylene	106	4.1	"	100		106	1-219			
Surrogate: 2-Fluorophenol	*40.0*		"	*100*		*40.0*	*0-200*			
Surrogate: Phenol-d6	*37.8*		"	*100*		*37.8*	*0-200*			
Surrogate: Nitrobenzene-d5	*28.4*		"	*50.0*		*56.8*	*0-200*			
Surrogate: 2-Fluorobiphenyl	*31.0*		"	*50.0*		*62.0*	*0-200*			
Surrogate: 2,4,6-Tribromophenol	*85.5*		"	*100*		*85.5*	*0-200*			
Surrogate: Terphenyl-dl4	*47.0*		"	*50.0*		*94.0*	*0-200*			
LCS Dup (4C12003-BSD1)				Prepared: 03/11/04 Analyzed: 03/22/04						
Phenol	44.4	1.5	ug/l	100		44.4	5-112	7.72	200	
Bis(2-chloroethyl)ether	55.5	5.7	"	100		55.5	12-158	1.63	200	
2-Chlorophenol	63.9	3.3	"	100		63.9	23-134	19.0	200	
1,3-Dichlorobenzene	43.0	1.9	"	100		43.0	1-172	4.55	200	
1,4-Dichlorobenzene	42.7	4.4	"	100		42.7	20-124	3.90	200	
1,2-Dichlorobenzene	45.4	1.9	"	100		45.4	32-129	3.25	200	
Bis(2-chloroisopropyl)ether	58.7	5.7	"	100		58.7	36-166	2.36	200	
N-Nitrosodi-n-propylamine	75.2	10	"	100		75.2	1-230	4.21	200	
Hexachloroethane	37.8	1.6	"	100		37.8	40-113	3.13	200	A-01a
Nitrobenzene	58.6	1.9	"	100		58.6	35-180	3.85	200	
Isophorone	104	2.2	"	100		104	21-196	2.93	200	

Acid and Base/Neutral Extractables by EPA Method 625 - Quality Control

San Diego Gas & Electric

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4C12003 - EPA 5030 Water MS										
LCS Dup (4C12003-BSD1)				Prepared: 03/11/04 Analyzed: 03/22/04						
-Nitrophenol	71.9	3.6	ug/l	100		71.9	29-182	18.2	200	
,4-Dimethylphenol	50.0	2.7	"	100		50.0	32-119	16.0	200	
is(2-chloroethoxy)methane	67.2	5.3	"	100		67.2	33-184	3.51	200	
,2,4-Trichlorobenzene	52.6	1.9	"	100		52.6	44-142	2.44	200	
laphthalene	60.0	1.6	"	100		60.0	21-133	3.12	200	
lexachlorobutadiene	44.4	0.90	"	100		44.4	24-116	1.56	200	
,4-Dichlorophenol	74.5	2.7	"	100		74.5	39-135	15.2	200	
-Chloro-3-methylphenol	89.7	3.0	"	100		89.7	22-147	12.4	200	
,4,6-Trichlorophenol	83.8	2.7	"	100		83.8	37-144	12.4	200	
imethyl phthalate	21.9	1.6	"	100		21.9	1-112	25.2	200	
,6-Dinitrotoluene	91.1	1.9	"	100		91.1	50-158	0.00	200	
cenaphthylene	81.4	3.5	"	100		81.4	33-145	0.369	200	
cenaphthene	80.2	1.9	"	100		80.2	47-145	1.61	200	
,4-Dinitrophenol	117	42	"	100		117	1-191	19.6	200	
-Nitrophenol	74.4	2.4	"	100		74.4	1-132	5.10	200	
,4-Dinitrotoluene	105	5.7	"	100		105	39-139	2.90	200	
iethyl phthalate	40.7	1.9	"	100		40.7	1-114	20.6	200	
luorene	92.8	1.9	"	100		92.8	59-121	4.18	200	
-Chlorophenyl phenyl ether	87.9	4.2	"	100		87.9	25-128	1.26	200	
,6-Dinitro-2-methylphenol	102	24	"	100		102	1-181	14.4	200	
-Bromophenyl phenyl ether	92.8	1.9	"	100		92.8	53-127	0.649	200	
exachlorobenzene	95.3	1.9	"	100		95.3	1-152	3.85	200	
entachlorophenol	120	3.6	"	100		120	14-176	14.3	200	
henanthrene	101	5.4	"	100		101	54-120	3.32	200	
nthracene	98.2	1.9	"	100		98.2	27-133	1.85	200	
i-n-butyl phthalate	92.1	2.5	"	100		92.1	1-118	6.85	200	
luoranthene	108	2.2	"	100		108	26-137	6.70	200	
yrene	108	1.9	"	100		108	52-115	0.00	200	
utyl benzyl phthalate	90.4	2.5	"	100		90.4	1-152	4.29	200	
enzo (a) anthracene	109	7.8	"	100		109	33-143	2.79	200	
hrysene	108	2.5	"	100		108	17-168	3.77	200	
3'-Dichlorobenzidine	86.6	16	"	70.0		124	1-262	1.60	200	
is(2-ethylhexyl)phthalate	113	12	"	100		113	8-158	1.79	200	
enzo (b) fluoranthene	114	4.8	"	100		114	24-159	1.74	200	
enzo (k) fluoranthene	101	2.5	"	100		101	11-162	10.9	200	
enzo (a) pyrene	105	7.8	"	100		105	17-163	3.88	200	
deno (1,2,3-cd) pyrene	114	3.7	"	100		114	1-171	0.873	200	
ibenz (a,h) anthracene	113	2.5	"	100		113	1-227	0.881	200	

Acid and Base/Neutral Extractables by EPA Method 625 - Quality Control

San Diego Gas & Electric

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4C12003 - EPA 5030 Water MS										
LCS Dup (4C12003-BSD1)				Prepared: 03/11/04 Analyzed: 03/22/04						
Benzo (g,h,i) perylene	106	4.1	ug/l	100		106	1-219	0.00	200	
Surrogate: 2-Fluorophenol	*45.2*		"	*100*		*45.2*	*0-200*			
Surrogate: Phenol-d6	*40.5*		"	*100*		*40.5*	*0-200*			
Surrogate: Nitrobenzene-d5	*26.9*		"	*50.0*		*53.8*	*0-200*			
Surrogate: 2-Fluorobiphenyl	*29.1*		"	*50.0*		*58.2*	*0-200*			
Surrogate: 2,4,6-Tribromophenol	*94.0*		"	*100*		*94.0*	*0-200*			
Surrogate: Terphenyl-dl4	*46.4*		"	*50.0*		*92.8*	*0-200*			
Matrix Spike (4C12003-MS1)		**Source: 0403049-07**		Prepared: 03/11/04 Analyzed: 03/22/04						
Phenol	53.8	1.5	ug/l	100	ND	53.8	5-112			
Bis(2-chloroethyl)ether	61.8	5.7	"	100	ND	61.8	12-158			
2-Chlorophenol	66.3	3.3	"	100	ND	66.3	23-134			
1,3-Dichlorobenzene	48.1	1.9	"	100	ND	48.1	1-172			
1,4-Dichlorobenzene	48.2	4.4	"	100	ND	48.2	20-124			
1,2-Dichlorobenzene	50.9	1.9	"	100	ND	50.9	32-129			
Bis(2-chloroisopropyl)ether	66.1	5.7	"	100	ND	66.1	36-166			
N-Nitrosodi-n-propylamine	78.1	10	"	100	ND	78.1	1-230			
Hexachloroethane	41.8	1.6	"	100	ND	41.8	40-113			
Nitrobenzene	65.3	1.9	"	100	ND	65.3	35-180			
Isophorone	109	2.2	"	100	ND	109	21-196			
2-Nitrophenol	74.0	3.6	"	100	ND	74.0	29-182			
2,4-Dimethylphenol	50.3	2.7	"	100	ND	50.3	32-119			
Bis(2-chloroethoxy)methane	73.1	5.3	"	100	ND	73.1	33-184			
1,2,4-Trichlorobenzene	58.0	1.9	"	100	ND	58.0	44-142			
Naphthalene	66.2	1.6	"	100	ND	66.2	21-133			
Hexachlorobutadiene	48.0	0.90	"	100	ND	48.0	24-116			
2,4-Dichlorophenol	77.4	2.7	"	100	ND	77.4	39-135			
4-Chloro-3-methylphenol	93.2	3.0	"	100	ND	93.2	22-147			
2,4,6-Trichlorophenol	86.8	2.7	"	100	ND	86.8	37-144			
Dimethyl phthalate	57.3	1.6	"	100	ND	57.3	1-112			
2,6-Dinitrotoluene	93.4	1.9	"	100	ND	93.4	50-158			
Acenaphthylene	85.0	3.5	"	100	ND	85.0	33-145			
Acenaphthene	85.2	1.9	"	100	ND	85.2	47-145			
2,4-Dinitrophenol	115	42	"	100	ND	115	1-191			
4-Nitrophenol	79.7	2.4	"	100	ND	79.7	1-132			
2,4-Dinitrotoluene	101	5.7	"	100	ND	101	39-139			

Cabrillo Power 1, LLC
4600 Carlsbad Boulevard
Carlsbad CA, 92008-4301

Project: NPDES Waste Water
Project Number: Encina NDPES Recertification - 2004
Project Manager: Sheila Henika

Reported: 04/26/04 09:37

Acid and Base/Neutral Extractables by EPA Method 625 - Quality Control

San Diego Gas & Electric

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4C12003 - EPA 5030 Water MS										
Matrix Spike (4C12003-MS1)		**Source: 0403049-07**		**Prepared: 03/11/04 Analyzed: 03/22/04**						
)iethyl phthalate	91.8	1.9	ug/l	100	ND	91.8	1-114			
'luorene	92.9	1.9	"	100	ND	92.9	59-121			
I-Chlorophenyl phenyl ether	89.3	4.2	"	100	ND	89.3	25-158			
I,6-Dinitro-2-methylphenol	97.5	24	"	100	ND	97.5	1-181			
I-Bromophenyl phenyl ether	97.0	1.9	"	100	ND	97.0	53-127			
Iexachlorobenzene	98.9	1.9	"	100	ND	98.9	1-152			
'entachlorophenol	117	3.6	"	100	ND	117	14-176			
'henanthrene	102	5.4	"	100	ND	102	54-120			
\nthracene	98.8	1.9	"	100	ND	98.8	27-133			
)i-n-butyl phthalate	104	2.5	"	100	ND	104	1-118			
'luoranthene	98.8	2.2	"	100	ND	98.8	26-137			
'yrene	114	1.9	"	100	ND	114	52-115			
lutyl benzyl phthalate	108	2.5	"	100	ND	108	1-152			
lenzo (a) anthracene	109	7.8	"	100	ND	109	33-143			
:hrysene	109	2.5	"	100	ND	109	17-168			
,3'-Dichlorobenzidine	74.7	16	"	70.0	ND	107	1-262			
lis(2-ethylhexyl)phthalate	111	12	"	100	ND	111	8-158			
lenzo (b) fluoranthene	121	4.8	"	100	ND	121	24-159			
lenzo (k) fluoranthene	86.5	2.5	"	100	ND	86.5	11-162			
lenzo (a) pyrene	102	7.8	"	100	ND	102	17-163			
ıdeno (1,2,3-cd) pyrene	119	3.7	"	100	ND	119	1-171			
)ibenz (a,h) anthracene	121	2.5	"	100	ND	121	1-227			
lenzo (g,h,i) perylene	115	4.1	"	100	ND	115	1-219			
urrogate: 2-Fluorophenol	*52.6*		"	*100*		*52.6*	*0-200*			
urrogate: Phenol-d6	*49.9*		"	*100*		*49.9*	*0-200*			
urrogate: Nitrobenzene-d5	*30.9*		"	*50.0*		*61.8*	*0-200*			
urrogate: 2-Fluorobiphenyl	*32.9*		"	*50.0*		*65.8*	*0-200*			
urrogate: 2,4,6-Tribromophenol	*94.1*		"	*100*		*94.1*	*0-200*			
urrogate: Terphenyl-dl4	*48.7*		"	*50.0*		*97.4*	*0-200*			
latrix Spike Dup (4C12003-MSD1)		**Source: 0403049-07**		**Prepared: 03/11/04 Analyzed: 03/22/04**						
henol	50.0	1.5	ug/l	100	ND	50.0	5-112	7.32	200	
is(2-chloroethyl)ether	58.2	5.7	"	100	ND	58.2	12-158	6.00	200	
·Chlorophenol	64.0	3.3	"	100	ND	64.0	23-134	3.53	200	
,3-Dichlorobenzene	42.8	1.9	"	100	ND	42.8	1-172	11.7	200	
4-Dichlorobenzene	42.9	4.4	"	100	ND	42.9	20-124	11.6	200	

Acid and Base/Neutral Extractables by EPA Method 625 - Quality Control
San Diego Gas & Electric

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4C12003 - EPA 5030 Water MS										
Matrix Spike Dup (4C12003-MSD1)		**Source: 0403049-07**		**Prepared: 03/11/04**	**Analyzed: 03/22/04**					
1,2-Dichlorobenzene	45.5	1.9	ug/l	100	ND	45.5	32-129	11.2	200	
Bis(2-chloroisopropyl)ether	62.1	5.7	"	100	ND	62.1	36-166	6.24	200	
N-Nitrosodi-n-propylamine	75.4	10	"	100	ND	75.4	1-230	3.52	200	
Hexachloroethane	34.3	1.6	"	100	ND	34.3	40-113	19.7	200	A-01a
Nitrobenzene	61.1	1.9	"	100	ND	61.1	35-180	6.65	200	
Isophorone	103	2.2	"	100	ND	103	21-196	5.66	200	
2-Nitrophenol	71.1	3.6	"	100	ND	71.1	29-182	4.00	200	
2,4-Dimethylphenol	46.2	2.7	"	100	ND	46.2	32-119	8.50	200	
Bis(2-chloroethoxy)methane	69.5	5.3	"	100	ND	69.5	33-184	5.05	200	
1,2,4-Trichlorobenzene	52.0	1.9	"	100	ND	52.0	44-142	10.9	200	
Naphthalene	60.5	1.6	"	100	ND	60.5	21-133	9.00	200	
Hexachlorobutadiene	38.8	0.90	"	100	ND	38.8	24-116	21.2	200	
2,4-Dichlorophenol	73.6	2.7	"	100	ND	73.6	39-135	5.03	200	
4-Chloro-3-methylphenol	87.2	3.0	"	100	ND	87.2	22-147	6.65	200	
2,4,6-Trichlorophenol	84.1	2.7	"	100	ND	84.1	37-144	3.16	200	
Dimethyl phthalate	21.4	1.6	"	100	ND	21.4	1-112	91.2	200	
2,6-Dinitrotoluene	92.1	1.9	"	100	ND	92.1	50-158	1.40	200	
Acenaphthylene	81.3	3.5	"	100	ND	81.3	33-145	4.45	200	
Acenaphthene	79.8	1.9	"	100	ND	79.8	47-145	6.55	200	
2,4-Dinitrophenol	114	42	"	100	ND	114	1-191	0.873	200	
4-Nitrophenol	79.0	2.4	"	100	ND	79.0	1-132	0.882	200	
2,4-Dinitrotoluene	100	5.7	"	100	ND	100	39-139	0.995	200	
Diethyl phthalate	56.2	1.9	"	100	ND	56.2	1-114	48.1	200	
Fluorene	89.4	1.9	"	100	ND	89.4	59-121	3.84	200	
4-Chlorophenyl phenyl ether	86.4	4.2	"	100	ND	86.4	25-158	3.30	200	
4,6-Dinitro-2-methylphenol	99.2	24	"	100	ND	99.2	1-181	1.73	200	
4-Bromophenyl phenyl ether	92.1	1.9	"	100	ND	92.1	53-127	5.18	200	
Hexachlorobenzene	93.1	1.9	"	100	ND	93.1	1-152	6.04	200	
Pentachlorophenol	116	3.6	"	100	ND	116	14-176	0.858	200	
Phenanthrene	98.7	5.4	"	100	ND	98.7	54-120	3.29	200	
Anthracene	93.6	1.9	"	100	ND	93.6	27-133	5.41	200	
Di-n-butyl phthalate	95.7	2.5	"	100	ND	95.7	1-118	8.31	200	
Fluoranthene	102	2.2	"	100	ND	102	26-137	3.19	200	
Pyrene	98.8	1.9	"	100	ND	98.8	52-115	14.3	200	
Butyl benzyl phthalate	86.9	2.5	"	100	ND	86.9	1-152	21.7	200	
Benzo (a) anthracene	106	7.8	"	100	ND	106	33-143	2.79	200	
Chrysene	103	2.5	"	100	ND	103	17-168	5.66	200	
3,3'-Dichlorobenzidine	82.2	16	"	70.0	ND	117	1-262	9.56	200	

Acid and Base/Neutral Extractables by EPA Method 625 - Quality Control

San Diego Gas & Electric

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4C12003 - EPA 5030 Water MS										
Matrix Spike Dup (4C12003-MSD1)		**Source: 0403049-07**		Prepared: 03/11/04	Analyzed: 03/22/04					
Bis(2-ethylhexyl)phthalate	107	12	ug/l	100	ND	107	8-158	3.67	200	
Benzo (b) fluoranthene	114	4.8	"	100	ND	114	24-159	5.96	200	
Benzo (k) fluoranthene	94.4	2.5	"	100	ND	94.4	11-162	8.73	200	
Benzo (a) pyrene	101	7.8	"	100	ND	101	17-163	0.985	200	
Indeno (1,2,3-cd) pyrene	118	3.7	"	100	ND	118	1-171	0.844	200	
Dibenz (a,h) anthracene	117	2.5	"	100	ND	117	1-227	3.36	200	
Benzo (g,h,i) perylene	112	4.1	"	100	ND	112	1-219	2.64	200	
Surrogate: 2-Fluorophenol	*50.3*		"	*100*		*50.3*	*0-200*			
Surrogate: Phenol-d6	*46.8*		"	*100*		*46.8*	*0-200*			
Surrogate: Nitrobenzene-d5	*29.2*		"	*50.0*		*58.4*	*0-200*			
Surrogate: 2-Fluorobiphenyl	*30.2*		"	*50.0*		*60.4*	*0-200*			
Surrogate: 2,4,6-Tribromophenol	*94.0*		"	*100*		*94.0*	*0-200*			
Surrogate: Terphenyl-dl4	*43.6*		"	*50.0*		*87.2*	*0-200*			
Reference (4C12003-SRM1)				Prepared: 03/11/04	Analyzed: 03/22/04					
N-Nitrosodimethylamine	35.5	10	ug/l	100		35.5	0-200			
Phenol	51.9	1.5	"	100		51.9	0-200			
Aniline	66.9	10	"	100		66.9	0-200			
Bis(2-chloroethyl)ether	67.6	5.7	"	100		67.6	0-200			
2-Chlorophenol	73.6	3.3	"	100		73.6	0-200			
1,3-Dichlorobenzene	50.6	1.9	"	100		50.6	0-200			
1,4-Dichlorobenzene	50.6	4.4	"	100		50.6	0-200			
1,2-Dichlorobenzene	54.1	1.9	"	100		54.1	0-200			
Benzyl alcohol	93.0	10	"	100		93.0	0-200			
2-Methylphenol	81.3	10	"	100		81.3	0-200			
Bis(2-chloroisopropyl)ether	71.1	5.7	"	100		71.1	0-200			
4-Methylphenol	80.8	10	"	100		80.8	0-200			
N-Nitrosodi-n-propylamine	85.9	10	"	100		85.9	0-200			
Hexachloroethane	40.5	1.6	"	100		40.5	0-200			
Nitrobenzene	66.9	1.9	"	100		66.9	0-200			
Isophorone	112	2.2	"	100		112	0-200			
2-Nitrophenol	78.7	3.6	"	100		78.7	0-200			
2,4-Dimethylphenol	70.8	2.7	"	100		70.8	0-200			
Bis(2-chloroethoxy)methane	75.1	5.3	"	100		75.1	0-200			
1,2,4-Trichlorobenzene	58.9	1.9	"	100		58.9	0-200			
Benzoic acid	67.0	10	"	100		67.0	0-200			

Acid and Base/Neutral Extractables by EPA Method 625 - Quality Control

San Diego Gas & Electric

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4C12003 - EPA 5030 Water MS										
Reference (4C12003-SRM1)				Prepared: 03/11/04 Analyzed: 03/22/04						
Naphthalene	67.4	1.6	ug/l	100		67.4	0-200			
4-Chloroaniline	83.4	10	"	100		83.4	0-200			
Hexachlorobutadiene	43.8	0.90	"	100		43.8	0-200			
2-Methylnaphthalene	78.2	10	"	100		78.2	0-200			
2,4-Dichlorophenol	80.7	2.7	"	100		80.7	0-200			
4-Chloro-3-methylphenol	94.2	3.0	"	100		94.2	0-200			
Hexachlorocyclopentadiene	54.4	10	"	100		54.4	0-200			
2,4,6-Trichlorophenol	88.5	2.7	"	100		88.5	0-200			
2,4,5-Trichlorophenol	92.9	25	"	100		92.9	0-200			
2-Chloronaphthalene	76.8	10	"	100		76.8	0-200			
2-Nitroaniline	97.4	25	"	100		97.4	0-200			
Dimethyl phthalate	1.87	1.6	"	100		1.87	0-200			
2,6-Dinitrotoluene	95.4	1.9	"	100		95.4	0-200			
Acenaphthylene	86.7	3.5	"	100		86.7	0-200			
3-Nitroaniline	96.6	25	"	100		96.6	0-200			
Acenaphthene	85.8	1.9	"	100		85.8	0-200			
2,4-Dinitrophenol	125	42	"	100		125	0-200			
4-Nitrophenol	78.9	2.4	"	100		78.9	0-200			
Dibenzofuran	91.6	10	"	100		91.6	0-200			
2,4-Dinitrotoluene	107	5.7	"	100		107	0-200			
Diethyl phthalate	17.8	1.9	"	100		17.8	0-200			
Fluorene	97.7	1.9	"	100		97.7	0-200			
4-Nitroaniline	128	25	"	100		128	0-200			
4,6-Dinitro-2-methylphenol	102	24	"	100		102	0-200			
N-Nitrosodiphenylamine	112	10	"	100		112	0-200			
Azobenzene	108	10	"	100		108	0-200			
4-Bromophenyl phenyl ether	96.0	1.9	"	100		96.0	0-200			
Hexachlorobenzene	98.8	1.9	"	100		98.8	0-200			
Pentachlorophenol	124	3.6	"	100		124	0-200			
Phenanthrene	105	5.4	"	100		105	0-200			
Anthracene	99.6	1.9	"	100		99.6	0-200			
Di-n-butyl phthalate	76.3	2.5	"	100		76.3	0-200			
Fluoranthene	109	2.2	"	100		109	0-200			
Benzidine	31.7	10	"	70.0		45.3	0-200			
Pyrene	109	1.9	"	100		109	0-200			
Butyl benzyl phthalate	73.0	2.5	"	100		73.0	0-200			
Benzo (a) anthracene	106	7.8	"	100		106	0-200			
Chrysene	105	2.5	"	100		105	0-200			

Cabrillo Power 1, LLC 4600 Carlsbad Boulevard Carlsbad CA, 92008-4301	Project: NPDES Waste Water Project Number: Encina NDPES Recertification - 2004 Project Manager: Sheila Henika	Reported: 04/26/04 09:37

Acid and Base/Neutral Extractables by EPA Method 625 - Quality Control
San Diego Gas & Electric

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
3atch 4C12003 - EPA 5030 Water MS										
Reference (4C12003-SRM1)				Prepared: 03/11/04 Analyzed: 03/22/04						
,3'-Dichlorobenzidine	90.3	16	ug/l	70.0		129	0-200			
3is(2-ethylhexyl)phthalate	111	12	"	100		111	0-200			
)i-n-octyl phthalate	97.8	2.5	"	100		97.8	0-200			
3enzo (b) fluoranthene	116	4.8	"	100		116	0-200			
3enzo (k) fluoranthene	94.6	2.5	"	100		94.6	0-200			
3enzo (a) pyrene	104	7.8	"	100		104	0-200			
ndeno (1,2,3-cd) pyrene	117	3.7	"	100		117	0-200			
)ibenz (a,h) anthracene	116	2.5	"	100		116	0-200			
3enzo (g,h,i) perylene	109	4.1	"	100		109	0-200			
'urrogate: 2-Fluorophenol	*55.0*		"	*100*		*55.0*	*0-200*			
'urrogate: Phenol-d6	*48.5*		"	*100*		*48.5*	*0-200*			
'urrogate: Nitrobenzene-d5	*31.6*		"	*50.0*		*63.2*	*0-200*			
'urrogate: 2-Fluorobiphenyl	*32.6*		"	*50.0*		*65.2*	*0-200*			
'urrogate: 2,4,6-Tribromophenol	*99.6*		"	*100*		*99.6*	*0-200*			
'urrogate: Terphenyl-dl4	*46.7*		"	*50.0*		*93.4*	*0-200*			

Volatile Organic Compounds by EPA Method 8260B - Quality Control
San Diego Gas & Electric

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
3atch 4C17002 - EPA 5030 Water MS										
3lank (4C17002-BLK1)				Prepared & Analyzed: 03/17/04						
.crolein	ND	20	ug/l							
.crylonitrile	ND	20	"							
'hloromethane	ND	5.0	"							
'inyl chloride	ND	5.0	"							
·romomethane	ND	5.0	"							
'hloroethane	ND	5.0	"							
richlorofluoromethane	ND	5.0	"							
,1-Dichloroethene	ND	5.0	"							
.cetone	ND	50	"							

Volatile Organic Compounds by EPA Method 8260B - Quality Control
San Diego Gas & Electric

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4C17002 - EPA 5030 Water MS										
Blank (4C17002-BLK1)				Prepared & Analyzed: 03/17/04						
Methylene chloride	ND	25	ug/l							
trans-1,2-Dichloroethene	ND	5.0	"							
1,1-Dichloroethane	ND	5.0	"							
2-Butanone	ND	10	"							
cis-1,2-Dichloroethene	ND	5.0	"							
Chloroform	ND	5.0	"							
1,1,1-Trichloroethane	ND	5.0	"							
Carbon tetrachloride	ND	5.0	"							
1,2-Dichloroethane	ND	5.0	"							
Benzene	ND	5.0	"							
Trichloroethene	ND	5.0	"							
1,2-Dichloropropane	ND	5.0	"							
Bromodichloromethane	ND	5.0	"							
2-Chloroethylvinyl ether	ND	10	"							
trans-1,3-Dichloropropene	ND	5.0	"							
4-Methyl-2-pentanone	ND	10	"							
Toluene	ND	5.0	"							
cis-1,3-Dichloropropene	ND	5.0	"							
1,1,2-Trichloroethane	ND	5.0	"							
Tetrachloroethene	ND	5.0	"							
2-Hexanone	ND	10	"							
Dibromochloromethane	ND	5.0	"							
Chlorobenzene	ND	5.0	"							
Ethylbenzene	ND	5.0	"							
Styrene	ND	5.0	"							
Bromoform	ND	5.0	"							
1,3-Dichlorobenzene	ND	5.0	"							
1,4-Dichlorobenzene	ND	5.0	"							
1,2-Dichlorobenzene	ND	5.0	"							
1,1,2,2-Tetrachloroethane	ND	5.0	"							
m,p-Xylene	ND	5.0	"							
o-Xylene	ND	5.0	"							
Surrogate: Dibromofluoromethane	*49.8*		"	*50.0*		*99.6*	*86-118*			
Surrogate: 1,2-Dichloroethane-d4	*47.2*		"	*50.0*		*94.4*	*80-120*			
Surrogate: Toluene-d8	*49.9*		"	*50.0*		*99.8*	*88-110*			
Surrogate: 4-Bromofluorobenzene	*48.2*		"	*50.0*		*96.4*	*86-115*			

Cabrillo Power 1, LLC
4600 Carlsbad Boulevard
Carlsbad CA, 92008-4301

Project: NPDES Waste Water
Project Number: Encina NDPES Recertification - 2004
Project Manager: Sheila Henika

Reported:
04/26/04 09:37

Volatile Organic Compounds by EPA Method 8260B - Quality Control
San Diego Gas & Electric

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4C17002 - EPA 5030 Water MS										
3lank (4C17002-BLK1)				Prepared & Analyzed: 03/17/04						
Reference (4C17002-SRM1)				Prepared & Analyzed: 03/17/04						
Chloromethane	18.1	5.0	ug/l	20.0		90.5	1-273			
Vinyl chloride	20.8	5.0	"	20.0		104	1-251			
Bromomethane	19.5	5.0	"	20.0		97.5	1-242			
Chloroethane	18.7	5.0	"	20.0		93.5	14-230			
Trichlorofluoromethane	17.5	5.0	"	20.0		87.5	17-181			
1,1-Dichloroethene	17.3	5.0	"	20.0		86.5	1-234			
Methylene chloride	19.8	5.0	"	20.0		99.0	1-221			
trans-1,2-Dichloroethene	17.8	5.0	"	20.0		89.0	54-156			
1,1-Dichloroethane	18.7	5.0	"	20.0		93.5	59-155			
Chloroform	18.8	5.0	"	20.0		94.0	51-138			
1,1,1-Trichloroethane	18.3	5.0	"	20.0		91.5	52-162			
Carbon tetrachloride	17.5	5.0	"	20.0		87.5	70-170			
1,2-Dichloropropane	18.7	5.0	"	20.0		93.5	1-210			
Bromodichloromethane	18.9	5.0	"	20.0		94.5	35-155			
trans-1,3-Dichloropropene	16.7	5.0	"	20.0		83.5	17-183			
Toluene	19.0	5.0	"	20.0		95.0	47-150			
cis-1,3-Dichloropropene	16.4	5.0	"	20.0		82.0	1-227			
1,1,2-Trichloroethane	18.8	5.0	"	20.0		94.0	52-150			
Tetrachloroethene	18.7	5.0	"	20.0		93.5	64-148			
Dibromochloromethane	18.1	5.0	"	20.0		90.5	53-149			
Chlorobenzene	19.3	5.0	"	20.0		96.5	37-160			
Ethylbenzene	18.6	5.0	"	20.0		93.0	37-162			
Bromoform	18.1	5.0	"	20.0		90.5	45-169			
1,3-Dichlorobenzene	19.8	5.0	"	20.0		99.0	59-156			
1,4-Dichlorobenzene	19.4	5.0	"	20.0		97.0	18-190			
1,2-Dichlorobenzene	19.4	5.0	"	20.0		97.0	18-190			
1,1,2,2-Tetrachloroethane	19.1	5.0	"	20.0		95.5	46-157			
Surrogate: Dibromofluoromethane	*50.8*		"	*50.0*		*102*	*86-118*			
Surrogate: 1,2-Dichloroethane-d4	*48.1*		"	*50.0*		*96.2*	*80-120*			
Surrogate: Toluene-d8	*49.6*		"	*50.0*		*99.2*	*88-110*			
Surrogate: 4-Bromofluorobenzene	*49.2*		"	*50.0*		*98.4*	*86-115*			

Notes and Definitions

A-01	Although the Mehtod Blank indicates a possible positive bias, the associated client sample are non-detect. Method criteria were met.
A-01a	Since OPR (SRM1) met all criteria, the data is accepted.
QM-02	The percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte inherent in the sample.
QM-12	The MS and/or MSD percent recoveries indicate bias due to the sample matrix. Method criteria were satisfied.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

ENCINA POWER STATION LAB
pH METER CALIBRATION AND ANALYSIS
EPA Method 150.1

PROJECT: **ENCINA POWER STATION NPDES RECERTIFICATION - 2004**
METER: **HACH SensION 2**

START DATE	3/8/04		START TIME	0615	
pH STANDARDS:	**Fisher Scientific Standards**				
pH 7.0 exp. Date	Jul-05	Lot #	035852-24	Temp. C- 7 Buffer	21.9
mv @ 7.0 pH	7.7				
pH 10.0 exp.date	May-05	Lot #	033151-24	Temp. C-10 Buffer	21.9
pH 4.0 exp. date	Oct-04	Lot #	027572-24	Temp . C-4 Buffer	21.9
Slope =	-58.6				

pH Calibration Checks: **HACH Standards**

DI Water pH	5-66	Temp.C	21.2				
10 pH check	10.06	Temp.C	21.3	Exp. Date	May-05	Lot#	A3024
7 pH check	7.02	Temp.C	21.3	Exp. Date	Jan-05	Lot#	A3024

PROJECT : **EPS NPDES RECERTIFICATION - 2004**

SAMPLE	Time	pH	Temp. C
CW INLET	0705	8.15	16.0°C
CW DISCHARGE	0725	8.07	20.7°C

STANDARDS CHECK AFTER ANALYSIS
Fisher Scientific Standards

pH Buffer	Time	pH	Temp. C
DI Water	0800	5.71	21.5
pH 4.0	0803	4.03	22.3
pH 7.0	0805	7.01	22.3
pH 10.0	0807	10.02	22.3

END DATE 3/8/04 END TIME 0810

COMMENTS

Analyzed by [signature]
Date 3-8-04

ENCINA POWER STATION LAB
pH METER CALIBRATION AND ANALYSIS
EPA Method 150.1

PROJECT: **ENCINA POWER STATION NPDES RECERTIFICATION - 2004**
METER: **HACH SensION 2**

START DATE 3/8/04 START TIME 1135
pH STANDARDS: **Fisher Scientific Standards**

pH 7.0 exp. Date	Jul-05	Lot #	035852-24	Temp. C- 7 Buffer	23.8
mv @ 7.0 pH	+7.2				
pH 10.0 exp.date	May-05	Lot #	033151-24	Temp. C-10 Buffer	23.8
pH 4.0 exp. date	Oct-04	Lot #	027572-24	Temp . C-4 Buffer	23.8
Slope =	-58.6				

pH Calibration Checks: **HACH Standards**

DI Water pH	5.68	Temp.C	22.2				
10 pH check	10.07	Temp.C	22.6	Exp. Date	May-05	Lot#	A3024
7 pH check	7.00	Temp.C	23.1	Exp. Date	Jan-05	Lot#	A3024

PROJECT : **EPS NPDES RECERTIFICATION - 2004**

SAMPLE	Time	pH	Temp. C
CW INLET	1250	8.18	16.1
CW DISCHARGE	1315	8.10	22.9

STANDARDS CHECK AFTER ANALYSIS
Fisher Scientific Standards

pH Buffer	Time	pH	Temp. C
DI Water		5.78	23.0
pH 4.0		4.01	22.5
pH 7.0		7.02	22.5
pH 10.0		10.04	22.5

END DATE 3/8/04 END TIME 1345

COMMENTS

Analyzed by Pedro Lopez
Date 3/8/04

ENCINA POWER STATION LAB
pH METER CALIBRATION AND ANALYSIS
EPA Method 150.1

PROJECT: **ENCINA POWER STATION NPDES RECERTIFICATION - 2004**
METER: **HACH SensION 2**

START DATE 3/8/04 START TIME 1810
pH STANDARDS: **Fisher Scientific Standards**

pH 7.0 exp. Date	Jul-05	Lot #	035852-24	Temp. C- 7 Buffer	24.6
mv @ 7.0 pH	7.1				
pH 10.0 exp.date	May-05	Lot #	033151-24	Temp. C-10 Buffer	24.6
pH 4.0 exp. date	Oct-04	Lot #	027572-24	Temp . C-4 Buffer	24.6
Slope =	58.6				

pH Calibration Checks: **HACH Standards**

DI Water pH	5.66	Temp.C	23.5				
10 pH check	10.04	Temp.C	23.7	Exp. Date	May-05	Lot#	A3024
7 pH check	7.01	Temp.C	24.0	Exp. Date	Jan-05	Lot#	A3024

PROJECT : **EPS NPDES RECERTIFICATION - 2004**

SAMPLE	Time	pH	Temp. C
CW INLET	1900	8.16	16.6°C
CW DISCHARGE	1925	8.06	24°C

STANDARDS CHECK AFTER ANALYSIS
Fisher Scientific Standards

pH Buffer	Time	pH	Temp. C
DI Water	2015	~~8.71~~ 5.71 PL	22.9
pH 4.0	2017	4.00	23.1
pH 7.0	2020	7.02	22.7
pH 10.0	2025	10.05	22.9

END DATE 3/8/04 END TIME 2030

COMMENTS

Analyzed by [signature]
Date 3/8/04

ENCINA POWER STATION LAB
pH METER CALIBRATION AND ANALYSIS
EPA Method 150.1

PROJECT: **ENCINA POWER STATION NPDES RECERTIFICATION - 2004**
METER: **HACH SensION 2**

START DATE	3/9/04		START TIME	0030	
pH STANDARDS:	**Fisher Scientific Standards**				
pH 7.0 exp. Date	Jul-05	Lot #	035852-24	Temp. C- 7 Buffer	23.1
mv @ 7.0 pH	6.8				
pH 10.0 exp.date	May-05	Lot #	033151-24	Temp. C-10 Buffer	23.1
pH 4.0 exp. date	Oct-04	Lot #	027572-24	Temp . C-4 Buffer	23.1
Slope =	-58.6				
pH Calibration Checks:	**HACH Standards**				
DI Water pH	5.81	Temp.C	35.3°c		
10 pH check	10.01	Temp.C	22.7	Exp. Date	May-05 Lot# A3024
7 pH check	7.01	Temp.C	22.7	Exp. Date	Jan-05 Lot# A3024

PROJECT : **EPS NPDES RECERTIFICATION - 2004**

SAMPLE	Time	pH	Temp. C
CW INLET	0115	8.16	16.3
CW DISCHARGE	0122	8.14	18.5

STANDARDS CHECK AFTER ANALYSIS
Fisher Scientific Standards

pH Buffer	Time	pH	Temp. C
DI Water	0150	5.89	35.1
pH 4.0	0155	4.01	22.8
pH 7.0	0158	7.02	22.8
pH 10.0	0202	10.04	22.3

END DATE 3/9/04 END TIME 0205

COMMENTS

Analyzed by [signature]
Date 3/9/04

(2)

ENCINA POWER STATION LAB
DR2000 or DR2010 SPECTROPHOTOMETER
ENICNAPOWER STATION RECERTIFICATION - 2004
DPD Method

PROJECT NPDES- Recertification - 2004
DATE 3/8/04 TIME 0630

Checking the calibration of the spectrophotometer before analysis.		
HACH DPD Chlorine Std. Kit	kit lot number: A2129 cat # 26353-00	Exp. Date May 2004

	Standards	DR/2000 readings
1st	Zero	—
2nd	0.20mg/l	0.20
3rd	0.88mg/l	0.86
4th	1.58mg/l	1.61

HACH STD SOLUTIONS

69.8+/-0.1 mg/l	cat# 14268 -10	lot # A3332	exp date July 2005
24.98+/-0.19 mg/l	cat# 26300 - 20	lot # A3314	exp date Nov 2004

Calculation for making Stds and spikes
Volume of Std = (Sample vlolume)(Desire Std Conc) / Original Std Conc.

Known STD solution used: 24.98 +/- 0.19 mg/l

Volume of Std	Total volume	Calculated mg/l	Analyzer reading mg/l
0.20 mls	50 mls	0.10 mg/l	0.10 mg/l
0.40 mls	50 mls	0.20 mg/l	0.19 mg/l

ENCINA POWER STATION NPDES RECERTIFICATION			
SAMPLE POINT	TIME	RESULT	COMMENTS
INLET	0705	0.01 mg/l	
DISCHARGE	0724	0.01 mg/l	

Check after analysis with HACH DPD CHLORINE STD KIT		
	Standards	DR/2000 readings
1st	Zero	
2nd	0.20mg/l	0.20 mg/l
3rd	0.88mg/l	0.85 mg/l
4th	1.58mg/l	1.61 mg/l

Calibration Check Performed by Pedro Lopez
Date 3/8/04
Lab Number 2547

(2)

ENCINA POWER STATION LAB
DR2000 or DR2010 SPECTROPHOTOMETER
ENICNAPOWER STATION RECERTIFICATION - 2004
DPD Method

PROJECT NPDES- Recertification -2004
DATE 3/8/04 TIME 1145

Checking the calibration of the spectrophotometer before analysis.		
HACH DPD Chlorine Std. Kit	kit lot number: A2129 cat # 26353-00	Exp. Date May 2004

	Standards	DR/2000 readings
1st	Zero	—
2nd	0.20mg/l	0.20 mg/l
3rd	0.88mg/l	0.86 mg/l
4th	1.58mg/l	1.61 mg/l

HACH STD SOLUTIONS

69.8+/-0.1 mg/l	cat# 14268 -10	lot # A3332	exp date July 2005
24.98+/-0.19 mg/l	cat# 26300 - 20	lot # A3314	exp date Nov 2004

Calculation for making Stds and spikes

Volume of Std = (Sample vlolume)(Desire Std Conc) / Original Std Conc.

Known STD solution used: 24.98 +/- 0.19 mg/l

Volume of Std	Total volume	Calculated mg/l	Analyzer reading mg/l
0.10 mls	50 mls	0.05 mg/l	0.05 mg/l
0.40 mls	50 mls	0.20 mg/l	0.20 mg/l

ENCINA POWER STATION NPDES RECERTIFICATION

SAMPLE POINT	TIME	RESULT	COMMENTS
INLET	1250	0.01 mg/l	
DISCHARGE	1315	0.02 mg/l	

Check after analysis with HACH DPD CHLORINE STD KIT

	Standards	DR/2000 readings
1st	Zero	—
2nd	0.20mg/l	0.20 mg/l
3rd	0.88mg/l	0.86 mg/l
4th	1.58mg/l	1.62 mg/l

Calibration Check Performed by [signature]
Date 3/8/04
Lab Number 2547

ENCINA POWER STATION LAB
DR2000 or DR2010 SPECTROPHOTOMETER
ENICNAPOWER STATION RECERTIFICATION - 2004
DPD Method

PROJECT NPDES- Recertification
DATE 3/8/04 TIME 1800

Checking the calibration of the spectrophotometer before analysis.		
HACH DPD Chlorine Std. Kit	kit lot number: A2129 cat # 26353-00	Exp. Date May 2004

	Standards	DR/2000 readings
1st	Zero	—
2nd	0.20mg/l	0.20
3rd	0.88mg/l	0.86
4th	1.58mg/l	1.62

HACH STD SOLUTIONS

69.8+/-0.1 mg/l	cat# 14268 -10	lot # A3332	exp date July 2005
24.98+/-0.19 mg/l	cat# 26300 - 20	lot # A3314	exp date Nov 2004

Calculation for making Stds and spikes

Volume of Std = (Sample vlolume)(Desire Std Conc) / Original Std Conc.

Known STD solution used: 24.98±0.19 mg/l

Volume of Std	Total volume	Calculated mg/l	Analyzer reading mg/l
0.10 ml	50mls	0.05 mg/l	0.05 mg/l
0.40 mls	50mls	0.20 mg/l	0.20 mg/l

ENCINA POWER STATION NPDES RECERTIFICATION

SAMPLE POINT	TIME	RESULT	COMMENTS
INLET	1900	0.02 mg/l	
DISCHARGE	1925	0.02 mg/l	

Check after analysis with HACH DPD CHLORINE STD KIT

	Standards	DR/2000 readings
1st	Zero	—
2nd	0.20mg/l	0.20
3rd	0.88mg/l	0.87
4th	1.58mg/l	1.61

Calibration Check Performed by [signature]
Date 3/8/04
Lab Number 2547

(4)

ENCINA POWER STATION LAB
DR2000 or DR2010 SPECTROPHOTOMETER
ENICNAPOWER STATION RECERTIFICATION - 2004
DPD Method

PROJECT NPDES- RECERTIFICATION - 2004
DATE 3/9/04 TIME 0030

Checking the calibration of the spectrophotometer before analysis.			
HACH DPD Chlorine Std. Kit	kit lot number: A2129 cat # 26353-00		Exp. Date May 2004
	Standards	DR/2000 readings	
1st	Zero	—	
2nd	0.20mg/l	0.20 mg/l	
3rd	0.88mg/l	0.88 mg/l	
4th	1.58mg/l	1.64 mg/l	

HACH STD SOLUTIONS

69.8+/-0.1 mg/l	cat# 14268 -10	lot # A3332	exp date July 2005
24.98+/-0.19 mg/l	cat# 26300 - 20	lot # A3314	exp date Nov 2004

Calculation for making Stds and spikes
Volume of Std = (Sample vlolume)(Desire Std Conc) / Original Std Conc.

Known STD solution used: 24.98+/- 0.19 mg/l

Volume of Std	Total volume	Calculated mg/l	Analyzer reading mg/l
0.10 mls	50 mls	0.05 mg/l	0.05 mg/l
0.40 mls	50 mls	0.20 mg/l	0.20 mg/l

ENCINA POWER STATION NPDES RECERTIFICATION

SAMPLE POINT	TIME	RESULT	COMMENTS
INLET	0115	0.02	
DISCHARGE	0122	0.03	

Check after analysis with HACH DPD CHLORINE STD KIT

	Standards	DR/2000 readings
1st	Zero	—
2nd	0.20mg/l	0.20 mg/l
3rd	0.88mg/l	0.87 mg/l
4th	1.58mg/l	1.64 mg/l

Calibration Check Performed by Pedro Lopez
Date 3/9/04
Lab Number 2547

;DG&E Chain of Custody Form

nvironmental Analysis Laboratory
555 Nancy Ridge Dr., Suite 300, San Diego CA 92121-3221
ab Phone No: (619) 260-5747 Fax: (858) 514-0154

Lab ID No. 04-03-049

VORK ID: Encina NPDES Recertification - 2004

Client Code: Cabrillo Power 1, LLC
Project Code: NPDES Waste Water
Category Code: Semi-Annual

lient Name: Sheila Henika
lient Address: 4600 Carlsbad Blvd, Carlsbad, CA 92008-4301
lient Phone: (760) 268-4018

Number of Containers: 93 total (14 this page)

Due Date: 10-day TAT

ampled by (Print): Pedro D. Lopez

Sampled by (Signature): Pedro Lopez

ample ID	Bottle	Date	Time	Sample Type	Sample Matrix	Sample Container	Preservation	Test (Test Codes)
ITAKE	01A	3/9/04	0800	24-hr composite	Seawater	1 x 1L P	4C, pH<2 w/H2SO4	Nitrogen (Ammonia) - EPA 350.2
ITAKE	01B	↓	↓	24-hr composite	Seawater	1 x 1L P	4°C	Total Suspended Solids - EPA 160.2
ITAKE	01C	↓	↓	24-hr composite	Seawater	1 x 1L P	4°C	Bromide, Fluoride, Nitrate (as N), Nitrite (as N), Sulfate - EPA 300
ITAKE	01D	↓	↓	24-hr composite	Seawater	1 x 1L P	4C, pH<2 w/HNO3	Metals - see list below
ITAKE	01E	↓	↓	24-hr composite	Seawater	250 mL P	4C, pH<2 w/H2SO4	Phosphorus, Total (as P) - EPA 200.7
ITAKE	01F	↓	↓	24-hr composite	Seawater	1 x 1L P	4C, pH>12 w/NaOH	Cyanide, Total - EPA 335.2
ISCHARGE	02A-B	3/9/04	0820	24-hr composite	Seawater	2 x 1L P	4C, pH<2 w/H2SO4	Nitrogen (Ammonia) - EPA 350.2
ISCHARGE	02C	↓	↓	24-hr composite	Seawater	1 x 1L P	4°C	Total Suspended Solids - EPA 160.2
SCHARGE	2D	↓	↓	24-hr composite	Seawater	1 x 1L P	4°C	Bromide, Fluoride, Nitrate (as N), Nitrite (as N), Sulfate - EPA 300
SCHARGE	02E	↓	↓	24-hr composite	Seawater	1 x 1L P	4C, pH<2 w/HNO3	Metals - see list below
SCHARGE	02F	↓	↓	24-hr composite	Seawater	250 mL P	4C, pH<2 w/H2SO4	Phosphorus, Total (as P) - EPA 200.7
SCHARGE	02G-H	↓	↓	24-hr composite	Seawater	2 x 1L P	4C, pH>12 w/NaOH	Cyanide, Total - EPA 335.2

clude Quality Control data with report
etals by ICP - EPA 200.7 = Al, Sb, Ba, Be, B, Co, Fe, Mg, Mn, Mo, Se, Tl, Sn, Ti, Zn   Metals by CVAA - Hg (245.1)   Cooler Temp = 3.8°C
etals by GFAA - Ag (272.2,)As (206.3), Cd (213.2), Cr (218.2), Cu (220.2), Ni (249.2), Pb (239.2)

	Date	Time		Date	Time
eleasing: Pedro Lopez	3/9/04	1130	Accepting: [signature]	3-9-04	1130
eleasing	Date	Time	Accepting	Date	Time

ab\cocforms\Encina 2004 Recert.xls

SDG&E Chain of Custody Form

Environmental Analysis Laboratory
6555 Nancy Ridge Dr., Suite 300, San Diego CA 92121-3221
Lab Phone No: (619) 260-5747 Fax: (858) 514-0154

Lab ID No. 04·03·049

WORK ID: Encina NPDES Recertification - 2004

Client Name: Sheila Henika
Client Address: 4600 Carlsbad Blvd, Carlsbad, CA 92008-4301
Client Phone: (760) 268-4018

Client Code: Cabrillo Power 1, LLC
Project Code: NPDES Waste Water
Category Code: Semi-Annual

Number of Containers: 93 total (16 this page)

Due Date: 10-day TAT

Sampled by (Print): Pedro D. Lopez

Sampled by (Signature): [signature]

Sample ID	Bottle	Date	Time	Sample Type	Sample Matrix	Sample Container	Preservation	Test (Test Codes)
INTAKE	03A-B	3/8/04	0715	Grab	Seawater	2x 1-L Amber Glass	4°C,pH<2w/H_2SO_4	Hexane Extractable Material (Oil & Grease) - EPA 1664A
INTAKE	04A-B	3/8/04	1242	Grab	Seawater	2x 1-L Amber Glass	4°C,pH<2w/H_2SO_4	Hexane Extractable Material (Oil & Grease) - EPA 1664A
INTAKE	05A-B	3/8/04	1850	Grab	Seawater	2x 1-L Amber Glass	4°C,pH<2w/H_2SO_4	Hexane Extractable Material (Oil & Grease) - EPA 1664A
INTAKE	06A-B	3/9/04	0105	Grab	Seawater	2x 1-L Amber Glass	4°C,pH<2w/H_2SO_4	Hexane Extractable Material (Oil & Grease) - EPA 1664A
INTAKE	03C-D	3/8/04	0715	Grab	Seawater	2x 1-L Amber Glass	4°C	Pesticides/PCBs - EPA 608
INTAKE	04C-D	3/8/04	1242	Grab	Seawater	2x 1-L Amber Glass	4°C	Pesticides/PCBs - EPA 608
INTAKE	05C-D	3/8/04	1850	Grab	Seawater	2x 1-L Amber Glass	4°C	Pesticides/PCBs - EPA 608
NTAKE	06C-D	3/9/04	0105	Grab	Seawater	2x 1-L Amber Glass	4°C	Pesticides/PCBs - EPA 608

nclude Quality Control data with report

Cooler Temp= 3.8°C

Releasing	Date	Time	Accepting	Date	Time
eleasing [signature]	3/9/04	1130	Accepting [signature]	3-9-04	1130
eleasing	Date	Time	Accepting	Date	Time

SDG&E Chain of Custody Form

Environmental Analysis Laboratory
6555 Nancy Ridge Dr., Suite 300, San Diego CA 92121-3221
Lab Phone No: (619) 260-5747 Fax: (858) 514-0154

Lab ID No. 04·03·049

WORK ID: Encina NPDES Recertification - 2004

Client Name: Sheila Henika
Client Address: 4600 Carlsbad Blvd, Carlsbad, CA 92008-4301
Client Phone: (760) 268-4018

Client Code: Cabrillo Power 1, LLC
Project Code: NPDES Waste Water
Category Code: Semi-Annual

Number of Containers: 93 total (20 this page)

Due Date: 10-day TAT

Sampled by (Print): Pedro D. Lopez

Sampled by (Signature): Pedro Lopez 3-9-04

Sample ID	Bottle	Date	Time	Sample Type	Sample Matrix	Sample Container	Preservation	Test (Test Codes)
								8260
INTAKE	03E-F-G	3/8/04	0715	Grab	Seawater	3 x VOA	4°C,pH<2w/HCl	Volatile Organic Compounds - EPA ~~624~~ 8260
INTAKE	04E-F-G	3/8/04	1242	Grab	Seawater	3 x VOA	4°C,pH<2w/HCl	Volatile Organic Compounds - EPA ~~624~~ 8260
INTAKE	05E-F-G	3/8/04	1850	Grab	Seawater	3 x VOA	4°C,pH<2w/HCl	Volatile Organic Compounds - EPA ~~624~~ 8260
INTAKE	06E-F-G	3/9/04	0105	Grab	Seawater	3 x VOA	4°C,pH<2w/HCl	Volatile Organic Compounds - EPA ~~624~~ 8260
INTAKE	03H-I	3/8/04	0715	Grab	Seawater	2x 1-L Amber Glass	4°C	Semivolatile Organic Compounds - EPA 625
INTAKE	04H-I	3/8/04	1242	Grab	Seawater	2x 1-L Amber Glass	4°C	Semivolatile Organic Compounds - EPA 625
INTAKE	05H-I	3/8/04	1850	Grab	Seawater	2x 1-L Amber Glass	4°C	Semivolatile Organic Compounds - EPA 625
INTAKE	06H-I	3/9/04	0105	Grab	Seawater	2x 1-L Amber Glass	4°C	Semivolatile Organic Compounds - EPA 625

Include Quality Control data with report

Cooler Temp = 3.8°C

Releasing	Date	Time	Accepting	Date	Time
			[signature]	3-9-04	1130

Releasing	Date	Time	Accepting	Date	Time

SDG&E Chain of Custody Form

Environmental Analysis Laboratory
6555 Nancy Ridge Dr., Suite 300, San Diego CA 92121-3221
Lab Phone No: (619) 260-5747 Fax: (858) 514-0154

Lab ID No. 04-03-049

WORK ID: Encina NPDES Recertification - 2004

Client Code: Cabrillo Power 1, LLC
Project Code: NPDES Waste Water
Category Code: Semi-Annual

Client Name: Sheila Henika
Client Address: 4600 Carlsbad Blvd, Carlsbad, CA 92008-4301
Client Phone: (760) 268-4018

Number of Containers: 93 total (16 this page)

Due Date: 10-day TAT

Sampled by (Print): Pedro D. Lopez

Sampled by (Signature): Pedro Lopez

Sample ID	Bottle	Date	Time	Sample Type	Sample Matrix	Sample Container	Preservation	Test (Test Codes)
DISCHARGE	07A-B	3/8/04	0737	Grab	Seawater	2x 1-L Amber Glass	4°C,pH<2w/H_2SO_4	Hexane Extractable Material (Oil & Grease) - EPA 1664A
DISCHARGE	08A-B	3/8/04	1305	Grab	Seawater	2x 1-L Amber Glass	4°C,pH<2w/H_2SO_4	Hexane Extractable Material (Oil & Grease) - EPA 1664A
DISCHARGE	09A-B	3/8/04	1910	Grab	Seawater	2x 1-L Amber Glass	4°C,pH<2w/H_2SO_4	Hexane Extractable Material (Oil & Grease) - EPA 1664A
DISCHARGE	10A-B	3/9/04	0127	Grab	Seawater	2x 1-L Amber Glass	4°C,pH<2w/H_2SO_4	Hexane Extractable Material (Oil & Grease) - EPA 1664A
DISCHARGE	07C-D	3/8/04	0737	Grab	Seawater	2x 1-L Amber Glass	4°C	Pesticides/PCBs - EPA 608
DISCHARGE	08C-D	3/8/04	1305	Grab	Seawater	2x 1-L Amber Glass	4°C	Pesticides/PCBs - EPA 608
DISCHARGE	09C-D	3/8/04	1910	Grab	Seawater	2x 1-L Amber Glass	4°C	Pesticides/PCBs - EPA 608
DISCHARGE	10C-D	3/9/04	0127	Grab	Seawater	2x 1-L Amber Glass	4°C	Pesticides/PCBs - EPA 608

Include Quality Control data with report

Cooler Temp= 3.8 °C

Releasing: Pedro Lopez	Date 3/9/04	Time 1130	Accepting: [signature]	Date 3-9-04	Time 1130
Releasing	Date	Time	Accepting	Date	Time

SDG&E Chain of Custody Form

Environmental Analysis Laboratory
6555 Nancy Ridge Dr., Suite 300, San Diego CA 92121-3221
Lab Phone No: (619) 260-5747 Fax: (858) 514-0154

Lab ID No. 04-03-049

WORK ID: Encina NPDES Recertification - 2004

Client Name: Sheila Henika
Client Address: 4600 Carlsbad Blvd, Carlsbad, CA 92008-4301
Client Phone: (760) 268-4018

Client Code: Cabrillo Power 1, LLC
Project Code: NPDES Waste Water
Category Code: Semi-Annual

Number of Containers: 93 total (27 this page)

Due Date: 10-day TAT

Sampled by (Print): Pedro D. Lopez

Sampled by (Signature): Pedro Lopez

Sample ID	Bottle	Date	Time	Sample Type	Sample Matrix	Sample Container	Preservation	Test (Test Codes)
DISCHARGE	07E-F-G	3/8/04	0737	Grab	Seawater	3 x VOA	4°C,pH<2w/HCl	Volatile Organic Compounds - EPA ~~624~~ 8260
DISCHARGE	08E-F-G	3/8/04	1305	Grab	Seawater	3 x VOA	4°C,pH<2w/HCl	Volatile Organic Compounds - EPA ~~624~~ 8260
DISCHARGE	09E-F-G	3/8/04	1910	Grab	Seawater	3 x VOA	4°C,pH<2w/HCl	Volatile Organic Compounds - EPA ~~624~~ 8260
DISCHARGE	10E-F-G	3/9/04	0127	Grab	Seawater	3 x VOA	4°C,pH<2w/HCl	Volatile Organic Compounds - EPA ~~624~~ 8260
TRIP BLANK	11A-B-C	3/2/04	1000	Grab	Seawater	3 x VOA	4°C,pH<2w/HCl	Volatile Organic Compounds - EPA ~~624~~ 8260
DISCHARGE	07H-I-J	3/8/04	0737	Grab	Seawater	3x 1-L Amber Glass	4°C	Semivolatile Organic Compounds - EPA 625
DISCHARGE	08H-I-J	3/8/04	1305	Grab	Seawater	3x 1-L Amber Glass	4°C	Semivolatile Organic Compounds - EPA 625
DISCHARGE	09H-I-J	3/8/04	1910	Grab	Seawater	3x 1-L Amber Glass	4°C	Semivolatile Organic Compounds - EPA 625
DISCHARGE	10H-1-J	3/9/04	0127	Grab	Seawater	3x 1-L Amber Glass	4°C	Semivolatile Organic Compounds - EPA 625

3/9/04 8260

Include Quality Control data with report

Cooler Temp = 3.8°C

Releasing	Date	Time	Accepting	Date	Time
Pedro Lopez	3/9/04	1125	[signature]	3-9-04	1118
Releasing	Date	Time	Accepting	Date	Time

;DG&E Chain of Custody Form

nvironmental Analysis Laboratory
;55 Nancy Ridge Dr., Suite 300, San Diego CA 92121-3221
ab Phone No: (619) 260-5747 Fax: (858) 514-0154

Lab ID No. 04·03·049

/ORK ID: Encina NPDES Recertification - 2004

lient Name: Sheila Henika
lient Address: 4600 Carlsbad Blvd, Carlsbad, CA 92008-4301
lient Phone: (760) 268-4018

Client Code: Cabrillo Power 1, LLC
Project Code: NPDES Waste Water
Category Code: Semi-Annual

Number of Containers: 0 (field tests)

Due Date: 10-day TAT

ampled by (Print): Pedro D. Lopez

Sampled by (Signature): [signature]

ample ID	Bottle	Date	Time	Sample Type	Sample Matrix	Sample Container	Preservation	Test (Test Codes)
ITAKE	12A	3/8/04	0705	Grab	Seawater	Field Test	n/a	pH - EPA 150.1 ; Total Residual Chlorine - SM 4500-Cl G
TAKE	14A	3/8/04	1250	Grab	Seawater	Field Test	n/a	pH - EPA 150.1 ; Total Residual Chlorine - SM 4500-Cl G
TAKE	16A	3/8/04	1900	Grab	Seawater	Field Test	n/a	pH - EPA 150.1 ; Total Residual Chlorine - SM 4500-Cl G
TAKE	18A	3/9/04	0115	Grab	Seawater	Field Test	n/a	pH - EPA 150.1 ; Total Residual Chlorine - SM 4500-Cl G
SCHARGE	13A	3/8/04	0725	Grab	Seawater	Field Test	n/a	pH - EPA 150.1 ; Total Residual Chlorine - SM 4500-Cl G
SCHARGE	15A	3/8/04	1315	Grab	Seawater	Field Test	n/a	pH - EPA 150.1 ; Total Residual Chlorine - SM 4500-Cl G
SCHARGE	17A	3/8/04	1925	Grab	Seawater	Field Test	n/a	pH - EPA 150.1 ; Total Residual Chlorine - SM 4500-Cl G
SCHARGE	19A	3/9/04	0122	Grab	Seawater	Field Test	n/a	pH - EPA 150.1 ; Total Residual Chlorine - SM 4500-Cl G

;lude Quality Control data with report

Field Measurements

		Date	Time			Date	Time
leasing	[signature]	3-9-04	1105	Accepting	[signature]	3-9-04	1105
easing		Date	Time	Accepting		Date	Time

CRG Marine Laboratories, Inc.
2020 Del Amo Blvd., Suite 200, Torrance, CA 90501-1206
(310) 533-5190 FAX (310) 533-5003

CHAIN-OF-CUSTODY RECORD

Client Name:	SDG&E Environmental Laboratory
Client Address:	6555 Nancy Ridge Drive, Suite 300, San Diego, CA 92121
Sampled By:	Pedro D. Lopez
Phone:	619-260-5746
FAX:	858-514-0-154
Project Manager:	Albert Menegus
Project Name:	Encina NPDES Recertification - 2004
PO Number:	

REQUESTED ANALYSIS

	Client Sample ID	Sample Date	Sample Time	Sample Matrix*	Container Number	Container Type	Tributylin Tin by GC/FPD										
1	Intake	3/9/04	0800	SW	2	1-L amber glass	✓										
2	Discharge	3/9/04	0820	SW	2	1-L amber glass	✓										
3	MS/MSD	3/9/04	0820	SW	2	1-L amber glass	✓										
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Correct Containers:	Yes	No	
Sample Temperature:	Ambient	Cold	Warm
Sample Preservative:	Yes	No	
Turnaround Time:	STD	Specify:	

Comments:

Please include Quality Control data with report.

Please send report and invoice to the SDG&E address shown above.

4-9-04 - Cooler Temp = 3.8°C

RELIQUINSHED BY

Signature:	Pedro Lopez
Print:	PEDRO LOPEZ
Company:	NRG Cabrillo Power
DATE:	3/9/04 TIME: 1105

RECEIVED BY

Signature:	Albert M. Menegus
Print:	Albert M. MENEGUS
Company:	SDG+E
DATE:	3-9-04 TIME: 1105

*MATRIX CODES: (SED = Sediment); (TISS = Tissue); (SW = Seawater, Saltwater); (FW = Freshwater); (WW = Wastewater); (STRMW = Stormwater)

SDG&E Chain of Custody Form

Environmental Analysis Laboratory
6555 Nancy Ridge Dr., Suite 300, San Diego CA 92121-3221
Lab Phone No: (619) 260-5747 Fax: (858) 514-0154

Lab ID No.

WORK ID: Encina NPDES Recertification - 2004

Client Code: Cabrillo Power 1, LLC
Project Code: NPDES Waste Water
Category Code: Semi-Annual

Client Name: Sheila Henika
Client Address: 4600 Carlsbad Blvd, Carlsbad, CA 92008-4301
Client Phone: (760) 268-4018

Number of Containers: 24 total (12 this page)

Due Date: 10 day TAT

Sampled by (Print): Pedro D. Lopez

Sampled by (Signature): [signature]

Sample ID	Bottle	Date	Time	Sample Type	Sample Matrix	Sample Container	Preservation	Test (Test Codes)
INTAKE	01A	3/9/04	0800	24-hr composite	Seawater	1 L P	4°C	Biological Oxygen Demand - EPA 405.1
INTAKE	01B	↓	↓	24-hr composite	Seawater	125 mL P	4°C,pH<2 H_2SO_4	Chemical Oxygen Demand - EPA 410.2
INTAKE	01C	↓	↓	24-hr composite	Seawater	125 mL P	4C, pH<2 w/H_3PO_4	Total Organic Carbon - EPA 415.2
INTAKE	01D	↓	↓	24-hr composite	Seawater	500 mL P	4°C	Color - SM 2120 B Visual
INTAKE	01E	↓	↓	24-hr composite	Seawater	250 mL P	4°C,pH<2 H_2SO_4	Total Organic Nitrogen as N or TKN - EPA 351.3
INTAKE	01F	↓	↓	24-hr composite	Seawater	500 mL P	4°C; zinc acetate	Sulfide - EPA 376.1
INTAKE	01G	↓	↓	24-hr composite	Seawater	250 mL P	4°C	Sulfite - EPA 377.1
INTAKE	01H	↓	↓	24-hr composite	Seawater	125 mL P	4°C	Surfactants (MBAS) - SM 5540C
INTAKE	03A	3/8/04	0715	Grab	Seawater	1 L Amber Glass	4C, pH<2 w/H_3PO_4	Total Phenols - EPA 420.1
INTAKE	05A	3/8/04	1242	Grab	Seawater	1 L Amber Glass	4C, pH<2 w/H_3PO_4	Total Phenols - EPA 420.1
INTAKE	07A	3/8/04	1850	Grab	Seawater	1 L Amber Glass	4C, pH<2 w/H_3PO_4	Total Phenols - EPA 420.1
INTAKE	09A	3/9/04	0105	Grab	Seawater	1 L Amber Glass	4C, pH<2 w/H_3PO_4	Total Phenols - EPA 420.1

Include Quality Control data with report

4-9-04 - Cooler Temp = 3.8°C

Please send report and invoice to the SDG&E address shown above.

Releasing	Date	Time	Accepting	Date	Time
[signature]	3/9/04	1105	[signature]	3-9-04	1105
[signature]	3-9-04	1220	[signature]	3/9/04	1220

s:\lab\cocforms\Encina 2004 Recert.xls

EEL - Intake

SDG&E Chain of Custody Form

Environmental Analysis Laboratory
6555 Nancy Ridge Dr., Suite 300, San Diego CA 92121-3221
Lab Phone No: (619) 260-5747 Fax: (858) 514-0154

Lab ID No.

WORK ID: Encina NPDES Recertification - 2004

Client Code: Cabrillo Power 1, LLC
Project Code: NPDES Waste Water
Category Code: Semi-Annual

Client Name: Sheila Henika
Client Address: 4600 Carlsbad Blvd, Carlsbad, CA 92008-4301
Client Phone: (760) 268-4018

Number of Containers: 24 total (12 this page)

Due Date: 10-day TAT

Sampled by (Print): Pedro D. Lopez

Sampled by (Signature): Pedro Lopez

Sample ID	Bottle	Date	Time	Sample Type	Sample Matrix	Sample Container	Preservation	Test (Test Codes)
DISCHARGE	02A	3/9/04	0820	24-hr composite	Seawater	1 L P	4°C	Biological Oxygen Demand - EPA 405.1
DISCHARGE	02B	↓	↓	24-hr composite	Seawater	125 mL P	4°C,pH<2 H_2SO_4	Chemical Oxygen Demand - EPA 410.2
DISCHARGE	02C	↓	↓	24-hr composite	Seawater	125 mL P	4C, pH<2 w/H_3PO_4	Total Organic Carbon - EPA 415.2
DISCHARGE	02D	↓	↓	24-hr composite	Seawater	500 mL P	4°C	Color - SM 2120 B Visual
DISCHARGE	02E	↓	↓	24-hr composite	Seawater	250 mL P	4°C,pH<2 H_2SO_4	Total Organic Nitrogen as N or TKN - EPA 351.3
DISCHARGE	02F	↓	↓	24-hr composite	Seawater	500 mL P	4°C; zinc acetate	Sulfide - EPA 376.1
DISCHARGE	02G	↓	↓	24-hr composite	Seawater	250 mL P	4°C	Sulfite - EPA 377.1
DISCHARGE	02H	↓	↓	24-hr composite	Seawater	125 mL P	4°C	Surfactants (MBAS) - SM 5540C
DISCHARGE	04A	3/8/04	0737	Grab	Seawater	1 L Amber Glass	4C, pH<2 w/H_3PO_4	Total Phenols - EPA 420.1
DISCHARGE	06A	3/8/04	1305	Grab	Seawater	1 L Amber Glass	4C, pH<2 w/H_3PO_4	Total Phenols - EPA 420.1
DISCHARGE	08A	3/8/04	1910	Grab	Seawater	1 L Amber Glass	4C, pH<2 w/H_3PO_4	Total Phenols - EPA 420.1
DISCHARGE	10A	3/9/04	0127	Grab	Seawater	1 L Amber Glass	4C, pH<2 w/H_3PO_4	Total Phenols - EPA 420.1

Include Quality Control data with report

4-9-04 - Cooler Temp = 3.8°C

Please send report and invoice to the SDG&E address shown above.

Releasing	Date	Time	Accepting	Date	Time
Pedro Lopez (signature)	3/9/04	1105	(signature)	3-9-04	1105
(signature)	3-9-04	1200	Russell K. (signature)	3/9/04	1200

s:\lab\cocforms\Encina 2004 Recert.xls

G&E Chain of Custody Form

ronmental Analysis Laboratory
5 Nancy Ridge Dr., Suite 300, San Diego CA 92121-3221
Phone No: (619) 260-5747 Fax: (858) 514-0154

Lab ID No.

RK ID: Encina NPDES Recertification - 2004

Client Code: Cabrillo Power 1, LLC
Project Code: NPDES Waste Water
Category Code: Semi-Annual

nt Name: Sheila Henika
nt Address: 4600 Carlsbad Blvd, Carlsbad, CA 92008-4301
nt Phone: (760) 268-4018

Number of Containers: 8 (total)

Due Date: 10-day TAT

pled by (Print): Pedro D. Lopez

✓Sampled by (Signature): [signature]

ple ID	Bottle	Date	Time	Sample Type	Sample Matrix	Sample Container	Preservation	Test (Test Codes)
KE 04-0092	01A	03-08-04	0715	Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
KE	03A			Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
KE	05A			Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
KE	07A			Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
HARGE 0093	02A	03-08-04	0740	Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
HARGE	04A			Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
HARGE	06A			Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
HARGE	08A			Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C

e Quality Control data with report

send report and invoice to the SDG&E address shown above.

	Date	Time		Date	Time
ing [signature]	3/8/04	0820	Accepting [signature]	3/8/04	910
ing	Date	Time	Accepting	Date	Time

...DG&E Chain of Custody Form

...vironmental Analysis Laboratory
...55 Nancy Ridge Dr., Suite 300, San Diego CA 92121-3221
...b Phone No: (619) 260-5747 Fax: (858) 514-0154

Lab ID No.

...ORK ID: **Encina NPDES Recertification - 2004**

...ent Name: Sheila Henika
...ent Address: 4600 Carlsbad Blvd, Carlsbad, CA 92008-4301
...ent Phone: (760) 268-4018

Client Code: Cabrillo Power 1, LLC
Project Code: NPDES Waste Water
Category Code: Semi-Annual

Number of Containers: 8 (total)

Due Date: 10-day TAT

...mpled by (Print): Pedro D. Lopez

Sampled by (Signature): [signature]

...mple ID	Bottle	Date	Time	Sample Type	Sample Matrix	Sample Container	Preservation	Test (Test Codes)
...AKE	01A			Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
...AKE 94	03A	3/8/04	1242	Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
...AKE 95	05A	3/8/04	1330	Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
...AKE	07A	~~3/9/04~~ PL	~~0625~~ PL	Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
...CHARGE	02A			Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
...CHARGE 96	04A	3/8/04	1305	Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
...CHARGE 97	06A	3/8/04	1335	Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
...CHARGE	08A	~~3/9/04~~ PL	~~0630~~ PL	Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C

...de Quality Control data with report

...se send report and invoice to the SDG&E address shown above.

...asing [signature]	Date 3/8/04	Time 1400	Accepting [signature]	Date 3/8/04	Time 1430
...asing	Date	Time	Accepting	Date	Time

DG&E Chain of Custody Form

ıvironmental Analysis Laboratory
55 Nancy Ridge Dr., Suite 300, San Diego CA 92121-3221
b Phone No: (619) 260-5747 Fax: (858) 514-0154

Lab ID No.

'ORK ID: Encina NPDES Recertification - 2004

Client Code: Cabrillo Power 1, LLC
Project Code: NPDES Waste Water
Category Code: Semi-Annual

ient Name: Sheila Henika
ient Address: 4600 Carlsbad Blvd, Carlsbad, CA 92008-4301
ient Phone: (760) 268-4018

Number of Containers: 8 (total)

Due Date: 10-day TAT

ımpled by (Print): Pedro D. Lopez

Sampled by (Signature): Pedro Lopez

ımple ID	Bottle	Date	Time	Sample Type	Sample Matrix	Sample Container	Preservation	Test (Test Codes)
TAKE	01A			Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
TAKE	03A			Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
TAKE	05A			Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
TAKE	07A	3/9/04	0625	Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
SCHARGE	02A			Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
SCHARGE	04A			Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
SCHARGE	06A			Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
SCHARGE	08A	3/9/04	0630	Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C

:lude Quality Control data with report

ease send report and invoice to the SDG&E address shown above.

:leasing	Date	Time	Accepting	Date	Time
Pedro Lopez	3/9/04	0700	Tori [signature]	3/9/04	1000
:leasing	Date	Time	Accepting	Date	Time

Attachment 1 - Encina NPDES Recertification - 2004

CRG Marine Laboratories Report

CRG

Marine Laboratories, Inc.

"A Center for Excellence in Analytical Chemistry and Environmental Microbiology"

2020 Del Amo Boulevard, Suite 200, Torrance, CA 90501• (310) 533-5190 • FAX (310) 533-5003 • mborja@crglabs.com

April 1, 2004

SDG&E Environmental Laboratory
6555 Nancy-Ridge Drive
Suite 300
San Diego, CA 92121

Re: CRG Project ID # 2464
SDG&E: Encina NPDES Recertification - 2004

ATTN: Mr. Albert Menegus

CRG Laboratories is pleased to provide you with the enclosed analytical data report for your Encina NPDES Recertification – 2004 Project. According to the chain-of-custody, 2 samples were received intact at CRG on March 10. 2004. Per your instructions, the samples were analyzed for:

- Organotins By GCMS Using Krone, *et al.*

Please don't hesitate to call if you have any questions and thank you very much for using our laboratory for your analytical needs.

Regards,
Misty R. Borja
Project Manager

Reviewed and Approved ✓ Misty R. Borja

Signature Valid

Digitally signed by Misty R. Borja
DN: cn=Misty R. Borja, o=CRG Marine Laboratories, Inc., c=US
Date: 2004.04.01 15:26:02 -08'00'
Location: Torrance

DATA REPORT

CRG Marine Laboratories, Inc.
2020 Del Amo Blvd., Suite 200, Torrance, CA 90501-1206 (310) 533-5190 FAX (310) 533-5003 crglabs@sbcglobal.net

Organotins By Krone et al. 1989
GC/MS #1: HP6890/5972

CRG ID#: 16792 **Replicate #:** R1 **Project ID:** 2464 **Batch ID:** 2464-9130 **Matrix:** Seawater

Sample Description: Intake
Encina NPDES Recertification-2004
08:00

Client Name: San Diego Gas & Electric
Albert Menegus

Date Sampled: 09-Mar-04
Date Received: 10-Mar-04
Date Processed: 10-Mar-04
Date Analyzed: 30-Mar-04

CONSTITUENT	RESULT	UNITS	MDL	ML	DILUTION FACTOR
(Tripentyltin)	72	% Recovery			1
Dibutyltin	ND	ng/L	1	2	1
Monobutyltin	ND	ng/L	1	2	1
Tetrabutyltin	ND	ng/L	1	2	1
Tributyltin	ND	ng/L	1	2	1

MDL= Method Detection Limit (CFR 40 Part 136); ML= Minimum Level (SWRCB); E= Estimated Value below the ML and above the MDL; ND= Not Detected

California ELAP Certificate # 2261

QUALITY CONTROL REPORT

CRG Marine Laboratories, Inc.
2020 Del Amo Blvd., Suite 200, Torrance, CA 90501-1206 (310) 533-5190 FAX (310) 533-5003 crglabs@sbcglobal.net

Organotins By Krone et al. 1989
GC/MS #1: HP6890/5972

CRG ID#: 16790 **Replicate #:** B1 **Project ID:** 2464 **Batch ID:** 2464-9130 **Matrix:** DI Water

Sample Description: QAQC
Procedural Blank

Client Name: San Diego Gas & Electric
Albert Menegus

Date Sampled:
Date Received:

Date Processed: 10-Mar-04
Date Analyzed: 30-Mar-04

CONSTITUENT	RESULT	UNITS	MDL	ML	DILUTION FACTOR
(Tripentyltin)	77	% Recovery			1
Dibutyltin	ND	ng/L	1	2	1
Monobutyltin	ND	ng/L	1	2	1
Tetrabutyltin	ND	ng/L	1	2	1
Tributyltin	ND	ng/L	1	2	1

MDL= Method Detection Limit (CFR 40 Part 136); ML= Minimum Level (SWRCB); E= Estimated Value below the ML and above the MDL; ND= Not Detected

California ELAP Certificate # 2261

CRG Marine Laboratories, Inc.
2020 Del Amo Blvd., Suite 200, Torrance, CA 90501-1206 (310) 533-5190 FAX (310) 533-5003 crglabs@sbcglobal.net

Organotins By Krone et al. 1989
GC/MS #1: HP6890/5972

CRG ID#: 16792 **Replicate #:** R1 **Project ID:** 2464 **Batch ID:** 2464-9130 **Matrix:** Seawater

Sample Description: Intake
Encina NPDES Recertification-2004
08:00

Client Name: San Diego Gas & Electric
Albert Menegus

Date Sampled: 09-Mar-04
Date Received: 10-Mar-04
Date Processed: 10-Mar-04
Date Analyzed: 30-Mar-04

CONSTITUENT	RESULT	UNITS	MDL	ML	DILUTION FACTOR
(Tripentyltin)	72	% Recovery			1
Dibutyltin	ND	ng/L	1	2	1
Monobutyltin	ND	ng/L	1	2	1
Tetrabutyltin	ND	ng/L	1	2	1
Tributyltin	ND	ng/L	1	2	1

CHAIN OF CUSTODY

P2464

CRG Marine Laboratories, Inc.

2020 Del Amo Blvd., Suite 200, Torrance, CA 90501-1206
(310) 533-5190 FAX (310) 533-5003

CHAIN-OF-CUSTODY RECORD

Client Name:	SDG&E Environmental Laboratory
Client Address:	6555 Nancy Ridge Drive, Suite 300, San Diego, CA 92121
Sampled By:	Pedro D. Lopez
Phone:	619-260-5746
FAX:	858-514-0-154
Project Manager:	Albert Menegus
Project Name:	Encina NPDES Recertification - 2004
PO Number:	

REQUESTED ANALYSIS

	Client Sample ID	Sample Date	Sample Time	Sample Matrix*	Container Number	Container Type	Tributylin Tin by GC/FPD										
1	Intake	3/9/04	0800	SW	2	1-L amber glass	✓										
2	Discharge	3/9/04	0820	SW	2	1-L amber glass	✓										
3	MS/MSD	3/9/04	0820	SW	2	1-L amber glass	✓										
4																	
5																	
6																	
7																	
8																	
9																	
0																	

Correct Containers:	Yes	No	
Sample Temperature:	Ambient	Cold	Warm
Sample Preservative:	Yes	No	
Turnaround Time:	STD	Specify:	

Comments:
Please include Quality Control data with report.

Please send report and invoice to the SDG&E address shown above.

[illegible] Cooler Temp = 3.9°C

RCVD 3/10/04 @ CRG
M. Borja - M. Borja

RELIQUINSHED BY

Signature:	Pedro Lopez
Print:	PEDRO LOPEZ
Company:	NRG Cabrillo Power
DATE:	3/9/04 TIME: 1105

RECEIVED BY

Signature:	Albert M. Menegus
Print:	Albert M. Menegus
Company:	SDG&E
DATE:	3-9-04 TIME: [illegible]

*MATRIX CODES: (SED = Sediment); (TISS = Tissue); (SW = Seawater, Saltwater); (FW = Freshwater); (WW = Wastewater); (STRMW = Stormwater)

3538 Hancock Street
San Diego, CA 92110
(619) 298-6131
(619) 298-6141 fax
eel@direcway.com

ELAP Certificate
#1738

Robert L. Chambers, M.S.
Consultant/Partner

Michael M. Chambers, M.S., P.E.
Lab Director/Partner

Michael E. Harris, PhD
Senior Chemist

Microbiology
Inorganic Chemistry
Organic Chemistry

Civil Engineering

Drinking Water
Waste Water
Hazardous Waste
Soil

ENVIRONMENTAL ENGINEERING LABORATORY\

Customer: SDG&E
Order: #0421974
Sample ID: 0421974-001, Intake – Composite
0421974-006, Discharge – Composite
Received: 3/09/2004 @ 12:20

Chemical Oxygen Demand and Total Organic Carbon results are not available for these samples due to extreme chloride ion interference. The COD test was performed and the interference was clearly evident. It was determined that the large dilutions necessary to mitigate the chloride problem would make the demand determination unreliable. Chemical "fixes" for the problem produce erratic and high blanks, are unacceptable in the COD test, and are potentially damaging to the TOC instrument.

Michael E. Harris, PhD

Environmental Engineering Laboratory
3538 Hancock Street
San Diego, CA 92110
(619) 298-6131

Recipient:	Envionmental Analysis Lab SDG&E 6555 Nancy Ridge Dr. Suite 300 San Diego, CA 92121	**Matrix:**	SEAWATER
		Sampled:	03/09/2004
		Received:	03/09/2004 12:20
		Collection Address:	
Reference:	0421974	**Sample Location:**	Intake -- Composite
Source Code:	0421974-001	**Description:**	Encina NPDES Recertification - 2004
Sample #:		**Date Started:**	03/09/2004
Project#:		**Date Completed:**	04/02/2004
		PS Code:	
Comment:	Sample not analyzed for TOC or COD due to Chloride content; Color analyzed past hold time		

Test Parameters

Parameter	Result	Units	RL	MCL	Dilution Factor	Method	Date Analyzed	Analyst
Biochemical Oxygen Demand	ND	mg/L	2.0	-	1	SM 5210B	03/15/2004	RH
Color, Visual	ND	Units	3	-	1	SM 2120B	03/24/2004	EB
Nitrogen, Kjeldahl	ND	mg/L	0.10	-	1	SM4500C	03/17/2004	EB
Sulfide, Iodometric	ND	mg/L	0.1	-	1	SM 4500S E	03/15/2004	MEH
Sulfite	ND	mg/L	2	-	1	SM 4500 B	03/09/2004	MEH
Sulfonated Detergent - MBAS	ND	mg/L	0.05	-	1	SM 5540 C	03/11/2004	RH

Recipient:	Envionmental Analysis Lab SDG&E 6555 Nancy Ridge Dr. Suite 300 San Diego, CA 92121	**Matrix:**	SEAWATER
		Sampled:	03/08/2004 7:15
		Received:	03/09/2004 12:20
		Collection Address:	
Reference:	0421974	**Sample Location:**	Intake -- Grab
Source Code:	0421974-002	**Description:**	Encina NPDES Recertification - 2004
Sample #:		**Date Started:**	03/09/2004
Project#:		**Date Completed:**	04/02/2004
Comment:		**PS Code:**	

Test Parameters

Parameter	Result	Units	RL	MCL	Dilution Factor	Method	Date Analyzed	Analyst
Phenol, Total	0.002	mg/L	0.001	-	1	EPA 420.1	04/02/2004	MEH

RL = Reporting Limit   MCL = Maximum Contaminant Level   MDL = Method Detection Limit   N/A = Not Applicable

Recipient:	Envionmental Analysis Lab SDG&E 6555 Nancy Ridge Dr. Suite 300 San Diego, CA 92121	**Matrix:**	SEAWATER
		Sampled:	03/08/2004 12:42
		Received:	03/09/2004 12:20
		Collection Address:	
Reference:	0421974	**Sample Location:**	Intake -- Grab
Source Code:	0421974-003	**Description:**	Encina NPDES Recertification - 2004
Sample #:		**Date Started:**	03/09/2004
Project#:		**Date Completed:**	04/02/2004
Comment:		**PS Code:**	

Test Parameters

Parameter	Result	Units	RL	MCL	Dilution Factor	Method	Date Analyzed	Analyst
Phenol, Total	ND	mg/L	0.001	-	1	EPA 420.1	04/02/2004	MEH

Recipient:	Envionmental Analysis Lab SDG&E 6555 Nancy Ridge Dr. Suite 300 San Diego, CA 92121	**Matrix:**	SEAWATER
		Sampled:	03/08/2004 18:50
		Received:	03/09/2004 12:20
		Collection Address:	
Reference:	0421974	**Sample Location:**	Intake -- Grab
Source Code:	0421974-004	**Description:**	Encina NPDES Recertification - 2004
Sample #:		**Date Started:**	03/09/2004
Project#:		**Date Completed:**	04/02/2004
Comment:		**PS Code:**	

Test Parameters

Parameter	Result	Units	RL	MCL	Dilution Factor	Method	Date Analyzed	Analyst
Phenol, Total	ND	mg/L	0.001	-	1	EPA 420.1	04/02/2004	MEH

Recipient:	Envionmental Analysis Lab SDG&E 6555 Nancy Ridge Dr. Suite 300 San Diego, CA 92121	**Matrix:**	SEAWATER
		Sampled:	03/09/2004 1:05
		Received:	03/09/2004 12:20
		Collection Address:	
Reference:	0421974	**Sample Location:**	Intake -- Grab
Source Code:	0421974-005	**Description:**	Encina NPDES Recertification - 2004
Sample #:		**Date Started:**	03/09/2004
Project#:		**Date Completed:**	04/02/2004
Comment:		**PS Code:**	

Test Parameters

Parameter	Result	Units	RL	MCL	Dilution Factor	Method	Date Analyzed	Analyst
Phenol, Total	0.002	mg/L	0.001	-	1	EPA 420.1	04/02/2004	MEH

RL = Reporting Limit MCL = Maximum Contaminant Level MDL = Method Detection Limit N/A = Not Applicable

Attachment 2 - Encina NPDES Recertification - 2004

Environmental Engineering Laboratory Report

Environmental Engineering Lab

QUALITY CONTROL REPORT

Test Parameters

Order#: 0421974

BLANK Run#: 1 SEAWATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Sulfite-mg/L	0000639-01			0		

BLANK Run#: 1 WASTE	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Biochemical Oxygen Demand-mg/L	0000618-01			0.010		

CONTROL Run#: 1 WASTE	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Biochemical Oxygen Demand-mg/L	0000618-02		200	202	101.%	

DUPLICATE Run#: 1 SEAWATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Phenol, Total-mg/L	4219740-02	0.0020		0.0050		85.7%
Sulfide, Iodometric-mg/L	4219740-01	9.64		9.69		0.5%
Sulfite-mg/L	4219740-01	0.120		0.170		34.5%

DUPLICATE Run#: 1 WASTE	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Nitrogen, Kjeldahl-mg/L	4217910-01	2.16		2.06		4.7%
Sulfonated Detergent - MBAS-mg/L	4219740-06	0.0650		0.010		200.%

MS Run#: 1 SEAWATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Phenol, Total-mg/L	4219740-03	0	0.080	0.0859	107.4%	

MS Run#: 1 WASTE	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Nitrogen, Kjeldahl-mg/L	4217910-01	1.06	1.0	2.59	153.5%	
Sulfonated Detergent - MBAS-mg/L	4219740-06	0.0372	0.30	0.180	47.6%	

SDG&E Chain of Custody Form

Environmental Analysis Laboratory
6555 Nancy Ridge Dr., Suite 300, San Diego CA 92121-3221
Lab Phone No: (619) 260-5747 Fax: (858) 514-0154

Lab ID No.

WORK ID: Encina NPDES Recertification - 2004

Client Code: Cabrillo Power 1, LLC
Project Code: NPDES Waste Water
Category Code: Semi-Annual

Client Name: Sheila Henika
Client Address: 4600 Carlsbad Blvd, Carlsbad, CA 92008-4301
Client Phone: (760) 268-4018

Number of Containers: 24 total (12 this page)

Due Date: 10 day TAT

Sampled by (Print): Pedro D. Lopez

Sampled by (Signature): Pedro Lopez

Sample ID	Bottle	Date	Time	Sample Type	Sample Matrix	Sample Container	Preservation	Test (Test Codes)
INTAKE	01A	3/9/04	0800	24-hr composite	Seawater	1 L P	4°C	Biological Oxygen Demand - EPA 405.1
INTAKE	01B	↓	↓	24-hr composite	Seawater	125 mL P	4°C,pH<2 H_2SO_4	Chemical Oxygen Demand - EPA 410.2
INTAKE	01C	↓	↓	24-hr composite	Seawater	125 mL P	4C, pH<2 w/H_3PO_4	Total Organic Carbon - EPA 415.2
INTAKE	01D	↓	↓	24-hr composite	Seawater	500 mL P	4°C	Color - SM 2120 B Visual
INTAKE	01E	↓	↓	24-hr composite	Seawater	250 mL P	4°C,pH<2 H_2SO_4	Total Organic Nitrogen as N or TKN - EPA 351.3
INTAKE	01F	↓	↓	24-hr composite	Seawater	500 mL P	4°C; zinc acetate	Sulfide - EPA 376.1
INTAKE	01G	↓	↓	24-hr composite	Seawater	250 mL P	4°C	Sulfite - EPA 377.1
INTAKE	01H	↓	↓	24-hr composite	Seawater	125 mL P	4°C	Surfactants (MBAS) - SM 5540C
INTAKE	03A	3/8/04	0715	Grab	Seawater	1 L Amber Glass	4C, pH<2 w/H_3PO_4	Total Phenols - EPA 420.1
INTAKE	05A	3/8/04	1242	Grab	Seawater	1 L Amber Glass	4C, pH<2 w/H_3PO_4	Total Phenols - EPA 420.1
INTAKE	07A	3/8/04	1850	Grab	Seawater	1 L Amber Glass	4C, pH<2 w/H_3PO_4	Total Phenols - EPA 420.1
INTAKE	09A	3/9/04	0105	Grab	Seawater	1 L Amber Glass	4C, pH<2 w/H_3PO_4	Total Phenols - EPA 420.1

Include Quality Control data with report

4-9-04 - Cooler Temp = 3.8°C

Please send report and invoice to the SDG&E address shown above.

Releasing	Date	Time	Accepting	Date	Time
[signature]	3/9/04	1105	[signature]	3-9-04	1105
[signature]	3-9-04	1220	[signature]	3/9/04	1220

SDG&E Chain of Custody Form

Environmental Analysis Laboratory
6555 Nancy Ridge Dr., Suite 300, San Diego CA 92121-3221
Lab Phone No: (619) 260-5747 Fax: (858) 514-0154

Lab ID No.

WORK ID: Encina NPDES Recertification - 2004

Client Name: Sheila Henika
Client Address: 4600 Carlsbad Blvd, Carlsbad, CA 92008-4301
Client Phone: (760) 268-4018

Client Code: Cabrillo Power 1, LLC
Project Code: NPDES Waste Water
Category Code: Semi-Annual

Number of Containers: 24 total (12 this page)

Due Date: 10-day TAT

Sampled by (Print): Pedro D. Lopez

Sampled by (Signature): [signature]

Sample ID	Bottle	Date	Time	Sample Type	Sample Matrix	Sample Container	Preservation	Test (Test Codes)
DISCHARGE	02A	3/9/04	0820	24-hr composite	Seawater	1 L P	4°C	Biological Oxygen Demand - EPA 405.1
DISCHARGE	02B	↓	↓	24-hr composite	Seawater	125 mL P	4°C,pH<2 H_2SO_4	Chemical Oxygen Demand - EPA 410.2
DISCHARGE	02C	↓	↓	24-hr composite	Seawater	125 mL P	4C, pH<2 w/H_3PO_4	Total Organic Carbon - EPA 415.2
DISCHARGE	02D	↓	↓	24-hr composite	Seawater	500 mL P	4°C	Color - SM 2120 B Visual
DISCHARGE	02E	↓	↓	24-hr composite	Seawater	250 mL P	4°C,pH<2 H_2SO_4	Total Organic Nitrogen as N or TKN - EPA 351.3
DISCHARGE	02F	↓	↓	24-hr composite	Seawater	500 mL P	4°C; zinc acetate	Sulfide - EPA 376.1
DISCHARGE	02G	↓	↓	24-hr composite	Seawater	250 mL P	4°C	Sulfite - EPA 377.1
DISCHARGE	02H	↓	↓	24-hr composite	Seawater	125 mL P	4°C	Surfactants (MBAS) - SM 5540C
DISCHARGE	04A	3/8/04	0737	Grab	Seawater	1 L Amber Glass	4C, pH<2 w/H_3PO_4	Total Phenols - EPA 420.1
DISCHARGE	06A	3/8/04	1305	Grab	Seawater	1 L Amber Glass	4C, pH<2 w/H_3PO_4	Total Phenols - EPA 420.1
DISCHARGE	08A	3/8/04	1910	Grab	Seawater	1 L Amber Glass	4C, pH<2 w/H_3PO_4	Total Phenols - EPA 420.1
DISCHARGE	10A	3/9/04	0127	Grab	Seawater	1 L Amber Glass	4C, pH<2 w/H_3PO_4	Total Phenols - EPA 420.1

Include Quality Control data with report

3-9-04 - Cooler Temp = 3.8°C

Please send report and invoice to the SDG&E address shown above.

Releasing	Date	Time	Accepting	Date	Time
[signature]	3/9/04	1105	[signature]	3-9-04	1105
[signature]	3-9-04	1200	[signature]	3/9/04	1220

s:\lab\cocforms\Encina 2004 Recert.xls

Attachment 3 - Encina NPDES Recertification - 2004

Motile Laboratory Services Report

Motile Laboratory Services
4600 Carlsbad Blvd.
Carlsbad, CA 92008

ELAP Certification # 2457

Sample Site:	Encina Power Plant Carlsbad, CA
Client Source:	SDGE Environmental Analysis 6655 Nancy Ridge Dr. #300 San Diego, CA 92121-0152
Report To:	Albert F. Fax (858) 514-0154 ASAP
ATTN:	Albert F.
Comments:	Fax Results ASAP
Analysis to be performed:	Fecal Coliform MPN (Four dilutions)

		Date:	Time:
Sampled:	Pedro Lopez	03/08/04	See Below
Relinquished by:	Pedro Lopez	03/08/04	0821
Received:	Lori Motil	03/08/04	0910
Tested:	Lori Motil	03/08/04	0915

Locations:	Sample Type	Sample#	Sampling Time:	Fecal Coliform MPN/100 mL
Intake 01A	Seawater	04-0092	0715	40
Discharge 02A	Seawater	04-0093	0740	70

Test Performed By: Lori D. Motil
Test Results By: Lori D. Motil

Thank you,
Lori D. Motil

Lori Motil, Laboratory Director,RM, CLSp(M)

Lori Motil 3/11/04

04-0092-00993

Motile Laboratory Services
4600 Carlsbad Blvd.
Carlsbad, CA 92008

ELAP Certification # 2457

Sample Site: Encina Power Plant
Carlsbad, CA

Client Source: SDGE
Environmental Analysis
6655 Nancy Ridge Dr. #300
San Diego, CA
92121-0152

Report To: Albert F.
Fax (858) 514-0154 ASAP

ATTN: Albert F.

Comments: Fax Results ASAP

Analysis to be performed: Fecal Coliform MPN
(Four dilutions)

		Date:	Time:
Sampled:	Pedro Lopez	03/08/04	See Below
Relinquished by:	Pedro Lopez	03/08/04	1400
Received:	Lori Motil	03/08/04	1430
Tested:	Lori Motil	03/08/04	1435

Locations:	Sample Type	Sample#	Sampling Time:	Fecal Coliform MPN/100 mL
Intake 03A	Seawater	04-0094	1242	30
Intake 05A	Seawater	04-0095	1330	30
Discharge 04A	Seawater	04-0096	1305	50
Discharge 06A	Seawater	04-0097	1335	30

Test Performed By: Lori D. Motil
Test Results By: Lori D. Motil

Thank you,
Lori D. Motil

Lori Motil, Laboratory Director,RM, CLSp(M)

Lori Motil 3/11/04

04-0094-0096

Motile Laboratory Services
4600 Carlsbad Blvd.
Carlsbad, CA 92008

ELAP Certification # 2457

Sample Site: Encina Power Plant
Carlsbad, CA

Client Source: SDGE
Environmental Analysis
6655 Nancy Ridge Dr. #300
San Diego, CA
92121-0152

Report To: Albert F.
Fax (858) 514-0154 ASAP

ATTN: Albert F.

Comments: Fax Results ASAP

Analysis to be performed: Fecal Coliform MPN
(Four dilutions)

		Date:	Time:
Sampled:	Pedro Lopez	03/09/04	See Below
Relinquished by:	Pedro Lopez	03/09/04	0700
Received:	Lori Motil	03/09/04	1000
Tested:	Lori Motil	03/09/04	1005

Locations:	Sample Type	Sample#	Sampling Time:	Fecal Coliform MPN/100 mL
Intake 07A	Seawater	04-0099	0625	30
Discharge 08A	Seawater	04-0100	0630	23

Test Performed By: Lori D. Motil
Test Results By: Lori D. Motil

Thank you,
Lori D. Motil

Lori Motil, Laboratory Director,RM, CLSp(M)
Lori Motil 3/11/04

04-0099-0100

)G&E Chain of Custody Form

ironmental Analysis Laboratory
5 Nancy Ridge Dr., Suite 300, San Diego CA 92121-3221
Phone No: (619) 260-5747 Fax: (858) 514-0154

Lab ID No.

)RK ID: Encina NPDES Recertification - 2004

nt Name: Sheila Henika
nt Address: 4600 Carlsbad Blvd, Carlsbad, CA 92008-4301
nt Phone: (760) 268-4018

Client Code: Cabrillo Power 1, LLC
Project Code: NPDES Waste Water
Category Code: Semi-Annual

Number of Containers: 8 (total)

Due Date: 10-day TAT

ıpled by (Print): Pedro D. Lopez

✓Sampled by (Signature): [signature]

ıple ID	Bottle	Date	Time	Sample Type	Sample Matrix	Sample Container	Preservation	Test (Test Codes)
\KE 04-0092	01A	03-08-04	0715	Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
\KE	03A			Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
\KE	05A			Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
\KE	07A			Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
:HARGE 0093	02A	03-08-04	0740	Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
:HARGE	04A			Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
:HARGE	06A			Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
:HARGE	08A			Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C

de Quality Control data with report

se send report and invoice to the SDG&E address shown above.

	Date	Time		Date	Time
ısing [signature]	3/8/04	0820	Accepting [signature]	3/8/04	910
ısing	Date	Time	Accepting	Date	Time

)G&E Chain of Custody Form

vironmental Analysis Laboratory
55 Nancy Ridge Dr., Suite 300, San Diego CA 92121-3221
) Phone No: (619) 260-5747 Fax: (858) 514-0154

Lab ID No.

)RK ID: Encina NPDES Recertification - 2004

Client Code: Cabrillo Power 1, LLC
Project Code: NPDES Waste Water
Category Code: Semi-Annual

ent Name: Sheila Henika
ent Address: 4600 Carlsbad Blvd, Carlsbad, CA 92008-4301
ent Phone: (760) 268-4018

Number of Containers: 8 (total)

Due Date: 10-day TAT

npled by (Print): Pedro D. Lopez

Sampled by (Signature): Pedro Lopez

nple ID	Bottle	Date	Time	Sample Type	Sample Matrix	Sample Container	Preservation	Test (Test Codes)
'AKE	01A			Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
'AKE 94	03A	3/8/04	1242	Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
'AKE 95	05A	3/8/04	1330	Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
'AKE	07A	~~3/9/04~~ PL	~~0625~~ PL	Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
:CHARGE	02A			Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
CHARGE 96	04A	3/8/04	1305	Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
CHARGE 97	06A	3/8/04	1335	Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
CHARGE	08A	~~3/9/04~~ PL	~~0630~~ PL	Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C

ude Quality Control data with report

ase send report and invoice to the SDG&E address shown above.

	Date	Time		Date	Time
)asing Pedro Lopez	3/8/04	1400	Accepting [signature]	3/8/04	1430
:asing	Date	Time	Accepting	Date	Time

DG&E Chain of Custody Form

vironmental Analysis Laboratory
55 Nancy Ridge Dr., Suite 300, San Diego CA 92121-3221
b Phone No: (619) 260-5747 Fax: (858) 514-0154

Lab ID No.

ORK ID: Encina NPDES Recertification - 2004

Client Code: Cabrillo Power 1, LLC
Project Code: NPDES Waste Water
Category Code: Semi-Annual

ent Name: Sheila Henika
ent Address: 4600 Carlsbad Blvd, Carlsbad, CA 92008-4301
ent Phone: (760) 268-4018

Number of Containers: 8 (total)

Due Date: 10-day TAT

ımpled by (Print): Pedro D. Lopez

Sampled by (Signature): Pedro Lopez

ımple ID	Bottle	Date	Time	Sample Type	Sample Matrix	Sample Container	Preservation	Test (Test Codes)
TAKE	01A			Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
TAKE	03A			Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
TAKE	05A			Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
TAKE	07A	3/9/04	0625	Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
SCHARGE	02A			Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
SCHARGE	04A			Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
SCHARGE	06A			Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C
SCHARGE	08A	3/9/04	0630	Grab	Seawater	100 mL P	4°C	Fecal Coliform - SM 9221 C

clude Quality Control data with report

ease send report and invoice to the SDG&E address shown above.

	Date	Time		Date	Time
eleasing: Pedro Lopez	3/9/04	0700	Accepting: Lori [signature]	3/9/04	1000
eleasing			Accepting		

lab\cocforms\Encina 2004 Recert.xls

Motile-Intake-Discharge

Attachment 4 - Encina NPDES Recertification - 2004

Associated Laboratories Report

ASSOCIATED LABORATORIES

806 North Batavia - Orange, California 92868 - 714/771-6900

FAX 714/538-1209

CLIENT SDG&E (8756)

ATTN: Chris Dong

6555 Nancy Ridge Dr.,

Suite 300

San Diego, CA 92121

LAB REQUEST 127733

REPORTED 04/19/2004

RECEIVED 04/14/2004

PROJECT Encina NPDES Recertification - 2004

SUBMITTER Client

COMMENTS

This laboratory request covers the following listed samples which were analyzed for the parameters indicated on the attached Analytical Result Report. All analyses were conducted using the appropriate methods as indicated on the report. This cover letter is an integral part of the final report.

Order No.	Client Sample Identification
512804	Intake
512805	Discharge
512806	Laboratory Method Blank

Thank you for the opportunity to be of service to your company. Please feel free to call if there are any questions regarding this report or if we can be of further service.

ASSOCIATED LABORATORIES by,

Edward S. Behare, Ph.D.
Vice President

NOTE: Unless notified in writing, all samples will be discarded by appropriate disposal protocol 30 days from date reported.

TESTING & CONSULTING
Chemical
Microbiological
Environmental

ler #: 512804 **Client Sample ID:** Intake
rix: WATER
Sampled: 04/13/2004
e Sampled: 13:00

Analyte	Result	DLR	Units	Date/Analyst	
.1 Total Organic Carbon (TOC)					
Total Organic Carbon	1.8	1.0	mg/L	04/15/04	QP

der #: 512805 **Client Sample ID:** Discharge
trix: WATER
e Sampled: 04/13/2004
e Sampled: 13:00

Analyte	Result	DLR	Units	Date/Analyst	
.1 Total Organic Carbon (TOC)					
Total Organic Carbon	1.7	1.0	mg/L	04/15/04	QP

der #: 512806 **Client Sample ID:** Laboratory Method Blank
trix: WATER

Analyte	Result	DLR	Units	Date/Analyst	
.1 Total Organic Carbon (TOC)					
Total Organic Carbon	ND	0.5	mg/L	04/15/04	QP

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit

ASSOCIATED LABORATORIES

QA REPORT FORM

QC Sample: LR 127511-1

Matrix: WATER

Prep. Date: 04/15/04

Analysis Date: 04/15/04

ID#'s in Batch: LR 127511, 127512, 127733

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RESULT

Reporting Units = mg/L

Test	Method	Sample Result	Spike Added	Matrix Spike	Matrix Spike Dup	%Rec MS	%Rec MSD	RPD
TOC	415.1	2.1	10	11.3	12.0	92	99	6

ND = "U" - Not Detected
RPD = Relative Percent Difference of Matrix Spike and Matrix Spike Duplicate
%REC-MS & MSD = Percent Recovery of Matrix Spike & Matrix Spike Duplicate

%REC LIMITS = 80 - 120	
RPD LIMITS = 20	

PREPARATION BLANK / LAB CONTROL SAMPLE RESULTS

PREP BLK	LCS				
Value	Result	True	%Rec	L.Limit	H.Limit
ND	10	10	100	80%	120%

Value = Preparation Blank Value; ND = Not-Detected
LCS Result = Lab Control Sample Result
True = True Value of LCS
L.Limit / H.Limit = LCS Control Limits

Lab ID No.

SDG&E Chain of Custody Form

Environmental Analysis Laboratory
6555 Nancy Ridge Dr., Suite 300, San Diego CA 92121-3221
Lab Phone No: (619) 260-5747 Fax: (858) 514-0154

127733

WORK ID: Encina NPDES Recertification - 2004

Client Code: Cabrillo Power 1, LLC
Project Code: NPDES Waste Water
Category Code: Semi-Annual

Client Name: Sheila Henika
Client Address: 4600 Carlsbad Blvd, Carlsbad, CA 92008-4301
Client Phone: (760) 268-4018

Number of Containers: 2

Due Date: 3-day TAT

Sampled by (Print): Pedro D. Lopez

Sampled by (Signature): [signature]

Sample ID	Bottle	Date	Time	Sample Type	Sample Matrix	Sample Container	Preservation	Test (Test Codes)
INTAKE	01A	4/13/04	1300	24-hr composite	Sea-water	1 l Amber Glass	4oC, pH<2 w/HCl	Total Organic Carbon - EPA 415.2
DISCHARGE	02A	4/13/04	1300	24-hr composite	Sea-water	1 l Amber Glass	4oC, pH<2 w/HCl	Total Organic Carbon - EPA 415.2

SALT WATER MATRIX
Please invoice Albert Menegus (619-260-5747) at SDG&E
Please include Quality Control data with report

		Date	Time			Date	Time
Releasing	[signature]	4/14/04	0945	Accepting	[signature]	4/14/04	9:45
Releasing	[signature]	4/14/04	11:30	Accepting	Kevin [signature]	4/14/04	1130

[signature] 4/14/04 [signature] 4/14 AL-TOC Composite

EPA FORM 2D

APPENDIX B

CECP ANALYSIS OF REVERSE OSMOSIS BRINE WASTES FROM DESALINATION PLANT

CECP Analysis of Reverse Osmosis Brine Wastes from Desalination Plant

Ocean Water Consumption, (GPM daily avg. w/PAG)	848					
Ocean Water Consumption, GPD	1221120					
RO Reject, (gpm daily avg. w/PAG)	505					
Seawater Analysis (notes 1 & 2)		Actual Conc.	MDL, mg/l	lbs/day	Concentration of R/O Reject, mg/l (notes 3 & 5)	Notes
Constituents	Units					
Boron	mg/l	3.9	0.024	39.72	6.549	
Barium	mg/l	0.0071	0.006	0.07	0.012	
Bromide	mg/l	66.6	1.00	678.26	111.835	Note 4.
Iron	mg/g	0.039	0.0066	0.40	0.065	
Magnesium	mg/l	1200	0.45	12220.97	2015.050	Note 4.
Manganese	mg/l	0.0045	0.0035	0.05	0.008	
Antimony	mg/l	0.054	0.031	0.55	0.091	
Selenium	mg/l	0.062	0.057	0.63	0.104	
Tin	mg/l	0.13	0.036	1.32	0.218	
Silver	mg/l	ND	0.0005	0.01	0.001	
Aluminum	mg/l	ND	0.48	4.89	0.806	
Ammonia	mg/l	ND	0.05	0.51	0.084	
Arsenic	mg/l	ND	0.0005	0.01	0.001	
Beryllium	mg/l	ND	0.0015	0.02	0.003	
Cadmium	mg/l	ND	0.0005	0.01	0.001	
Cobalt	mg/l	ND	0.036	0.37	0.060	
Chromium	mg/l	ND	0.0005	0.01	0.001	
Copper	mg/l	ND	0.0025	0.03	0.004	
Cyanide	mg/l	ND	0.005	0.05	0.008	
Fluoride	mg/l	ND	0.01	0.10	0.017	
Mercury	mg/l	ND	0.0001	0.00	0.000	
Molybdenum	mg/l	ND	0.035	0.36	0.059	
Nickel	mg/l	ND	0.0025	0.03	0.004	
Phosphorus	mg/l	ND	0.06	0.61	0.101	
lead	mg/l	ND	0.0025	0.03	0.004	
Titanium	mg/l	ND	0.05	0.51	0.084	
Thallium	mg/l	ND	0.086	0.88	0.144	
Zinc	mg/l	ND	0.0081	0.08	0.014	

Note 1: The analysis is for selected components
Note 2: The ocean water analysis is based on Encina NPDES Recertification - 2004, reported on April 26, 2004
Note 3: Data in shaded areas are projected assuming the contaminants are present just at or below MDLs.
Note 4: The concentrations are greater than TSS concentration (assumed 30 mg/l). The contaminants, therefore, can not be all insoluble.
Note 5: Assume that all contaminants are soluble and rejected via R/O 1st pass (an absolute and unlikely worst case scenario)