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RECIP.NAME RECIPIENT AFFILIATION
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SUBJECT: Forwards plant renewed NPDES permit.

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Pacific Gas and Electric Company

77 Beale Street
San Francisco, CA 94106
415/972-4758

Lawrence F. Womack
Manager
Nuclear Operations Support

June 12, 1990

PG&E Letter No. DCL-90-151

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Re: Docket No. 50-275, OL-DPR-80
Docket No. 50-323, OL-DPR-82
Diablo Canyon Units 1 and 2
Renewed NPDES Permit No. CA0003751

Gentlemen:

Enclosed is a copy of Diablo Canyon Power Plant's renewed NPDES Permit No. CA0003751. This was recently received from the California Regional Water Quality Control Board, Central Coast Region as Order No. 90-09.

Kindly acknowledge receipt of this material on the enclosed copy of this letter and return it in the enclosed addressed envelope.

Sincerely,

L. F. Womack

cc: A. P. Hodgdon
J. B. Martin
P. P. Narbut
S. A. Richards
H. Rood
CPUC
Diablo Distribution

Enclosure

3234S/0083K/ERK/935

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ENCLOSURE

NPDES PERMIT NO. CA0003751

STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD —
CENTRAL COAST REGION
1102 A LAUREL LANE
SAN LUIS OBISPO, CALIFORNIA 93401
(805) 549-3147

GEORGE DEUKMEJIAN, *Governor*

ENVIRONMENTAL SERVICES
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May 17, 1990

Victor C. Furtado, Ph.D.
Manager, Environmental Services
Pacific Gas and Electric Company
P.O. Box 7640
San Francisco, CA 94120

Dear Mr. Furtado:

Enclosed is a copy of Order No. 90-09, NPDES No. CA0003751, for "Pacific Gas and Electric Company Diablo Canyon Nuclear Power Plant, Units 1 and 2, San Luis Obispo County," which was adopted by this Board on May 11, 1990.

Sincerely,

CALIFORNIA REGIONAL WATER QUALITY
CONTROL BOARD, CENTRAL COAST REGION

By William R. Leonard
WILLIAM R. LEONARD
Executive Officer

WRL:sm25/Diablo.LTR

Enclosure

c: State Water Resources Control Board, DWQ, Attn.: Archie Matthews
U.S. Environmental Protection Agency, Attn.: W-5-1
Nuclear Regulatory Commission
State Department of Health, Envi. Management Branch, Los Angeles
San Luis Obispo County Health Department

ID#3 402003001

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION
1102-A Laurel Lane
San Luis Obispo, California 93401

ORDER NO. 90-09
NPDES NO. CA0003751

WASTE DISCHARGE REQUIREMENTS
FOR
PACIFIC GAS AND ELECTRIC COMPANY
DIABLO CANYON NUCLEAR POWER PLANT
UNITS 1 AND 2
SAN LUIS OBISPO COUNTY

The California Regional Water Quality Control Board, Central Coast Region (hereafter Board), finds:

1. Pacific Gas and Electric Company, with headquarters at 77 Beale Street, San Francisco, CA 94106 (hereafter Discharger) owns and operates a nuclear power plant located approximately 12 miles southwest of San Luis Obispo (35°12'44" N Latitude, 120°51'14" W Longitude) as shown on Attachments "A" and "B". The power plant consists of two generating units, with a net power generating capacity of 2269 MW

2. The Diablo Canyon Nuclear Power Plant discharges up to 2,540 MGD of seawater for main condenser cooling. Smaller amounts of in-plant chemical wastes, low-level radioactive wastes and stormwater runoff are also discharged. The cooling water intake is located in the Intake Cove south of the plant, and the cooling water discharge is into Diablo Cove (Discharge 001), southwest of the plant. Intake structure floor drains (Discharge 002) discharge into the Intake Cove west of the cooling water intakes. Intake screen wash (Discharge 003) is discharged into the ocean on the west breakwater. The Biolab and Yard Storm Drain (Discharge 004) discharge to the Intake Cove east of the intake structure. Yard Storm Drain (Discharge 005) and Stormwater (Discharges 006 and 007) are discharged into the ocean at three points downcoast of the Intake Cove. The Biolab Seawater Supply Pump Valve Drain (016) and the Seawater Reverse Osmosis System Blowdown Drain (017) both discharge into the Intake Cove east of the intake structure. Stormwater and yard drainage are also discharged to Diablo Creek (Discharges 008, 009, 010, 011, 012, 013, 014 and 015.)

3. An application for re-authorization to discharge wastes under the National Pollutant Discharge Elimination System (NPDES) was submitted to the Board on November 15, 1989, and supplemented by information on February 22, 1990. NPDES Permit No. CA0003751 was last issued by the Board on July 12, 1985.

4. Waste discharges, as located on Attachment "B" and shown schematically on Attachment "C" of this Order, are described as follows:

Discharge 001 - Once-Through Cooling Water.

Design Flow: 2,540 MGD with two units operating. Cooling water for steam condensers and service cooling systems, and in-plant waste streams, is discharged to Diablo Cove. Natural temperatures of water in both coves are assumed comparable at any time. Discharge of corrosion inhibitors used in closed cooling water systems can occur due to leakage, or during operation, testing and maintenance activities.

Service cooling water systems and in-plant waste streams discharging to the once-through cooling water system are as follows:

Discharge 001 A, (1),(2) and (3) Firewater System.

This discharge description has been deleted and those discharges which receive firewater (see note 1) from the firewater system are identified in the following discharge descriptions. The periodic testing and flushing of the firewater system are also described.

Discharge 001 B, Auxiliary Salt Water Cooling System, 6.34 x 10^7 GPD .

This system provides once-through cooling water for the component cooling water system (a closed cooling water loop servicing pumps and other loads in the electric generation system). Discharge of chromate/potassium hydroxide based or molybdate/tolytriazole based corrosion inhibitors, used in closed cooling water systems, may occur due to leakage or during operation, testing and maintenance activities.

Part of the auxiliary salt water system may be taken out of service and filled with firewater to control biofouling. When the system is returned to service, approximately 40,000 gallons of firewater will be discharged. Periodic flowrate testing of this system is performed using a dye, such as rhodamine. The Discharger will provide prior notification to the Board staff.

Discharge No. 001C-Discharge deleted.

Discharge 001 D, Liquid Radioactive Waste Treatment System Effluent, 5 x 10^4 GPD, (Intermittent).

Liquid Radioactive Waste (LRW) from reactor systems is collected, treated and monitored in a LRW treatment system. This system includes storage tanks for radioactive decay, evaporators, activated carbon filters, ion exchangers, and filters to remove radioactive matter. Small amounts of sodium hydroxide, sulfuric acid, and polyelectrolyte may be used as treatment aids. Solid wastes produced by ion-exchange resins and filter media are collected and packaged for off-site disposal. After decay and/or treatment, individual batches of low-level waste are sampled and analyzed to confirm compliance with discharge limits, passed through a 5 micron filter, and discharged into the auxiliary salt water cooling system (Discharge 001B). Wastes from other plant systems collected in the LRW treatment system from leakage, or operation, maintenance and testing activities could contain boric acid, lithium hydroxide, sulfuric acid, ammonium hydroxide or other neutralizing amines, hydrazine, sodium sulfate, chemicals from primary laboratory drains, hot shower and laundry wastes, metal cleaning wastes, chromate/potassium hydroxide based or molybdate/tolytriazole based corrosion inhibitors, and firewater system flush water (see note 1).

Discharge 001E, Service Cooling Water System, 2.5 x 10^7 GPD.

This system provides once-through cooling water for the Service Cooling Water System (a closed cooling water loop servicing pumps and other loads in the electric generation system). Discharge of chromate/potassium hydroxide based or molybdate/tolytriazole based corrosion inhibitors may occur due to leakage or during operation testing and maintenance activities.

Discharge 001 F, Turbine Building Sump, 1.5 x 10^5 GPD, (Intermittent).

Floor drainage from the turbine building, buttress areas, other sumps, secondary systems, secondary systems chemistry laboratories, and firewater system flush (see note 1), are collected in the turbine building sump. Discharge may contain boric acid, sodium hydroxide, sulfuric acid, chromate/potassium hydroxide based or molybdate/tolytriazole based corrosion inhibitors, chemicals from the secondary chemistry laboratory drains, hydrazine, ammonium hydroxide or other neutralizing amines. The turbine building sump effluent is treated in an oily water separator or the Wastewater Holding and

Treatment (WHAT) system prior to discharge to the main circulating water. Polyelectrolytes may be used as a treatment aid.

Discharge 001 G, Make-Up Water System Waste Effluent, 4.83 x 10^5 GPD.

Filter backwashes from make-up water pretreatment and treatment systems, and blowdown from the reverse osmosis systems are discharged to the main circulating water. This waste contains filter backwash, concentrated dissolved solids, and water treatment chemicals such as: sulfuric acid, sequestering agents, sodium hypochlorite, sodium hydroxide and sodium bisulfite.

Discharge 001 H, Condensate Demineralizer Regenerant, 1.5 x 10^5 GPD, (Intermittent).

Waste regenerant solution from the steam-cycle condensate demineralizers is collected in regenerant waste tanks for neutralization, filtration and discharged to the main circulating water. The principal discharge constituent is sodium sulfate. It may also include hydrazine, boric acid, ammonia or other neutralizing amines and corrosion products.

Discharge 001 I, Seawater Evaporator Blowdown, 5.0 x 10^5 GPD.

Seawater is concentrated in the seawater evaporation system and discharged. The effluent has a two-fold increase in salinity. Water treatment chemicals such as sulfuric acid and polymer are added to control scaling.

Discharge 001 J, Condensate Pumps Discharge Header Overboard, 3.6 x 10^5 GPD, (Intermittent).

During normal start-up operations, and occasionally during power operations, condensate from the main condenser hot well will be periodically discharged to improve condensate quality in the steam cycle. The discharge is demineralized water containing ammonium hydroxide or other neutralizing amines, hydrazine, boric acid, and impurities such as corrosion products and seawater which may result from condenser leakage.

Discharge 001 K, Condenser Tube Sheet Leak Detection Dump Tank Overboard, 1.4 x 10^5 GPD, (Intermittent).

Water from the main condenser tube sheet collection trough will be discharged periodically in order to minimize seawater contamination of the condensate during periods of condenser tube sheet leakage. This discharge

is demineralized water containing ammonium hydroxide or other neutralizing amines, hydrazine, boric acid, and impurities such as corrosion products and seawater which may result from condenser leakage.

Discharge 001 L, Steam Generator Blowdown, 6.5 x 10^5 GPD.
This normally continuous discharge contains corrosion products and seawater contaminants from condenser tube leakage. Treatment chemicals include boric acid, ammonium hydroxide or other neutralizing amines, and hydrazine.

Discharge 001 M, Wastewater Holding and Treatment System, 8 x 10^5 GPD. (Intermittent).
Water routed to the WHAT system will be periodically discharged. This discharge includes wastes from discharges 001F and 001H requiring further treatment. Treatment may involve coagulation, settling, oil removal, neutralization, filtration, or chlorination. (See note 1 for firewater discharge.)

Discharge 001 N, Sanitary Wastewater Treatment System, 3.5 x 10^3 GPD.
Sanitary waste is treated in a package treatment facility, with the normal discharge to the Unit 2 cooling water discharge (001). In the event both discharge pumps fail, an alternate discharge path is gravity overflowed to the seawater reverse osmosis system discharge (001 P). During a discharge to 001 P, a portion of the effluent could be discharged along with the intake screen wash water (003). Chlorine is periodically used in this system to control filamentous growth. In the event the treatment facility is inoperable, sanitary waste will receive treatment in septic tanks and be discharged to leachfields.

Discharge 001 P, Seawater Reverse Osmosis System Blowdown, 1.44 x 10^6 GPD.
Blowdown from the seawater reverse osmosis system contains concentrated seawater brine and filter backwash, with additions of water treatment chemicals such as sulfuric acid, ferric sulfate, a sequestering agent, sodium hypochlorite and sodium bisulfite. Blowdown is normally discharged through the intake structure to the auxiliary salt water system. When auxiliary salt water system pumps are not operating, an alternate discharge path is to the intake screen wash (003). Treated domestic sanitary wastes (001 N) are discharged to the seawater reverse osmosis system blowdown, in the event of a failure of both discharge pumps.

Discharge 002, Intake Structure Building Floor Drains, 3.5 x 10^5 GPD, (Intermittent).

Drainage from within the cooling water intake structure and firewater system flush (see note 1), is collected in sumps and discharged inside the breakwater adjacent to the intake structure. Discharge of chromate/potassium hydroxide based or molybdate/tolytriazole based corrosion inhibitors may be present in this discharge due to leakage or during operation, testing and maintenance activities.

Discharge 003, Intake Screen Wash, 5.76 x 10^6 GPD.

Solid material from the ocean is washed from traveling screens at the intake structure, collected in a collection pit, and removed for land disposal. The screen wash water and the material passing through the collection pit screen are pumped back to the ocean at a point located on the ocean side of the breakwater. This system may contain hypochlorite during periods of circulating water chlorination. During heat treatment of main condensers, some heated seawater is discharged at this point. The seawater reverse osmosis blowdown can also discharge at this point when the auxiliary salt water system pumps are not operating.

Discharge 004, Biolab Discharge, 1.73 x 10^6 GPD, and Yard Storm Drain, Flow Variable.

This discharge normally consists of the seawater discharge from the Biolab, (formerly called the Thermal Effects Lab). Seawater is pumped from the intake structure to tanks used for observation and scientific study of marine organisms, and discharged continuously to the intake cove. Approximately one-half of the seawater supplied to the Biolab is filtered through sand filters at line pressure. Filters are backwashed based on pressure differentials and the filtrate (debris from the ocean) is discharged through discharge 004. This system may be filled with freshwater as a method of biofouling control. It may also contain trace amounts of hypochlorite and/or other oxidants from future biofouling control optimization studies. Storm water from a portion of the plant yard area is collected in a drainage system that occasionally includes firewater (see note 1), washwater, and stored water releases. This drainage system includes a 17,000 gallon sump which serves as a collection system for the Spill Prevention Control and Countermeasure (SPCC) Plan. This sump has a passive oil-water separation system for the containment of transformer oil. The discharge also includes drainage for areas surrounding the hazardous waste storage

building, truck bay, firewater storage tank and firewater pump building. Drainage joins the Biolab discharge before entering the intake cove.

Discharge 005, Yard Storm Drains, Flow Variable.
Storm water runoff from the plant yard on the Unit 2 side of the radwaste buildings and the west side of the turbine buildings is discharged to South Cove. This may occasionally include some firewater (see note 1), washwater and stored water releases. Rain water and washwater from the rotor warehouse and adjacent areas is collected in a sump and routed into this drainage system.

Discharge 006, Storm Water Runoff, Flow Variable.
Storm water runoff from the Pacific Ocean side of the ridge to the southeast of the plant is discharged to South Cove. Storm water runoff from the south warehouse, the shooting range, and a temporary parking lot also drains to this discharge.

Discharge 007, Storm Water Runoff, Flow Variable.
Storm water runoff from an area to the south of the same ridge that drains to Discharge 006 is routed to the ocean near the southern site boundary. Drainage from the general construction paint department, the temporary hazardous waste storage area, the diked gasoline and fuel oil tanks area and the soils lab are routed to this discharge.

Discharge 008, Yard Storm Drain, Flow Variable; Storm Water Runoff, Flow Variable .
Storm water runoff from the yard area on the northwest side of the turbine building is drained to the west plant access road and discharged into Diablo Creek. This discharge may occasionally include some firewater (see note 1), washwater and stored water releases. Storm water runoff from watershed areas north of Diablo Creek is collected in a second drainage system and discharged to Diablo Creek at the same point.

Discharge 009, Yard Storm Drain, Flow Variable.
Storm water runoff from the north and northeast side of the Unit 1 auxiliary, containment, fuel handling and turbine buildings, and the protected area hazardous waste storage facility, drains to the north side of the plant yard and discharges to Diablo Creek. This discharge may occasionally include firewater (see note 1), washwater and stored water releases. This drainage system includes a 17,000 gallon sump which serves as a collection system for the Spill Prevention Control and Countermeasure

(SPCC) Plan. The sump has a passive oil-water separation system provided for containment of any spill of oil from a main transformer. (The protected area hazardous waste storage facility is a concrete diked enclosure surrounded by a locked chain-link fence.)

Discharge 010, Storm Water Runoff, Flow Variable.
Storm water runoff from the hillside between the plant and the raw water reservoirs drains into a concrete culvert and is routed to the north along the hillside and discharged to Diablo Creek. This discharge may occasionally include firewater (see note 1), washwater and stored water releases.

Discharge 011, Storm Water Runoff, Flow Variable.
Storm water runoff from watershed areas north of Diablo Creek drains to the north switchyard access road and discharges to Diablo Creek.

Discharge 012, Storm Water Runoff, Flow Variable.
Storm water runoff from the watershed area between the 230 KV switchyard and the 500 KV switchyard drains to a vertical shaft leading to the Diablo Creek culvert passing under the switchyard.

Discharge 013, Yard Storm Drain, Flow Variable.
Storm water from the raw water reservoirs, the make-up water treatment area, and the 230 KV switchyard collects in a drainage system and is routed to Diablo Creek. Some runoff from the hillside under the 500 KV power lines is also included in this drainage. This drainage may occasionally include firewater (see note 1), washwater and stored water releases.

Discharge 014, Yard Storm Drains, Flow Variable.
Storm water runoff from laydown areas, dog kennels, and the hillside south and east of the 500 KV switchyard is collected in a drainage ditch and routed to Diablo Creek.

Discharge 015, Yard Storm Drain, Flow Variable.
Storm water runoff from the area around the temporary auto facility, carwash slab, and adjacent roadway; and wash water from the carwash slab, is collected in a sump with an oil water separator, and then routed to Diablo Creek.

Discharge 016, Biolab Seawater Supply Pump Valve Drain, Flow Variable.

A drain is provided in the seawater supply valve box for removal of accumulated rainwater and seawater. Discharge is to South Cove.

Discharge 017, Seawater Reverse Osmosis System Blowdown Drain, Flow Variable.

A low-point valve located beside the Intake Structure access road allows the 8" brine line to be drained for repair. Only rare use of the drain during the lifetime of the system is expected. The discharge is to South Cove.

Note 1: The firewater system is periodically flushed, tested, and diverted as described below:

1. Firewater System Flush, 5.0×10^4 GPD, (Intermittent).
   Firewater will be discharged semiannually when portions of the system are flushed to ensure they remain clear. The discharges are to yard storm drains, building floor drains and the LRW treatment system (discharge 001D).

2. Firewater System Flow Test, 2.4×10^4 GPD, (Intermittent).
   This test is conducted once every three years to comply with Nuclear Regulatory Commission requirements. The discharges are to yard storm drains, building floor drains and the LRW treatment system (discharge 001D).

3. Fire Hose Test, 1.4×10^3 GPD, (Intermittent).
   This test is conducted annually on portions of the firewater system to comply with Nuclear Regulatory Commission requirements. The discharges are to yard storm drains and building floor drains and the LRW treatment system (discharge 001D). (Unscheduled discharges from firewater systems will occur in the event of fire and on occasion from washing.)

The firewater system may contain a corrosion inhibitor and/or a biocide for corrosion and/or scale protection.

5. The Environmental Protection Agency and Board have classified this discharge as a major discharge.

6. The Water Quality Control Plan, Central Coastal Basin (Basin Plan) was adopted by the Board on March 14, 1975 and approved by the State Board on March 30, 1975. The Basin Plan incorporates State Board plans and policies by reference and contains a strategy for protecting beneficial uses of the Pacific Ocean.

7. Existing and anticipated beneficial uses in the vicinity of the discharge include:

   a. Water contact recreation;
   b. Non-contact water recreation, including aesthetic enjoyment;
   c. Industrial water supply;
   d. Navigation;
   e. Marine habitat;
   f. Shell fish harvesting;
   g. Preservation of Rare and Endangered Species;
   h. Wildlife habitat; and,
   i. Ocean commercial and sport fishing.

8. The State Board adopted the "Water Quality Control Plan, Ocean Waters of California, California Ocean Plan" (Ocean Plan) on September 22, 1988. The Ocean Plan contains water quality objectives and other requirements governing discharge to the Pacific Ocean. On March 4, 1989, the Discharger submitted a report "Estimation of the Dilution Factor for the Diablo Canyon Power Plant Thermal Discharge Plume," as required by Monitoring and Reporting Program No. 85-101. This report concluded the minimum initial dilution of the discharge is 4.1:1 (seawater:effluent). This ratio was used for calculating effluent limits based on Ocean Plan water quality standards. The minimum initial dilution previously used was 6.4:1.

9. The State Board adopted a revised Ocean Plan on March 22, 1990. The revised Plan was adopted too late to be included in this NPDES Permit. Provision No.D.7. requires the discharger to submit a report evaluating its ability to comply with the revised Ocean Plan and to prepare an implementation schedule, if needed, for achieving full compliance. The Board will consider revising the Permit after receipt and review of the report.

10. The State Board adopted the "Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California" (Thermal Plan) on September 18, 1975. This plan contains water quality objectives for the Pacific Ocean in the area of Diablo Canyon. Units 1 and 2 at Diablo Canyon are classified as existing

discharges in the Thermal Plan. This classification requires the Regional Board to establish limits to assure protection of beneficial uses. The Thermal Plan requires existing dischargers to define the effect of their discharges on beneficial uses and determine, as necessary, design and operating changes necessary to achieve compliance.

11. Effluent limitations and toxic and effluent standards established pursuant to Sections 301, 302, 303(d), 304, 307 and 316 of the Clean Water Act (CWA) and amendments thereto are applicable to the discharge. Final regulations defining effluent limitation guidelines for the steam-electric industry were promulgated by EPA on November 19, 1982.

12. Temperature of cooling water is raised approximately 20 degrees F during commercial operation. The cooling water temperature increase may be greater than 20 degrees F during condenser heat treatment or transient conditions. Transient conditions can include load rejection, steam dump, generator trip, and conditions resulting from operation of engineered safety features, as well as periods of reduced flow resulting from condenser tube sheet plugging, condenser fouling, or loss of a circulating water pump. Periodic thermal treatment of each cooling water system is necessary to demussel and minimize growth of marine organisms in the piping and heat exchangers. The frequency of this operation will vary seasonally but is expected to average once per month for each condenser. Thermal treatment of each half-condenser takes nine hours with the maximum temperature being maintained for one hour.

13. Thermal effects on the receiving water, actual temperature increases, and actual temperatures of the discharge are monitored and results correlated and evaluated as part of ongoing studies. These studies are being performed as required in Monitoring and Reporting Program No. 90-09. This monitoring is developed and reviewed jointly by Board and Department of Fish and Game staff. The results of the studies may result in more stringent thermal limits.

14. Section 316 (b) of the Clean Water Act requires that the location, design, construction and capacity of cooling water intake structures reflect the Best Technology Available (BTA) for minimizing adverse environmental impact. An April 28, 1988, study of the cooling water intake structure was submitted which concluded the facilities at Diablo Canyon Power Plant reflect BTA.

15. Waste discharge requirements for this discharge are exempt from the provisions of the California Environmental Quality Act (Public Resources Code, Sections 21100 et seq.) in accordance with Section 13389 of the California Water Code.

16. A permit and the privilege to discharge waste into waters of the State is conditional upon the discharge complying with provisions of Division 7 of the California Water Code and of the Clean Water Act (as amended or as supplemented by implementing guidelines and regulations) and with any more stringent effluent limitations necessary to implement water quality control plans, to protect beneficial uses, and to prevent nuisance. This Order shall serve as a National Pollutant Discharge Elimination System Permit pursuant to Section 402 of the Clean Water Act. Compliance with this Order should assure conditions are met and mitigate any potential changes in water quality due to the project.

17. On March 20, 1990, the Board notified the Discharger and interested persons of its intent to reissue waste discharge requirements for the discharge, provided them with an opportunity to submit their written views and recommendations, and scheduled a public hearing.

18. In a public hearing on May 11, 1990, the Board heard and considered all comments pertaining to the discharge and found this Order consistent with the above findings.

IT IS HEREBY ORDERED, pursuant to authority in Section 13377 of the California Water Code, Pacific Gas & Electric Company, its agents, successors, and assigns, may discharge waste from the Diablo Canyon Power Plant providing they comply with the following:

(General permit conditions, definitions and the method of determining compliance are contained in the attached "Standard Provisions and Reporting Requirements for National Pollutant Discharge Elimination System Permits," dated January, 1985. Applicable paragraphs are referenced in Provision D.3. of this Order.)

A. <u>Discharge Prohibitions</u>

1. Any discharge at a location other than as described in the permit application, Finding No. 4, or shown on Attachment "B" or "C", is prohibited. This prohibition does not apply to storm runoff.

2. The discharge of polychlorinated biphenyl compounds is prohibited.

3. Except as described in Finding No. 4, discharge of sludges, centrates, screenings, backwashes, or filtrates to surface waters is prohibited.

4. Discharge of nonhazardous solid waste, (as defined in California Code of Regulations, Title 23, Chapter 3, Subchapter 15, Section 2523(a), adopted December 8, 1984), to surface waters is prohibited.

5. Discharge of untreated or partially treated sanitary wastes and discharge of septic tank effluent to the Pacific Ocean or its tributaries, is prohibited.

B. Effluent Limitations

1. Discharge 001

a. Discharge shall not exceed 2760 MGD.

b. Effluent shall not exceed the following limits:*

		Concentrations		
Constituents	Units	6-Month Median	Daily Max	Instantaneous Maximum
Arsenic	ug/l	30.	150.	400.
Cadmium	ug/l	10.	20.	50.
Chromium (Hex)**	ug/l	10.	40.	100.
Copper	ug/l	10.	50.	140.
Lead	ug/l	10.	40.	100.
Mercury	ug/l	0.2	0.8	2.
Nickel	ug/l	30.	100.	260.
Silver	ug/l	2.9	13.6	35.
Zinc	ug/l	70.	380.	990.
Cyanide	ug/l	30.	100.	260.
Total Residual Chlorine(TRC)***	ug/l			200.
Ammonia (as N)	ug/l	3060.	12240.	30600.
Toxicity Concentration	tu	0.26	-	-
Phenolic Compounds (non-chlorinated)	ug/l	150.	610.	1530.
Chlorinated Phenolics	ug/l	10.	20.	50.

Constituents	Units	Concentrations 6-Month Median	Daily Max	Instantaneous Maximum
Radioactivity	Not to exceed limits specified in Title 17, Chapter 5, Subchapter 4, Group 3, Article 3, Section 30269 of the California Code of Regulations.			

* Based on Ocean Plan criteria using a minimum initial dilution of 4.1:1. If actual dilution is found to be less than this value, it will be recalculated and the order revised.

** The chromium limit may be met as total chromium if the Discharger chooses.

*** TRC may not be discharged from any single generating unit for more than two hours per day. At least thirty minutes must separate the chlorine discharge from each one-half condenser unit.

c. During any 24-hour period, the effluent mass emission rate shall not exceed the "Maximum Daily Mass Emission Rate".

d. Violation of the "Instantaneous Maximum" or "Maximum Allowable Daily Mass Emission Rate" must be reported to the Board within 24 hours.

e. During any six-month period, the effluent mass emission rate shall not exceed the "Maximum Allowable Six-Month Median Mass Emission Rate."

f. The daily average discharge temperature shall not exceed the daily average of the natural temperature of the intake water by more than 22 degrees F (12.2 degrees C), except during heat treatment.

g. During heat treatment for demusseling, the daily average discharge temperature shall not exceed the daily average of the natural temperature of the intake water by more than 25 degrees F (13.9 degrees C), and the maximum temperature increase (delta T) measured at the point of discharge of the unit being treated shall be less than 50 degrees F (27.8 degrees C) over that of the intake. The duration

of maximum temperature during heat treatment of any half-condenser shall not exceed one hour during any 24 hour period. Pumps for the unit not being treated should be operated during demusseling.

2. Discharge 001D, 001F, 001G, 001H, 001I, 001J, 001K, 001L, 001M, 001P, AND 002:

Effluent concentrations shall not exceed the following limits:

Constituent	Units	Monthly Average	Daily Maximum
Suspended Solids	mg/l	30	100
Grease and oil	mg/l	15	20

3. Discharge 001D, 001F, 001I, 001L, and 001M:

When metal cleaning operations occur on these waste streams, effluent concentrations shall not exceed the following limits:

Constituent	Units	Daily Maximum
Copper, total	mg/l	1.0
Iron, total	mg/l	1.0

4. Discharge 001N:

Effluent concentrations shall not exceed the following limits:

Constituent	Units	Monthly (30-day Avg.)	Maximum
Grease & Oil	mg/l	15	20
Settleable Solids	ml/l	1.0	3.0
Suspended Solids	mg/l	60	

5. Discharge 002, 003, 004, 005, 008, 009, 013, 014, 015, 016, and 017:

Effluent discharged shall not violate water quality objectives contained in Chapter II, General Requirements contained in Chapter III, nor Table B Toxic Materials Limitations contained in Chapter IV of the Water Quality Control Plan for Ocean Waters of California, California Ocean Plan.

6. Discharge 003, 004, 005, 008, 009, 013, 015, 016, and 017:

   Effluent concentrations shall not exceed a Monthly Average Grease and Oil limit of 15 mg/l and a Daily Maximum of 20 mg/l.

C. Receiving Water Limitations

(Receiving water quality is a result of many factors, some unrelated to the discharge. This permit considers these other factors, and is designed to minimize the adverse influence of the discharge in the receiving water).

Waste discharges shall not individually or collectively cause:

1. Floating particulates and grease and oil to be visible on the water surface.

2. Aesthetically undesirable discoloration of the water surface.

3. Significant reduction in transmittance of natural light in ocean waters which may cause marine communities to be degraded.

4. Change in the rate of deposition of inert solids and the characteristics of inert solids in sediments such that benthic communities are degraded.

5. The dissolved oxygen concentration to fall below 5.0 mg/l or to be depressed more than 10 percent from that which occurs naturally.

6. The pH to be depressed below 7.0, raised above 8.5, or changed more than 0.2 units from that which occurs naturally.

7. Dissolved sulfide concentrations of waters in and near sediments to increase significantly above those present under natural conditions.

8. Concentrations of the same substances listed in Effluent Limitation No. B.1.b. to increase in marine sediments to levels which would degrade the indigenous biota.

9. Objectionable aquatic growth or degradation of indigenous biota.

10. Concentrations of organic materials in marine sediments to increase to a level which would degrade marine life.

11. Degradation of marine communities, including vertebrate, invertebrate, and plant species.

12. Alteration in natural taste, odor, and color of fish, shellfish, or other marine resources used for human consumption.

13. Degradation of marine life due to radioactive waste.

14. Temperature of the receiving water to adversely affect beneficial uses.

15. The following bacteriological limits to be exceeded in the water column (a) within a zone bounded by the shoreline and either the 30-foot depth contour or a distance of 1,000 feet from the shoreline, whichever is greater; and (b) within areas used for body contact recreation:

Parameter Applicable to any 30-Day Period	Total Coliform Organisms (MPN/100 ml)	Fecal Coliform Organisms (MPN/100 ml)
Log Mean	- - -	200
90% of Samples	- - -	400
80% of Samples	1,000	- - -
*Maximum	10,000	- - -

*Verified by a repeat sample taken within 48 hours.

16. The following bacteriological limits to be exceeded in the water column of areas where shellfish are harvested:

Parameter Applicable to any 30-Day Period	Total Coliform Organisms (MPN/100 ml)
Median	70
90% of Samples	230

D. Provisions

1. Requirements prescribed by this Order supersede requirements prescribed by Amended Order No. 85-101 adopted by the Board on July 12, 1985. Order No. 85-101 is hereby rescinded.

2. Discharger shall comply with "Monitoring and Reporting Program No. 90-09" specified by the Executive Officer.

3. The discharger shall comply with Items A.2.-A.5, A.8.-A.12, A.14.-A.23., B.1-B.7., C.1.-C.8., C.10.-C.15., C-18., E.1. and 2., and F.1.-F.6., of the "Standard Provisions and Reporting Requirements for National Pollutant Discharge Elimination System Permits," dated January, 1985. Paragraph (a) of Item E.1. shall apply only if the bypass is for essential maintenance to assure efficient operation. Bypasses authorized under paragraph (a) of Item E.1. are not subject to paragraphs (b) and (c) of Item E.1.

4. Discharge of any wastes of a significantly different character than described in the Permit Application, Finding No. 4., or as shown on Attachment "C", shall be reported to the Executive Officer within five (5) days of knowing of such a discharge.

5. Plant operations shall at all times include the recommendations and procedures of the Best Management Practices Plan. The Plan may be amended as approved by the Executive Officer.

6. Rerouting of in-plant waste streams identified in Finding No. 4 or shown on Attachment "C" may be made with the concurrence of the Executive Officer.

7. Discharger shall comply with the Water Quality Control Plan, Ocean Waters of California, California Ocean Plan, adopted March 22, 1990, (1990 Ocean Plan) and any corrections thereto. Compliance with those elements of the 1990 Ocean Plan different than the 1988 Ocean Plan shall be achieved according to the following schedule:

   a. Submit an Engineering Report by November 12, 1990, addressing the Discharger's ability to comply with the 1990 Ocean Plan and including a time schedule for bringing the discharge into full compliance with the Ocean Plan changes.

b. By November 12, 1990, comply with those elements of the 1990 Ocean Plan for which the Diablo Canyon Nuclear Power Plant is in compliance, or can achieve compliance without requiring: a change in the Power Plant operations; a modification to the Power Plant; or, the addition of treatment facilities

c. Comply by dates to be determined by the Regional Board with those elements of the 1990 Ocean Plan for which the Diablo Canyon Nuclear Power Plant is not achieving compliance on November 12, 1990.

8. Any studies performed at the Biolab which may affect the nature of Discharge No. 004, shall not commence until a study plan is submitted and approved by the Executive Officer. The study plan shall include a listing of chemical additions which may be discharged.

9. This Order expires July 1, 1995. The discharger must file a report of waste discharge in accordance with Title 23, Chapter 3, Subchapter 9 of the California Code of Regulations, not later than 180 days in advance of such expiration date as application for issuance of new waste discharge requirements.

I, WILLIAM R. LEONARD, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Coast Region, on May 11, 1990.

William R. Leonard
Executive Officer

sm25:Diablo.WDR

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION

MONITORING AND REPORTING PROGRAM NO. 90-09
FOR
PACIFIC GAS & ELECTRIC COMPANY
DIABLO CANYON POWER PLANT
UNITS 1 AND 2
SAN LUIS OBISPO COUNTY

Influent Monitoring

A sampling station shall be established at a point upstream of any treatment process where representative samples of the influent can be obtained. The following shall constitute the influent monitoring program:

Parameter	Units	Type of Sample	Minimum Frequency of Analysis
Temperature	F	Metered	Continuously*
pH	-	Grab	Monthly
Arsenic	ug/l	Grab	Annually (Oct)
Cadmium	ug/l	Grab	Annually (Oct)
Total Chromium	ug/l	Grab	Quarterly (Jan.Apr.Jul.Oct.)
Nickel	ug/l	Grab	" " "
Copper	ug/l	Grab	" " "
Lead	ug/l	Grab	Annually (Oct)
Mercury	ug/l	Grab	Annually (Oct)
Silver	ug/l	Grab	Annually (Oct)
Zinc	ug/l	Grab	Annually (Oct)
Cyanide	ug/l	Grab	Annually (Oct)
Phenolic Compounds (Non-chlorinated)	ug/l	Grab	Annually (Oct)
Chlorinated Phenolics	ug/l	Grab	Annually (Oct)
Ammonia (as N)	ug/l	Grab	Quarterly (Jan,Apr,Jul,Oct)

*In the event continuous temperature measurement systems are temporarily inoperative, an alternate means of measurement or calculating providing equivalent information may be used during this period.

Effluent Monitoring

A sampling station shall be established for each waste discharge and shall be located where representative samples of the discharge can be obtained. The following shall constitute the effluent monitoring program:

Parameter	Units	Discharge	Type of Sample	Minimum Frequency of Analysis
Temperature	F	001	Metered	Continuously***
Flow	MGD	001	Recorded from pump operating data	Daily
pH	-	001P, 002, 003, & 004	Grab	Monthly
pH	-	001	Grab	Daily when discharging chemical cleaning wastes from 001D F,I,L, and/or M. Otherwise monthly grab sample.
Grease & Oil	mg/l	001F	Grab	Monthly
Grease & oil	mg/l	001N	Composite during one discharge cycle	Weekly
Grease & Oil	mg/l	001D,001G 001H,001I, 001J,001K, 001L,001M, 001P**** 002, 003*****, & 004	Grab	Quarterly (Jan.Apr.Jul.Oct.)
Suspended Solids*	mg/l	001D,001F 001G,001H, 001I,001J, 001K, 001L, 001M, 001P**** & 002	Grab	Monthly
Suspended Solids	mg/l	001N	Composite during one discharge cycle	Weekly

Parameter	Units	Discharge	Type of Sample	Minimum Frequency of Analysis
Suspended Solids*	mg/l	003	Grab	Monthly when discharges to 003. Weekly when 001N and 001P discharge to 003
Settleable Solids	ml/l	001N	Grab	Weekly
Arsenic	ug/l	001	Grab	Annually
Grease & Oil	mg/l	005, 008, 009, 013, 015, 016, & 017	Grab	Annually
Cadmium	ug/l	001	Grab	Annually
Total Chromium	ug/l	001	Grab	Monthly
Copper	ug/l	001	Grab	Monthly
Copper	mg/l	001D,001F 001I,001L, & 001M	24-hr Composite	Daily during metal cleaning operations
Lead	ug/l	001	Grab	Annually
Mercury	ug/l	001	Grab	Annually
Nickel	ug/l	001	Grab	Monthly
Silver	ug/l	001	Grab	Annually
Zinc	ug/l	001	Grab	Monthly
Cyanide	ug/l	001	Grab	Annually
Phenolic Compounds (non-chlorinated)	ug/l	001	Grab	Annually
Chlorinated Phenolics	ug/l	001	Grab	Annually
Total Chlorine Residual	ug/l	001	Grab	At least twice during each chlorination cycle
Chlorine Used	lbs/day	001	Record of actual amount used	Monthly
Ammonia (as N)	ug/l	001	Grab	Quarterly

Parameter	Units	Discharge	Type of Sample	Minimum Frequency of Analysis
Toxicity Concentration**	tu	001	Grab	Quarterly
PCB's	ug/l	001	Grab	Annually
Iron	mg/l	001D,001F, 001I,001L, & 001M	24-hr composite	Daily during metal cleaning operations
Titanium	ug/l	001	Grab	Annually
Lithium, Boron Hydrazine	mg/l	001D	Grab	Annually
Cadmium, chromium, copper,lead,mercury nickel,silver,zinc	mg/l	001D,001H & 001L	Quarterly composite	Quarterly (Jan,Apr,Jul,Oct)
Cadmium,chromium, copper,lead,mercury, nickel,silver,zinc	mg/l	001F	Weekly composite	Quarterly Qtrly(Jan,Apr,Jul,Oct)

Intake and discharge samples, when required, shall be coordinated so as to sample the same water mass (intake sampling time plus plant and conduit detention time yields discharge sampling time).

*The suspended solids analysis of waste streams with a high concentration of dissolved solids shall be modified as follows: after determination of the suspended matter by the Standard Methods Technique, a second determination using the identical procedure shall be made of the suspended matter in the filtrate. Both the first and second determinations as well as the difference between the two amounts shall be reported. The calculated difference shall be considered the concentration of suspended solids in the effluent.

**Static bioassays (96-hr. TLm) using species indigenous to Diablo cove (including red abalone and blue rock fish, when available), but obtained elsewhere, shall be conducted using water being discharged to Diablo Cove.

***In the event continuous temperature measurement systems are <u>temporarily</u> inoperative, an alternate means of measurement or calculating providing equivalent information may be used during this period.

****Minimum frequency of analysis shall be weekly when 001N discharges to 001P.

*****Minimum frequency of analysis shall be weekly when 001P discharges to 003.

The State Water Resources Control Board and the Department of Fish and Game have issued Guidelines for Performing Static Acute Toxicity Bioassays. The guidelines contain the following reference to sample collection:

"Samples must be collected in thoroughly cleaned containers. Containers should be completely filled with the effluent before capping. Sample degradation by biological action can be minimized by storing samples at 4 degrees C. Tests should begin as soon as possible after collecting the sample. Where samples are known to contain volatiles that may be toxic, or where samples may undergo rapid changes, bioassay tests must be conducted within 24 hours after the samples are collected."

Note that 24 hours is the total maximum time allowed from sample collection to the start of the test including all transit time and is allowed only for refrigerated samples.

SLUDGE MONITORING

A representative sample of sanitary wastewater treatment system residual solids (sludge) as obtained from the last point in the handling process before disposal (i.e., in the drying beds just prior to removal) shall be analyzed for the following constituents at the frequencies listed below. All constituents shall be analyzed for total concentrations for comparison with TTLC criteria. The Waste Extraction Test shall be performed on any constituent when the total concentration of the waste exceeds ten times the STLC limit for that substance.

Constituent	Units	Type of Sample	Minimum Frequency of Analysis
Quantity	Tons or yds^3 Location of Disposal	measured	During Removal
Moisture Content	%	Grab	Annually (October)
Total Kjeldahl Nitrogen	mg/kg	Grab	" "
Ammonia (as N)	mg/kg	Grab	" "
Nitrate (as N)	mg/kg	Grab	" "
Total Phosphorus	mg/kg	Grab	" "
pH	-	Grab	" "

Constituent	Units	Type of Sample	Minimum Frequency of Analysis	
Grease & Oil	mg/kg	Grab	"	"
Boron	mg/kg	Grab		
Cadmium	mg/kg	Grab	"	"
Copper	mg/kg	Grab	"	"
Chromium	mg/kg	Grab	"	"
Lead	mg/kg	Grab	"	"
Nickel	mg/kg	Grab	"	"
Mercury	mg/kg	Grab	"	"
Zinc	mg/kg	Grab	"	"

Receiving Water Monitoring

Receiving Water Monitoring shall be conducted as outlined below:

1. Ecological studies shall continue as approved by the Executive Officer in order to evaluate changes in distribution and abundance of marine plant and animals within the vicinity of the discharge. (Thermal Effects Monitoring Program attached to this monitoring and reporting program).

2. Sediment samples collected annually from two stations inside and two stations adjacent to Diablo Cove, as approved by the Executive Officer, shall be analyzed for arsenic, cadmium, hexavalent chromium, copper, lead, mercury, nickel, silver, zinc, and sediment grain-sized distribution using the following methods:

   a. At least three aliquot samples shall be taken at each station. Samples may be collected by divers using noncontaminating samplers or by a surface operated grab sampler which will obtain a relatively undisturbed sample. If the surface operated grab sampler is utilized, a sample (uncontaminated by the sampler) should be taken from the grab. Regardless of collection method, only the top 5 cm of material shall be analyzed. (Stations should be adjusted as necessary just prior to sampling to assure collection of optimal amounts of fine sediment).

   b. Reference stations (See Figure 1, attached) have been selected in areas which should provide similar sediments at similar depths to the outfall stations.

      If the collector encounters rocks or gravel at a station, he shall re-position the station, as necessary, to obtain a usable sediment sample. Station location changes shall be described in the final report.

c. Samples shall be placed in air-tight polyethylene containers. Care shall be taken to ensure the containers are completely filled by the samples and that air bubbles are not trapped in the containers. The samples shall be stored immediately at 2 to 4 degrees C and not frozen or dried. Total sample storage time shall not exceed two weeks.

d. When processing for analyses, macrofauna and remnants should be removed (taking care to avoid contamination).

e. In order to obtain an estimate of metal concentrations more representative of the biologically available fraction of metals, sediment metal concentrations shall be determined using a weak acid leachable (WAL) extract on the fine sieved fraction (Flegal, 1981). Sediment metal concentrations measured by this method have previously been shown to correlate closely with metal bioaccumulation by benthic organisms (Luoma and Bryan, 1981). Flegal's modifications to this procedure (1981), which shall be followed in this program, were developed for the State Water Quality Control Board. In this method, sediment samples are filtered through a 100um sieve, oven dried (60°C for 24 hrs), and the fine fraction weighed and subjected to a WAL extraction in 1 N HCl at ambient temperature for 24 hours (5 gm dry weight per 50 ml HCl). The leachate is to be centrifuged at 2500 RPM for 15 minutes and supernatant quantitatively diluted to final volume (100 ml). The metal metals then shall be analyzed by flame AAS. Sediment metal concentrations expressed as ug metal normalized to gram salt-free dry weight.

3. Water temperature shall be measured at 6 stations (Figure 2, attached) located inside Diablo Cove. Stations 10, 11, and 12 are located near the west entrance. Stations 13, 14, and 15 located near the north entrance to Diablo Cove, shall be measured at one meter increments for the first five meters of the water column, at midwater, and at the ocean bottom. Measurements shall be made in February, June, and October. Precision of measurements shall be within plus or minus 0.5 degrees F.

4. Receiving water pH and dissolved oxygen sampling shall be conducted in conjunction with 3 above, with grab samples collected at ocean surface, midwater, and bottom depths and returned to a laboratory environment for analysis.

5. In-situ bioaccumulation monitoring, as approved by the Executive Officer, shall continue until such time that the Board determined it is no longer of benefit. Results shall be transmitted simultaneously to the Regional Board and the State Water Resources Control Board. (Deviations from the sampling schedule is permissible if specimen cannot be collected due to: hazardous sea conditions, seasonal unavailability, or inability to locate with reasonable effort).

6. For the duration of a discharge from 001N to 003, grab samples shall be collected four times per week along the ocean-side of the western-most breakwater. Samples shall be collected at the water's surface, within ten feet of either side of discharge 003, on an incoming tide. Samples shall be analyzed for total and fecal coliform.

Reporting

The Discharger shall comply with the following:

1. Influent and effluent monitoring shall be submitted Quarterly by the 20th day of the month following the end of each quarter.

2. Receiving water monitoring shall be submitted Quarterly by the 20th day of the month following the end of each quarter.

3. Notwithstanding Standard Provision C.4, details of any bypass or damage of the five-micron filters in the liquid radwaste system shall be reported to the Executive Officer immediately.

4. A copy of information contained in reports to the Nuclear Regulatory Commission and/or the California Department of Health Services related to the marine environment shall be submitted to the Executive Officer. Results of radiological monitoring of the receiving water shall be reported at the same time reports are made to the Nuclear Regulatory Commission.

5. Pump station failures resulting in discharges of sewage effluent from 001N to the intake cove or 003 shall be reported to Regional Board staff within 24 hours. Written confirmation of this discharge or rerouting to the existing leachfield shall be included in the next regular monitoring report.

6. Written confirmation of a temporary rerouting of 001P to 003 shall be included in the next regular monitoring report with an explanation of the need for the rerouting.

7. By February 28 of each year, the discharger shall submit an annual report to the Regional Board. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous year. The discharger shall discuss the compliance record and corrective actions taken, or which may be needed, to bring the discharge into full compliance. The report shall inform the Board of the date of the Facility's Operation and Maintenance Manual (including contingency plans as described in Provision A.21.), of the date the manual was last reviewed, and whether the manual is complete and valid for the current facility. The report shall restate, for the record, the laboratories used by the discharger to monitor compliance with effluent limits and provide a summary of performance relative to section B, General Monitoring Requirements.

ORDERED BY William R. Leonard
Executive Officer

May 11, 1990
Date

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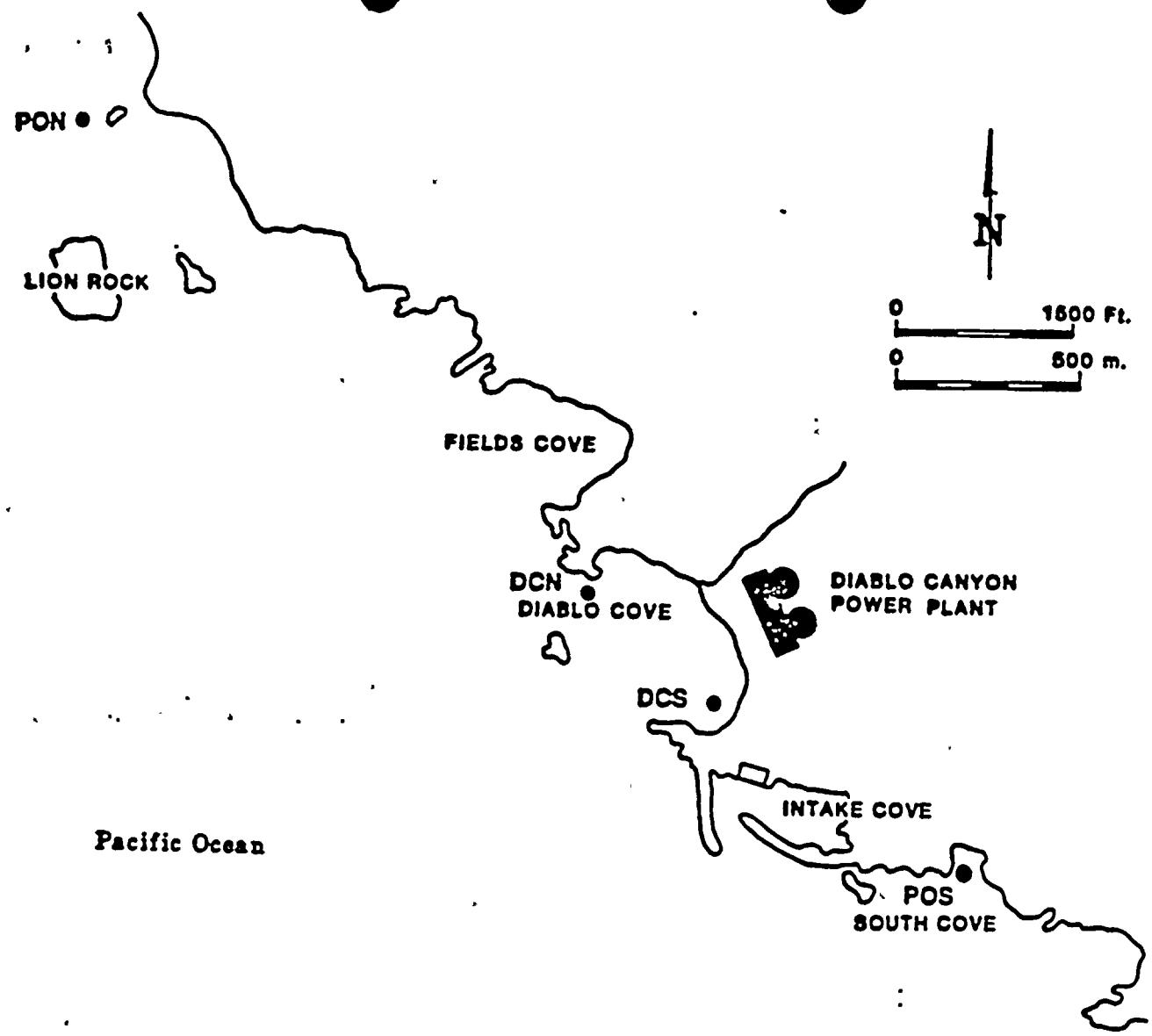
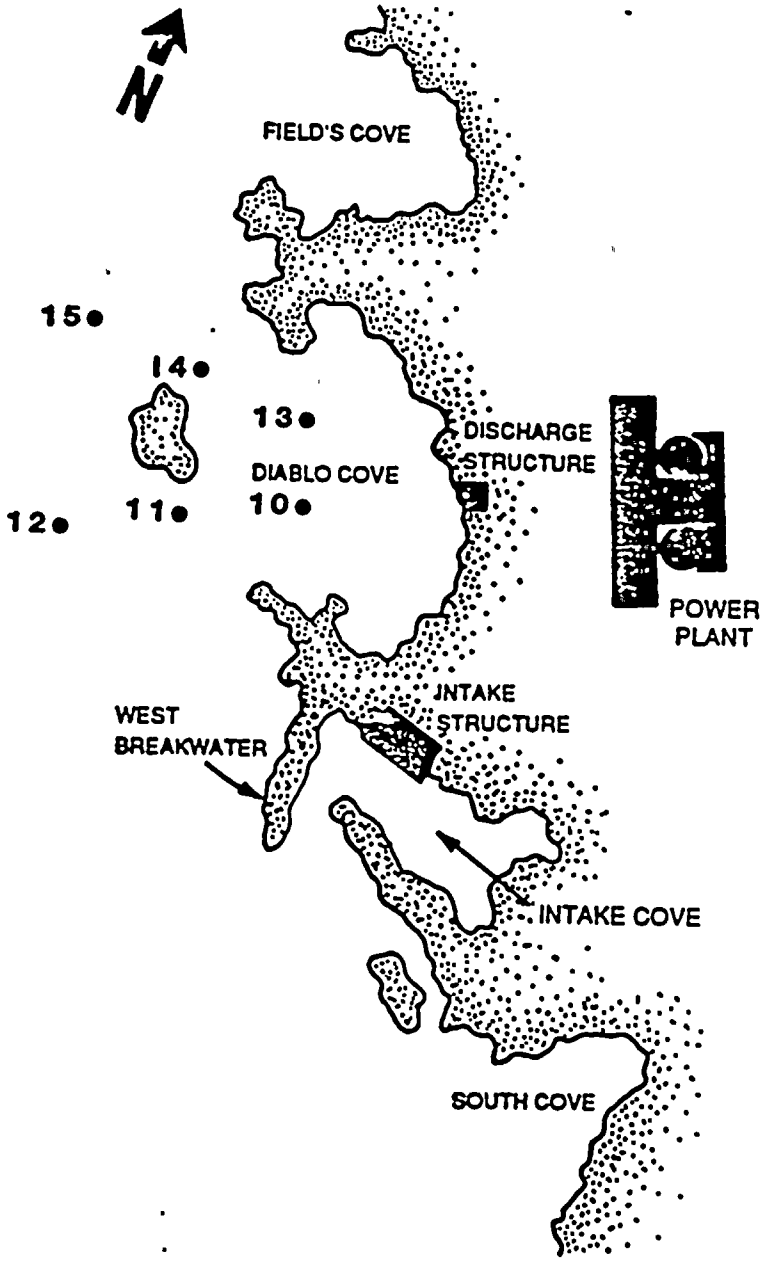


LEGEND

Pacific Ocean North - PON
Pacific Ocean South - POS
Diablo Cove North - DCN
Diablo Cove South - DCS

Diablo Canyon Power Plant NPDES Sediment Monitoring

FIGURE 1



WATER TEMPERATURE, pH, AND DISSOLVED OXYGEN

SAMPLE LOCATIONS

FIGURE 2

DIABLO CANYON POWER PLANT

THERMAL EFFECTS MONITORING PROGRAM

Pacific Gas and Electric Company

October,1989

MONITORING PROGRAM DESCRIPTION

The Diablo Canyon Power Plant Thermal Effects Monitoring Program is comprised of study elements which include intertidal monitoring, subtidal monitoring, fish monitoring, and physical environmental monitoring. The sections which follow describe the study methodology employed in each major study element, by subtask.

INTERTIDAL MONITORING

The intertidal task is comprised of the following subtasks: horizontal band transects, vertical band transects, algal scrapings, and black abalone surveys.

Horizontal Band Transects

Horizontal band transects consisting of ten one meter square quadrats are located at the +3 foot (MLLW) tide levels at Stations 1 through 12, 14, 15, 17 through 20, 22, and 23, as shown in the attached station map. Transects at the +1 foot elevation are located at Stations 1 through 12, 19, 20, 23and 29. The abundance of algae and invertebrates is monitored four times annually at each station. Algae and encrusting and colonial invertebrates are recorded as percent cover. Solitary invertebrates are enumerated in each quadrat.

Vertical Band Transects

Permanently marked vertical band transects are located at stations C, L, I, M, and H, as shown in the attached station map. Each station consists of three vertically oriented transects which contain twelve one meter square quadrats. Each transect runs from approximately the +4 to the -1 foot (MLLW) elevation. The presence of each algal and invertebrate taxon is recorded in each quadrat. Fish present in each quadrat are captured, identified to taxon, measured, and released. Surveys are conducted at these stations four times annually.

Algal Scrapes

Algal scrape samples are collected four times annually at intertidal stations C, L, and H. Pure stands of two turf building species of red alga (*Endocladia muricata* and *Gastroclonium coulteri*) will be sampled. All of the *Endocladia muricata* or *Gastroclonium coulteri* within eight 100-square centimeter replicates are removed using a metal scraper, placed in a labeled plastic bag, and returned to the laboratory for processing. Laboratory treatment of each sample consists of separating the sediment and animal subfractions of the sample from the algae. Dryweight measurements are recorded for sorted sediment and algae. Associated infauna are identified to the lowest taxon and enumerated.

Black Abalone Census

Black abalone (*Haliotis cracherodii*) in Diablo Cove are monitored to determine their status. Surveys are performed twice annually.

SUBTIDAL MONITORING

Monitoring of subtidal marine communities consists of non-destructive sampling of permanently located subtidal stations by diver-biologists. The subtasks of the subtidal program consist of Arc Quadrant, Fixed Quadrat, and Point Contact sampling. Monitoring of red abalone (*Haliotis rufescens*), is conducted. Population estimates of bull kelp (*Nereocystis luetkeana*) are made by shore census.

Arc Quadrants

Thirteen permanent stations are sampled four times annually. Station locations are shown in the attached station map. Each station consists of a circle approximately 28 square meters in area, divided into four equal pie-shaped sections. Species composition and population densities of the more conspicuous, representative, and enumerable subtidal biota will be determined throughout the entire 28 square meter station.

Fixed Quadrats

The species composition and population densities of the smaller, more cryptic subtidal invertebrates are monitored in four fixed location quadrats contained within the station boundary. There is no maximum size limit for the invertebrate taxa in these quadrats; minimum size limits are fixed by visual discernibility. Habitat forming and encrusting forms are quantified as percent cover. Solitary individuals are counted. Surveys of fixed quadrats are conducted four times annually.

Subtidal Random Line Point Contact

A random line point contact (RLPC) method is used to document the percentage area coverage of habitat forming species which occur within the boundaries of each of the subtidal stations. The predominant habitat formers on the subtidal stations are algal species, and this procedure was developed primarily to quantify algal abundances. An equal number of random points are sampled within each of the four arc quadrants. The species immediately over or under the loci to be sampled and the type of substrate lying immediately under the loci are recorded . The frequency of sampling is four times annually.

Bull Kelp Population Estimates

An annual census of the total number of bull kelp (*Nereocystis luetkeana*) plants occurring in Diablo Cove is conducted in the fall of every year, in order to coincide with the peak surface occurrence of adult bull kelp plants. Counts are made from permanently marked clifftop vantage points in the north and south portions of Diablo Cove. The total number of floating pneumatocysts observable on the surface waters is counted. Separate counts made from each vantage point are averaged to obtain an estimate of the total number of bull kelp plants. In addition to counts, the areas of Diablo Cove which contain stands of bull kelp are mapped.

Red Abalone Census

Red abalone (*Haliotis rufescens*) in Diablo Cove are monitored to determine their status. The number of abalone is recorded by size class. This survey effort is conducted twice yearly.

FISH MONITORING

Monitoring of fish populations in the vicinity of the discharge is accomplished by diver enumeration of fish assemblages at fixed sampling stations.

Subtidal Fish Observations

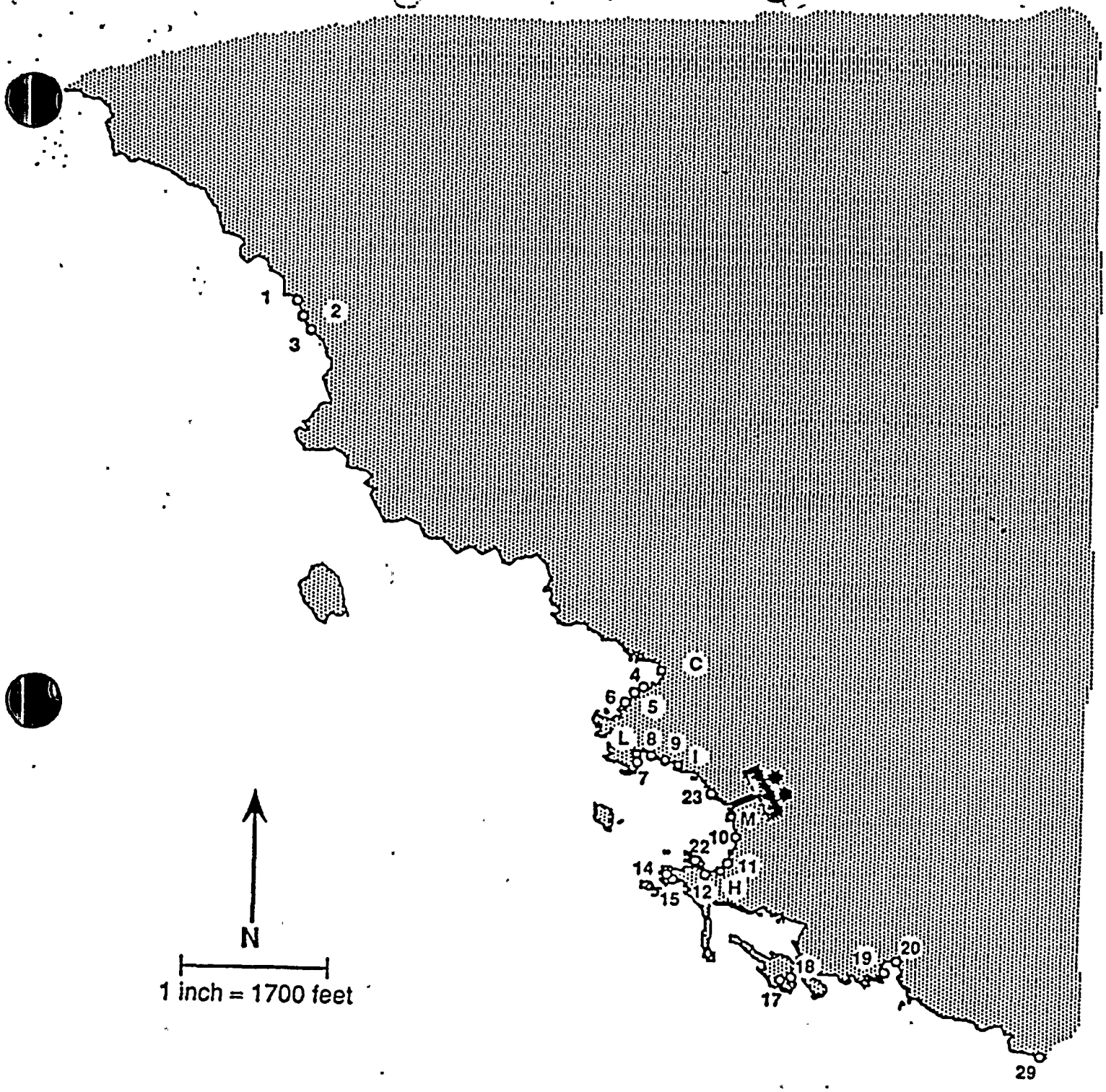
SCUBA observations at fixed subtidal transects provide documentation of the spatial composition and abundance of subtidal fish assemblages. Twelve sampling locations are monitored four times annually, at the locations depicted in the attached station map. Visual observations are made by benthic and midwater observers along transects. Each station is replicated once each survey. Water temperature and lateral visibility are measured at each transect endpoint by both benthic and midwater observers.

IN SITU TEMPERATURE DATA COLLECTION

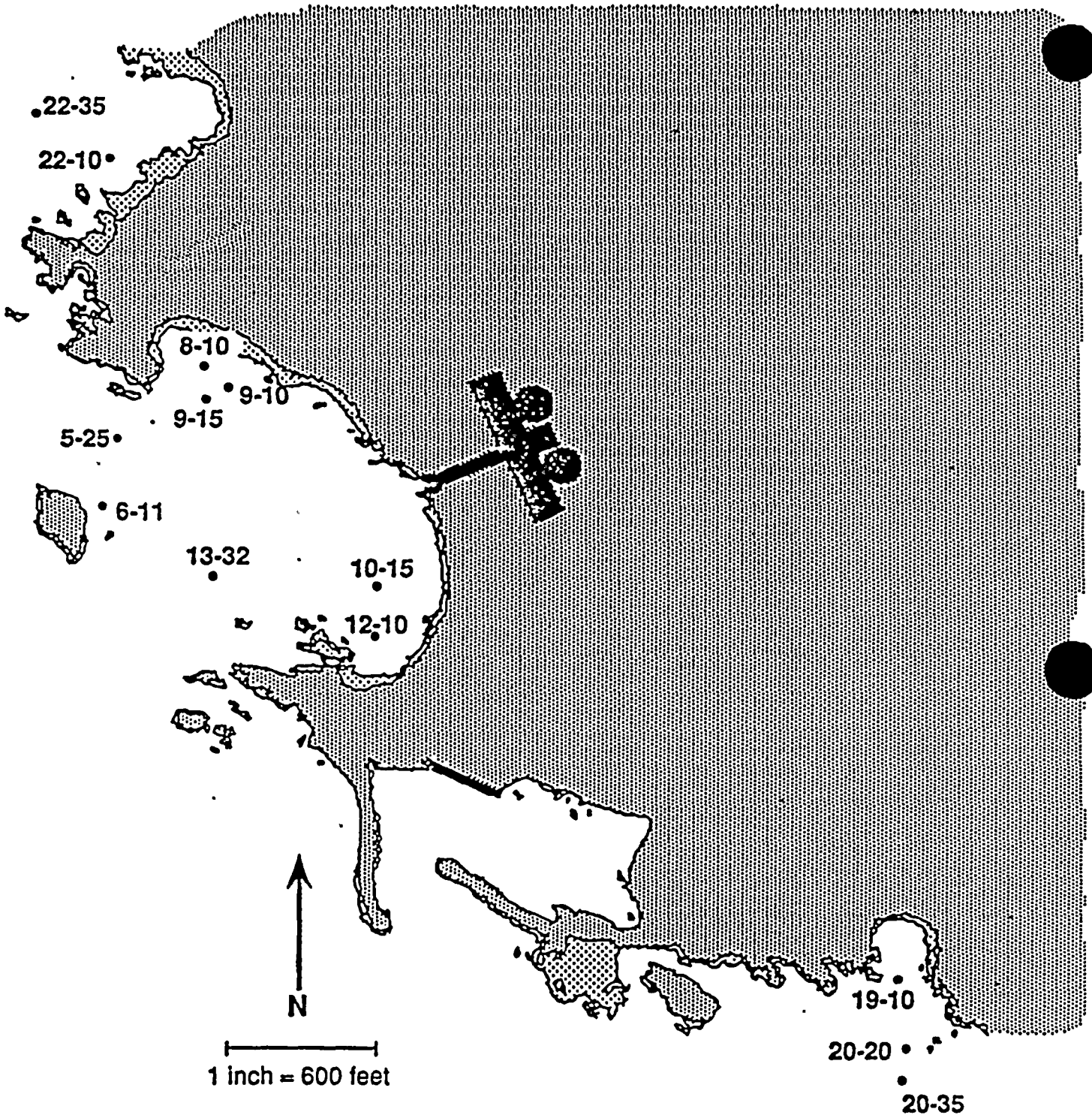
Temperature data are recorded at intertidal and subtidal station locations. The data are used to supplement the biological data derived from the intertidal and subtidal studies. A monthly service schedule provides for replacement of batteries, exchange of recording media, and instrument maintenance, as required.

REPORTING

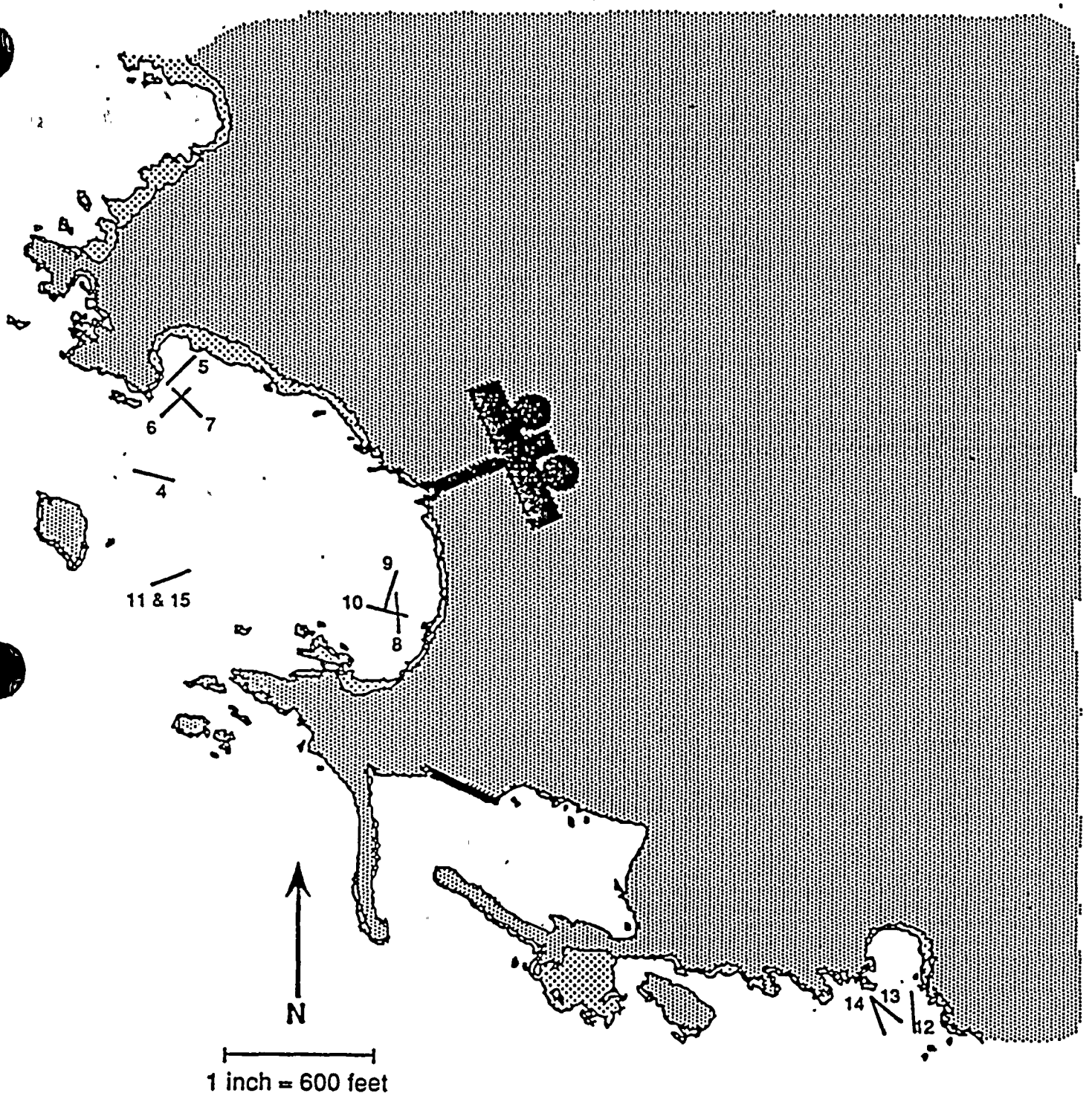
Monthly progress reports will describe the progress of study subtasks. Annual reports describing the procedures used and results of observations during the previous year's surveys will be presented to the Regional Board by March 31 of each year. Reports will contain a description of data collected, and a discussion of results.



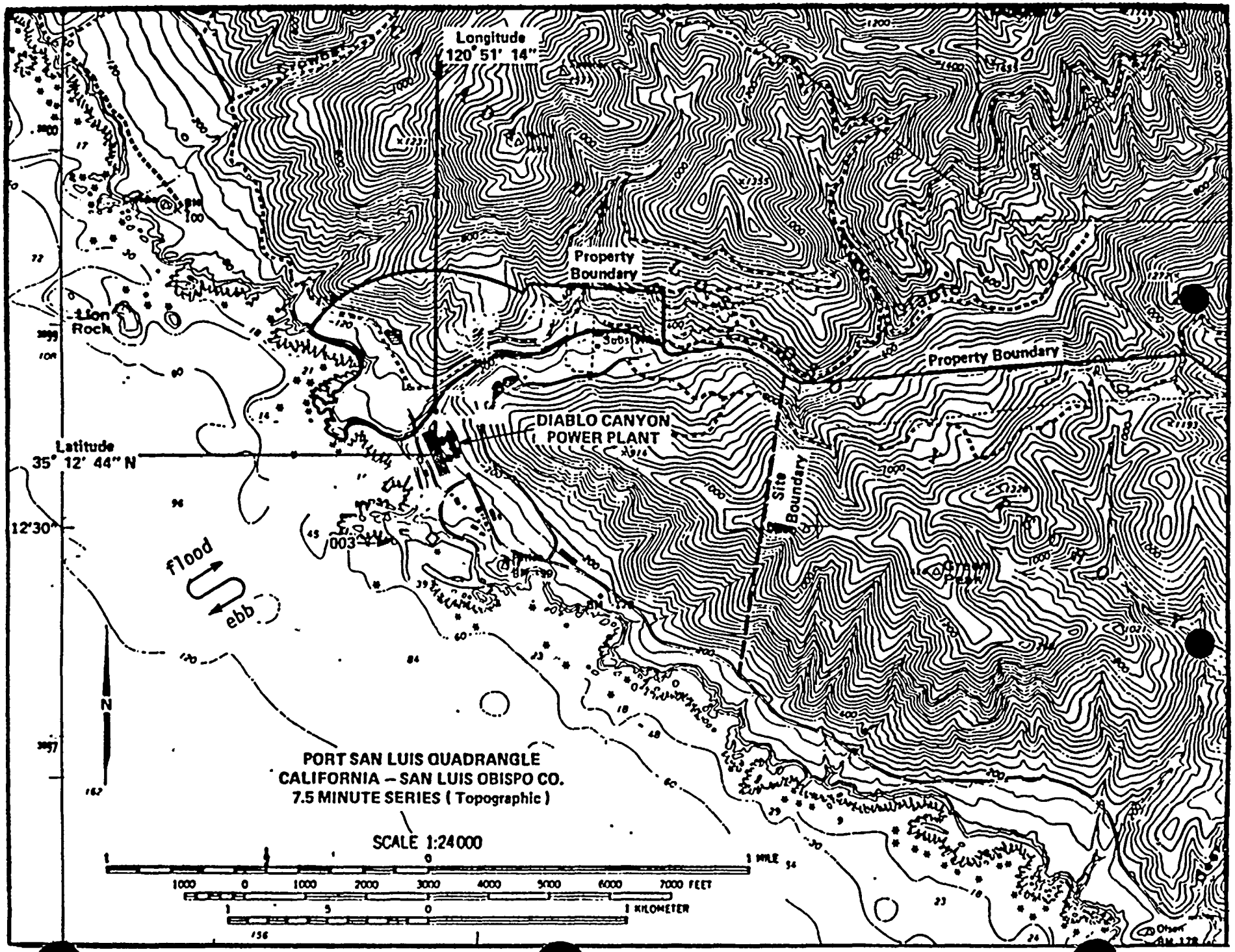
Location of Intertidal Sampling Stations



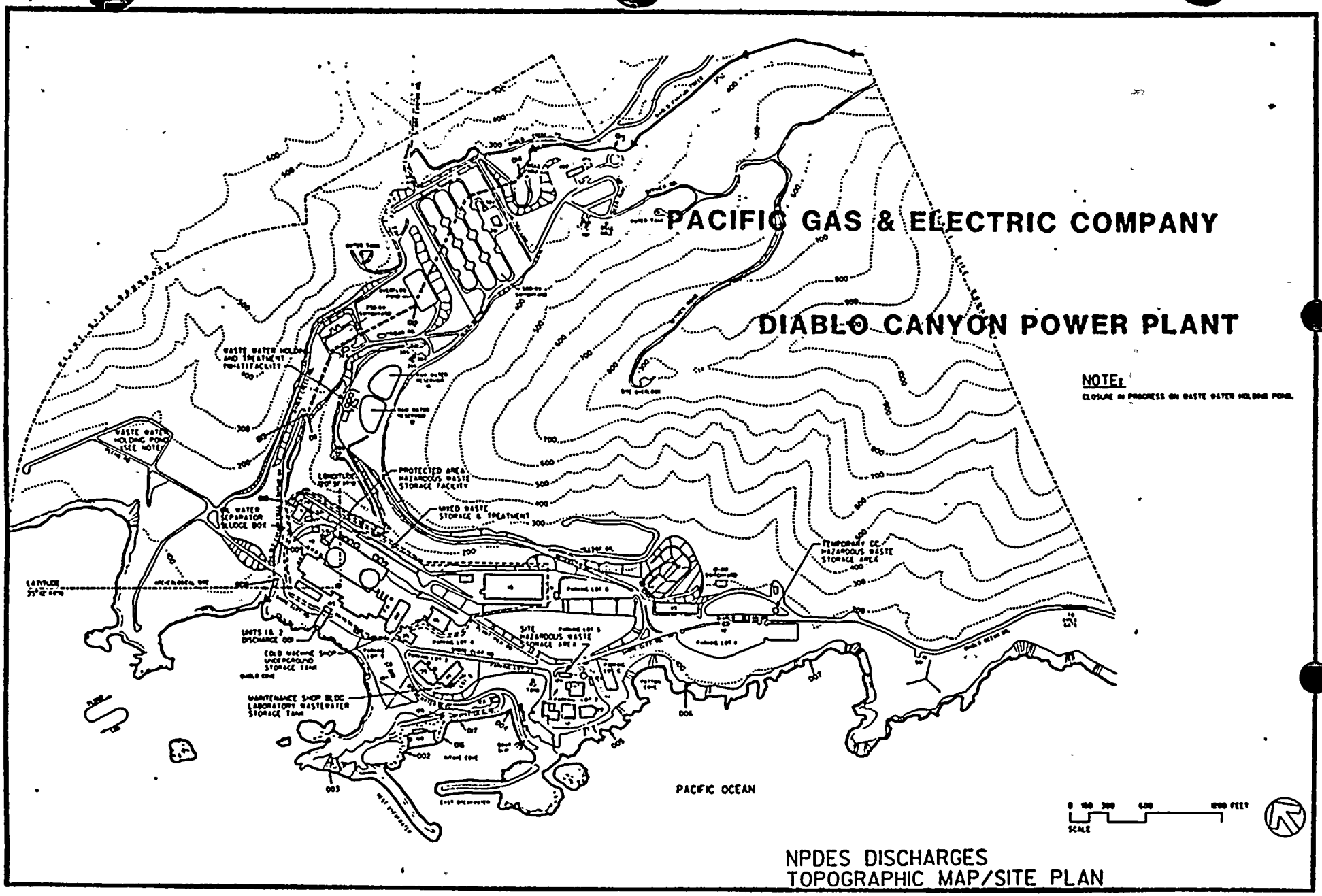
Subtidal Sampling Station Locations



Location of Nearshore Subtidal Fish Observation Stations



ATTACHMENT "A"



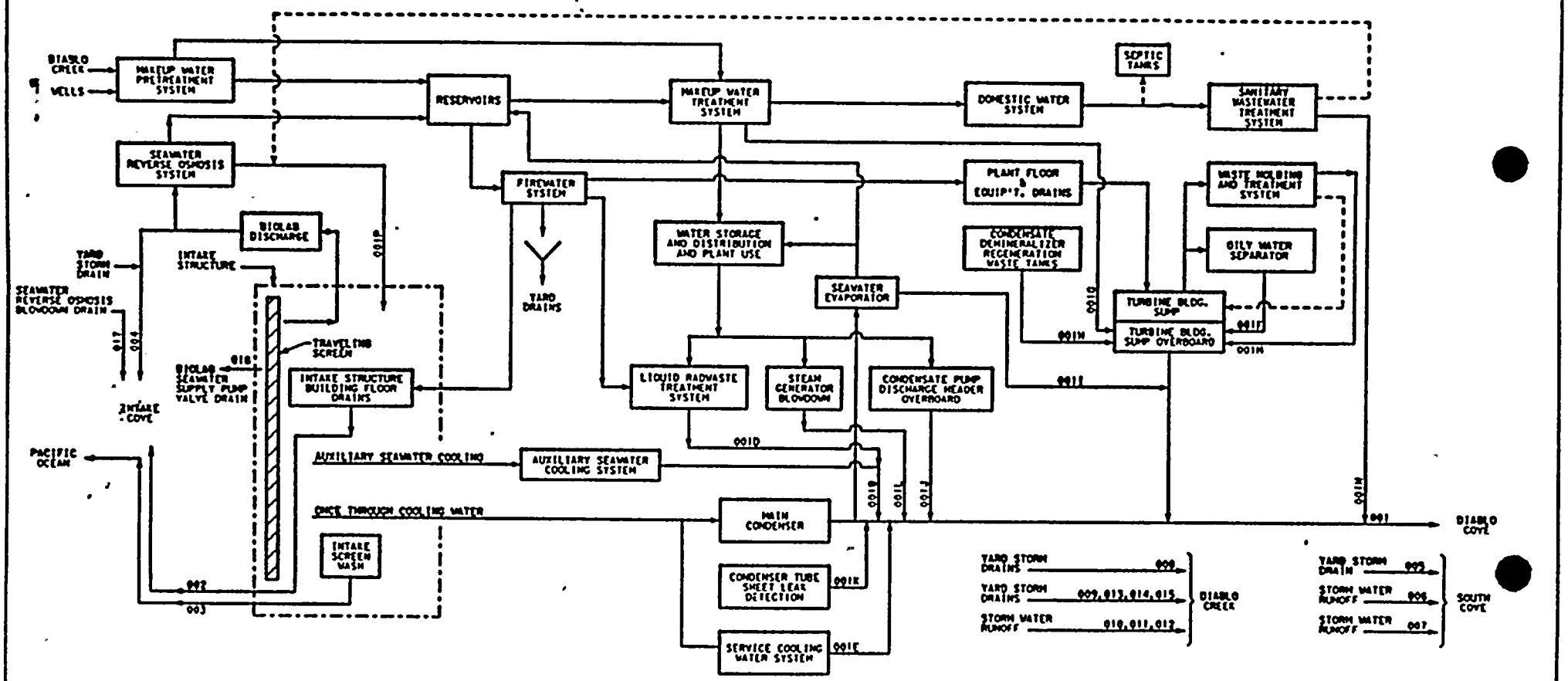
NPDES DISCHARGES
TOPOGRAPHIC MAP/SITE PLAN

ATTACHMENT "B"

ATTACHMENT "C"

Attachment C

WASTE STREAM SCHEMATIC



DISCHARGE	DESCRIPTION	VOLUME (gal/day)
001	Once through Cooling Water	2,540,000,000
001B	Auxiliary Salt Water Cooling	63,400,000
001D	Liquid Radioactive Waste Treatment System Effluent (Intermittent)	50,000
001E	Service Cooling Water	25,000,000
001F	Turbine Bldg. Sump (Intermittent)	150,000

DISCHARGE	DESCRIPTION	VOLUME (gal/day)
001G	Makeup Water System Waste Effluent	483,000
001H	Condensate Demineralizer Regenerant (Intermittent)	150,000
001I	Seawater Evaporator Blowdown	500,000
001J	Condensate Pump Discharge Header Overboard (Intermittent)	360,000

DISCHARGE	DESCRIPTION	VOLUME (gal/day)
001K	Condensate Tube Sheet Leak Detection Dump Tank Overboard (Intermittent)	140,000
001L	Steam Generator Blowdown	650,000
001M	Wastewater Holding & Treatment Tanks System	800,000
001N	Sanitary Wastewater Treatment System	3,500
001P	Seawater Reverse Osmosis System Blowdown	1,440,000

DISCHARGE	DESCRIPTION	VOLUME (gal/day)
002	Intake Structure Bldg. Floor Drains (Intermittent)	350,000
003	Intake Screen Wash (Intermittent)	5,760,000
004	Biolab Discharge	1,730,000
	Yard Storm Drains	Variable
005	Yard Storm Drain	Variable
006	Storm Water Runoff	Variable
007	Storm Water Runoff	Variable

DISCHARGE	DESCRIPTION	VOLUME (gal/day)
008	Yard Storm Drains, Storm Water Runoff	Variable
009	Yard Storm Drains	Variable
010	Storm Water Runoff	Variable
011	Storm Water Runoff	Variable
012	Storm Water Runoff	Variable
013	Yard Storm Drains	Variable
014	Yard Storm Drains	Variable
015	Yard Storm Drains	Variable
016	Biolab Seawater Supply Pump Valve Drain	Variable
017	Seawater Reverse Osmosis Blowdown	Variable

ATTACHMENT "D"

TABLE B
TOXIC MATERIALS LIMITATIONS

	Units of Measurement	Limiting Concentrations: 6-Month Median	Daily Maximum	Instantaneous Maximum
OBJECTIVES FOR PROTECTION OF MARINE AQUATIC LIFE				
Arsenic	ug/l	8	32	80
Cadmium	ug/l	1	4	10
Chromium (Hexavalent) (see below, a)	ug/l	2	8	20
Copper	ug/l	3	12	30
Lead	ug/l	2	8	20
Mercury	ug/l	0.04	0.16	0.4
Nickel	ug/l	5	20	50
Selenium	ug/l	15	60	150
Silver	ug/l	0.7	2.8	7
Zinc	ug/l	20	80	200
Cyanide (see below, b)	ug/l	~~5~~ 1	~~20~~ 4	~~50~~ 10
Total Chlorine Residual (For intermittent chlorine sources, see below, ~~b~~ c)	ug/l	2	~~11~~ 8	~~126~~ 60
Ammonia (expressed as nitrogen)	ug/l	600	2400	6000
Chronic* Toxicity ~~Concentration~~	~~tu~~ TUc	~~0.05~~	1	
Phenolic Compounds (non-chlorinated)	ug/l	30	120	300
Chlorinated Phenolics	ug/l	1	4	10
~~Aldrin and Dieldrin~~	~~ug/l~~	~~0.002~~	~~0.004~~	~~0.006~~
~~Chlordane* and Related Compounds~~	~~ug/l~~	~~0.003~~	~~0.006~~	~~0.009~~
~~DDT* and Derivatives~~	~~ug/l~~	~~0.001~~	~~0.002~~	~~0.003~~
Endosulfan	ng/l	9	18	27
Endrin	~~u~~ ng/l	~~0.002~~	~~0.004~~	~~0.006~~
HCH*	~~u~~ ng/l	~~0.004~~	~~0.008~~	~~0.012~~
~~PCBs*~~	~~u ng/l~~	~~0.003~~	~~0.006~~	~~0.009~~
~~Toxaphene~~	~~u ng/l~~	~~0.007~~	~~0.014~~	~~0.021~~
Radioactivity	Not to exceed limits specified in Title ~~17~~ 22, Chapter 15, ~~Subchapter 4, Group 3,~~ Article ~~3~~ 4, Section ~~30269~~ 64443 of the ~~California Administrative Code~~ California Code of Regulations.			

* See Appendix I for definition of terms.

Table B Continued

Chemical	Units of Measurement	30-day Average
OBJECTIVES FOR PROTECTION OF HUMAN HEALTH - NONCARCINOGENS		
acrolein	ug/l	220
antimony	mg/l	1.2
bis(2-chloroethoxy) methane	ug/l	4.4
bis(2-chloroisopropyl) ether	mg/l	1.2
chlorobenzene	ug/l	570
chromium (III)	mg/l	190
di-n-butyl phthalate	mg/l	3.5
dichlorobenzenes*	mg/l	5.1
1,1-dichloroethylene	mg/l	7.1
diethyl phthalate	mg/l	33
dimethyl phthalate	mg/l	820
4,6-dinitro-2-methylphenol	ug/l	220
2,4-dinitrophenol	ug/l	4.0
ethylbenzene	mg/l	4.1
fluoranthene	ug/l	15
hexachlorocyclopentadiene	ug/l	58
isophorone	mg/l	150
nitrobenzene	ug/l	4.9
thallium	ug/l	14
toluene	mg/l	85
1,1,2,2-tetrachloroethane	mg/l	1.2
tributyltin	ng/l	1.4
1,1,1-trichloroethane	mg/l	540
1,1,2-trichloroethane	mg/l	43
OBJECTIVES FOR PROTECTION OF HUMAN HEALTH - CARCINOGENS		
acrylonitrile	ug/l	0.10
aldrin	ng/l	0.022
benzene	ug/l	5.9
benzidine	ng/l	0.069
beryllium	ug/l	33
bis(2-chloroethyl) ether	ug/l	0.045
bis(2-ethylhexyl) phthalate	ug/l	3.5
carbon tetrachloride	ug/l	0.90
chlordane*	ng/l	0.023
chloroform	mg/l	0.13
DDT*	ng/l	0.17
1,4-dichlorobenzene	ug/l	18
3,3'-dichlorobenzidine	ng/l	8.1

* See Appendix I for definition of terms.

Chemical	Units of Measurement	30-day Average
1,2-dichloroethane	mg/l	0.13
dichloromethane	mg/l	0.45
1,3-dichloropropene	ug/l	8.9
dieldrin	ng/l	0.040
2,4-dinitrotoluene	ug/l	2.6
1,2-diphenylhydrazine	ug/l	0.16
halomethanes*	mg/l	0.13
heptachlor*	ng/l	0.72
hexachlorobenzene	ng/l	0.21
hexachlorobutadiene	ug/l	7.3
hexachloroethane	ug/l	2.5
N-nitrosodimethylamine	ug/l	14
N-nitrosodiphenylamine	ug/l	2.5
PAHs*	ng/l	8.8
PCBs*	ng/l	0.019
TCDD equivalents*	pg/l	0.0039
tetrachloroethylene	ug/l	99
toxaphene	ng/l	0.21
trichloroethylene	ug/l	27
2,4,6-trichlorophenol	ug/l	0.29
vinyl chloride	ug/l	36

a) Dischargers may at their option meet this limitation as a total chromium limitation.

b) If a discharger can demonstrate to the satisfaction of the Regional Board (subject to EPA approval) that an analytical method is available to reliably distinguish between strongly and weakly complexed cyanide, effluent limitations for cyanide may be met by the combined measurement of free cyanide, simple alkali metal cyanides, and weakly complexed organometallic cyanide complexes. In order for the analytical method to be acceptable, the recovery of free cyanide from metal complexes must be comparable to that achieved by Standard Methods 412F, G, and H (Standard Methods for the Examination of Water and Wastewater, Joint Editorial Board, American Public Health Association, American Water Works Association, and Water Pollution Control Federation. Most recent edition.).

~~b~~ c) Water quality objectives for total chlorine residual applying to intermittent discharges not exceeding two hours, shall be determined through the use of the following equation:

$$\log y = -0.\cancel{3343}\,(\log x) + \cancel{2.11}\,18$$

where: y = the water quality objective (in ug/l) to apply when chlorine is being discharged;
x = the duration of uninterrupted chlorine discharge in minutes.

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* See Appendix I for definition of terms.

Implementation Provisions for Table B

A. Calculation of Effluent Limitations

Effluent limitations for parameters ~~substances~~ identified in Table B with the exception of Radioactivity, shall be determined through the use of the following equation:

$$Ce = Co + Dm (Co - Cs) \quad (1)$$

where:

Ce = the effluent concentration limit,
Co = the concentration to be met at the completion of initial* dilution,
Cs = background seawater concentration (see Table C below),
Dm = minimum probable initial* dilution expressed as parts seawater per part wastewater.

For the purpose of this Plan, minimum initial dilution is the lowest average initial dilution within any single month of the year. Dilution estimates shall be based on observed waste flow characteristics, observed receiving water density structure, and the assumption that no currents, of sufficient strength to influence the initial dilution process, flow across the discharge structure.

The Executive Director of the State Board shall identify standard dilution models for use in determining Dm, and shall assist the Regional Board in evaluating Dm for specific waste discharger. Dischargers may propose alternative methods of calculating Dm, and the Regional Board may accept such method upon verification of its accuracy and applicability.

* See Appendix I for definition of terms.

TABLE C
BACKGROUND SEAWATER CONCENTRATIONS (Cs)

Waste Constituent	Cs (ug/l)
Arsenic	3
~~Cadmium~~	~~0~~
~~Chromium (Hexavalent)~~	~~0~~
Copper	2
~~Lead~~	~~0~~
Mercury	0.0005
~~Nickel~~	~~0~~
Silver	0.16
Zinc	8
~~Cyanide~~	~~0~~
~~Phenolic Compounds~~	~~0~~
~~Total Chlorine Residual~~	~~0~~
~~Ammonia (Expressed as nitrogen)~~	~~0~~
~~Toxicity* Concentration (in toxicity units)~~	~~0~~
~~Chlorinated Pesticides and PCB's~~	~~0~~

For all other Table B parameters, Cs = 0.

The six-month median effluent concentration limit shall apply as a moving median of daily values for any 180 day period in which daily values represent flow weighted average concentrations within a 24-hour period. For intermittent discharges, the daily value shall be considered to equal zero for days on which no discharge occurred.

The daily maximum effluent concentration limit shall apply to flow weighted 24 hour composite samples.

The instantaneous maximum shall apply to grab sample determinations.

If only one sample is collected during the time period associated with the water quality objective (e.g., 30-day average or 6-month median), the single measurement shall be used to determine compliance with the effluent limitation for the entire time period.

Discharge requirements shall also specify effluent requirements in terms of mass emission rate limits utilizing the general formula:

$$\text{lbs/day} = 8.34 \times Ce \times Q \quad (2)$$

The six-month median limit on daily mass emissions shall be determined using the six-month median effluent concentration as Ce and the observed flow rate Q in millions of gallons per day. The daily maximum mass emission shall be determined using the daily maximum effluent concentration limit as Ce and the observed flow rate Q in millions of

* See Appendix I for definition of terms.

gallons per day.

Any significant change in waste* flow shall be cause for reevaluating effluent quality requirements.

~~If a calculated Ce value falls below the limit of detection of the test method specified in the Code of Federal Regulations, 40 CFR 136, the limit of detection shall serve as the limiting effluent concentration.~~

B. Compliance Determination

All analytical data shall be reported uncensored with detection limits and quantitation limits identified. For any effluent limitation, compliance shall be determined using appropriate statistical methods to evaluate multiple samples. Compliance based on a single sample analysis should be determined where appropriate as described below.

When a calculated effluent limitation is greater than or equal to the PQL*, compliance shall be determined based on the calculated effluent limitation and either single or multiple sample analyses.

When the calculated effluent limitation is below the PQL*, compliance determinations based on analysis of a single sample shall only be undertaken if the concentration of the constituent of concern in the sample is greater than or equal to the PQL*.

When the calculated effluent limitation is below the PQL* and recurrent analytical responses between the PQL* and the calculated limit occur, compliance shall be determined by statistical analysis of multiple samples. Sufficient sampling and analysis shall be required to determine compliance.

Published values for MDL*s and PQL*s should be used except where revised MDL*s and PQL*s are available from recent laboratory performance evaluations, in which case the revised MDL*s and PQL*s should be used. Where published values are not available the Regional Boards should determine appropriate values based on available information.

If a discharger believes the sample matrix under consideration in the waste discharge requirements is sufficiently different from that used for an established MDL* value, the discharger may demonstrate to the satisfaction of the Regional Board what the appropriate MDL* should be for the discharger's matrix. In this case the PQL* shall be established at the limit of quantitation (equal to 10 standard deviations above the average measured blank used for development of the MDL* in the discharger's matrix).

When determining compliance based on a single sample, with a single effluent limitation which applies to a group of chemicals (e.g. PCBs) concentrations of individual members of the group may be considered to be zero if the analytical response for individual chemicals falls below the MDL* for that parameter.

~~The State or Regional Board may, at their discretion, specify test methods which are more sensitive than those specified in 40 CFR 136. Total chlorine residual is likely to be a "limit of detection" effluent requirement in many cases. The limit of detection of total chlorine residual in standard test methods is less than, or equal to, 20 ug/l.~~

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* See Appendix I for definition of terms.

Due to the large total volume of powerplant and other heat exchange discharges, special procedures must be applied for determining compliance with Table B limitations on a routine basis. Effluent concentration values (Ce) shall be determined through the use of equation 1 considering the minimal probable initial* dilution of the combined effluent (in-plant waste streams plus cooling water flow). These concentration values shall then be converted to mass emission limitations as indicated in equation 2. The mass emission limits will then serve as requirements applied to all inplant waste* streams taken together which discharge into the cooling water flow, except that limitations on total chlorine residual, chronic* toxicity ~~concentration~~ and instantaneous maximum limitations on Table B toxic materials shall apply to, and be measured in, the combined final effluent, as adjusted for dilution with ocean water. The Table B limitation on radioactivity shall apply to the undiluted combined final effluent.

C. Toxicity Reduction Requirements

If a discharge consistently exceeds an effluent limitation based on a toxicity objective in Table B, a toxicity reduction evaluation (TRE) is required. The TRE shall include all reasonable steps to identify the source of toxicity. Once the source(s) of toxicity is identified, the discharger shall take all reasonable steps necessary to reduce toxicity to the required level.

The following shall be incorporated into waste discharge requirements: (1) a requirement to conduct a TRE if the discharge consistently exceeds its toxicity effluent limitation, and (2) a provision requiring a discharger to take all reasonable steps to reduce toxicity once the source of toxicity is identified.

Chapter V
DISCHARGE PROHIBITIONS

A. Hazardous Substances

The discharge of any radiological, chemical, or biological warfare agent or high-level radioactive waste* into the ocean* is prohibited.

B. Areas of Special Biological Significance

Waste* shall not be discharged to areas designated as being of special biological significance. Discharges shall be located a sufficient distance from such designated areas to assure maintenance of natural water quality conditions in these areas.

C. Sludge

Pipeline discharge of sludge to the ocean* is prohibited by federal law; the discharge of municipal and industrial waste* sludge directly to the ocean*, or into a waste* stream that discharges to the ocean*, is prohibited by this Plan. The discharge of sludge digester supernatant directly to the ocean*, or to a waste* stream that discharges to the

* See Appendix I for definition of terms.

ocean* without further treatment, is prohibited.

It is the policy of the State Board that the treatment, use and disposal of sewage sludge shall be carried out in the manner found to have the least adverse impact on the total natural and human environment. Therefore, if federal law is amended to permit such discharge, which could affect California waters, the State Board may consider requests for exceptions to this section under Chapter VI, F. of this Plan, provided further that an Environmental Impact Report on the proposed project shows clearly that any available alternative disposal method will have a greater adverse environmental impact than the proposed project.

D. By-Passing

The by-passing of untreated wastes* containing concentrations of pollutants in excess of those of Table A or Table B to the ocean* is prohibited.

Chapter VI
GENERAL PROVISIONS

A. Effective Date

This Plan is in effect as of the date of adoption by the State Water Resources Control Board.

B. Waste Discharge Requirements

The Regional Boards may establish more restrictive water quality objectives and effluent quality requirements than those set forth in this Plan as necessary for the protection of beneficial uses of ocean* waters.

Regional Boards may impose alternative less restrictive provisions than those contained within Table B of the Plan, provided an applicant can demonstrate that:

Reasonable control technologies (including source control, material substitution. treatment and dispersion) will not provide for complete compliance; or

Any less stringent provisions would encourage water* reclamation;

Provided further that:

a) Any alternative water quality objectives shall be below the conservative estimate of chronic toxicity, as given in Table D below, and such alternative will provide for adequate protection of the marine environment;

b) A receiving water toxicity* objective of ~~0.05 tu~~ 1 TUc is not exceeded; and

c) The State Board grants an exception (Chapter VI.F.) to the Table B limits as

* See Appendix I for definition of terms.

established in the Regional Board findings and alternative limits.

TABLE D
CONSERVATIVE ESTIMATES OF CHRONIC TOXICITY

Constituent	Estimate of Chronic Toxicity (ug/l)
Arsenic	19
Cadmium	8
Hexavalent Chromium	18
Copper	5
Lead	22
Mercury	0.4
Nickel	48
Silver	3
Zinc	51
Cyanide	10 ~~a)(see below)~~
Total Chlorine Residual	10.0
Ammonia	4,000.0
Phenolic Compounds (non-chlorinated)	a)(see below)
Chlorinated Phenolics	a)
Chlorinated Pesticides and PCB's	b)

a. There is insufficient data for ~~cyanide and~~ phenolics to estimate chronic toxicity levels. Requests for modification of water quality objectives for ~~any of these three~~ these waste* constituents must be supported by chronic toxicity data for representative sensitive species. In such cases, applicants seeking modification of water quality objectives should consult the Regional Water Quality Control Board to determine the species and test conditions necessary to evaluate chronic effects.

b. Limitations on chlorinated pesticides and PCB's shall not be modified so that the total of these compounds is increased above the limitations in Table B (6-Month Median = ~~0.022 ug/l~~ 31 ng/l, Daily Maximum = ~~0.044 ug/l~~ 62 ng/l, and Instantaneous Maximum = ~~0.066 ug/l~~ 93 ng/l).

C. Revision of Waste* Discharge Requirements

The Regional Board shall revise the waste* discharge requirements for existing discharges as necessary to achieve compliance with this Plan and shall also establish a time schedule for such compliance.

D. Monitoring Program

The Regional Boards shall require dischargers to conduct self-monitoring programs and

* See Appendix I for definition of terms.

submit reports necessary to determine compliance with the waste* discharge requirements, and may require dischargers to contract with agencies or persons acceptable to the Regional Board to provide monitoring reports. Monitoring provisions contained in waste discharge requirements shall be in accordance with the Monitoring Procedures provided in Appendix II.

Where the Regional Board is satisfied that any substance(s) of Table B will not significantly occur in a discharger's effluent, the Regional Board may elect not to require monitoring for such substance(s), provided the discharger submits periodic certification that such substance(s) are not added to the waste* stream, and that no change has occurred in activities that could cause such substance(s) to be present in the waste* stream. Such election does not relieve the discharger from the requirement to meet the limitations of Table B.

The Regional Board may require monitoring of bioaccumulation of toxicants in the discharge zone. Organisms and techniques for such monitoring shall be chosen by the Regional Board on the basis of demonstrated value in waste* discharge monitoring.

E. Areas of Special Biological Significance

Areas of special biological significance shall be designated by the State Board after a public hearing by the Regional Board and review of its recommendations.

F. State Board Exceptions to Plan Requirements

The State Board may, in compliance with the California Environmental Quality Act, subsequent to a public hearing, and with the concurrence of the Environmental Protection Agency, grant exceptions where the Board determines:

1. The exception will not compromise protection of ocean* waters for beneficial uses, and

2. The public interest will be served.

* See Appendix I for definition of terms.

APPENDIX I

DEFINITION OF TERMS

ACUTE TOXICITY

a. Acute Toxicity (TUa)

Expressed in Toxic Units Acute (TUa)

TUa = 100/96-hr LC 50%

b. Lethal Concentration 50% (LC 50)*

LC 50 (percent waste giving 50% survival of test organisms) shall be determined by static or continuous flow bioassay techniques using standard test species. If specific identifiable substances in wastewater can be demonstrated by the discharger as being rapidly rendered harmless upon discharge to the marine environment, but not as a result of dilution, the LC 50 may be determined after the test samples are adjusted to remove the influence of those substances.

When it is not possible to measure the 96-hour LC 50 due to greater than 50 percent survival of the test species in 100 percent waste, the toxicity concentration shall be calculated by the expression:

$$TUa = \frac{\log(100 - S)}{1.7}$$

S = percentage survival in 100% waste. If S > 99, TUa shall be reported as zero.

~~CHLORDANE AND RELATED COMPOUNDS shall mean the sum of chlordane (cis + trans), trans-nonachlor, oxychlordane, heptachlor and heptachlor epoxide.~~

CHLORDANE shall mean the sum of chlordane-alpha, chlordane-gamma, chlordene-alpha, chlordene-gamma, nonachlor-alpha, nonachlor-gamma, and oxychlordane.

CHRONIC TOXICITY: This parameter shall be used to measure the acceptability of waters for supporting a healthy marine biota until improved methods are developed to evaluate biological response.

a. Chronic Toxicity (TUc)

Expressed as Toxic Units Chronic (TUc)

TUc = 100/NOEL

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* See Appendix I for definition of terms.

b. No Observed Effect Level (NOEL)

The NOEL is expressed as the maximum percent effluent or receiving water that causes no observable effect on a test organism, as determined by the result of a critical life stage toxicity test listed in Appendix II.

~~DDT AND DERIVATIVES shall mean the sum of the p,p' and o,p' isomers of DDT, DDD (TDE) and DDE.~~

DDT shall mean the sum of 4,4'DDT, 2,4'DDT, 4,4'DDE, 2,4'DDE, 4,4'DDD, and 2,4'DDD.

DEGRADE: Degradation shall be determined by comparison of the waste field and reference site(s) for characteristics species diversity, population density, contamination, growth anomalies, debility, or supplanting of normal species by undesirable plant and animal species. Degradation occurs if there are significant differences in any of three major biotic groups, namely, demersal fish, benthic invertebrates, or attached algae. Other groups may be evaluated where benthic species are not affected, or are not the only ones affected.

DICHLOROBENZENES shall mean the sum of 1,2- and 1,3-dichlorobenzene.

ENCLOSED BAYS are indentations along the coast which enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays include all bays where the narrowest distance between headlands or outermost harbor works is less than 75 percent of the greatest dimension of the enclosed portion of the bay. This definition includes but is not limited to: Humboldt Bay, Bodega Harbor, Tomales Bay, Drakes Estero, San Francisco Bay, Morro Bay, Los Angeles Harbor, Upper and Lower Newport Bay, Mission Bay, and San Diego Bay.

ENDOSULFAN shall mean the sum of endosulfan-alpha and -beta and endosulfan sulfate.

ESTUARIES AND COASTAL LAGOONS are waters at the mouths of streams which serve as mixing zones for fresh and ocean waters during a major portion of the year. Mouths of streams which are temporarily separated from the ocean by sandbars shall be considered as estuaries. Estuarine waters will generally be considered to extend from a bay or the open ocean to the upstream limit of tidal action but may be considered to extend seaward if significant mixing of fresh and salt water occurs in the open coastal waters. The waters described by this definition include but are not limited to the Sacramento-San Joaquin Delta as defined by Section 12220 of the California Water Code, Suisun Bay, Carquinez Strait downstream to Carquinez Bridge, and appropriate areas of the Smith, Klamath, Mad, Eel, Noyo, and Russian Rivers.

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* See Appendix I for definition of terms.

HALOMETHANES shall mean the sum of bromoform, bromomethane (methyl bromide), chloromethane (methyl chloride), chlorodibromomethane, and dichlorobromomethane.

HEPTACHLOR shall mean the sum of heptachlor and heptachlor epoxide.

HCH shall mean the sum of the alpha, beta, gamma (lindane) and delta isomers of hexachlorocyclohexane.

INITIAL DILUTION is the process which results in the rapid and irreversible turbulent mixing of wastewater with ocean water around the point of discharge.

For a submerged buoyant discharge, characteristic of most municipal and industrial wastes that are released from the submarine outfalls, the momentum of the discharge and its initial buoyancy act together to produce turbulent mixing. Initial dilution in this case is completed when the diluting wastewater ceases to rise in the water column and first begins to spread horizontally.

For shallow water submerged discharges, surface discharges, and nonbuoyant discharges, characteristic of cooling water wastes and some individual discharges, turbulent mixing results primarily from the momentum of discharge. Initial dilution, in these cases, is considered to be completed when the momentum induced velocity of the discharge ceases to produce significant mixing of the waste, or the diluting plume reaches a fixed distance from the discharge to be specified by the Regional Board, whichever results in the lower estimate for initial dilution.

~~For the purpose of this Plan, minimum initial dilution is the lowest average initial dilution within any single month of the year. Dilution estimates shall be based on observed waste flow characteristics, observed receiving water density structure, and the assumption that no currents, of sufficient strength to influence the initial dilution process, flow across the discharge structure.~~

KELP BEDS, for purposes of the bacteriological standards of this plan, are significant aggregations of marine algae of the genera Macrocystis and Nereocystis. Kelp beds include the total foliage canopy of Macrocystis and Nereocystis plants throughout the water column.

MARICULTURE is the culture of plants and animals in marine waters independent of any pollution source.

MDL (Method Detection Limit) is the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero, as defined in 40 CFR 136 Appendix B.

NATURAL LIGHT: Reduction of natural light may be determined by the Regional Board by measurement of light transmissivity or total irradiance, or both, according to the monitoring needs of the Regional Board.

OCEAN WATERS are the territorial marine waters of the State as defined by California law to the extent these waters are outside of enclosed bays, estuaries, and coastal

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* See Appendix I for definition of terms.

lagoons. If a discharge outside the territorial waters of the State could affect the quality of the waters of the State, the discharge may be regulated to assure no violation of the Ocean Plan will occur in ocean waters.

PAHs (polynuclear aromatic hydrocarbons) shall mean the sum of acenaphthylene, anthracene, 1,2-benzanthracene, 3,4-benzofluoranthene, benzo[k]fluoranthene, 1,12-benzoperylene, benzo[a]pyrene, chrysene, dibenzo[ah]anthracene, fluorene, indeno[1,2,3-cd]pyrene, phenanthrene and pyrene.

PCBs (polychlorinated biphenyls) shall mean the sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254 and Aroclor-1260.

POL (Practical Quantitation Level) is the lowest concentration of a substance which can be consistently determined within +/- 20% of the true concentration by 75% of the labs tested in a performance evaluation study. Alternatively, if performance data are not available, the PQL* for carcinogens is the MDL* x 5, and for noncarcinogens is the MDL* x 10.

SHELLFISH are organisms identified by the California Department of Health Services as shellfish for public health purposes (i.e., mussels, clams and oysters).

SIGNIFICANT difference is defined as a statistically significant difference in the means of two distributions of sampling results at the 95 percent confidence level.

TCDD EQUIVALENTS shall mean the sum of the concentrations of chlorinated dibenzodioxins (2,3,7,8-CDDs) and chlorinated dibenzofurans (2,3,7,8-CDFs) multiplied by their respective toxicity factors, as shown in the table below:

Isomer Group	Toxicity Equivalence Factor
2,3,7,8-tetra CDD	1.0
2,3,7,8-penta CDD	0.5
2,3,7,8-hexa CDDs	0.1
2,3,7,8-hepta CDD	0.01
octa CDD	0.001
2,3,7,8 tetra CDF	0.1
1,2,3,7,8 penta CDF	0.05
2,3,4,7,8 penta CDF	0.5
2,3,7,8 hexa CDFs	0.1
2,3,7,8 hepta CDFs	0.01
octa CDF	0.001

* See Appendix I for definition of terms.

~~TOXICITY CONCENTRATION: This parameter shall be used to measure the acceptability of waters for supporting a healthy marine biota until improved methods are developed to evaluate biological response.~~

~~a. Toxicity Concentration~~

~~c. Expressed in Toxicity Units (tu)~~

$$\cancel{Tc\ (tu) = \frac{100}{96\text{-hr. TLm\%}}}$$

~~b. Median Tolerance Limit (TLm%)~~

~~TLm (percent waste giving 50% survival of test organisms) shall be determined by static or continuous flow bioassay techniques using standard test species. If specific identifiable substances in wastewater can be demonstrated by the discharger as being rapidly rendered harmless upon discharge to the marine environment, but not as a result of dilution, the TLm may be determined after the test samples are adjusted to remove the influence of those substances.~~

~~When it is not possible to measure the 96 hour TLm due to greater than 50 percent survival of the test species in 100 percent waste, the toxicity concentration shall be calculated by the expression:~~

$$\cancel{Tc\ (tu) = \frac{\log (100 - S)}{1.7}}$$

~~S = percentage survival in 100% waste. If S > 99, Tc shall be reported as zero.~~

WASTE: As used in this Plan, waste includes a discharger's total discharge, of whatever origin, i.e., gross, not net, discharge.

WATER RECLAMATION: The treatment of wastewater to render it suitable for reuse, the transportation of treated wastewater to the place of use, and the actual use of treated wastewater for a direct beneficial use or controlled use that would not otherwise occur.

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* See Appendix I for definition of terms.

APPENDIX II

STANDARD MONITORING PROCEDURES

The purpose of this appendix is to provide direction to the Regional Boards on the implementation of the California Ocean Plan and to ensure the reporting of useful information. It is not feasible to cover all circumstances and conditions that could be encountered by all dischargers. Therefore, this appendix should be considered as the basic components of any discharger monitoring program. Regional Boards can deviate from the procedures required in the appendix only with the approval of the State Water Resources Control Board unless the Ocean Plan allows for the selection of alternate protocols by the Regional Boards. If no direction is given in this appendix for a specific provision of the Ocean Plan, it is within the discretion of the Regional Board to establish the monitoring requirements for the provision.

The appendix is organized in the same manner as the Ocean Plan.

Chapter II. A. Bacterial Standards:

For all bacterial analyses, sample dilutions should be performed so the range of values extends from 2 to 16,000. The detection methods used for each analysis shall be reported with the results of the analysis.

Detection methods used for coliforms (total and fecal) shall be those presented in the most recent edition of Standard Methods for the Examination of Water and Wastewater or any improved method determined by the Regional Board (and approved by EPA) to be appropriate.

Detection methods used for enterococcus shall be those presented in EPA publication EPA 600/4-85/076, Test Methods for Escherichia coli and Enterococci in Water By Membrane Filter Procedure or any improved method determined by the Regional Board to be appropriate.

Chapter IV. Table B. Compliance with Table B objectives:

Procedures, calibration techniques, and instrument/reagent specifications used to determine compliance with Table B shall conform to the requirements of federal regulations (40 CFR 136). All methods shall be specified in the monitoring requirement section of waste discharge requirements.

Where methods are not available in 40 CFR 136, the Regional Boards shall specify suitable analytical methods in waste discharge requirements. Acceptance of data should be predicated on demonstrated laboratory performance.

The State or Regional Board may, subject to EPA approval, specify test methods which are more sensitive than those specified in 40 CFR 136. Total chlorine residual is likely to be a method detection limit effluent requirement in many cases. The limit of detection of total chlorine residual in standard test methods is less than or equal to 20 ug/l.

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* See Appendix I for definition of terms.

Monitoring for the substances in Table B shall be required periodically. For discharges less than 1 MGD (million gallons per day), the monitoring of all the Table B parameters should consist of at least one complete scan of the Table B constituents one time in the life of the waste discharge requirements. For discharges between 1 and 10 MGD, the monitoring frequency shall be at least one complete scan of the Table B substances annually. Discharges greater than 10 MGD shall be required to monitor at least semiannually.

Chapter IV. Compliance with Toxicity Objectives

Compliance with the acute toxicity objective (TUa) in Table A shall be determined using an established protocol, e.g., American Society for Testing Materials (ASTM), EPA, American Public Health Association, or State Board.

The Regional Board shall require the use of critical life stage toxicity tests specified in this Appendix to measure TUc. Other species or protocols will be added to the list after State Board review and approval. A minimum of three test species with approved test protocols shall be used to measure compliance with the toxicity objective. If possible, the test species shall include a fish, an invertebrate, and an aquatic plant. After a screening period, monitoring can be reduced to the most sensitive species. Dilution and control water should be obtained from an unaffected area of the receiving waters. The sensitivity of the test organisms to a reference toxicant shall be determined concurrently with each bioassay test and reported with the test results.

Use of critical life stage bioassay testing shall be included in waste discharge requirements as a monitoring requirement for all discharges greater than 100 MGD by January 1, 1991 at the latest. For other major dischargers, critical life stage bioassay testing shall be included as a monitoring requirement one year before the waste discharge requirement is scheduled for renewal date. For major dischargers scheduled for waste discharge requirements renewal less than one year after the adoption of the toxicity objective, critical life stage bioassay testing shall be included as a monitoring requirement at the same time as the chronic toxicity effluent limits is established in the waste discharge requirements.

The following tests shall be used to measure TUc. Other tests may be added to the list when approved by the State Board.

Species	Effect	Test Duration	Reference
red alga, *Champia parvula*	number of cystocarps	7-9 days	1
giant kelp, *Macrocystis pyrifera*	percent germination; germ tube length	48 hours	2
abalone, *Haliotis rufescens*	abnormal shell development	48 hours	2
oyster, *Crassostrea gigas*	abnormal shell	48 hours	3

* See Appendix I for definition of terms.

mussel, Mytilus edulis	development; percent survival		
urchins, Strongylocentrotus purpuratus, S. franciscanus; sand dollar, Dendraster excentricus	percent fertilization	1 hour	4
shrimp, Mysidopsis bahia	percent survival; growth; fecundity	7 days	1
silversides, Menidia beryllina	larval growth rate; percent survival	7 days	1

Bioassay References

1. Weber, C.I., W.B. Horning, II, D.J. Klemm, T.W. Neiheisel, P.A. Lewis, E.L. Robinson, J. Menkedick, and F. Kessler (eds.). 1988. Short-term methods for estimating the chronic toxicity of effluents and receiving waters to marine and estuarine organisms. EPA-600/4-87/028. National Technical Information Service, Springfield, VA.

2. Hunt, J.W., B.S. Anderson, S.L. Turpin, A.R. Conlon, M. Martin, F.H. Palmer, and J.J. Janik. 1989. Experimental Evaluation of Effluent Toxicity Testing Protocols with Giant Kelp, Mysids, Red Abalone, and Topsmelt. Marine Bioassay Project Fourth Report. California State Water Resources Control Board, Sacramento.

3. American Society for Testing Materials (ASTM). 1987. Standard Practice for conducting static acute toxicity tests with larvae of four species of bivalve molluscs. Procedure E 724-80. ASTM, Philadelphia, PA.

4. Dinnel, P.J., J. Link, and Q. Stober. 1987. Improved methodology for sea urchin sperm cell bioassay for marine waters. Archives of Environmental Contamination and Toxicology 16: 23-32.

* See Appendix I for definition of terms.