

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 86-47
NPDES NO. CA0004880

AN ORDER AMENDING ORDER NO. 83-22 FOR:

PACIFIC GAS AND ELECTRIC COMPANY
PITTSBURG POWER PLANT
PITTSBURG, CONTRA COSTA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region (hereafter called the Board) finds that:

1. The Board, on June 23, 1983, adopted Order No.83-22 (NPDES Permit No. CA0004880) prescribing Waste Discharge Requirements for Pacific Gas and Electric Company, Pittsburg Power Plant (hereinafter called the Discharger). The permit contained effluent limitations for three existing discharges, and provisions for Best Technology Available (BTA) for the cooling water intake system.
2. The Board, on April 18, 1984, adopted Order No. 84-15 amending Order 83-22. The amendment allows the Discharger to include an additional waste stream, one from their metal cleaning waste pond, to be discharged to the once-through cooling water stream (001) and hence into Suisun Bay.
3. On June 19, 1985, the Board issued Cease and Desist Order No. 85-84 requiring the Discharger to submit estimates of annual reduction in 150 mm equivalent striped bass losses during various years. The Discharger submitted the required data on July 15, 1985, thereby complying with the Cease and Desist Order.
4. The Discharger submitted an application and filing fee, dated August 26, 1985, requesting a further amendment to Order 83-22, specifically the provisions related to the Best Technology Available Intake System.
5. The cooling water system intakes are located in the nursery area for striped bass, which is the principal organism of concern. There has been a sharp decline in striped bass population over the past ten years; the causes of this decline are not understood. Large numbers of young bass (and other fish and invertebrates) are entrained into the cooling system and are subjected to mechanical and thermal stresses. Approximately 90% of the annual power plant entrainment losses of larval and juvenile striped bass (normalized to 150 millimeters) occur in a 60 day period between May and August, the entrainment period. For the purposes of these requirements, the entrainment period

is defined as in Provision I.2 of this Order. This finding supercedes Finding No. 20 in Board Order No. 83-22.

6. Finding No. 21 of Order No. 83-22 concerning recirculation of heated effluent is no longer applicable.
7. The Regional Board has agreed to the Discharger's proposed means of meeting the BTA requirements. BTA, for the purpose of these requirements, includes a) Resources Management Program, b) intake system improvements, and c) fish replacement program.
 - a. The Resources Management Program is proposed to reduce the intake of cooling water at the Pittsburg and Contra Costa Power Plants during the entrainment season, the period critical for early life stages of striped bass and other organisms. This reduction will be achieved by using new power sources in lieu of the Pittsburg and Contra Costa plants and by maximizing the use of the closed-cycle cooling system at Pittsburg Unit 7. In addition to Pittsburg Unit 7 (720MW), two additional Pittsburg units and three Contra Costa units need to be committed at all times to maintain system reliability. The magnitude and timing of the new power sources and the reliability of Pittsburg Unit 7 are therefore critical to the effectiveness of the Resources Management Program.
 - b. The intake structures at Pittsburg Units 1 to 4 and Contra Costa Units 4 and 5 will be improved by the installation of variable-speed circulating water pump controls. This action will result in a reduction in entrainment and impingement of organisms by reducing the cooling water flow when the units are at reduced loads.
 - c. The actions described in Findings 7.a and 7.b are predicted to result in annual striped bass loss reductions of 50-80%, based on the method described in Provision I.7.a. Under the fish replacement program, the Discharger will place hatchery striped bass into the Delta in quantities dependent on the percentage fish loss reduction achieved at the Pittsburg and Contra Costa Power Plants.

This supercedes the BTA program described in Finding 22 of Board Order No. 83-22.

8. The effective integration and implementation of the proposed Resources Management Program, intake structure improvements, and fish replacement program constitutes BTA for the Pittsburg and Contra Costa Power Plants. The effectiveness of the BTA program in achieving maximum striped bass loss reductions will be subject to annual review by the Board. This finding supercedes Finding No. 23 in Board Order No. 83-22.
9. Projected net power source additions for 1986 and the years through 1995 are as follows:

<u>Net Power Resource Additions</u>	<u>Cumulative Capacity(MW)</u>	
	1986	1995
Geothermal	0	581
Diablo Canyon Unit 2	1105	1105
Cogeneration	214	3850
Hydroelectric	36	667
Wind and solar	37	93
Miscellaneous	150	1100
Total	1542	7396

This supercedes Finding No. 26 in Board Order No. 83-22.

10. Finding No. 27 in Board Order 83-22, which gives the projected date for achieving maximum benefit of the Discharger's Resources Management Program, is no longer valid.
11. In 1983 and 1984, respectively, the Discharger submitted studies on the effectiveness of recirculation barriers and intake screen modifications in reducing the losses of 150 mm equivalent striped bass. These studies showed that the loss reductions achievable would not be significant, and these features were not added to the power plants. Provisions D.4 and D.5 of Board Order No. 83-22 were thus satisfied.
12. As this Order is an amendment to a NPDES permit, it is exempted from the provisions of the California Environmental Quality Act (Public Resource Code Section 21000, et seq) in accordance with Section 13389 of the California Water Code.
13. The Board has notified the Discharger and interested persons and agencies of its intent to prescribe revised waste discharge requirements for the Pittsburg Power Plant.
14. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, that this Board's Order No. 83-22, amended by Order 84-15, be further amended as follows:

- I. Provisions D.1 through D.13, the subsection titled "Provisions Related to BTA Intake Systems" shall be replaced in its entirety by the following two subsections.

Provisions Related to BTA Intake Systems

1. During the entrainment period, the Discharger shall implement the following Resource Management Plan, designed to minimize adverse environmental impacts.
 - a. The Discharger shall maximize the commitment, dispatching and power production of Pittsburg Unit

7, as required to meet system demand, in place of and before the dispatching and power production above minimum load at any other committed unit at Pittsburg or Contra Costa power plants, except under the following conditions:

- i. Pittsburg Unit 5 or 6 may operate at a minimum load whenever Unit 7 is committed, dispatched or producing power, for the purpose of providing steam necessary to start or restart Pittsburg Unit 7.
 - ii. The Discharger may remove Pittsburg Unit 7 from service for emergency or unscheduled maintenance, for personnel or equipment safety, or the reliability of the system.
 - iii. The discharger may have Pittsburg Unit 7 at less than full load when other units are dispatched above minimum load if necessary to meet system stability, equipment safety, personnel safety, and to respond to system transient conditions.
- b. The Discharger shall minimize the commitment and dispatch of all Units at the Pittsburg Power Plant, except for Pittsburg Unit 7, to minimize cooling water flows unless commitment and dispatching of these units is necessary to meet system demand, to meet California Power Pool commitments, and/or to maintain system reliability according to prudent utility operating practice (including equipment and personnel safety, area load demand and transmission considerations).
 - c. All committed units at Pittsburg and Contra Costa Power Plants must be dispatched before the discharge temperature for any similar unit will be allowed to exceed 86 degrees F.
 - d. The Discharger shall monitor fish density at Pittsburg and Contra Costa Power Plant during the entrainment season, and preferentially dispatch units above 86 degrees F at the plant which has the lower fish density, provided the density difference is greater than 0.0002 normalized fish per cubic meter.
 - e. The Discharger shall schedule Pittsburg Unit 7 overhauls so that all scheduled work will be completed before April 1 each year.
 - f. The Discharger shall minimize circulation water flows under all conditions, except during chlorination, while maintaining discharge

temperatures pursuant to provision I.1.c. The Discharger shall use the variable speed pumps when units are at reduced loads in accordance with design parameters. Reduced load is defined as less than 95 percent of maximum load for the existing variable speed pumps. The design parameters for the new variable speed pumps shall be submitted to the Board by June 30, 1987. The discharger shall shut off circulation water for uncommitted units as soon as possible, except as required according to prudent operating practices to insure personnel and equipment safety.

- g. Except for compliance with NRC requirements and refueling of Diablo Canyon Power Plant, the Discharger shall minimize scheduled maintenance and outages, if they result in increased use of any unit at the Pittsburg and Contra Costa Power Plants during the entrainment period.
2. The entrainment period shall commence either on May 15 each year, or such later date that the Discharger demonstrates by a Threshold Monitoring Program (Attachment 1) that the density of striped bass, normalized to 150 mm, entrained at the Pittsburg or Contra Costa Power Plant exceeds 0.0005 per cubic meter of cooling water for three consecutive days.

The entrainment period shall terminate no earlier than one week after it starts. The entrainment period shall end either when the density of striped bass, normalized to 150 mm, entrained is less than 0.0005 normalized fish per cubic meter of cooling water in any three consecutive monitoring samples at both Pittsburg and Contra Costa Power Plants, or the day when the striped bass 38 mm index is set, as predicted by the California Department of Fish and Game (CDFG), whichever is earlier. Monitoring samples exceeding two per week may be either Threshold Monitoring or Entrainment Abundance Monitoring (Attachment 2).

If the Entrainment Period is terminated because striped bass densities are less than 0.0005 per cubic meter, the Threshold Monitoring Program must be resumed by the Discharger and continued daily either until the date CDFG predicts that the 38 mm index will be set, or until the normalized density again rises above 0.0005 normalized bass per cubic feet of cooling water for three consecutive days, whichever is earlier. In the latter event, the Entrainment Period will start again, and its termination shall be determined according to the provisions of the previous paragraph.

If CDFG does not conduct the surveys to determine the date when the 38 mm index is set, it will be assumed to be set on July 15 for the purpose of implementing this section.

The Discharger shall notify the Board within three days of both starting or ending any entrainment period.

3. The Discharger shall install temperature-modulated variable speed pumps for Pittsburg Units 1-4 according to the following time schedule.

Complete design: June 30, 1987
Full compliance: April 30, 1988

4. The Discharger shall measure bar rack approach velocities and sediment deposition in front of the intake structure annually. The Discharger shall dredge sand and silt to eliminate build-up in front of the intake structure and routinely clean the bar racks at the Pittsburg Power Plant as necessary to maintain bar rack approach velocities at design levels. The Discharger shall rotate and clean all intake screen assemblies in operation at a frequency of not less than once every four hours for the purpose of maintaining intake water velocities at design levels.
5. The Discharger shall minimize the duration, frequency and concentration of chlorine application as a cleaning agent for the condensers.
6. Semi-annual technical reports to the Board, due by November 1 and May 1 each year, shall include an evaluation of the previous period's BTA program performance according to the methodology approved by the Executive Officer. If the Board determines the BTA program is not effective, it may revise the permit's BTA provisions as appropriate.

Provisions related to fish replacement

7. The Discharger shall operate intake structures at Contra Costa and Pittsburg Power Plants and manage existing and new power resources to reduce striped bass losses at these plants. The goals for striped bass loss reduction are 75 percent in 1986, 79 percent in 1987 and 1988. The percent reduction will be calculated using the hindcast version of the SIMBAS computer model, the version available as of April 15,

1986, except that the model may be revised with the written concurrence of the Executive Officer. The input to the model will be the actual operating parameters measured for the preceeding period. Striped bass losses will be mitigated by a fish replacement program for which the Discharger will be responsible. If the Discharger does not meet a percentage fish reduction goal of at least fifty percent, the Executive Officer will present a report to the Board, which may consider enforcement or other remedial actions.

- a. The percentage loss reduction is the quantity one minus the ratio of the estimated losses in the current year (March 1 to February 28) to the average estimated losses from the three-year base period of 1976, 1978, and 1979, multiplied by 100. The following conventions shall apply:
 - i. Striped bass numbers are expressed in 150 mm equivalents.
 - ii. Striped bass densities from the current year, as determined by the Entrainment and Impingement Monitoring Program, will be used to calculate estimated losses for both the current year and for the average of the base years.
 - iii. The estimated striped bass loss for the base year period is the average of losses for 1976, 1978, and 1979, calculated individually based on actual operation for those years.
- 8. If the percentage loss reduction goal is met, the Discharger will stock 100,000 yearling striped bass in May of the following year. If the performance of the plants falls short of meeting the percentage loss reduction goal, the Discharger will stock yearling striped bass in the following numbers, depending on the percentage loss reduction achieved:

% <u>Loss reduction</u> <u>achieved</u>	<u>Number of</u> <u>yearling fish</u>
65.1 - goal	200,000
55.1 - 65.0	300,000
50.1 - 55.0	400,000
45.1 - 50.0	500,000
< 45.1	600,000

The Discharger may substitute fingerlings for yearlings in accordance with the Discharger's agreement with the California Department of Fish and

Game. The propagation and release of striped bass shall also be in accordance with the agreement.

9. By August 31, 1986 the Discharger shall enter into a revised agreement with the Department of Fish and Game concerning the propagation and release of striped bass, and to study the survival rates of artificially-propagated striped bass stocked in the Delta under this permit.

II. The following will be added as General Provision D.28 to Board Order No. 83-22:

The Discharger shall notify the Regional Board as soon as it knows or has reason to believe:

- a. that any activity has occurred or will occur that would result in the discharge of any toxic pollutant that is not limited in this permit, if that discharge will exceed the highest of the following "notification levels":

- (1) 100 micrograms per liter (ug/l);
- (2) 200 ug/l for acrolein and acrylonitrile; 500 ug/l for 2,4 -dinitrophenol and 2-methyl-4,6-dinitrophenol; and 1 ug/l for antimony;
- (3) 5 times the maximum concentration value reported for that pollutant in the their permit application; or
- (4) the level established by the Regional Board in accordance with 40CFR 122.44(f).

- b. that it has initiated or expects to begin to use or manufacture as an intermediate or final product or by-product any toxic pollutant that was not reported in the permit application.

III. General Provision No. 16 of Board Order 83-22 regarding the development and adoption of a Self Monitoring Program is no longer valid, and is hereby rescinded.

IV. The Discharger will comply with the Self Monitoring Program adopted by the Board and as may be amended by the Executive Officer.

V. The Waste Discharge Requirements Order 83-22, along with the two amendment Orders, 84-15 and 86-47, expires on November 1, 1988. The Discharger must file a Report of Waste Discharge in accordance with Title 23, California Administrative Code, not later than 180 days in advance of this date as application for issuance of new waste discharge requirements.

I, Roger B. James, 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, San Francisco Bay Region, on June 18, 1986.

A handwritten signature in cursive script, appearing to read "Roger B. James".

ROGER B. JAMES
Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM
FOR

PACIFIC GAS AND ELECTRIC COMPANY

PITTSBURG POWER PLANT

PITTSBURG, CONTRA COSTA COUNTY

NPDES NO. CA 0004880

ORDER NO. 86 - 47

CONSISTS OF

PART A

AND

PART B , DATED June 18, 1986.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

REVISED
SELF-MONITORING PROGRAM

FOR

PACIFIC GAS AND ELECTRIC COMPANY
PITTSBURG POWER PLANT
PITTSBURG, CONTRA COSTA COUNTY

PART A

A. GENERAL

Reporting responsibilities of waste dischargers are specified in Sections 13225(a), 13267(b), 13268, 13383, and 13387(b) of the California Water Code and this Regional Board's Resolution No. 73-16.

The principal purposes of a monitoring program by a waste discharger, also referred to as self-monitoring program, are: (1) to document compliance with waste discharge requirements and prohibitions established by this Regional Board, and (2) to facilitate self-policing by the waste discharger in the prevention and abatement of pollution arising from waste discharge.

B. SAMPLING AND ANALYTICAL METHODS

Sample collection, storage, and analyses shall be performed according to the latest edition of Standard Methods for the Examination of Water and Wastewater prepared and published jointly by the American Public Health Association, American Water Works Association, and Water Pollution Control Federation, or other methods approved and specified by the Executive Officer of this Regional Board including the methods specified in attached Appendix A.

Commercial Laboratory Analyses

Water and waste analyses shall be performed by a laboratory previously approved for these analyses by the State Department of Health. The director of the laboratory whose name appears on the certification shall supervise all analytical work in his laboratory and shall sign all reports of such work submitted to the Regional Board.

In-house Laboratory Analyses

The Board will accept analytical data from an in-house laboratory which is not currently certified if the discharger agrees in writing to: (1) perform all analyses in accordance with the latest edition of "Guidelines Establishing Test Procedures for Analysis of Pollutants promulgated by the U.S. Environmental Protection Agency; (2) implement and maintain a satisfactory quality assurance program, (comparable to State Department of Health Services Standards); (3) demonstrate a good agreement in analytical results with those of a previously certified

laboratory in split sampling; and (4) become certified within a reasonable time if the State certification program is reinstated.

All monitoring instruments and equipment shall be properly calibrated and maintained to ensure accuracy of measurements.

C. DEFINITIONS OF TERMS

1. A grab sample is defined as an individual sample collected in fewer than 15 minutes.
2. A composite sample is a combination of individual samples obtained at equal time intervals over the specified sampling period. The volume of each individual sample is proportional to the discharge flow rate at the time of sampling.

D. SCHEDULE OF SAMPLING, ANALYSES, AND OBSERVATIONS

The discharger is required to perform observations, sampling, and analyses according to the schedule in Part B.

E. RECORDS TO MAINTAINED

1. Written reports shall be retained by the discharger(s) for a minimum of three years. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge or when requested by the Regional Board. Such records shall show the following for each sample:
 - a. Identity of sampling and observations stations by number.
 - b. Date and time of sampling and/or observations.
 - c. Date that analyses are started and completed, and name of personnel performing the analyses.
 - d. Complete procedure used, including method of preserving sample and identity and volumes of reagents used. A reference to a specific section of Standard Methods, and EPA method, or approved alternate method from (B) above is satisfactory.
 - e. Results of analysis and/or observations.

F. REPORTS TO BE FILED WITH THE REGIONAL BOARD

1. Written self-monitoring reports shall be filed monthly (unless specified otherwise in Part B). In addition, an annual report shall be filed as indicated in F-1-f. The reports shall be comprised of the following.

a. Letter of Transmittal:

A letter transmitting self-monitoring reports should accompany each report. Such a letter shall include a discussion of requirement violations found during the past month and actions taken or planned for correcting violations, such as plant operation modifications and/or plant facilities expansion. If the discharger has previously submitted a detailed time schedule for correcting requirement violations, a reference to the correspondence transmitting such schedule will be satisfactory. Monitoring reports and the letter transmitting reports shall be signed by a principal executive officer at the level of vice-president or his duly authorized representative if such representative is responsible for the overall operation of the facility from which the discharge originates. The letter shall contain a statement by the official, under penalty of perjury, that to the best of the signer's knowledge the report is true and correct.

b. Compliance Evaluation Summary

Each report shall be accompanied by a compliance evaluation summary sheet prepared by the discharger. The report format shall be approved by the Executive Officer.

c. Map or Aerial Photograph

A map or aerial photograph shall accompany the report showing sampling and observation station locations.

d. Results of Analyses and Observations

Tabulations of the results from each required analysis or observations specified in Part B by date, time, type of sample, and station, signed by the laboratory director. The report format shall be approved by the Executive Officer.

e. List of Approved Analyses

List of analyses performed for the discharger by another approved laboratory currently or previously approved by the State Department of Health Service (and copies of reports signed by the laboratory director of that laboratory shall also be submitted as part of the report).

f. Annual Reporting

By January 31 of each year, the discharger shall submit an annual report to the Regional Board covering the previous calendar year. The report shall contain both tabular and graphic summaries of the monitoring data obtained during the previous year. In addition, the report shall contain a comprehensive discussion of the compliance record and the

corrective actions taken or planned which may be needed to bring the discharger into full compliance with the waste discharge requirements. The report format shall be approved by the Executive Officer and should be maintained and submitted with each regular self-monitoring report.

PART B

DESCRIPTION OF SAMPLING STATIONS AND SCHEDULE OF SAMPLING ANALYSIS AND OBSERVATIONS

I. Sampling Station Location/Description

A. Influent

<u>Station</u>	<u>Description</u>
I-001	At any point in the influent stream prior to the condensers and upstream of any treatment where representative samples of the influent to Units 5 and 6 can be obtained.

B. Effluent

<u>Station</u>	<u>Description</u>
E-001-A	At any point in the outfall for Units 1-6 from which once through cooling water is discharged, between the point of discharge to Suisun Bay and the point at which all pollutants tributary to that outfall are present.
E-001-B thru E-001-G	At any point in the pipe from which low volume waste is discharged prior to combination with once through cooling water.
E-001-H	At a point in the cooling water blowdown stream prior to mixing with once through cooling water stream.
E-001-I	At a point from which metal cleaning waste pond effluent is discharged, prior to combination with once-through cooling water.
E-002	At a point in the Outfall of combined yard drains prior to discharge to Suisun Byu.
E-003	At a point in the Outfall of combined yard drains from fuel oil tanks 8-14 prior to discharge to Willow Creek.

II. SCHEDULE OF SAMPLING AND ANALYSIS

INFLUENT MONITORING

The following shall constitute the influent monitoring program:

<u>Station</u>	<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Minimum Frequency of Analysis</u>
I-001	temperature	F	-	continuous
	Tot. Sus. solids	mg/l lbs/day	Grab	monthly
	pH	-	Grab	monthly

EFFLUENT MONITORING

The following shall constitute the effluent monitoring program:

<u>Station</u>	<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Minimum Frequency of Analysis</u>
E-001-A	temperature	F	-	continuous
	flow	MGD	from pump operating data	daily
	pH	pH units	Grab	monthly
	chlorine	mg/l	Grab	daily, when treating
	96-hour fish bioassay	% survival	24 hr composite	monthly
E-001-B-G	Flow	mgd	-	monthly
	Tot. Sus. solids	mg/l	Grab*	monthly
	Oil and Grease	mg/l	Grab*	monthly
E-001-H	Flow	mgd	-	monthly
	Chromium, zinc	mg/l	Grab	weekly, when adding maintenance chemicals
	Priority Pollutants Added	mg/l	Grab	annually
E-001-I	Total Sus. solids	mg/l	Grab	daily during discharge; sampling shall be representative of the first discharge, and the end of the discharge cycle.
	Oil & Grease	mg/l	Grab	
	Copper, total	mg/l	Grab	
	Iron, total	mg/l	Grab	
	Nickel, total	mg/l	Grab	
E-002, E-003	Oil & Grease	mg/l	Grab	weekly

*Flow proportional composite within \pm 5% from Stations E-001-B-G

AMBIENT (RIVER) WATER MONITORING

Ambient river conditions will be determined at the intake structure (I-001):

<u>Constituent</u>	<u>Unit</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>
Temperature	°F	Grab	Twice weekly during max flood tide

BTA MONITORING

- A. The following data shall be collected and used in estimating the percentage reduction in striped bass losses and the data shall be available to the Regional Board upon the request of the Executive Officer:
1. Each unit's hourly cooling water flow for each day of the preceding six month period (March 1 to September 1).
 2. Hourly temperature measurements in the discharges of Pittsburg Units 1-4, Pittsburg Unit 5, Pittsburg Unit 6, Contra Costa Units 1-5, Contra Costa Unit 6, and Contra Costa Unit 7 from 15 April to 1 September of each year.
 3. Hourly records of gross electrical generation (MW) for each unit at the Contra Costa and Pittsburg Power Plants (excluding house units) during the previous entrainment period.
- B. On November 1 of each year, the Discharger shall submit a post-entrainment period report which shall include, but not necessarily limited to the following:
1. An estimate, based on the Hindcast version of the SIMBAS computer model, of percentage reduction in striped bass losses during the preceding period starting May 1 and ending August 15, based on actual cooling system operation at the Pittsburg and Contra Costa Power Plants.
 2. A comparison of the percentage reduction in striped bass losses estimated based on actual cooling water system operation with loss reduction goals.
 3. A tabulation of outages and curtailments for Pittsburg Unit 7 by occurrence with a brief description of the cause of each occurrence during the previous entrainment period.
 4. A comparison of hourly electrical generation by unit at Contra Costa Units 1-7 and Pittsburg Units 1-6 with the generation at Pittsburg Unit 7 (expressed as a percentage of available capacity) during the previous entrainment period as it pertains to compliance with provisions of the

Resources Management Program.

5. A summary of information used to determine the start and end date of the entrainment period.
 6. A discussion of the correlation between Delta flowrates and spatial distribution of striped bass prior to the entrainment season as it pertains to the Threshold Monitoring Program.
- C. On May 1 of each year, the Discharger shall submit a report including but not necessarily limited to the following:
1. An estimate, based on the Hindcast version of the SIMBAS computer model, of the percentage reduction in striped bass losses during the preceding striped bass year (March 1 to February 28) based on actual cooling system operation at the Pittsburg and Contra Costa Power Plants. Data collected and used in developing the estimated percentage reduction in striped bass losses will include, but not necessarily limited to, hourly cooling water flows for each unit for the preceding striped bass year and discharge temperatures as described in A.
 2. A summary of resource additions:
 - a. A revision and status report on the resource addition schedule for the next striped bass year.
 - b. A comparison of actual resource additions with the forecasted resource additions for the preceding striped bass year.
 3. A summary of monthly capacity factors and generation by unit for the Pittsburg and Contra Costa Power Plants and monthly cooling water flow by unit group as in A.2 for the preceding striped bass year.
 4. An annual BTA compliance summary addressing:
 - a. Compliance with Resources Management Program.
 - b. Status of intake system improvements and modifications.
 - c. Intake velocity and bathymetry information and a summary of intake maintenance during the preceding striped bass year.
 - d. A summary of projected unit outages for overhaul scheduled for the subsequent calendar year and a summary of actual outages for unit overhaul during the previous calendar year.
 - e. A summary of intake screen operation (rotation

frequency) at Contra Costa and Pittsburg Power Plants, and fish pump operation at the Contra Costa Units 1-5 intake during the preceding striped bass year.

- f. Status of the Fish Replacement Program for the previous striped bass year.
- D. At the discretion of the Discharger, a Threshold Monitoring Program may be conducted as described in Attachment 1 which is made a part of this Order.
- E. An Entrainment and Impingement Monitoring Program shall be conducted each year as described in Attachment 2 and is made part of this Order.

I, Roger B. James, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

- 1. Has been developed in accordance with the procedures set forth in this Regional Board's Resolution No. 73-16 in order to obtain data and document compliance with Waste Discharge Requirements established in Regional Board Order Nos. 83-22, 84-15, and 86-47.
- 2. Is effective on the date shown below.
- 3. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the Discharger, and revisions will be ordered by the Executive Officer.


Roger B. James
Executive Officer

June 19, 1986
Effective Date

ATTACHMENT 1

**PITTSBURG AND CONTRA COSTA POWER PLANTS
STRIPED BASS THRESHOLD MONITORING PROGRAM**

At its discretion, the Discharger may choose to conduct a Threshold Monitoring Program to determine the starting date for the entrainment period. If the Threshold Monitoring Program is conducted, it will be conducted as follows:

1. If the mean Delta outflow, as determined by the Department of Water Resources daily operations data, averages less than 20,000 cfs from April 15 through May 7, the Program shall be conducted at the Contra Costa Power Plant from 12 May until 31 May, or until the entrainment period begins, whichever is earlier.
2. If the Delta outflow specified in paragraph 1 exceeds 20,000 cfs, the Program shall be conducted at the Pittsburg Power Plant from 12 May through 31 May, or until the entrainment period begins, whichever is earlier. In all years, the Program shall be conducted at the Pittsburg Power Plant after 1 June if the entrainment period has not yet started.
3. Sampling will be conducted daily for a three hour period (approximately 2000 to 2300 hours). Other than the sampling period, the sampling and analysis protocol will be the same as described for Entrainment Abundance Monitoring in Attachment 2.
4. The Threshold Monitoring Program may be terminated during the entrainment period(s) at the Discharger's discretion. Threshold Monitoring will terminate when the 38 mm index is predicted to be set by CDFG.

PITTSBURG AND CONTRA COSTA POWER PLANTS
STRIPED BASS ENTRAINMENT AND
IMPINGEMENT MONITORING PROGRAM

Entrainment Abundance Monitoring

The entrainment abundance monitoring program has been designed to provide information on the size-specific density and seasonal distribution of larval and juvenile striped bass entrained at the Pittsburg and Contra Costa power plants. The entrainment monitoring shall begin the first week of May and continue through 15 July of each year, or at the end of the entrainment period, whichever is later. Routine entrainment sampling will be conducted during a 12-hour period (approximately 1500 to 0300 hours) once per week until the entrainment period start date has been determined, at which time the sampling frequency will be increased to two sampling periods per week at each plant. The twice weekly sampling will continue until the entrainment period has ended. The entrainment sampling frequency will then be reduced to once per week at each plant and continue until 15 July or the date CDFG predicts that the 38 mm index will be set, whichever is later. Sampling equipment and processing methods will be standardized between the two power plants.

The plankton nets will be cycled periodically throughout the 12-hour collection period, and the sample removed from the collection net using standard rinsing procedures. Samples will be labeled, stained with rose bengal, and preserved. Samples will be sorted using a magnifying illuminator or dissecting microscope to remove fish larvae. Striped bass larvae will be identified, counted, and the total length measured. Fragments of striped bass constituting less than 50 percent of total body length will be recorded as observations, but will not be included in the estimation of size-specific densities. Following identification and measurement, fish larvae will be placed in labeled vials and archived. Archived samples will be discarded after completion of each year's monitoring program.

Entrainment monitoring results will be summarized as the size-specific density (no./cubic meter) of striped bass collected on each sampling date at the two power plants.

Impingement Monitoring

Impingement monitoring will consist of one 12-hour sampling period at approximately monthly intervals at the cooling water intakes for Pittsburg Units 1-4 and 7, Pittsburg Units 5 and 6, Contra Costa Units 1-5, and Contra Costa Units 6 and 7. Monitoring will begin after entrainment monitoring ceases in July and continue through February of each year.

Impingement samples will be collected from the screenwash sluiceways at each intake during routine rotation and washing of the intake screens. Sampling will not be conducted when operating conditions at the intake pose a safety hazard

to the sampling crew or when the intake system is not operating under standard conditions (e.g., high detrital loads require continuous screen rotation and cleaning, thereby not permitting interruption for sample collection, no circulating water pumps are in service at the intake, etc.). Organisms and detrital material collected during impingement sampling will not be retained.

Impingement monitoring results will be summarized as the size-specific density (no./cubic meter) of striped bass collected on each sampling date at each intake structure of the two power plants.