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RECIP.NAME RECIPIENT AFFILIATION
MCKENZIE,J.F. Pacific Gas & Electric Co.

SUBJECT: Forwards amended Order 82-24, "Waste Discharge Requirements for PG&E,Diablo Canyon Power Plant,Unit 1 & 2,San Luis Obispo County," & "Order 82-54 Amending NPDES Permit CA0003751,Waste Discharge Requirements...," adopted 820611.

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STATE OF CALIFORNIA—RESOURCES AGENCY EDMUND G. BROWN JR., Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD— CENTRAL COAST REGION

1102 A LAUREL LANE
SAN LUIS OBISPO, CALIFORNIA 93401
(805) 549-3147

June 30, 1982

Mr. John F. McKenzie
Siting Dept.-Room 2394
Pacific Gas and Electric Company
77 Beale Street
San Francisco, CA 94106

Gentlemen:

Enclosed is a copy of Amended Order No. 82-24, "Waste Discharge Requirements for Pacific Gas and Electric Company, Diablo Canyon Power Plant, Units 1 and 2, San Luis Obispo County," and "Order No. 82-54 Amending NPDES Permit No. CA0003751, Waste Discharge Requirements for Pacific Gas and Electric Company, Diablo Canyon Power Plant, Units 1 and 2, San Luis Obispo County," which were adopted by this Board on June 11, 1982.

Very truly yours,

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, CENTRAL COAST REGION

By Kenneth Jones

KENNETH R. JONES
Executive Officer

KRJ:sm

Enclosures

cc: U.S. Fish and Wildlife Service, Sacramento
State Water Resources Control Board, Technical Services Div.
State Department of Fish and Game, Long Beach
State Department of Fish and Game, Monterey
State Department of Fish and Game, Avila Beach,
State Department of Health Services, Santa Barbara
State Department of Health Services, Radiologic Health Section, Sacramento
State Coastal Commission, Santa Barbara
San Luis Obispo County Health Department
Nuclear Regulatory Commission, Washington D.C.
Nuclear Regulatory Commission, Walnut Creek, CA
Nuclear Regulatory Commission, Office of General Counsel, Wash., D.C.-Attn: Rick Parrish
Pacific Gas & Electric Co., San Francisco, Legal Div.

C002 B.

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

ORDER NO. 82-54
Amending NPDES Permit No. CA0003751

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

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

1. On January 14, 1982, the Board adopted Order No. 82-24 NPDES Permit CA0003751, Waste Discharge Requirements for Pacific Gas and Electric Company, Diablo Canyon Power Plant, Units 1 and 2, San Luis Obispo County.

2. Discharge Prohibition A.6., Order No. 82-24, provides as follows:

   Discharge of elevated temperature wastes exceeding ambient temperatures is prohibited until July 1, 1982, except for discharge from safety equipment required for non-power production operations and for low power testing provided the temperature increase shall not exceed 2°F. Prior to July 1, 1982, the Board will consider modification of this prohibition in accordance with provisions of this order. If this Board has not concluded its deliberation on this prohibition by July 1, 1982, it shall remain in effect until the Board acts on this prohibition.

3. Provision D.2., Order No. 82-24, provides as follows:

   In order for the Board to consider modification of Discharge Prohibition A.6., the discharger shall submit prior to April 1, 1982, a technical report which includes the following:

   (a) Information on and evaluation of alternative plans to reduce the heat and volume of the cooling water discharge which may include alternative cooling systems or beneficial use of waste heat.

   (b) further information regarding anticipated and possible thermal and volume effects, including heat treatment, on the beneficial use of ocean waters.

4. That Pacific Gas and Electric Company submitted on March 30, 1982, the technical reports required by the Board entitled "Thermal Discharge Assessment Report" and "Assessment of Alternatives to the Existing Cooling Water System".

5. The Board at public hearings on May 14, 1982, and June 11, 1982, considered all comments pertaining to issues set out in findings No. 2 and 3 above.

6. Finding No. 22., in Order No. 82-24 is revised to read as follows:

Testimony received by the Board during the hearing shows that the large volume of the proposed discharge combined with the temperature increases in the proposed discharge may not assure protection of some beneficial uses of water within Diablo Cove. Temperature levels in Diablo Cove, especially during demusseling operations, may cause stress of and increase mortality rates of marine organisms.

IT IS HEREBY ORDERED; that Order No. 82-24 is amended as follows:

1. Discharge Prohibition A.6. is deleted.

2. Effluent limitations B.1.f., B.1.g., and B.1.h. are added to read as follows:

"f. The discharge shall not exceed 2.67 billion gallons per day.

g. The temperature measured at the point of discharge shall not exceed 20°F. over that of the intake except during heat treatment.

h. During discharge of heat treatment effluent from Unit 1, Unit 2 circulating water pumps shall be operated at full capacity with no commercial load. Temperature measured at the point of discharge of Unit 1 shall not exceed 100°F."

3. Two new provisions are added to read as follows and other Provisions renumbered as appropriate:

D. Provisions

"6. Prior to commercial operation of Unit 2, PG & E shall evaluate alternative demusseling programs and propose to the Board its method to reduce heat treatment at the point of discharge of both Units to 86°F.

8. The permit is subject to revision if any of the above studies demonstrate different effects than those estimated prior to plant operation."

I, KENNETH R. JONES, 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 June 11, 1982.

Kenneth Jones

Executive Officer

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

AMENDED ORDER NO. 82-24
NPDES NO. CA0003751

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

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

1. The Pacific Gas and Electric Company (hereafter discharger) applied for waste discharge requirements and a permit to discharge wastes under the National Pollutant Discharge Elimination System and was issued a Permit on April 9, 1976 Order No. 76-11. The Discharger applied for reissuance of the permit by submission of a preliminary Report of Waste Discharge dated January 27, 1981. The NPDES Permit application form 2. C. Part V; A, B, & C., was completed June 26, 1981. An analysis for toxic constitutents of the discharge was submitted to the Regional Board on June 26, 1981. Further analyses will be conducted after commercial operation begins. Additional factual information was submitted by the discharger throughout the public hearing process. The Board has requested additional information on alternative methods of reducing heat and volume of the discharge.

2. The discharger proposes to discharge wastes from Diablo Canyon Nuclear Power Plant into the Pacific Ocean at Diablo Cove, a water of the United States, at points 12 miles southwest of San Luis Obispo (Latitude 35° 12', Longitude 120° 51') and as shown on Attachment "A" included with this Order.

3. The potential 2.67 billion gallon per day discharge consists primarily of heated seawater. To this flow are added smaller amounts of in-plant chemical wastes and low-level radioactive wastes.

4. Waste discharges are shown schematically on Attachment "B" included with this Order and described as follows:

Discharge 001 - Once-Through Cooling Water

Design Flow: 2.54 billion gallons per operating day with two units operating. Cooling water for the steam condensers, and other miscellaneous service cooling systems, will be pumped from the Pacific Ocean at the intake cove and discharged near the shore in Diablo Cove.

Other waste discharges entering the once-through cooling water system include:

Discharge 001 A, (1)- Firewater System Flush, 5.0×10^4 GPD (Intermittent)

Firewater will be discharged semiannually from flushing the the lines to ensure they are maintained clear.

Discharge 001 A, (2)- Firewater System Flow Test, 2.4×10^4 GPD (Intermittent)

Conducted once every three years to comply with Nuclear Regulatory Commission requirements.

Discharge 001 A, (3)- Fire Hose Test, 1.4×10^3 GPD (Intermittent)

Conducted once every three years to comply with Nuclear Regulatory Commission requirements.

Discharge 001 B-Auxiliary Salt Water Cooling, 3.17×10^7 GPD

This system provides once-through cooling water for the component cooling water system.

Discharge 001 C-Make-Up Water System Waste Effluent, 1.9×10^4 GPD (Intermittent)

During normal operation, 10,000 GPD of ion exchange demineralizer regenerant solution (containing sulfuric acid and sodium hydroxide) is periodically discharged over a 2.5 - 3.0 hour period. Up to 9,000 GPD of filter backwash water (containing any suspended matter carried over from clarifier operation) is discharged over a 1.5 hour period.

Discharge 001 D-Liquid Radioactive Waste Treatment System Effluent, 3×10^4 GPD (Intermittent)

Radioactive liquid wastes from the reactor system will be collected, treated, and monitored in a radioactive liquid waste treatment system. This system includes storage tanks to permit radioactive decay, ion exchangers, and filters to remove radioactive matter from the waste streams. High-level wastes produced by these processes (evaporator concentrates, ion-exchange resins, filter media) will be collected and packaged for ultimate off-site shipment to an approved burial site. After decay and/or treatment, individual batches of low level liquid waste will be sampled and analyzed to determine compliance with discharge limits. The batch will then be discharged through a 5-micron filter into the cooling water discharge. Wastes from other plant systems discharged into this system include boric acid, lithium hydroxide, sodium hydroxide, ammonium hydroxide, hydrazine, sodium sulfate, chemical laboratory drains, hot shower and laundry wastes, metal cleaning wastes, and a portion of the firewater system flush water. Treatment includes distillation and filtration.

Discharge 001 E-Service Cooling Water 5.62×10^6 GPD

This system provides once-through cooling water for the service cooling water system.

Discharge 001 F-Turbine Building Sump, 9.8×10^4 GPD (Intermittent)

Floor drainage from the turbine building and reverse osmosis equipment room, as well as a portion of the firewater system flush, will be collected in sumps and treated in an oil-water separator prior to discharge.

Discharge 001 G-Reverse Osmosis Blowdown, 7.2×10^4 GPD

Waste from a reverse osmosis demineralization system containing dissolved solids, sulfuric acid, sodium hexametaphosphate, sodium hypochlorite and sodium bisulfite (for dechlorination) will be discharged to the cooling water stream.

Discharge 001 H-Condensate Demineralizer and Seawater Evaporator Demineralizer Regenerant, 5.2×10^4 GPD (Intermittent)

a.) Waste regenerant solution from the steam-cycle condensate demineralizer will normally be discharged once per day for each unit.

The discharge constituents are salts present in seawater which enter the steam cycle through main condenser leakage, iron and copper corrosion products with added sulfuric acid (1,700 pounds per regeneration), sodium hydroxide (850 pounds per regeneration) and calcium chloride (65 pounds per regeneration).

b.) Waste regenerant solution from the sea water evaporator demineralizers will normally be discharged at intervals of approximately 40 days for each unit.

The discharge constituents are salts present in sea water which carry over with the distillate from the sea water evaporator, with added sulfuric acid (400 pounds per regeneration) and sodium hydroxide (600 pounds per regeneration).

Discharge 001 I-Seawater Evaporator Blowdown, 4.3×10^5 GPD

Seawater concentrated in the seawater evaporation system will be discharged. This effluent has a two-fold increase in salinity and some seawater carbonate is replaced with sulfate. Sulfuric acid is added to control scaling.

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

During normal startup operations, and occasionally during power operations, condensate from the main condenser hotwell will be periodically discharged to improve the water quality of condensate in the steam cycle.

This discharge is demineralized water containing ammonium hydroxide, hydrazine, impurities such as corrosion products (iron, copper, nickel, and zinc), low concentrations of radioactivity, and seawater which may result from condenser leakage.

Discharge 001 K-Condenser Tube Sheet Leak Detection Dump Tank Overboard, 6.0×10^3 GPD (Intermittent)

Condensate from the main condenser tube sheet condensate collection trays will be discharged periodically in order to minimize seawater contamination of the condensate during periods of condenser leakage from this source.

Discharge 001 L-Steam Generator Blowdown 4.32×10^5 GPD

This is a normally continuous discharge containing corrosion products and seawater contaminants from condenser tube leakage. Treatment chemicals include ammonium hydroxide and hydrazine.

Discharge 002 - Intake Structure Building Floor Drains, 3×10^5 GPD (Intermittent)

Drainage from within the cooling water intake structure, as well as a portion of the firewater system flush, will be collected in sumps and discharged inside the breakwater adjacent to the intake racks.

Discharge 003 - Intake Screen Wash, 5.62×10^5 GPD

Solid material collected on the intake screens that is native to the ocean will be pumped back to the ocean at a point located at the foot of the west breakwater of the intake cove.

Discharge 004 - Thermal Effects Laboratory Discharge 1.44×10^6 GPD

Seawater is pumped through tanks used for observation of, and experimentation with, marine organisms and discharged to the intake cove.

Discharge 005 - Yard Storm Drains, Flow Not Determined.

Stormwater runoff is collected in a drainage system and discharged to the ocean near the plant cooling water intake. This discharge also contains a portion of the firewater system flush.

5. Temperature of cooling water is proposed to be raised approximately 20°F during normal thermal operation. The cooling water temperature increase may be greater than 20°F during condenser heat treatment or transient conditions due to load rejection, steam dump, generator trip, conditions resulting from operation of engineered safety features, or during periods of reduced flow resulting from condenser tube sheet plugging or loss of the circulating water pump(s) flow. Periodic thermal treatment of each cooling water system (about once per month for each of the four systems or about once per week) is proposed to demussel and minimize growth of marine organisms in the piping and heat exchangers. The required frequency of this operation varies seasonally but will normally have a duration of not more than a few hours per month. The maximum temperature difference between intake and discharge during demusseling is expected to be 50°F. if pumps of only one unit are operating.

6. A chlorination system is proposed to control slime and algae in the once-through condenser cooling water.

7. Evidence presented at the hearings indicates that if chlorination is used, the concentration of chlorine allowed in the discharge will minimize degradation of beneficial uses.

8. Sewage will receive treatment in septic tanks prior to discharge to leachfields.

9. The cooling water intake is located at the shoreline 1,000 feet south of the power plant and draws water from the surface to a depth of 31.5 feet (mean sea level).

10. The proposed discharge is a surface discharge at the shoreline within Diablo Cove. The volume of discharge each day is many times that of the Cove. Evidence from the applicant's calculations and testimony at hearings indicates that the Zone of Initial Dilution as defined in the California Ocean Plan would include most of Diablo Cove and that dilution at the mouth of the cove be as little as 6:1. Such a Zone of Initial Dilution would preclude protection of some beneficial uses within the cove.

    Because of the large volume of the discharge, the low dilution at the exit of the cove, and the desirability of protecting beneficial uses within the cove, no credit for dilution within the cove will be allowed in calculating the allowable concentration limits in this permit.

11. The <u>Water Quality Control Plan, Central Coastal Basin</u>, (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.

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

    a. Water contact recreation;
    b. Non-contact water recreation;
    c. Industrial service supply;
    d. Navigation;
    e. Marine habitat;
    f. Shellfish harvesting;
    g. Ocean commercial and sport fishing; and
    h. Wildlife habitat.

13. The State Water Resources Control Board (State Board) revised the "Water Quality Control Plan - Ocean Waters of California" (Ocean Plan) on January 19, 1978. This Plan contains water quality objectives for the Pacific Ocean.

14. The State Water Resources Control 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). 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.

15. Effluent limitation guidelines for the Steam Electric Power Generating Point Source Category have been promulgated by the United States Environmental Protection Agency (EPA) requiring the application of the best practicable control technology currently available (BPT). Additional effluent limitation guidelines have been proposed, but not promulgated, by the EPA, including effluent limits for best available technology economically achievable (BAT). Some effluent limitations contained in this order are derived from the promulgated federal guidelines, some from the proposed guidelines, and others are based on the "Ocean Plan". Together, they are considered the best available technology in the judgment of the Board. Limits are subject to reconsideration when the final guidelines are promulgated.

16. Best available technology economically achievable (BAT) for Diablo Canyon Power Plant should result in minimal discharge of heavy metals which result from dissolution of metal in the plant piping system and from other sources. Such quantities in many cases may be significantly less than State Ocean Plan allowable concentrations. Discharge requirement found in Paragraph B.1.b. are based on limits aimed at maintaining discharges of metal as low as reasonably achievable.

17. 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 for minimizing adverse environmental impact. The large volume of this discharge may require special procedures to minimize entrainment and impingment of marine organisms.

18. There are difficulties in measuring constituents listed in B.1.b. at low levels. Many of the low volume streams have the potential for contributing significant concentrations of heavy metals and other toxic constituents and for diversion to further treatment if necessary. Since analytical procedures are more reliable at higher concentrations, the Board considers internal monitoring of various waste streams to be reasonable, desirable and necessary.

19. The presently available method for calculation of toxicity in Seawater does not allow for measurement of lower limits than that given in B.1.b.

20. Waste discharge requirements for this discharge are exempt from the provisions of the California Environmental Quality Act (Public Resources Code, Section 21000 et seq.) in accordance with Section 13389 of the California Water Code.

21. A final Environmental Statement (FES) for the Diablo Canyon Power Plant was completed in May 1973 by the AEC and an Addendum was issued by the NRC in May 1976. Water related impacts of plant construction and operation identified in these documents include: (from summary sections unless otherwise noted)

a. The benthic ecosystem of Inlet Cove was essentially destroyed by siltation of the cove during construction activities associated with the intake structure. Extensive efforts have been made to remove the silt. Although these efforts have not been completely successful, the staff believes a new, but different benthic community has been initiated. A program of erosion control is underway to minimize siltation of both Inlet and Diablo Coves through runoff of waters from the plant site. (Addendum)

b. Evaluation by NRC staff of the physical model studies of the thermal plume indicated that: (Addendum, p. 3-10)

(1) The area enclosed by the 10°F surface isotherm can cover half to most of the cove although it never completely filled the cove. It can extend out of the west entrance of the cove; for upcoast currents, possibly as much as several thousand feet. This condition was most conspicuous during two-unit operation and with a Delta T of 22°F.

(2) The 4°F surface isotherm will always emerge from the cove, sometimes covering hundreds of acres but is not expected to be as large as a square mile for downcoast currents. For upcoast currents, the maximum extent could not be determined due to the limited size of the model.

(3) The plume is expected to be primarily a surface phenomenon (upper 10 feet) outside the cove.

(4) NRC staff recommended (Addendum, p. 3-11 and FES, p. 3-26) that defouling should be conducted only when cooling water from the second unit was available for dilution, and for the shortest period necessary. In the FES (pp. 3-24 and 3-26), the staff expressed concern about the potential heat burden that would be incurred by Diablo Cove during defouling operations, especially when the cooling water system of one unit is inoperative. They estimated that during defouling with only one unit's pumps operating, the Delta 10°F isotherm would enclose over 500 acres. This was considered unacceptable.

(c) Some chemicals will be added to the water used for cooling; however, the concentration of these chemicals in Diablo Cove is not expected to have adverse effects on aquatic life. (FES) The NRC staff will require that, during heat treatment, no chemicals that can be controlled be added to the effluent stream (FES, p. 3-50). The NRC staff will require that the effluent be monitored for total available chlorine and the cove, for acute and chronic effects (FES) and that total available chlorine be limited to 0.1 ppm in the discharged cooling water (FES, p. 3-46).

(d) There will be very little, if any decline in the concentration of dissolved oxygen in the discharged cooling water. (FES)

(e) The FES stated: the thermal discharge from the plant will cause an ecological shift in benthic organisms and fish that will result in an increase in the number of warmwater- tolerant forms. The higher temperatures in Diablo Cove may cause those parts of the bull kelp that are near the surface to degenerate earlier in the year than they normally do; at most, 2 or 3 acres will be affected. The higher temperatures will also increase the feeding activity of the giant sea urchin, which competes with the abalone for the existing food supply (mainly kelp); this may lead to a decline in the abalone population unless measures are taken to control the urchin. A total of 110,000 abalone may be lost as a result of the station operation.

(f) The Addendum predicted loss of 10-20 acres of bull kelp, but concluded that this will not be a serious impact to those aquatic species that depend on kelp for food or habitat. (p. 5-4). Because the populations of abalone and sea urchins within D.C. have been reduced to a small fraction of their former abundance primarily due to factors unrelated to the plant (including sea otter predation, copper discharge from the plant and a red tide (Addendum, p. 2-21), the additional impact of the thermal plume will be small (Addendum). However, the Cove will not afford a viable habitat for abalone in those areas where the thermal plume remains in constant contact with the bottom. (Addendum p. 5-5)

(g) No adverse effect on phytoplankton populations is expected, because of the rapid regeneration times and large stocks available for recruitment from outside Diablo Cove. A mortality of as much as 8.5% of the zooplankton passing through the cooling system may occur, but the generation times for California zooplankton are generally 24 hours to 8 weeks, and recruitment from the open ocean will be copious; therefore, the impact on the local ecosystem is believed to be insignificant. (FES)

(h) Some jellyfish will be killed in the intake structures as a result of impingement. The ecological consequences of this loss are expected to be small. (FES)

(i) No fish losses are expected to occur in Diablo Cove as a result of the thermal discharge. Some small fish (less than 3 inches) will be killed as a result of impingement or entrainment in the cooling system. (FES) The effect of the plant on loss of pelagic larval fishes through entrainment will be negligible. Loss of finfish through impingement will be low during winter months. (Addendum)

(j) The larger thermal plume area will not substantially increase the thermal impact on Diablo Cove because much of the heat will be dissipated outside of the cove. Some additional kelp beds may be affected outside Diablo Cove but the impact will be minimal because of the low abundance of kelp in this deeper offshore water. The effect of the surface plume on other biota in the nearshore waters is expected to be minimal. (Addendum)

(k) Doses of radioactivity will be released to the environment, but the levels will be insignificant. (Addendum) Pending a report to be filed with the AEC by June, 1976, the staff concluded that the radioactive waste treatment systems meet the "Low as practicable" guidelines set by the Commission. (Addendum p. 3-11).

(l) Excessive amounts of copper were discharged into Diablo Cove during the testing of the cooling water system of Unit 1 and resulted in significant damage to the benthic community of the cove. Through substitution of titanium tubing in the main condenser, the source of this problem has been eliminated. (Addendum)

(m) Excessive amounts of foam have been formed in Diablo Canyon when the cooling water system of Unit 1 was tested. The applicant has developed a plan of action to study the formation and control of foam. (Addendum)

(n) The accuracy of the staff's predictions related to biological impacts should be verified through a comprehensive operational monitoring program. This program should be coordinated with the applicant's demonstration for an exemption under Section 316(a) of the Federal Water Pollution Control Act (FWPCA). (Addendum)

(o) Limits on thermal effluents, that differ from the one assessed by the staff, have recently been set by the State of California in connection with the issuance of a five-year National Pollution Discharge Elimination System (NPDES) Permit. The Commission will evaluate the impact of the less stringent temperature prior to the operating license hearing, but has no jurisdiction to set different limitations. (Addendum)

(p) "Both the natural draft and forced draft (mechanical) draft cooling towers were found by the (NRC) staff to offer no net benefit to the marine environment compared to the once-through shoreline discharge." (FES, p. 13-2.)

(q) The issue of alternative cooling systems will be decided by the California Regional Water Quality Control Board in connection with the applicant's request for an exemption from applicable thermal discharge prohibitions under Section 316(a) of the FWPCA. (Addendum)

22. Testimony received by the Board during the hearing shows that the large volume of the proposed discharge combined with the temperature increases in the proposed discharge may not assure protection of some beneficial uses of water within Diablo Cove. Temperature levels in Diablo Cove, especially during demusseling operations, may cause stress of and increase mortality rates of marine organisms.

23. That Pacific Gas and Electric Company submitted on March 30, 1982, the technical reports required by the Board entitled "Thermal Discharge Assessment Report" and "Assessment of Alternatives to the Existing Cooling Water System".

24. Implementation Provisions of the "Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California" state that "Existing and future dischargers of thermal waste shall conduct a study to define the effect of the discharge on beneficial uses and, for existing discharges, determine design and operating changes which would be necessary to achieve compliance with the provisions of this plan."

25. The Ocean Plan states that "The Regional Board shall require dischargers to conduct self-monitoring programs and 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. Such monitoring programs shall comply with Guidelines for Monitoring the Effects of Waste Discharges on the Ocean which shall be issued by the Executive Director of the State Board."

26. On July 13, 1981, the Board notified the discharger and interested agencies and persons of its intent to revise waste discharge requirements for the proposed discharge and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

27. The Board in public meetings on Sept. 11 & 24, Oct. 9, 29 & 30, Nov. 13 & 14, 1981, Jan. 14, May 14, and June 11, 1982 considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, Pacific Gas and Electric Company, its agents, successors and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder and the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, shall comply with the following at the Diablo Canyon Power Plant:

A. Discharge Prohibitions

1. Discharge of Polychlorinated Biphenyls is prohibited.

2. Discharge of untreated sewage or septic tank effluent to the Pacific Ocean or its tributaries is prohibited.

3. Any discharge not listed in finding No. 4. and shown on Attachment B is prohibited.

4. Discharge of any wastes into Diablo Creek is prohibited.

5. Release of radioactive materials in liquid effluents in excess of limits is prohibited. Monitoring for radioactive materials in liquid effluents shall be conducted in accordance with the technical specifications issued by the N.R.C.

B. Effluent Limitations

1. Discharge 001

a. Effluent discharged shall not have a pH of less than 6.0 nor more than 9.0. In addition the pH of the discharge shall not vary more than 0.2 units from that of the intake water.

b. Effluent discharge shall not exceed the following limits:

	Concentration, mg/l (except as noted)		
	6-Month Median	Daily Maximum	Instantaneous Maximum
Arsenic	0.008	0.032	0.08
Cadmium	0.003	0.012	0.03
Total Chromium	0.002	0.008	0.02
Copper	0.005	0.020	0.05
Lead	0.008	0.032	0.08
Mercury	0.00014	0.00056	0.0014
Nickel	0.02	0.08	0.2
Silver	0.00045	0.0018	0.0045
Zinc	0.020	0.08	0.2
Cyanide	0.005	0.02	0.05
Phenolic Compounds	0.025	0.05	0.08
Total Chlorine Residual	0.03	0.1	0.3

	6-Month Median	Daily Maximum	Instantaneous Maximum
Grease and Oil	5.0	10.0	20.
Ammonia (expressed as nitrogen)	0.1	0.2	0.3
Toxicity Concentration	0.7 tu	-	-
Total Chlorinated Pesticides	0.002	0.004	0.006
Radioactivity	Not to exceed limits specified in Title 17, Chapter 5, Subchapter 4, Group 3, Article 3, Section 30269 of the California Administrative Code. In addition the Provisions of 10 CFR20 and 10CFR50 shall apply.		

c. The daily maximum total chlorine residual concentration in Effluent Limitation B.1.b. shall not be maintained for longer than 30 minutes per day per generating unit. Longer periods of chlorination may be used as long as the maximum concentration is reduced to comply with the time-concentration relationship contained in the California Ocean Plan. Chlorination periods shall not exceed two hours per day per generating unit at any time. At least thirty minutes must separate the chlorine discharged from each one-half condenser unit.

d. During any Six-Month period, the effluent mass emission rate for each constituent listed in Effluent Limitation B.1.b. shall not exceed the "Maximum Allowable Six-Month Median Mass Emission Rate" as calculated from the total waste flow occuring on the day of the Median effluent concentration and the constituent concentration specified in the "Six-Month Median" column of Effluent Limitation B.1.b.

e. The discharge shall contain a minimum dissolved oxygen concentration of 5.0 mg/l at all times.

f. The discharge shall not exceed 2.67 billion gallons per day.

g. The temperature measured at the point of discharge shall not exceed 20°F. over that of the intake except during heat treatment.

h. During discharge of heat treatment effluent from Unit 1, Unit 2 circulating water pumps shall be operated at full capacity with no commercial load. Temperature measured at the point of discharge of Unit 1 shall not exceed 100°F.

2. <u>Discharge 001C, 001D, 001F, 001G, 001H, 001I, 001J, 001K, 001L, 002 and 004:</u>

   Effluent concentrations shall not exceed the following limits:

Constituent	Units	Monthly Average	Daily Maximum
Total Non-Filtrable Residue	mg/l	30	100
Grease and Oil	mg/l	15	20

3. <u>Discharge 001D, 001F, 001I and 001L:</u>

   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. During any 24-hour period, the effluent mass emission rate for each constituent listed in Effluent Limitation B.1.b., B.2., and B.3. shall not exceed the "Maximum Allowable Mass Emission Rate" as calculated from the total waste flow occuring each day and the concentration specified in the "Daily Maximum" column of Effluent Limitations.

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

6. During any month, the mass emission rate for each constituent listed in Effluent Limitation B.2., shall not exceed the "Average Monthly Allowable Mass Emission Rate" as calculated from the average Daily Waste Flow for any 30 day period. and the concentration specified in the "Monthly Average" column of Effluent Limitations.

7. <u>Discharge 002, 003, 004, and 005:</u>

   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 <u>Water Quality Control Plan for Ocean Waters of California.</u>

8. <u>Discharge 003 and 005:</u>

   Effluent concentrations shall not exceed a Monthly Average Grease and Oil limit of 5 mg/l and a Daily Maximum of 10 mg/l.

9. <u>Discharge 001, 002, 003, 004, and 005</u>:

   a. The discharge of waste shall not cause a pollution as defined in Section 13050(l) of the California Water Code.

   b. The discharge of waste shall not cause a nuisance as defined in Section 13050(m) of the California Water Code.

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).

1. Elevated temperature wastes shall not adversely affect beneficial uses.

   <u>Waste discharges shall not individually or collectively cause:</u>

2. Floating particulates or grease and oil to be visible.

3. Esthetically undesirable discoloration of the ocean surface.

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

5. Change in the rate of deposition of inert solids and the characteristics of inert solids in ocean sediments such that benthic communities are degraded. Degradation shall be determined by analysis of the effects of waste discharge on species diversity, population density, contamination, growth anomalies, debility, or supplanting of normal species by undesirable plant and animal species.

6. The dissolved oxygen concentration in the ocean waters to be depressed more than 10 percent from that which occurs naturally.

7. The pH in the ocean waters to be changed more than 0.2 units from that which occurs naturally.

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

9. Foam and froth that causes marine communities to be degraded.

10. Objectionable aquatic growth.

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

12. Increase in nutrient concentrations such that objectionable aquatic growths occur or indigenous biota is degraded.

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

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

15. The concentration of substances set forth in Discharge Limitation B.1.b of this Order shall not be significantly increased in marine sediments and the water column above that present prior to commencement of plant operation.

16. The discharge shall not cause an acutely toxic condition to exist in the receiving waters.

D. Provisions

1. This order permits the discharge of waste waters produced by or resulting from the operation and maintenance of the Diablo Canyon Power Plant Units 1 and 2.

2. In order for the Board to consider modification of Discharge Prohibition A.6., the discharger shall submit prior to April 1, 1982, a technical report which includes the following:

   (a) Information on and evaluation of alternative plans to reduce the heat and volume of the cooling water discharge which may include alternative cooling systems or beneficial use of waste heat.

   (b) further information regarding anticipated and possible thermal and volume effects, including heat treatment, on the beneficial use of ocean waters.

3. Discharger shall comply with "Monitoring and Reporting Program No. 82-24," specified by the Executive Officer.

4. Discharger shall comply with all items of the attached "Standard Provisions and Reporting Requirements," except A.1., A.6., A.11., A.13., C.9., C.17., D.1 - 4.

5. This Order is subject to revision if EPA adopts BCT or BAT effluent limitations which differ substantially from existing proposed guidelines, or if testing for recognized toxic constituents listed in EPA Form 3510-26 under commercial operations indicates violation of an accepted effluent standard.

6. Prior to commercial operation of Unit 2, PG & E shall evaluate alternative demusseling programs and propose to the Board its method to reduce heat treatment at the point of discharge of both Units to 86°F.

7. Within 36 months after beginning commercial operation, the discharger shall submit results of:

   (a) Thermal Effects Study to determine whether a thermal discharge in compliance with this Order adequately protects beneficial uses of receiving waters.

   (b) Studies necessary to demonstrate compliance with Section 316 (b) of the Clean Water Act.

8. The permit is subject to revision if any of the above studies demonstrate different effects than those estimated prior to plant operation.

9. The terms "significant difference" and "degradation" used in this permit are defined in footnotes 5 and 7, respectively, of the 1978 Water Quality Control Plan for Ocean Waters of California.

10. All facilities used for containment, transporting or holding waste on site shall be adequately protected against overflow, flooding or washout occurring as a result of a 100 year frequency storm.

11. This Order does not alleviate the responsibility to obtain other necessary local, state, and federal permits to construct facilities necessary for compliance with this Order, nor does this Order preclude imposition of additional standards, requirements, or conditions by any other regulatory agency.

12. Requirements prescribed by this Order supersede requirements prescribed by Order No. 76-11 adopted by the Board on April 9, 1976. Order No. 76-11 is hereby rescinded.

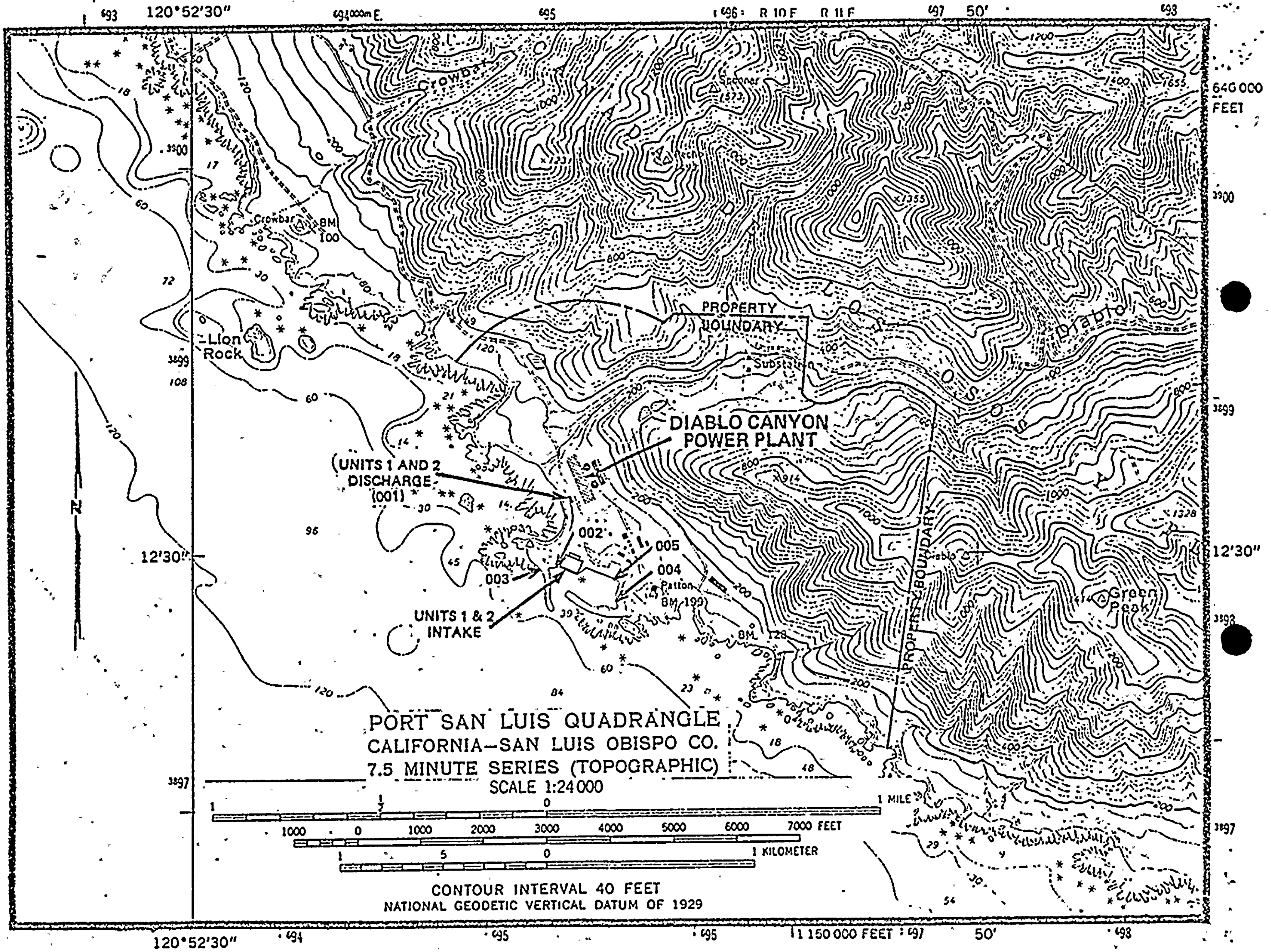
13. This Order expires January 1, 1986. The discharger must file a report of waste discharge in accordance with Title 23, Chapter 3, Subchapter 9 of the California Administrative Code, not later than 180 days in advance of such expiration date as application for issuance of new waste discharge requirements.

This Order shall serve as a National Pollutant Discharge Elimination System permit pursuant to Section 402 of the Act, or amendments thereto, and shall take effect January 25, 1982.

I, KENNETH R. JONES, 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 January 14, 1982 and amended on June 11, 1982.

Kenneth Jones

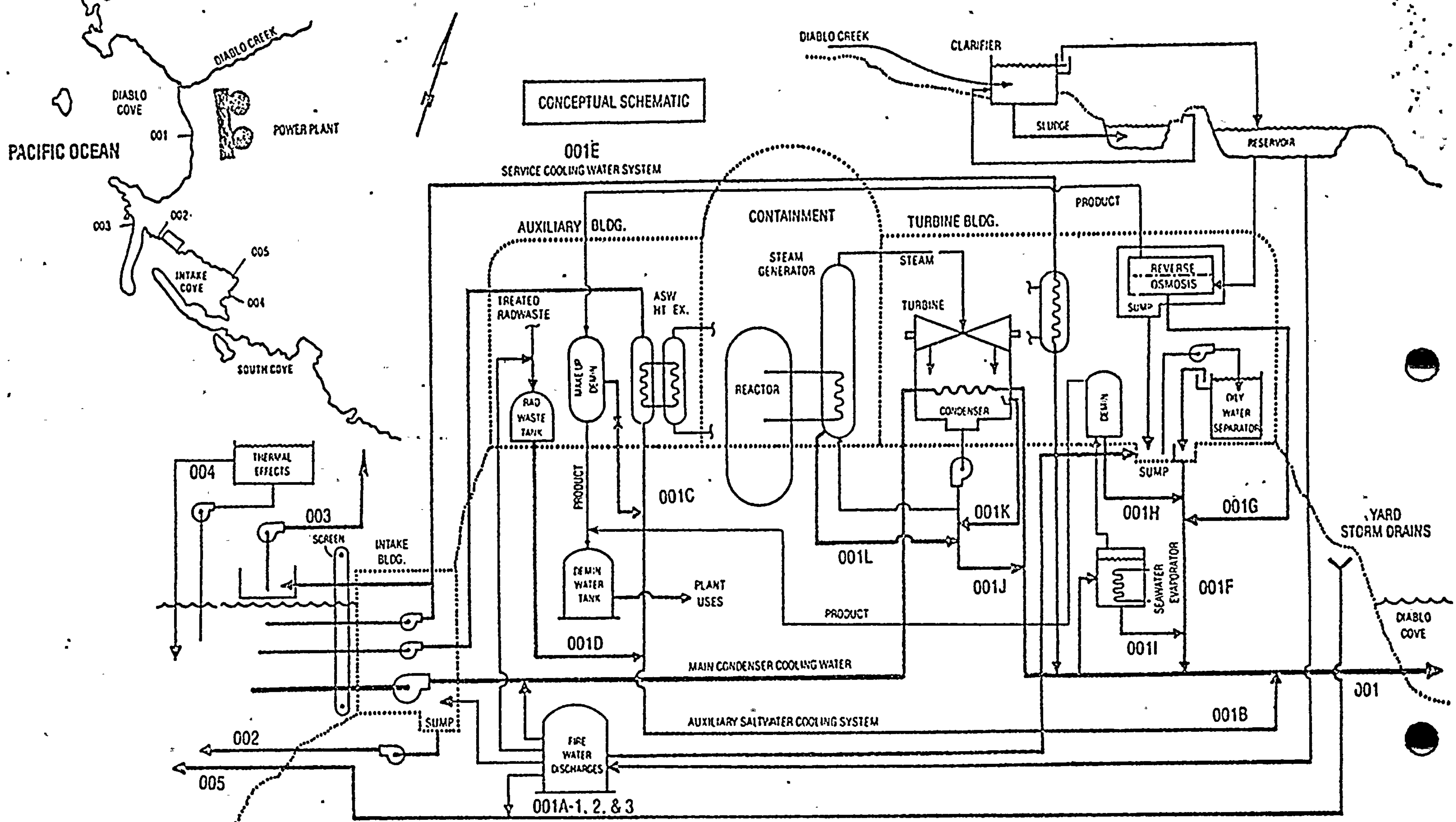
Executive Officer



120°52'30"
694000m E.
R 10 E
R 11 E
50'
640 000 FEET
12'30"
Crowbar
Spooner
Lion Rock
PROPERTY BOUNDARY
Substation
DIABLO CANYON POWER PLANT
(UNITS 1 AND 2 DISCHARGE (001)
002
003
004
005
UNITS 1 & 2 INTAKE
Green Peak
PROPERTY BOUNDARY
Diablo
PORT SAN LUIS QUADRANGLE
CALIFORNIA–SAN LUIS OBISPO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
SCALE 1:24000
1 MILE
7000 FEET
1 KILOMETER
CONTOUR INTERVAL 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
1 150 000 FEET

FIGURE 1

ATTACHMENT "B"



WASTE STREAMS

Discharge	Description	Volume (gal/day)
001	Once-through Cooling Water (Seawater)	2,540,000,000
001 A,1	Firewater System Flush (Intermittent)	50,000
001 A,2	Firewater System Flow Test (Intermittent)	24,000
001 A,3	Fire Hose Test (Intermittent)	1,400
001 B	Auxiliary Salt Water Cooling	31,700,000
001 C	Make-up Water System Waste Effluent (Intermittent)	19,000
001 D	Liquid Radioactive Waste Treatment System Effluent (Intermittent)	30,000
001 E	Service Cooling Water	5,620,000
001 F	Turbine Building Sump (Intermittent)	98,000
001 G	Reverse Osmosis Blowdown	72,000
001 H	Condensate Demineralizer and Seawater Evaporator Demineralizer Regenerant (Intermittent)	52,000
001 I	Sea Water Evaporator Blowdown	430,000
001 J	Condensate Pumps Discharge Header Overboard (Intermittent)	360,000
001 K	Condenser Tube Sheet Leak Detection Dump Tank Overboard (Intermittent)	8,000
001 L	Steam Generator Blowdown	432,000
002	Intake Structure Building Floor Drains, (Intermittent)	300,000
003	Intake Screen Wash	582,000
004	Thermal Effects Laboratory Discharge	1,440,000
005	Yard Storm Drains	Variable

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION

MONITORING AND REPORTING PROGRAM NO. 82-24
FOR
PACIFIC GAS & ELECTRIC COMPANY
DIABLO CANYON NUCLEAR POWER PLANT
SAN LUIS OBISPO COUNTY

Influent Monitoring

A sampling station shall be established at a point upstream of any treatment 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
Turbidity	NTU	Grab	Monthly
pH	-	Grab	Monthly
Grease & Oil	mg/l	Grab	Qtrly(Jan,Apr,July,Oct)
Total Non-Filtrable Residue* (Suspended Solids)	mg/l	Grab	Qtrly(Jan,Apr,July,Oct)
Arsenic	mg/l	Grab	Annually (Oct.)
Cadmium	mg/l	Grab	Annually (Oct.)
Total Chromium	mg/l	Grab	Qtrly(Jan,Apr,July,Oct)
Copper	mg/l	Grab	Qtrly(Jan,Apr,July,Oct)
Lead	mg/l	Grab	Annually (Oct.)
Mercury	mg/l	Grab	Annually (Oct.)
Nickel	mg/l	Grab	Qtrly(Jan,Apr,July,Oct)
Silver	mg/l	Grab	Annually (Oct.)
Zinc	mg/l	Grab	Annually (Oct.)
Cyanide	mg/l	Grab	Annually (Oct.)
Phenolic Compounds	mg/l	Grab	Annually (Oct.)
Ammonia (as N)	mg/l	Grab	Qtrly(Jan,Apr,July,Oct)

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	pH Units	001	Grab	Daily when effluent from chemical cleaning is discharged otherwise Monthly.

Parameter	Units	Discharge	Type of Sample	Minimum Frequency of Analysis
Turbidity	NTU	001	Grab	Monthly
Grease & Oil	mg/l	001 & 001F	Grab	Monthly
Grease & Oil	mg/l	001C,001D,001G, 001H,001I,001J, 001K,001L,002,& 005	Grab	Qtrly(Jan,Apr,July,Oct)
Total Non-Filtrable Residue* (Suspended Solids)	mg/l	001&001I	Grab	Monthly
Total Non-Filtrable Residue (Suspended Solids)	mg/l	001C,001D,001F, 001G,001H,001J, 001K&001L	Grab	Monthly
Arsenic	mg/l	001	Grab	Annually (Oct.)
Cadmium	mg/l	001	Grab	Annually (Oct.)
Total Chromium	mg/l	001	Grab	Qtrly(Jan,Apr,July,Oct)
Copper	mg/l	001	Grab	Monthly
Copper	mg/l	001D,001F, 001I,&001L	24-Hr. Composite	During metal cleaning operations
Lead	mg/l	001	Grab	Annually (Oct.)
Mercury	mg/l	001	Grab	Annually (Oct.)
Nickel	mg/l	001	Grab	Qtrly(Jan,Apr,July,Oct)
Silver	mg/l	001	Grab	Annually (Oct.)
Zinc	mg/l	001	Grab	Monthly
Cyanide	mg/l	001	Grab	Annually (Oct.)
Phenolic Compounds	mg/l	001	Grab	Annually (Oct.)
Total Chlorine Residual	mg/l	001	Grab	At least twice during each chlorination cycle
Chlorine Used	lbs/day	001	Record of Actual amount used.	Monthly
Ammonia (as N)	mg/l	001	Grab	Qtrly(Jan,Apr,July,Oct)
Toxicity Concentration**	tu	001	Grab	Qtrly(Jan,Apr,July,Oct)
Total Chlorinated Pesticides & PCB's***	mg/l	001	Grab	Annually (Oct.)
Iron	mg/l	001D,001F 001I&001L	24-Hr. Composite	During metal cleaning operations
Titanium	mg/l	001	Grab	Qtrly(Jan,Apr,July,Oct)
Boron	mg/l	001	Grab	Qtrly(Jan,Apr,July,Oct)
Dissolved Oxygen	mg/l	001	Grab	Qtrly(Jan,Apr,July,Oct)
Lithium	mg/l	001D	Grab	Qtrly(Jan,Apr,July,Oct)
Hydrazine	mg/l	001	Grab	Qtrly. when discharging hydrazine into 001.
Cadmium, chromium, copper, lead, mercury, nickel silver, and zinc	mg/l	001D, 001H & 001L	Quarterly Composite	Qtrly(Jan,Apr,July,Oct)
Cadmium, chromium, lead, copper, mercury, nickel, silver, and zinc	mg/l	001F	Weekly Composite	Qtrly(Jan,Apr,July,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 total non-filtrable residue (suspended solids) analyses of brine waste streams 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 non-filtrable residue 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. Accumulation of materials in the tissue of bioassay-tested animals shall be measured, as directed by the Executive Officer.

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°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 samples collection to the start of the test including all transit time and is allowed only for refrigerated samples.

**Total chlorinated pesticides and PCB's shall be measured by summing the individual concentrations of DDT, DDD, DDE, aldrin, BHC, chlordane, endrin, heptachlor, lindane, dieldrin, and polychlorinated biphenyls.

Receiving Water Monitoring

Receiving Water Monitoring shall be conducted as outlined below:

1. Ecological studies as approved by the Executive Officer shall be continued in order to evaluate changes of the marine plant and animal distribution and abundance within the vicinity of the discharge. These studies will be designed in cooperation with the Department of Fish and Game.

2. Sediment samples shall be analyzed annually at two stations inside and two stations adjacent to Diablo Cove for constituents listed in paragraph B.6. on page 9 of Order No. 81-76.

3. Aerial photographs of the existing kelp beds from Pecho Rock to Point Buchon shall be taken three times per year, during February, June and October, for a period of at least two years after commercial operation begins.

4. Surface water temperatures shall be determined at two-month intervals from Point Buchon to Pecho Rock for at least two years after commercial operation begins. Isotherms shall be determined in 2°F intervals.

5. Water temperatures shall be measured at one meter intervals from the surface to the bottom at twelve stations inside and adjacent to Diablo Cove. Measurements shall be taken in February, June and October after commercial operation begins. Precision of measurements shall be within ±0.2°F.

6. pH and dissolved oxygen content of the receiving water in February, June, and October (including Pacific Gas & Electric stations 3a through c, 4a through c, 5a through c, as well as three stations in Diablo Cove). Dissolved oxygen and pH samples shall be grab samples.

7. Incident light measurements shall be taken at three meter intervals from the surface to the bottom at 6 stations approved by the Executive Officer. Measurements shall be taken on a monthly basis after commercial operation begins and during times of discharge. Measurement shall be with a photometer cell.

8. Radiological monitoring of seawater and bull kelp at stations located at the middle and immediately north and south of Diablo Cove shall be conducted monthly. Radiological monitoring of the following animals shall be conducted quarterly at the same locations:

    Black Abalone
    Red Abalone
    Perch
    Rockfish

9. An in situ bioassay monitoring program approved by the Executive Officer shall be instituted.

Reporting

The following information shall be reported to the Board:

1. Results of Influent, Effluent and Receiving Water Monitoring.

2. Details of any bypass or damage of the 5 micron filters in the liquid radwaste system.

3. The occurrence of any incident causing the release of toxic materials in concentration detrimental to human, plant, bird, or aquatic life shall be reported orally within 12 hours after its occurrence and its cause, effect, and corrective action shall be described in detail in the next regular report submitted to the Regional Board.

4. Daily radiological concentrations and total quantity of radioactive materials in the discharge. Violations of radioactivity limitations shall be reported to the Board immediately.

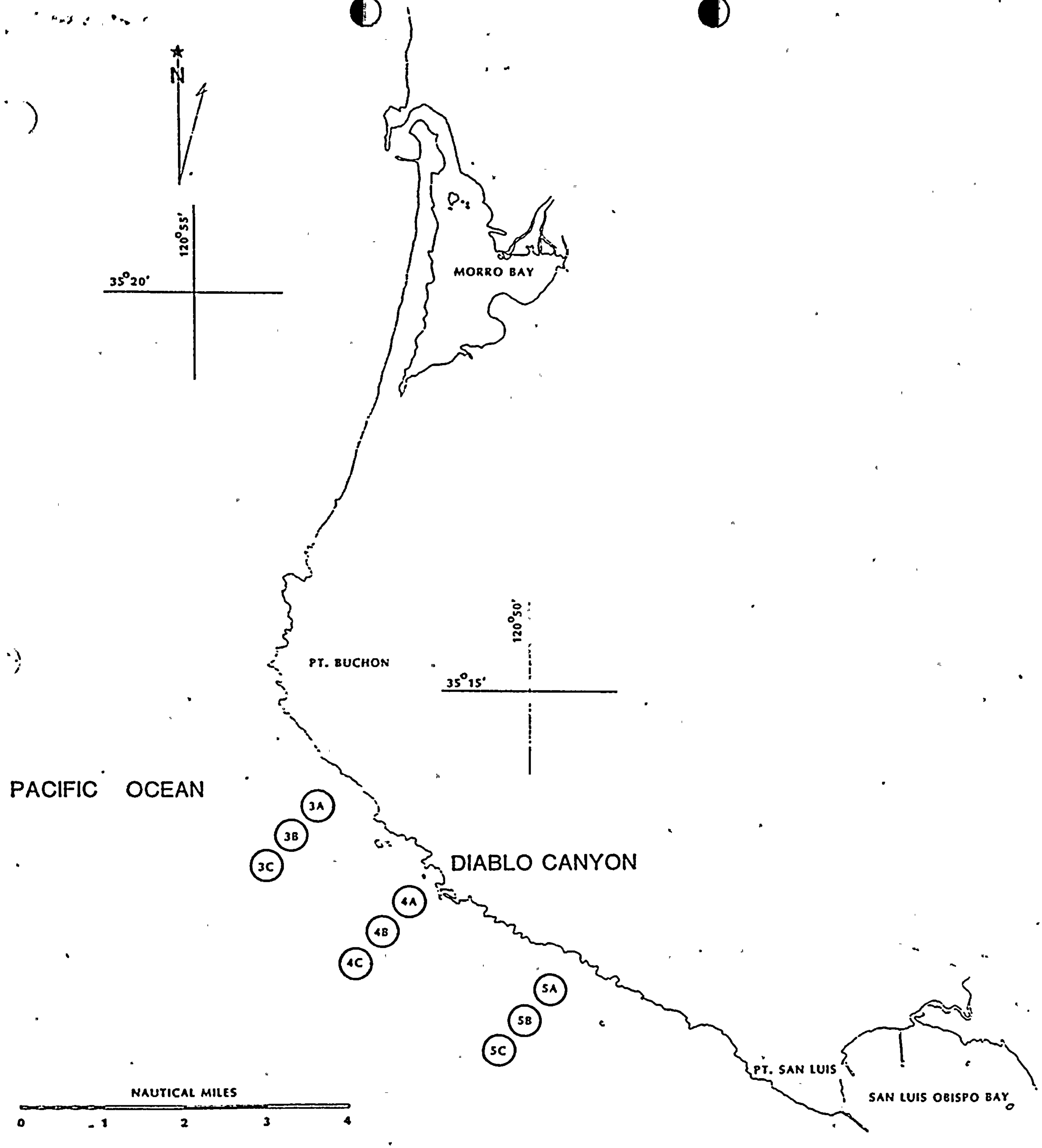
5. A copy of information contained in reports to the Nuclear Regulatory Commission and/or the California Department of Health Services related to the marine environment.

6. Progress reports regarding studies required in Provision D.4., above, shall be submitted every year.

Routine monitoring reports containing information pertinent to the calendar quarter shall be submitted by the 20th day of the following month (i.e. information obtained for the period Jan. 1 to March 31 shall be submitted by April 20th).

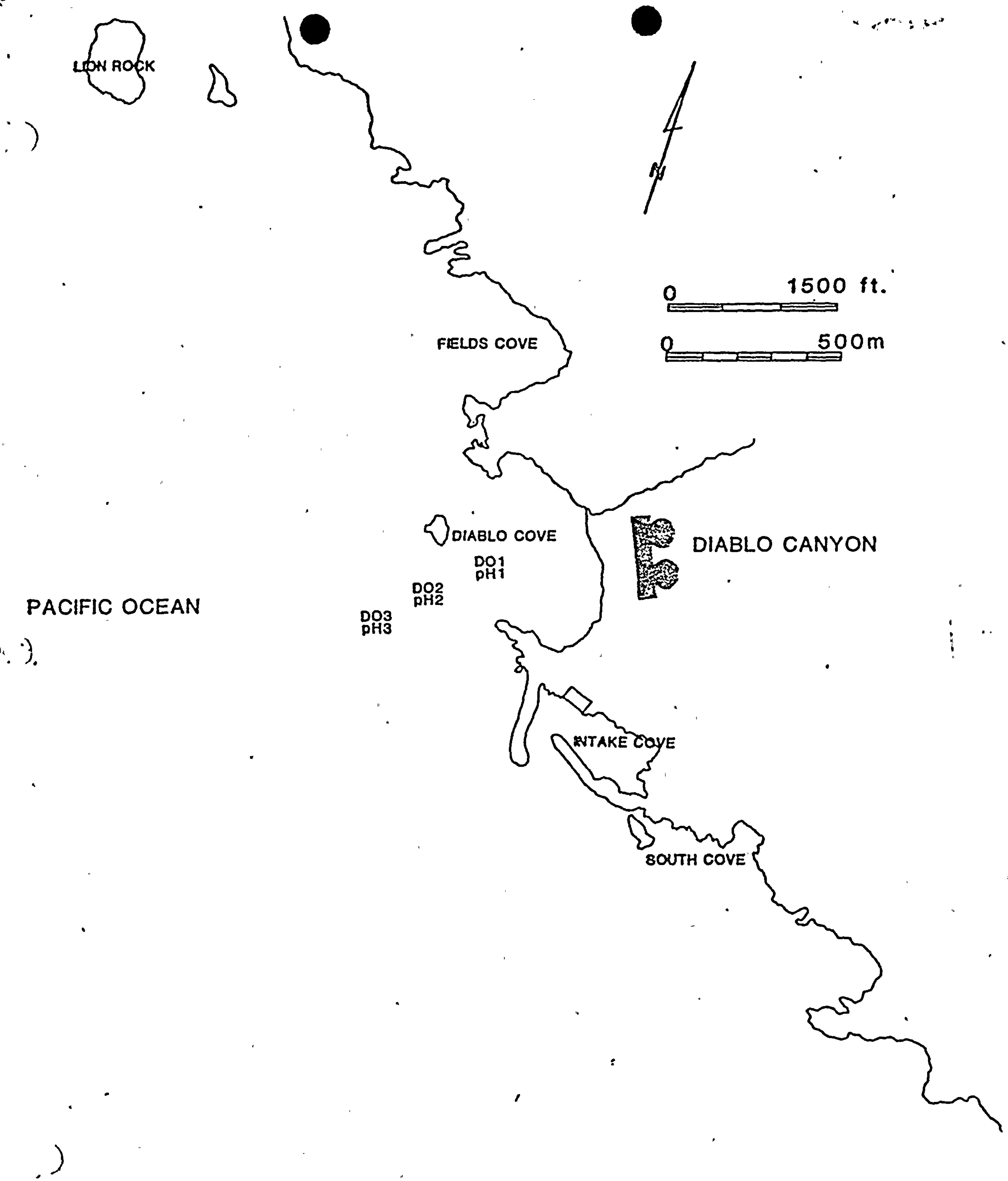
ORDERED BY Kenneth [signature]
Executive Officer

January 14, 1982
Date



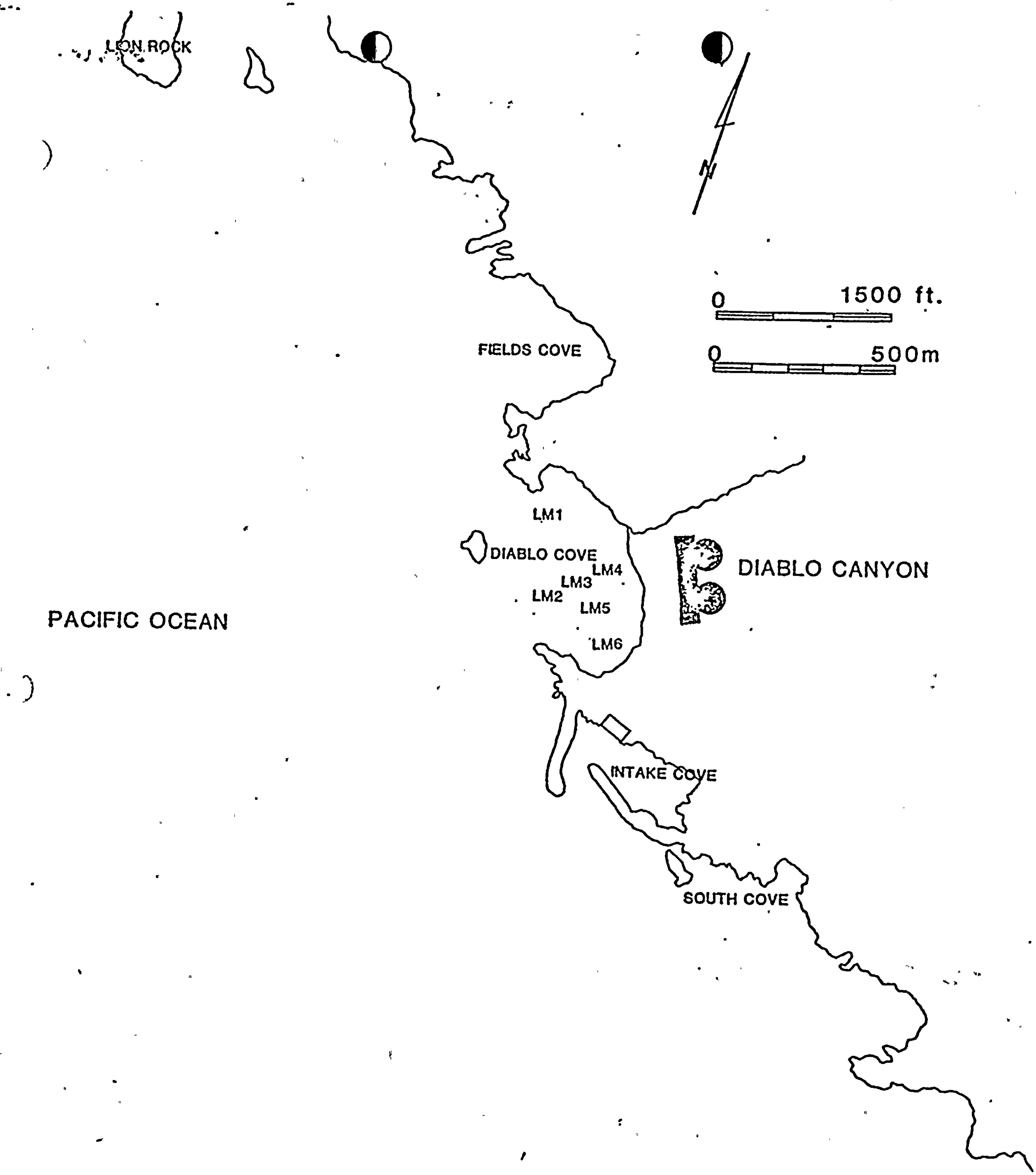
OCEANOGRAPHIC STATIONS

FIGURE 1



DISSOLVED OXYGEN and pH MONITORING STATIONS

FIGURE 2



LIGHT METER LOCATIONS

FIGURE 3

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