

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION
895 Aerovista Place, Suite 101
San Luis Obispo, CA 93401**

**WASTE DISCHARGE REQUIREMENTS ORDER NO. RB3-2003-0009
NPDES NO. CA0003751
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:

SITE OWNER AND LOCATION

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 Attachment 1 ("power plant or DCP").

FACILITY DESCRIPTION

Discharge Category

2. The United States Environmental Protection Agency and Board classify this discharge as a major discharge.

Design Capacity

3. The power plant consists of two generating units, with a net power generating capacity of 2222 Megawatts or MW (design).

Adjacent Properties and Land Use

4. The Diablo Canyon Power Plant site is surrounded by over 12,000 acres of undeveloped coastal property remote from any city or small town. Some areas of this undeveloped property are used for agriculture and grazing. The Plant site is approximately four miles south of Montana de Oro State Park and approximately seven miles west by northwest of the Port of San Luis.

Geology

5. The plant facilities are constructed at a general elevation of 80 feet above mean sea level on low-lying coastal terraces and the gently sloping terrain adjacent to the Irish Hills and in the lower part of Diablo Canyon. The bedrock adjacent to and beneath the plant site consists of Miocene Obispo Formation that consists of volcanic tuff, shale and sandstone strata that are variably weathered and locally altered to a friable rock. These strata have been folded, along with the rocks beneath the plant facilities, on the southern flank of the northwest-trending Pismo syncline, a structural feature

that lies within the Irish Hills. A diabase intrusion forms sills and dikes within the Diablo Canyon area north and northeast of the power plant.

Ground Water

6. Groundwater at the Power Plant site is found in the narrow, relatively thin gravel alluvium along Diablo Creek, in fractures in the bedrock of the Obispo Formation, and along the contact that marks the top of bedrock and the base of some of the extensive terrace and alluvial fan deposits that flank the coast. Two seeps and a small spring were encountered during excavations for the power plant and other seeps are found in Diablo Canyon. The main groundwater table beneath the coastal terrace north and south of the plant site is controlled by sea level at the coastline and gradually rises beneath the hills southeast of the plant site. Groundwater in the alluvium of Diablo Creek upstream of the 500 kV switchyard is taken from the makeup water wells No. 1, No. 2, and No. 3 (collar elevations at 232 ft, 329 ft, and 229 ft MSL, respectively). Well No. 3 is used seasonally; water is produced from surface percolation and is screened at a depth of ten feet. Wells No. 1 (active but not in use – screened at a depth of 150 ft) and No.2 (active and in use – screened at a depth of 350 ft) produce water from the alluvium in Diablo Creek and from fractured sandstone in the Obispo Formation. In this area the water table varies, depending on the month of the year, but is generally controlled by flow in the alluvium near elevation 200 ft MSL.

Surface Water

7. The plant lies in the vicinity of Diablo Creek, which discharges into the Pacific Ocean. The Diablo Creek drainage basin encompasses approximately five square miles and is bounded by ridges reaching a maximum elevation of 1,819 ft above mean sea level (MSL) at Saddle Peak, located approximately two miles to the east of the plant site. The hydrologic characteristics of the plant site are influenced by the Pacific Ocean on the west and the watershed drained by Diablo Creek. There are no other creeks or rivers within the site area or drainage basin. The Pacific Ocean is the largest nearby surface water body.

Facility Cooling Water Intake System

8. The Plant has cooling water intake systems located in Intake Cove south of the Plant. The source of cooling water is the Pacific Ocean, as shown on Attachment 1.
9. Cooling water flow for once-through main steam condenser cooling of the two-unit power plant averages 2,540 million gallons a day (MGD), and ranges up to a maximum flow of 2,650 MGD.

Discharges

10. The power plant has eleven discharge points covered by this permit (Discharge No. 001 – 0011). The discharges are listed in Table 1 below, and described in detail in Attachment 2.
11. Discharge No. 001 (35°12'45" N. Latitude, 120°51'15" W. Longitude) is a combination of once-through cooling water that supplies the main steam condensers and the Service Cooling Water System (001E), once-through cooling water that supplies the Auxiliary Salt Water System (001B), and miscellaneous in-plant waste streams (001D through 001Q).

Table 1. Power Plant Discharges

Discharge No.	Discharge Description	Volume (gpd) Average Flows
001 Pacific Ocean (Diablo Cove)	Once Through Cooling	2.54×10^9
001B	Auxiliary Salt Water Cooling	3.48×10^7
001D	Liquid Radioactive Waste Treatment System (Batch 3-12 times/week)	8.00×10^3
001E	Service Cooling Water	1.24×10^7
001F	Turbine Building Sump (Intermittent)	5.00×10^4
001G	Makeup Water System Effluent (Brine)	9.65×10^4
001H	Condensate Demineralizer Regenerant (Intermittent)	3.33×10^4
001I	Seawater Evaporator Blowdown (Non Operational)	0
001J	Condensate Pumps Discharge Header Overboard (Intermittent)	1.89×10^3
001K	Condensate Dump Tank (Batch)	1.44×10^5
001L	Steam Generator Blowdown	1.47×10^5
001M	Wastewater Holding & Treatment System (Intermittent)	1.25×10^5
001N	Sanitary Wastewater Treatment System (Intermittent)	1.21×10^4
001P	Seawater Reverse Osmosis System Blowdown	8.37×10^5
001Q	Intake Structure Building Sumps (Intermittent)	7.20×10^4
002 Pacific Ocean	Screen Wash Pumps Overboard (Intermittent)	1.76×10^5
003 Pacific Ocean	Intake Screen Wash (Intermittent)	3.19×10^6
004 Pacific Ocean (Intake Cove)	Reverse Osmosis System Discharge	4.71×10^5
005 Pacific Ocean (Intake Cove)	Biolab Seawater Supply Pump Valve Drain (Batch)	2.00×10^3
006 Pacific Ocean Intake Cove	Seawater Reverse Osmosis System Blowdown Drain (Batch)	4.00×10^3
007 Pacific Ocean	Screenwash Overspray	1.46×10^3

(Intake Cove)		
008 Pacific Ocean	Screen Wash Overspray	1.46 x 10 ³
009 Pacific Ocean	Biolab/Reverse Osmosis Supply Lines Drain	1.65 x 10 ⁴
010 Pacific Ocean (Intake Cove)	Circulating Water Pumps Backflow (Intermittent)	3.00x10 ⁶
011 Pacific Ocean (Intake Cove)	Screen Wash Collection Sump Overflow (Intermittent)	7.22 x 10 ⁶

12. Discharges 002 through 011 are minor discharges and present minimal threat to water quality. Minimal effluent monitoring for these discharges is required where necessary as described in Monitoring and Reporting Program RB3-2003-009. Discharges 002 and 003 are intermittent, occurring when seawater is used to wash kelp and other marine debris off the intake screen. Discharge 002 flows back into the intake structure area (Attachment 1). Discharge 003 carries kelp and other marine debris back to the ocean at a point on the breakwater between Diablo Cove and Intake Cove. Discharge 004 is the discharge from PG&E's seawater reverse osmosis system. This discharge is a continuous flow, about 33 gallons per minute, of seawater (concentrated approximately 1.5 times) flowing to Intake Cove. This discharge is to riprap on the shoreline of Intake Cove. Discharge 005 intermittently drains a valve box on the seawater reverse osmosis supply line, and flows back to Intake Cove. Discharge 006 is intermittent, occurring only when maintenance is needed on the reverse osmosis system drain line, and flows from a valve at the low point in the drain line to Intake Cove. Discharges 007 and 008 are intermittent overspray (seawater) from the intake screen wash system, and both flow back into Intake Cove. Discharge 009 is intermittent, occurring when seawater in the seawater reverse osmosis supply lines flows back to Intake Cove when the lines are emptied for maintenance purposes. Discharge 010 occurs when the main cooling water pumps are shut down during outages, and seawater in the main cooling water conduits flows by gravity back into Intake Cove (with no elevated temperature). Discharge 011 occurs rarely when the sumps for the screen wash system become clogged during heavy debris loading, and seawater flows out of the sumps and back into Intake Cove.

STORM WATER DISCHARGES

13. Storm water discharges and other non-stormwater discharges via yard drains and other stormwater collection systems from the facility will be regulated under NPDES General Permit No. CAS000001, Water Discharge Requirements for Discharges of Storm Water Associated with Industrial Activities, Excluding Construction Activities, issued by the State Water Resources Control Board (General Industrial Storm Water Permit) and any renewed General Storm Water Permits issued by the State Water Resources Control Board. Discharger has applied for coverage under the general permit by filing a Notice of Intent with the State Water Resources Control Board and is complying with the requirements of the general permit.

BENEFICIAL USES

14. The beneficial uses of the Pacific Ocean near Diablo Canyon, as designated in the Ocean Plan

and Basin Plan are:

- a. Water contact recreation;
- b. Non-contact water recreation, including aesthetic enjoyment;
- c. Industrial water supply;
- d. Navigation;
- e. Marine habitat;
- f. Commercial and sport fishing;
- g. Rare and endangered species;
- h. Fish spawning and shellfish harvesting;
- i. Wildlife habitat;
- j. Spawning, reproduction and/or early development;
- k. Mariculture; and
- l. Fish migration.

15. Four species that are listed as “Threatened” or “Endangered” pursuant to the Federal Endangered Species Act are documented to exist in the Diablo Canyon area. These species are the California southern sea otter, green sea turtle, California brown pelican, and the peregrine falcon. Other listed species that could be in the vicinity include the loggerhead and leatherback sea turtles, Guadalupe fur seal, and white abalone.

REGIONAL BASIN PLAN

16. The Water Quality Control Plan, Central Coastal Basin (Basin Plan) was adopted by the Board on November 19, 1989 and approved by the State Board on August 16, 1990. The Regional Board has adopted several amendments to the Basin Plan since then. The Basin Plan incorporates statewide plans and policies by reference and contains a strategy for protecting beneficial uses of State waters. It designates beneficial uses of water bodies in the Central Coast Region and specifies numeric and narrative water quality objectives to protect designated and existing beneficial uses.

CALIFORNIA OCEAN PLAN

17. The Water Quality Control Plan, Ocean Waters of California - California Ocean Plan (Ocean Plan) was adopted by the Board in 1972 and has been amended several times since then. The 2001 Ocean Plan designates beneficial uses and contains water quality objectives and other requirements governing discharges to the Pacific Ocean including Estero Bay. Water quality objectives for heat are not included in the Ocean Plan but are established in the Thermal Plan, discussed below.
18. The Ocean Plan is applicable to Discharge No. 001 to Diablo Cove and other point-source discharges covered by this Permit, all of which are to the Pacific Ocean. The Ocean Plan contains a procedure for establishing effluent limitations based on ocean water quality objectives. Effluent limitations are applied outside a zone of initial dilution and are calculated based on, among other things, ocean water concentration and minimum probable initial dilution. An initial dilution ratio of 4.1:1 (Seawater: Effluent) is used in calculating effluent limits for Discharge No. 001, as determined by PG&E in their *Estimation of the Dilution Factor for the Diablo Canyon Power Plant* report, dated February 1988.

THE CLEAN WATER ENFORCEMENT AND POLLUTION PREVENTION ACT OF 1999

19. The Clean Water Enforcement and Pollution Prevention Act of 1999 (amendments to Water Code section 13385) became effective January 1, 2000. The Act requires the Board to impose mandatory penalties for certain violations. Failure to comply with NPDES Permit effluent limitations and certain other requirements and conditions may result in significant enforcement action by the Board.

FEDERAL CLEAN WATER ACT

20. The Regional Board has issued this Order pursuant to California Water Code Division 2, Chapter 5.5, and the Order serves as an NPDES permit under California's state certified program. This Order is issued to comply with applicable provisions of the federal Clean Water Act (22 U.S.C. section 1250 et Seq.) and applicable federal regulations.

ANTI-BACKSLIDING

21. There is no anti-backsliding issue because the effluent limitations in the permit are not less stringent than the previous permits. Additional constituents have been added pursuant to the 2001 Ocean Plan.

ANTI-DEGRADATION

22. The discharge authorized by this Order adds no additional volume or concentration of waste and therefore will not cause degradation within the meaning of State Water Resource Control Board Resolution 68-16.

CALIFORNIA THERMAL PLAN

23. 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. The Thermal Plan contains objectives governing cooling water discharges and provides numeric and narrative water quality objectives for "existing" and "new" discharges of heat. The Thermal Plan specifically lists the DCCP discharge as an existing discharge.

THERMAL DISCHARGE

24. The temperature of cooling water is raised approximately 20 degrees F during commercial operation (the effluent limit is 22 degrees F, see section B. "Effluent Limitations"). The cooling water temperature increase may be greater than 20 degrees F during condenser heat treatments 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, for loss of circulating water pump.
25. Pursuant to the Thermal Plan, existing thermal discharges shall "comply with limitations necessary to assure protection of beneficial uses and Areas of Special Biological Significance." There are no designated Areas of Special Biological Significance near the Diablo Canyon Power Plant. The nearest designated Area of Special Biological Significance is the ocean area surrounding the mouth of Salmon Creek, approximately 60 miles north of Diablo Cove. Therefore, the operative portion of the objective is compliance with limitations necessary to protect beneficial uses. The beneficial uses of the Pacific Ocean, including Diablo Cove are listed in Finding No. 14, above.
26. The State Water Resources Control Board's Order No. WQ No. 83-1 (Order WQ 83-1), a

precedent setting decision, determined that the Thermal Plan narrative objective requiring protection of beneficial uses meant “reasonable” protection and so accommodated some degradation of beneficial uses by the thermal discharge (hereafter, the term “beneficial uses” refers to the marine habitat use as effects on other beneficial uses are not in question). Order WQ 83-1 held that the Diablo Canyon Power Plant thermal discharge, subject to an effluent limitation of 20 degrees Fahrenheit over the intake water temperature, provided reasonable protection of beneficial uses based on predicted adverse impacts (“the Predicted Impacts”). The Predicted Impacts versus actual thermal impacts are discussed in previous staff reports to the Regional Board, the staff report for this Order, and staff’s testimony for this Order.

27. PG&E initiated comprehensive biological monitoring of Diablo Cove and the vicinity in 1976. This program is known as the Thermal Effects Monitoring Program (TEMP) or the Ecological Monitoring Program (EMP) in previous Orders. The Regional Board periodically revised the monitoring program, but the program has otherwise continued for twenty-six years.
28. TEMP included intertidal, subtidal, and temperature studies at locations in Diablo Cove, Fields Cove and two control stations. Intertidal studies included horizontal and vertical band transects to measure algae and invertebrates and a black abalone census. The subtidal studies included kelp surveys and the measurement of red abalone and fish at various transects. Temperature was measured at various stations within Diablo Cove and the control areas. PG&E submitted annual reports evaluating the TEMP data to the Board from 1985 to the present.
29. As part of amendments to the Monitoring and Reporting Program approved by the Regional Board in February 1995, the Board began a comprehensive review of the monitoring program data in 1995 via a technical workgroup. The technical workgroup included Regional Board staff and the Regional Board’s independent scientists, Department of Fish and Game staff, and PG&E. The Regional Board’s scientists included both marine biologists and statisticians.
30. The technical workgroup directed the development of PG&E’s *Thermal Effects Monitoring Program Analysis Report, Chapter 1: Changes in the Marine Environment Resulting from the Diablo Canyon Power Plant Discharge*, December 1997 (hereafter Chapter 1). The data collected was primarily analyzed using the Before-After-Control-Impact and Fisher’s Exact Test statistical methods.
31. PG&E also produced a report titled *Thermal Effects Analysis Report, Chapter 2: Analysis of Thermal Effects*, November 1998 (hereafter Chapter 2). Chapter 2 was not overseen by the technical workgroup; PG&E produced this report on its own, and the report presents PG&E’s interpretation of the ecological and regulatory significance of the statistically significant thermal discharge effects identified in Chapter 1.
32. Based on Chapter 1, the Regional Board’s independent scientists and Regional Board staff concluded that the thermal discharge impacts were greater than the Predicted Impacts, which the State Water Board had considered reasonable protection of beneficial uses, for the following reasons:
 - a. The actual impacts occur over a greater distance of coastline than was predicted. The actual distance is 1.1 miles (all of the intertidal zone in Diablo Cove), with minor changes also observed along an additional 0.7 miles into Field’s Cove, for a total distance of 1.8 miles. Field’s Cove was supposed to be a control area, with no biological effects and no thermal plume contact, but the thermal plume was found to extend into this area periodically.

- b. The actual impacts occur over a greater area of the subtidal zone than was predicted. The predicted area of impact was up to 40 acres. The actual impacts to subtidal kelp occur to an area of about 56 acres on a frequent basis and up to 105 acres during major El Nino event years (this has occurred twice since the Power Plant began operation). The effects during El Nino years include early senescence of bull kelp leaves in the extended area outside of Diablo Cove.
- c. The magnitude of population and community changes is greater than predicted. The Predicted Impacts in the intertidal zone were limited to one-third of Diablo Cove during a few months out of the year, and few changes were expected. The actual impacts include major reductions in species populations and assemblages in Diablo Cove, including almost complete loss of foliose algae and intertidal fish. These actual impacts occur continuously (not seasonally as predicted).
- d. The thermal effects include unexpected impacts, such as a major increase in "bare rock" in the intertidal zone in Diablo Cove. This represents a major community shift from foliose algae to predominantly limpets and other grazers with low diversity, and is indicative of a stressed biological community). The thermal discharge also causes detectable effects in the intertidal zone in Field's Cove (an area that was intended to be a biological control area), and exacerbation of withering syndrome disease on black abalone and black abalone population declines in the area.

Regional Board staff concluded that adverse water quality impacts exceeding the Predicted Impacts constituted a violation of various receiving water limitations in PG&E's 1990 NPDES permit. In March 2000 the Board conducted a hearing to determine whether PG&E had violated its 1990 NPDES permit and whether to issue a Cease and Desist Order.

33. The basis for allegations of violation of the permit were various receiving water limitations. PG&E could get a variance from State Water Quality Standards under Clean Water Act section 316(a). (33 U.S.C. sec. 1326(a).) Section 316(a) provides that if state imposed effluent limitations are more stringent than necessary to assure protection and propagation of a balanced indigenous community of shellfish, fish and wildlife in the receiving water, the Discharger will be subject to less stringent limitations. Discharger has never applied for a variance under 316(a) and so the Regional Board has not made a determination as to whether the discharge would comply with the less stringent standards authorized under section 316(a).
34. Discharger vigorously opposed staff's conclusions and presented numerous expert witnesses and testimony in support of its position. Discharger asserted that, although the thermal effects were different to some degree than those predicted:
 - a. In Order WQ 83-1 the SWRCB acknowledged that the water quality of Diablo Cove would be "significantly altered," that the impacts could be more significant than predicted, and that this "alteration of water quality is not unreasonable."
 - b. The marine community in Diablo Cove shifted generally as predicted in the 1982 Thermal Discharge Assessment Report, with an increase in warm water tolerant species that are indigenous to the area. Changes included a shift in the intertidal community of Diablo Cove from a foliose algae dominated community to a community dominated by indigenous invertebrates/grazers. In the subtidal area of Diablo Cove, bull kelp has been replaced by indigenous giant kelp, which is a significant habitat former found throughout the Central Coast.

- c. The area of alleged thermal impacts was more limited than staff contended, and the minor impacts that occurred in Fields Cove were not ecologically significant. Additionally, the thermal discharge did not cause withering syndrome disease in black abalone or worsen the rate of mortality that would have occurred in Diablo Cove if the thermal discharge did not exist.
 - d. Notwithstanding the shift in the marine community that occurred in Diablo Cove, a balanced, indigenous community of species has continuously existed there and beyond. Thus, under the correct legal standard, the thermal discharge provided for reasonable protection of beneficial uses as required by the Water Code sec. 13000, the Thermal Plan and Order WQ 83-1. Variation from Predicted Impacts is not the correct legal standard for determining whether or not beneficial uses are protected.
 - e. The effluent limitations for the thermal discharge adequately protected beneficial uses as required by the Thermal Plan.
 - f. Both Discharger and Board staff agreed that Discharger had never violated the thermal effluent limitations.
35. After hearing testimony and taking evidence in the hearing, the Regional Board continued the hearing for the purpose of closing statements and deliberation. Regional Board staff and Discharger then continued negotiating a tentative resolution and the Cease and Desist Order hearing was never completed.
36. At the Regional Board's request, Discharger prepared a comprehensive report on the thermal discharge effects that have occurred since 1995. This report is titled: *Receiving Water Monitoring Program: 1995-2002 Analysis Report*, November 2002. This report analyzes the data collected from 1995-2002 using the same analytical approach as Chapter 1. Regional Board staff and the Regional Board's independent consultant reviewed the report. The results show that since 1995 there have been minor additional biological changes in Diablo Cove and no additional biological changes in Field's Cove. The minor additional changes in Diablo Cove are within the areas previously established as being impacted.
37. Based on State Board Order WQ 83-1, protection of beneficial uses does not require elimination of adverse impacts of the Thermal discharge. The Thermal Plan implementation program requires that existing dischargers determine design and operating changes which would be necessary to achieve compliance with the Thermal Plan. Thus staff evaluated alternatives to improve protection of beneficial uses. For this evaluation, Regional Board staff reviewed PG&E's *Assessment of Alternatives to the Existing Cooling Water System*, 1982, by Tera Corporation. The Tera report provides an overview of site conditions, alternative cooling systems, and estimated costs. Staff also reviewed PG&E's *Diablo Canyon Power Plant 316(b) Demonstration Report*, March 2000. More recently, the Regional Board's independent consultant, Tetra Tech, also provided a report on the feasibility of alternatives, titled: *Evaluation of Cooling System Alternatives, Diablo Canyon Power Plant*, November 2002. Tetra Tech also provided a supplemental memo, dated December 4, 2002, regarding the estimated cost of an offshore discharge. The dispersion of the existing thermal plume is also described in PG&E's *Chapter 1: Thermal Discharge Assessment Report*, December 1997, and several other reports in the record. A complete list of references is included in Regional Board staff's testimony for this Order. The conceptually feasible design and operating changes that might be made are construction of an offshore discharge outfall, closed cooling systems, a reduction in cooling water flow, or a reduction in effluent temperature.

Offshore Discharge Outfall: There are several issues of concern regarding an offshore discharge structure at Diablo Canyon. The extensive construction effort required for a discharge of this size would result in additional nearshore impacts to the marine environment, including the nearshore area in Diablo Cove, and the subtidal area out to the extent of the outfall, which could be several thousand feet offshore depending on the length of the structure. These construction related impacts would include destruction of intertidal zone, shallow subtidal zone, and kelp forest habitat. In addition, an outfall located one thousand to two thousand feet offshore would shift the thermal plume discharge into the local kelp forest and would likely increase thermal impacts on this habitat forming species and its associated taxa.

Additional coastline may also be impacted because the thermal plume would no longer be bounded by Diablo Cove. To avoid impacts to kelp and to limit thermal plume contact with the shoreline, the discharge outfall would have to be located several thousand feet offshore, which may not be possible due to the relatively steep bathymetry near Diablo Canyon and the rocky substrata (bathymetry is shown on Attachment 3). Finally, the cost of an offshore discharge would be at least \$144 to \$194 million (Tetra Tech, 2002). This estimate understates the actual cost because it does not include construction issues associated with rocky substrata. Considering the additional marine impacts, feasibility problems, and costs associated with this option, an offshore discharge structure is not a reasonable alternative at Diablo Canyon for protection of beneficial uses.

Closed Cooling Systems: Dry cooling systems and fresh water cooling towers are not feasible at Diablo Canyon. The only conceptually feasible closed cooling system for Diablo Canyon is a mechanical draft tower system using saltwater. Closed cooling systems are discussed in detail in Attachment 4 of this Order and in Regional Board staff's testimony for this Order. Mechanical draft towers using saltwater could theoretically reduce cooling water intake volume by approximately 90%. However, the cost of installing saltwater cooling towers is \$1.3 billion or more (Tetra Tech, 2002). Also, the site-specific constraints at Diablo Canyon (zoning, topography, available space, relocation of existing facilities) makes this option speculative. There are other significant issues associated with cooling towers, such as salt drift, visual impacts, and land use impacts. Considering the high cost and speculative feasibility of mechanical draft cooling towers, this option is not a reasonable design change for protection of beneficial uses associated with the thermal discharge.

Reduced Flow Volume: Reducing cooling water flow at Diablo Canyon would require major design changes, such as permanently shutting down one of the two power generation units (a fifty percent flow reduction). Reducing flow volume by fifty percent may not reduce thermal effects in Diablo Cove because the Cove acts as a physical boundary for the plume. Three factors control biological impacts caused by the thermal plume: 1) elevated temperature, 2) frequency of exposure to elevated temperatures, and 3) time. A fifty percent flow reduction may result in less frequent plume contact in some areas, however, less frequent plume contact in some areas only means that biological changes will take longer to occur. Since the discharge will exist for several years, the impacts would continue to occur. Also, reducing flow volume by fifty percent would require decreasing power generation by fifty percent. Decreasing power generation by fifty percent would cost billions of dollars in lost revenue over the life of the facility. This option is not a reasonable design change for protection of beneficial uses.

Reduced Temperature: Reducing the temperature of the discharge could be achieved by reducing power generation while maintaining cooling water flows. However, even a major reduction in effluent temperature, such as a fifty percent reduction, may provide little or no improvement in thermal effects in Diablo Cove because even relatively small temperature changes over a long period of time will cause biological changes (PG&E, Chapter 1, December 1997). At fifty-percent

reduction, the effluent temperature would be a delta of 11⁰ F. This degree of elevated temperature is adequate to cause major biological changes, especially over a long period of time. A fifty-percent reduction in power would result in a significant reduction in the available power supply to the state of California (about 1100 MW reduction). Also, a fifty-percent reduction in power generation would cost billions of dollars in lost revenue over the life of the facility. This option is not a reasonable operational change for protection of beneficial uses.

38. For the reasons noted above, design or operational changes to reduce thermal discharge impacts would either be ineffective or infeasible. Second, the Thermal Plan requires analysis of design or operational alternatives but does not mandate any technology changes. It only requires reasonable protection of beneficial uses. Third, the Regional Board cannot directly mandate use of a particular technology to achieve compliance. (Water Code sec. 13360.) Fourth, PG&E could apply for a variance under Clean Water Act section 316(a) that could relieve them of a state imposed effluent limitation to eliminate or drastically reduce the volume or temperature of their thermal discharge. Further, the issue with respect to thermal effects is the incremental difference between the Predicted Impacts and the actual impacts that have occurred, not elimination of all impacts (as noted above, Order WQ 83-1 established that some degradation of marine habitat is allowed). Therefore, Regional Board staff sought another means for protecting beneficial uses. The result is an alternative (a negotiated settlement) that requires permanent preservation of coastal habitat, including the same type of intertidal and shallow subtidal habitat affected by the thermal discharge. The settlement is discussed later in this Order, following the findings on the Regional Board's Clean Water Act Section 316(b) analysis.

COOLING WATER INTAKE EFFECTS

39. The power plant's cooling water intake system must comply with Clean Water Act section 316(b) (33 U.S.C. § 1326), which provides:

“Any standard established pursuant to section 1311 [CWA §301] ... or section 1316 [CWA §306] ... and applicable to a point source shall require that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact.”

In the 1970's, USEPA adopted regulations interpreting section 316(b) and issued a draft guidance document [Draft Guidance for Evaluating Adverse Impact of Cooling Water Intake Structures on Aquatic Environment: Section 316(b) (May 1, 1977) “1977 Draft Guidance”]. A federal court invalidated the regulations on procedural grounds in 1977. Since then, USEPA and states issuing NPDES permits and applying section 316(b) have implemented the law on a case by case basis following certain principles established by USEPA administrative practice and a few court decisions.

On December 18, 2001, USEPA issued regulations governing cooling water intake systems at new facilities. Power plants are considered “new facilities” only if they fit all the elements of the definition in the regulations (40 C.F.R. § 125.83.). The Diablo Canyon Power Plant is not a new source within the definition so the USEPA regulations for new facilities do not apply to the Diablo Canyon Power Plant.

In April 2002, USEPA issued section 316(b) proposed regulations for cooling water intakes at existing facilities. In the preamble to the proposed regulation, USEPA directed permit issuers to “use existing guidance and information to form their best professional judgment in issuing permits to existing facilities.” USEPA also noted that the 1977 Draft Guidance “continues to be applicable for

existing facilities” pending adoption of the final regulations. USEPA also concluded: “State decision-makers retain the discretion to adopt approaches on a case-by-case basis that differ from applicable guidance where appropriate. Any decisions on a particular facility should be based on the requirements of section 316(b).” (67 Fed. Reg. 17125.)

Although the USEPA regulations for cooling water intake systems at new facilities do not apply to the Diablo Canyon Power Plant, and the USEPA proposed regulations for existing facilities are not final, these respective regulations and the preambles published by USEPA in the Federal Register offer valuable insights on how USEPA has interpreted section 316(b). These insights are particularly useful given that USEPA may issue applicable regulations in February 2004, less than a year after this Order is adopted.

Application of section 316(b) includes a cost analysis. In June, 1977, the USEPA Administrator defined the economic test that should be used in applying section 316(b), known as the “wholly disproportionate” cost test. The administrator stated:

“[a] cost/benefit analysis is not required under Section 316(b)... Section 316(b) determines what the benefits to be achieved are and directs the Agency to require use of “best technology available” to achieve them....However, ... some consideration ought to be given to costs in determining the degree of minimization to be required. I agree that this is so—otherwise the effect would be to require cooling towers at every plant that could afford to install them, regardless of whether or not any significant degree of entrainment or entrapment was anticipated. I do not believe that it is reasonable to interpret Section 316(b) as requiring use of technology whose cost is wholly disproportionate to the environmental benefit to be gained.” (In the Matter of the Public Service Company of New Hampshire, et al. (Seabrook Station, Units 1 and 2) Decision of the Administrator, Case No. 76-7, June 10, 1977.)

The Administrator’s decision, including the wholly disproportionate test was upheld by the First Circuit Court of Appeals in *Seacost Anti-Pollution League v. Costle*, 1979 597 Fed. 2d 306. This test has continued to be applied by subsequent USEPA Administrators, Regional Administrators and NPDES permit issuing states.

Additional Findings in this Order, in support of this Finding 39, regarding Clean Water Act Section 316(b) are contained in Attachment 4 of this Order, and are incorporated herein by reference. The Regional Board’s 316(b) analysis evaluates intake structure technologies (screens, filters) and closed cooling systems (cooling towers, dry cooling) and concludes that the potential technologies are either infeasible, experimental, or the costs are wholly disproportionate to the benefit to be gained for this facility. This conclusion is supported by independent evaluations (Tetra Tech, 2003; EPRI, 1999; SAIC, 1994). The existing cooling water intake structure is best technology available under Clean Water Act section 316(b) and no changes to the cooling water intake structure location, construction, design or capacity are required by this Order.

RESOLUTION OF THERMAL EFFECTS AND ENTRAINMENT IMPACTS

40. To resolve the issue of the incremental thermal effects above the Predicted Impacts and the entrainment losses, Regional Board staff and Discharger negotiated a settlement based primarily on marine habitat conservation. The Regional Board and Discharger announced a tentative agreement in June 2000, following submittal of the entrainment results and the evidentiary hearing regarding thermal effects. The general terms of this settlement were presented to the public with at least 30

days for public comment in September 2000. At their meeting in October 2000, the Board considered written and oral public comments and directed legal counsel to negotiate a consent judgment and conservation easement incorporating the basic settlement terms.

41. At their March 2003 meeting, the Regional Board considered public comments and approved the draft consent judgment and form of grant of conservation easement negotiated by legal counsel. The consent judgment and form of grant of conservation easement are incorporated into this Order by reference and are attached to this Order as Attachment 5 (note the consent judgment is an exhibit attached to the conservation easement). The following is a brief outline of the terms of the settlement. In the event of any conflict, the terms of the consent judgment or form of grant of conservation easement will prevail over the terms of this finding.
 - a. Discharger must grant a conservation easement to preserve forever specified land between Fields Cove and Coon Creek comprising 2,013 acres of watershed draining to approximately 5.7 miles of coastline. The primary goal is protection of marine resources from Field Cove to Coon Creek through watershed and habitat protection. Existing uses and limited cattle grazing subject to Best Management Practices are permitted on the easement land. Discharger will also protect an additional 547 acres draining to Coon Creek through Best Management Practices for as long as Discharger operates the plant or holds the property, whichever is longer. The Land Conservancy of San Luis Obispo (Land Conservancy of SLO) will accept ownership of the conservation easement.
 - b. Discharger will fund a \$200,000 endowment to fund the Land Conservancy of SLO for easement stewardship costs. Discharger, as fee holder, will remain responsible for land maintenance and restorations costs (e.g., fencing off sensitive areas).
 - c. Discharger will provide \$4.05 million for projects that will directly improve permanent preservation, restoration, enhancement, monitoring and research of marine life, habitat and water quality in coastal waters of San Luis Obispo County, California or on projects in coastal waters outside San Luis Obispo County to preserve, protect, restore, monitor or research marine life relating to the effects of the Plant's cooling water system. The Board will select projects based on criteria in the consent judgment.
 - d. Discharger will make its biolab facilities available for ten years for marine research to educational organizations and for fisheries related activities, providing \$100,000 in initial operating money, as well as up to \$5,000 annually, for water and electricity during this period. If access to the biolab facilities is limited or prevented due to security requirements, the Regional Board may approve transferring this value to another county facility.
 - e. Discharger will contribute \$350,000 to the California Department of Fish and Game for its abalone restoration project (not limited to black abalone).
 - f. The settlement will resolve issues regarding entrainment/impingement and the thermal discharge for DCPD over its operating life subject to compliance with thermal effluent limitations in the current permit or as updated. Effluent monitoring will continue pursuant to the Thermal Plan and the Ocean Plan. Effluent limitation violations will be enforceable as before the settlement.
 - g. Discharger's receiving water monitoring will be changed to consist of participating in the Central Coast Ambient Monitoring Program (\$150,000 per year for the next ten years). If the plant is still operating after ten years, Discharger will continue to participate in the program in an amount

proportional to other dischargers.

- h. If a government agency imposes a requirement that would require the Discharger to comply with a more stringent standard with respect to thermal effluent limitations than exists in the Plant's current Permit, or that would require a cooling water system technology that is more costly or burdensome than the cooling water intake and discharge system which existed at the Plant as of August 2000, the Discharger, in its sole discretion, may elect to rescind the Consent Judgment, including without limitation the Conservation Easement in the manner set forth in the Consent Judgment. If the Discharger rescinds, the Board reserves the right to take enforcement action against the Discharger for any permit violations that existed on the effective date of the consent judgment and after the date of rescission. Also, any funds already paid by Discharger would not be returned.
42. The terms of the consent judgment and conservation easement will provide for reasonable protection of beneficial uses in accordance with the Thermal Plan, and will help protect the overall marine environment. The settlement also encompasses the findings in the 316(b) analysis in Attachment 4 that Discharger is not required to make any changes to the location, design, construction or capacity of the cooling water intake system and, the settlement may contribute to protection of marine habitat affected by the cooling water intake system. Reasons for this conclusion include:
- a. Order WQ 83-1 established that the predicted adverse impacts on marine habitat constituted reasonable protection of beneficial uses. Therefore only the increment of additional adverse impacts on marine habitat can be considered. Staff has presented substantial evidence that there have been additional impacts beyond what was predicted. Discharger has also presented evidence that the actual impacts as demonstrated were not greater than predicted. The numeric effluent limitations provide some protection of beneficial uses as acknowledged in WQ Order 83-1. The conservation easement and other requirements of the Consent Judgment assure additional protection of beneficial uses of the Pacific Ocean in the vicinity of the discharge and thus assure reasonable protection of beneficial uses. The Thermal Plan does not require complete elimination of adverse thermal effects, only reasonable protection of beneficial uses.
 - b. Regarding thermal effects, there are no reasonable design and/or operational changes that could be implemented to address the incremental difference between the Predicted Impacts and the actual thermal impacts. Also, the Board lacks authority to require specific technological changes to reduce thermal discharge effects. Finally, PG&E could seek a variance under Clean Water Act 316(a) if the Board required them to eliminate or drastically curtail the volume of their thermal discharge in order to comply with the Thermal Plan. Regarding entrainment, the current cooling intake system is the best technology available. In the absence of changes to the cooling water system itself, the terms of the settlement provide protection of beneficial uses and may reduce some of the adverse environmental impacts of entrainment.
 - c. Adverse impacts caused by the thermal discharge are limited mainly to Diablo Cove, with additional minor impacts detected in Fields Cove, over a total shoreline distance of 1.8 miles. The thermal effects are temporary, as the impacts are predicted to return to normal several years after the discharge ceases. However, the conservation easement protects 5.7 miles of coastline habitat in perpetuity. The conservation easement assures that the entire 2013-acre watershed draining to the 5.7 miles of coastline will be free from development or other uses

- that may harm the intertidal and shallow subtidal zones. This means that adverse impacts caused by non-point source pollution due to uses such as intense cattle grazing, farming, recreation, or residential, commercial or industrial development will not occur, and the relatively pristine condition of this 5.7 miles of coastline will be permanently preserved.
- d. The importance of the conservation easement for protection of water quality and beneficial uses is illustrated by empirical data from programs such as the Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO) program. The PISCO program illustrates that intertidal degradation that can occur in areas that are developed or open to public access versus the more pristine condition of areas that are protected. Degradation can include reduction of algal cover, increases in bare rock, and population or community impacts. The conservation easement will prevent these impacts from occurring over an area much greater than the area affected by the discharge. The funding of an endowment for Land Conservancy of SLO to oversee the conservation easement strengthens the effectiveness of the conservation easement to achieve this preservation.
 - e. While the impacts caused by the Power Plant will occur for a limited time, the benefit of the conservation easement will last for an unlimited time.
 - f. In addition to the easement, the consent judgment requires that the projects to be funded by the \$4.05 million fund must “directly improve permanent preservation, restoration, enhancement, monitoring and research of marine life, habitat and water quality in coastal waters of San Luis Obispo County, California or on projects in coastal waters outside San Luis Obispo County to preserve, protect, restore, monitor or research marine life relating to the effects of the Plant’s cooling water system.” These projects will provide additional protection for beneficial uses of coastal waters relating to the effects of the cooling water system and could be used to reduce the adverse environmental impacts of entrainment.
 - g. In addition, the abalone restoration project will directly bolster a taxa that has been adversely affected by the thermal discharge, providing additional protection for beneficial uses of coastal waters in the area.
 - h. Finally, educational and fisheries use of the biolab will further support protection of beneficial uses through the building of knowledge about marine habitat and biological communities in the area and implementing projects to support marine habitat and communities, including fisheries.
43. For the reasons stated above, including the administrative record assembled with respect to the Discharger’s alleged non-compliance with the 1990 NPDES Permit’s receiving water limitations and protection of beneficial use standards applied to the thermal discharge and the Discharger’s compliance with the terms of the Consent Judgment, the cumulative effects of the discharge of up to 2.76 billion gallons of cooling water per day in compliance with the Permit’s 22⁰ F thermal discharge effluent limitation fully complies with the thermal discharge requirements of this Order, and the thermal discharge complies with all relevant state and federal laws, regulations, policies, plans and procedures, including the protection of beneficial use standards, and all discharge prohibitions, effluent limitations and receiving water limitations, including Receiving Water Limitations nos. 9, 11, and 14 contained in the 1990 NPDES Permit and general permit condition A.8 contained in the Board’s Standard Provision and Reporting Requirements.
44. For the reasons stated above, including the Regional Board’s 316(b) analysis in Attachment 4,

and the administrative record assembled during analysis of the Plant's existing cooling water intake structure, and the Discharger's compliance with the Consent Judgment, the Plant's existing cooling water intake structure constitutes the "best technology available" for the purpose of Section 316(b) of the Clean Water Act.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

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

DISCHARGING IS A PRIVILEGE

46. 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.

PERMIT APPLICATION

47. The Board last issued Permit No. CA0003751 on May 11, 1990 (Order No. 90-09). The Discharger submitted an application for authorization to continue to discharge wastes under the NPDES permit on November 7, 1994, and also submitted an Amended Application dated January 24, 2001. Order no. 90-09 was automatically administratively extended on May 10, 1995.
48. Regional Board staff prepared a draft permit and fact sheet and notified the public on April 29, 2003 that a hearing on the draft permit would be convened on July 10, 2003. Pursuant to regulations of the State Water Resources Control Board (Title 23 C.C.R. sections 648 et seq.), the hearing notice designated Parties that would be authorized to present evidence and cross-examine witnesses at the hearings. All others were authorized to comment on the draft permit but not to present evidence or cross-examine witnesses. The notice provided that all written comments were due June 9, 2003. It also directed that direct evidence and legal arguments of Parties were due June 9, 2003, and rebuttal evidence and legal arguments were due June 23, 2003. Members of the public made oral comments at the July 10, 2003 hearing and Parties summarized evidence, made legal arguments, cross-examined witnesses and made closing statements.
49. After considering all the evidence, legal arguments, and public comment presented according to the hearing notice, documents in the administrative record and applicable laws and regulations, the Board adopts this Order.

IT IS HEREBY ORDERED, pursuant to authority in Section 13377 and 13383 of the California Water Code, that Pacific Gas and Electric Company (Discharger), its agents, successors, and assigns, may discharge waste from its 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 paragraph C.4. of this Order.

Requirements specified in this Order are based on staff's professional judgment and the following documents:

- BP = Basin Plan
- OP = Ocean Plan
- TP = Thermal Plan
- S = Standard Provisions & Reporting Requirements
- R = 40CFR 423.12 (applies to in-plant waste streams)

Throughout the Order and Monitoring and Reporting Program, subscripts are included to indicate the source of specified requirements. Requirements not referenced are based on professional judgment or are carried over from the previous Order.

A. DISCHARGE PROHIBITIONS

1. Discharge at any locations other than that described in this Order is prohibited.
2. Discharge of polychlorinated biphenyl compounds is prohibited.^R
3. Except as described in Attachment 3, discharge of sludges, centrates, screenings, backwashes, or filtrates to surface waters is prohibited.
4. Discharge of untreated or partially treated sanitary wastes and discharge of septic tank effluent to surface waters is prohibited.

B. EFFLUENT LIMITATIONS

Effluent Limitations for all outfalls unless otherwise specified:

1. The total discharge of Outfall 001 shall not exceed 2,760 MGD (total cooling water flow plus in-plant waste streams).
2. In addition to the effluent limits described below, mass emission limits also apply. The mass emission limit is simply the effluent limit multiplied by the flow volume, as described in the Ocean Plan.
3. The daily average temperature of discharge 001 shall not exceed the natural daily average temperature of the intake water by more than 22 degrees F (12.2 degrees C), except during periods of heat treatment.^{TP}
4. During heat treatment to remove mussels and other biofouling organisms from cooling water system conduits, the daily average temperature of the discharge shall not exceed the natural temperature of the intake water by more than 25 degrees F (13.9 degrees C). The maximum temperature increase measured at the point of discharge of the unit being treated shall be less than 50 degrees F over that

of the intake. The duration of the 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.^{TP}

5. Ocean discharges shall not contain constituents in excess of the following limits:^{OP}

PROTECTION OF MARINE AQUATIC LIFE

Constituent	Units	6-Month Median	Daily Maximum	Instantaneous Maximum
Arsenic	ug/l	29	151	396
Cadmium	ug/l	5	20	51
Chromium(Hex) ^a	ug/l	10	41	102
Copper	ug/l	7	53	145
Lead	ug/l	10	41	102
Mercury	ug/l	0.2	0.8	2
Nickel	ug/l	26	102	255
Selenium	ug/l	77	306	765
Silver	ug/l	4	14	35
Zinc	ug/l	69	375	987
Cyanide ^b	ug/l	5	20	51
Total Chlorine Residual ^c	ug/l	N/A	N/A	200
Ammonia (as N)	ug/l	3060	12240	30600
Chronic Toxicity	TUc	N/A	5.1	N/A
Phenolic Compounds (non-chlorinated)	ug/l	153	612	1530
Chlorinated Phenolics	ug/l	5	20	51
Endosulfan	ug/l	0.05	0.09	0.14
Endrin	ug/l	0.01	0.02	0.03
HCH ^d	ug/l	0.02	0.04	0.06

Radioactivity: Discharger performs radiological monitoring pursuant to 10CFR20 and it's Nuclear Regulatory Commission operating license. The results of this monitoring are provided in the "Annual Radiological Effluent Report" which is provided to the Regional Board and the Nuclear Energy Commission. Radiological monitoring is not required in this Order pursuant to SWRCB Order WQ 83-1.

Effluent Limit Notes:

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

- 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 the approved method in 40 CFR Part 136, as revised May 14, 1999.
- c. The total chlorine residual limitation is from 40 CFR 423.12. For periods when total chlorine residual (TCR) or total residual oxidant (TRO) monitoring systems are temporarily inoperative, an alternate means of measurement or calculation, such as an engineering evaluation, may be used. Total residual chlorine may not be discharged from any single generating unit for more than two hours per day.
- d. HCH shall mean the sum of the alpha, beta, gamma (lindane), and delta isomers of hexachlorocyclohexane.

PROTECTION OF HUMAN HEALTH - NON-CARCINOGENS

Constituent	Units	Effluent Limit 30 Day Average
Acrolein	mg/l	1
Antimony	mg/l	6
Bis(2-chloroethoxy) methane	mg/l	0.02
Bis(2-chloroisopropyl) ether	mg/l	6
Chlorobenzene	mg/l	3
Chromium (III)	g/l	1
di-n-butyl phthalate	mg/l	18
Dichlorobenzenes	mg/l	26
Diethyl phthalate	mg/l	168
dimethyl phthalate	g/l	4
4,6-dinitro-2-methylphenol	mg/l	1
2,4-dinitrophenol	mg/l	0.02
Ethylbenzene	mg/l	21
Fluoranthene	mg/l	0.08
Hexachlorocyclopentadiene	mg/l	0.3
Nitrobenzene	mg/l	0.03
Thallium	mg/l	0.01
Toluene	g/l	0.4
Tributyltin	ug/l	0.007
1,1,1-trichloroethane	g/l	2.8

PROTECTION OF HUMAN HEALTH -- CARCINOGENS

Constituent	Units	Effluent Limit Thirty Day Average
Acrylonitrile	ug/l	0.5
Aldrin	ng/l	0.1
Benzene	ug/l	30
Benzidine	ng/l	0.4
Beryllium	ug/l	0.2
Bis(2-chloroethyl) ether	ug/l	0.2
Bis(2-ethylhexyl) phthalate	ug/l	18
Carbon tetrachloride	ug/l	5
Chlordane	ng/l	0.1
Chlorodibromomethane	ug/l	44
Chloroform	ug/l	663
DDT	ng/l	0.9
1,4-dichlorobenzene	ug/l	92
3,3'-dichlorobenzidine	ug/l	0.04
1,2-dichloroethane	mg/l	0.1
1,1-dichloroethylene	mg/l	0.005
Dichlorobromomethane	mg/l	0.03
Dichloromethane	mg/l	2
1,3-dichloropropene	mg/l	0.04
Dieldrin	ng/l	0.2
2,4-dinitrotoluene	ug/l	13
1,2-diphenylhydrazine	ug/l	0.8
Halomethanes	mg/l	0.7
Heptachlor	ng/l	0.3
Heptachlor epoxide	ng/l	0.1
Hexachlorobenzene	ng/l	1
Hexachlorobutadiene	ug/l	71
Hexachloroethane	ug/l	13
Isophorone	g/l	0.004
N-nitrosodimethylamine	ug/l	37
N-nitrosodi-N-propylamine	ug/l	2
N-nitrosodiphenylamine	ug/l	13
PAHs	ug/l	0.05
PCBs	ng/l	0.1
TCDD equivalents	pg/l	0.02
1,1,2,2-tetrachloroethane	mg/l	0.01
Tetrachloroethylene	mg/l	0.01
Toxaphene	ng/l	1

Trichloroethylene	ug/l	138
1,1,2-trichloroethane	mg/l	0.05
2,4,6-trichlorophenol	mg/l	0.001
Vinyl chloride	ug/l	184

10. Discharge 001D, 001F, 001G, 001H, 001I, 001J, 001K, 001L, 001M, 001P, 002, 003, 004:

Effluent concentrations shall not exceed the following limits:

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

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

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

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

12. Discharge 001N:

Effluent concentrations shall not exceed the following limits:

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

13. Discharge 002, 003, 004, 005, 006, 007, 008, 009, 010, 011:

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

Physical Characteristics:

1. Floating particulates and grease and oil shall not be visible.^{OP}

2. The discharge of waste shall not cause aesthetically undesirable discoloration of the ocean surface.^{OP}
3. Natural light shall not be significantly reduced at any point outside the initial dilution zone as a result of the discharge of waste.^{OP}
4. The rate of deposition of inert solids and the characteristics of inert solids in ocean sediments shall not be changed such that benthic communities are degraded.^{OP}

Chemical Characteristics:

5. The dissolved oxygen concentration shall not at any time fall below 5.0 mg/l or be depressed more than 10 percent from that which occurs naturally as a result of the discharge of oxygen demanding waste material.^{BP,OP}
6. The pH shall not be depressed below 7.0, raised above 8.5, or changed more than 0.2 units from that which occurs naturally.^{BP,OP}
7. The dissolved sulfide concentrations of wastes in and near sediments shall not be significantly increased above that present under natural conditions.^{OP}
8. The concentrations of substances with Effluent Limitations in this Order shall not increase in marine sediments to levels that would degrade indigenous biota.^{OP}
9. The concentrations of organic materials shall not be increased in marine sediments to a level which would degrade marine life.^{OP}
10. Nutrient materials shall not cause objectionable aquatic growth or degradation of indigenous biota.^{OP}
11. Waste discharges to the ocean must be essentially free of substances that will accumulate to toxic levels in marine waters, sediments, or biota.^{OP}

Biological Characteristics:

12. Marine communities, including vertebrate, invertebrate, and plant species, shall not be degraded.^{OP}
13. The natural taste, odor, and color of fish, shellfish, or other marine resources used for human consumption shall not be altered.^{OP}
14. The concentration of organic materials in fish, shellfish or other marine resources used for human consumption shall not bioaccumulate to levels that are harmful to human health.^{OP}

Radioactivity:

15. The discharge of radioactive waste shall not degrade marine life.^B Discharger performs radiological monitoring pursuant to 10CFR20 and it's Nuclear Regulatory Commission operating license. The results of this monitoring are provided in the "Annual Radiological Effluent

Report” which is provided to the Regional Board and the Nuclear Energy Commission. Radiological monitoring is not required in this Order pursuant to SWRCB Order WQ 83-1.

Temperature: (provisions regulating the thermal aspect of wastes discharged to the ocean are set forth in the Thermal Plan (Ocean Plan, page 1)):

16. The temperature of the discharge shall assure protection of beneficial uses. ^{BP, TP}

Bacteria:

17. The following bacteriological limits shall not 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 (5 samples or more, 30- day period)
90% of Samples	---	400 (60 day period)
80% of Samples	1,000 (30 day period)	---
*Maximum	10,000 (48 hour period)	---

*Verified by a repeat sample taken within 48 hours.

18. The following bacteriological limits shall not be exceeded in the water column in areas where shellfish are harvested for human consumption:

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

C. Provisions

1. This Order (Order RB3-2003-0009) will become effective fifty days after adoption by the Regional Board. Requirements prescribed by this Order supersede requirements prescribed by Amended Order No. 90-09, adopted by the Board on May 11, 1990. Order No. 90-09 will be rescinded fifty days after Order RB-2003-0009 is adopted by the Regional Board (when Order RB3-2003-009 becomes effective).
2. Discharger shall comply with Monitoring and Reporting Program No. RB3-2003-0009 as specified by the Executive Officer. Monitoring and Reporting Program No. RB3-2003-0009 is Attachment 6 attached to this Order.

3. For all sampling to determine compliance with this Order, Discharger shall use analytical methods capable of detecting chemicals at the minimum detection level as defined in the Ocean Plan. If an effluent limit is below the minimum detection level ("minimum level"), the minimum level shall be reported with monitoring results. Minimum levels of detection for given analytical methods are provided in Appendix II to the Ocean Plan. Minimum levels represent the lowest concentration of a pollutant that can be quantitatively measured in a sample given the current state of performance in analytical chemistry methods on California.
4. The discharger shall comply with Items A.2.-A.5, A.8.- A.12, A.14.-A.23., B.L-B.7., C.1.-C.8., C.10., C.12-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 of Item E.1. are not subject to paragraphs (b) and (c) of Item E.1. The Regional Board address specified in Item C.10 has changed. It is now 895 Aerovista Place, Suite 101, San Luis Obispo, CA 93401.
5. Discharge of any wastes of a significantly different character than described in this Order shall be reported to the Executive Officer pursuant to paragraph C.6. in the Standard Provisions.
6. 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.
7. Permanent rerouting of in-plant waste streams (001B through 001Q) identified in Finding 11 may be made with the concurrence of the Executive Officer, and the Executive Officer may require additional monitoring as necessary to assure compliance with effluent limitations in this Order. Temporary rerouting of internal waste streams may be performed as needed as long as effluent limitations are not exceeded. Compliance can be confirmed by sampling and analysis, or an engineering evaluation approved by the Executive Officer.
8. For each new chemical added to the discharge that could potentially cause toxicity, Discharger shall conduct toxicity testing to determine the effluent concentration for that chemical or chemical product necessary to assure compliance with toxicity effluent limits in this Order. Approved toxicity testing methodologies are described in the Ocean Plan. The results of these toxicity tests shall be submitted to the Executive Officer prior to discharge of added chemicals or chemical products.
9. The Discharger shall make every reasonable effort to schedule quarterly toxicity monitoring to coincide with the highest potential for toxicity in the effluent (considering plant operations and addition of toxic chemicals). Monitoring reports shall include a discussion of the efforts made to comply with this requirement.
10. The Mussel Watch Program currently being performed at Diablo Canyon will continue under the direction of the Executive Officer. Mussel Watch sampling and analysis may be modified by the Executive Officer, in consultation with the Department of Fish and Game, as necessary to determine compliance with this Order.
11. Failure of Discharger to comply with the consent judgment is a violation of this Permit, provided the Regional Board and Discharger have exhausted the dispute resolution procedure in the Consent Judgment.

12. Discharger anticipates transferring ownership and responsibility for operation of DCPD to another entity or entities (Transfer Entities). This Order may be transferred only after approval by the Board at a public meeting. The Transfer Entities shall demonstrate to the satisfaction of the Board that the Transfer Entities have assumed legal responsibility for compliance with this Order, the Consent Judgment and the Grant of Conservation Easement. Prior to transfer of this Order, Discharger shall have conveyed the Conservation Easement to the Land Conservancy of San Luis Obispo or shall demonstrate that at least one of the Transfer Entities has sufficient legal interest in the Encumbered Land, as defined in the Consent Judgment, to be able to convey the Conservation Easement pursuant to the Consent Judgment. Prior to transfer of this Order, Discharger shall demonstrate that at least one of the Transfer Entities has fee title to the Unencumbered Land, as defined in the Consent Judgment, or has sufficient legal interest in the Unencumbered Land to comply with the Consent Judgment as it applies to the Unencumbered Land. This provision supercedes Provision C. 11 of the Standard Provision and Reporting requirements for National Pollutant Discharge Elimination System Permits (January 1985).
13. This Order expires July 10, 2008. The discharger must file a report of waste discharge in accordance with Title 23, Division 3, Chapter 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, Roger W. Briggs, 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 July 10, 2003.

Roger W. Briggs, Executive Officer

ATTACHMENTS:

1. Vicinity Map and Photo
2. Discharge Descriptions
3. Bathymetry Map
4. Entrainment/Impingement Analysis Findings
5. Grant form of Conservation Easement (Including Consent Judgment)
6. Monitoring and Reporting Program No. RB3-2003-0009
7. Standard Provisions

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