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# State Water Resources Control Board

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**TO:** CCRWQCB Members

**FROM:** Jennifer S. Soloway  
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**DATE:** June 11, 2003

**SUBJECT:** LEGAL ANALYSIS REGARDING COMPLIANCE WITH THE THERMAL PLAN

PREPARED FOR JULY 10, 2003 HEARING REGARDING ADOPTION OF NPDES PERMIT FOR DIABLO CANYON POWER PLANT, SAN LUIS OBISPO COUNTY

I am submitting this memorandum to the Board in my role as the Board's legal advisor. The purpose of this memorandum is to provide guidance to the Board on the purpose of this proceeding and the applicable law. This is not testimony.

### ISSUE

What legal standards should the Board apply to determine if the draft NPDES Permit for Diablo Canyon Power Plant (DCPP) complies with the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (the Thermal Plan)?

### SUMMARY

Because DCPP is deemed an existing discharge under the Thermal Plan, only a narrative water quality objective for heat applies to its cooling water discharge. The objective is:

“Elevated temperature wastes shall comply with limitations necessary to assure protection of the beneficial uses and areas of special biological significance.”

There are no areas of special biological significance near DCPP's thermal discharge to Diablo Cove.

The State Water Resources Control Board (SWRCB) in WQ Order 83-1 interpreted the 1982 NPDES permit for DCPD and determined that Water Code section 13000 required only “reasonable” protection of beneficial uses based on a balancing test, including economics. The SWRCB determined that the DCPD thermal discharge could be in compliance with the Thermal Plan even if it caused some degradation of beneficial uses. Thus, the SWRCB established a flexible test for finding Thermal Plan compliance at DCPD.

The SWRCB issued Order WQ 83-1 before DCPD began full operations. The SWRCB based its decision on a PG&E sponsored study that predicted a certain level of adverse impacts to Diablo Cove from its thermal discharge. Years after the plant began operations analysis of 18 years of biological data indicated that the extent and severity of adverse impacts to Diablo Cove were worse than predicted and based upon that analysis staff concluded PG&E was in violation of the current NPDES Permit 90-09.

The Board convened a hearing in March 2000 to consider staff’s allegations but before the hearing was completed, staff and PG&E agreed that protection of beneficial uses would be accomplished under the terms of a settlement. The most important provision of that settlement is the grant of a conservation easement comprising approximately 2000 acres of coastal land. The rationale for the settlement is that preservation of this coastal land would permanently protect marine habitat beneficial uses, adjacent to Diablo Cove. The temporary (during the life of the plant plus a period of recovery) adverse effects of the thermal discharge are limited mostly to Diablo Cove. The Regional Board approved the settlement in the form of a consent judgment at their March 2003 meeting, conditioned upon approval of an NPDES permit consistent with the consent judgment.

Finally, in considering whether the DCPD thermal discharge, taken together with the terms of the settlement, complies with the Thermal Plan, the Board should also remember that PG&E can seek a variance from state imposed effluent limits. Clean Water Act section 316(a) allows PG&E to apply for the variance if less stringent effluent limitations would provide for protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife in and on the body of water into which the discharge is made. Because PG&E has not applied for a variance, a detailed analysis of section 316(a) is not included in this memo. However, the standard for the variance is flexible. PG&E could apply for a variance if the Board decided to make the thermal effluent limitation more stringent or imposed an effluent limitation reducing the volume of the flow. Note the 316(a) variance does not affect any requirements imposed under section 316(b) to address entrainment or impingement.

## CONCLUSION

This case is unique in that compliance with the Thermal Plan has never been achieved by the means provided in the settlement. Because of the flexible water quality objective in the Thermal

Plan and the SWRCB interpretation of its application to Diablo Cove, the creative approach in the consent judgment approved at the March 2003 meeting could be used for compliance.

The Thermal Plan requires protection of beneficial uses. Although the plant has always complied with its thermal effluent limitations, there is documented degradation of the marine habitat beneficial use within and near Diablo Cove. When reviewing predicted degradation of marine habitat in Diablo Cove, the SWRCB applied a “reasonableness” standard under Water Code section 13000 and held that beneficial uses were reasonably protected despite degradation of uses in the cove. The flexibility in the narrative objective and the SWRCB interpretation of its application to Diablo Cove allow for creative approaches that provide for marine habitat protection without necessarily requiring more stringent effluent limitations for temperature or discharge volume. In addition, the variance requirements of Clean Water Act section 316(a) also call for regulatory flexibility regarding thermal discharges.

## DISCUSSION

### Regulatory Framework

Discharges of waste from DCPD are regulated by the Regional Board under an NPDES permit, Waste Discharge Requirements Order No. 90-09 (the NPDES permit).

Two SWRCB water quality control plans are applicable in this case, the Ocean Plan and the Water Quality Control Plan for Control of Temperature in Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (Thermal Plan). The major provisions of water quality control plans are designations of beneficial uses of ground water and surface water and the water quality objectives necessary to protect actual and designated beneficial uses. While water quality objectives must protect beneficial uses, that protection is not necessarily absolute. Water Code section 13000 states:

“The Legislature finds and declares that the people of the state have a primary interest in the conservation, control, and utilization of the water resources of the state, and that the quality of all the waters of the state shall be protected for use and enjoyment by the people of the state.

The Legislature further finds and declares that activities and factors which may affect the quality of the waters of the state shall be regulated to attain the highest water quality which is reasonable, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible.”

Water Code section 13241 states that “it may be possible for the quality of water to be changed to some degree without unreasonably affecting beneficial uses.”

The beneficial uses of the entire California coast, including the DCPD discharge area, are established in the Ocean Plan. The water quality objectives to protect beneficial uses of the ocean and certain other California waters are established in the Thermal Plan.

The beneficial uses designated in the Ocean Plan are, industrial water supply, water contact recreation; non-contact recreation, including aesthetic enjoyment; navigation; commercial and sport fishing; mariculture; preservation and enhancement of Areas of Special Biological Significance (ASBS), rare and endangered species; marine habitat; fish migration; and fish spawning, and shellfish harvesting.

The Thermal Plan establishes water quality objectives for the discharge of heat. There are numeric water quality objectives for new discharges and a narrative objective for existing discharges. The Thermal Plan specifies that the thermal discharge from DCPD is an existing discharge for the purposes of the Thermal Plan. The applicable Thermal Plan objective is,

“Elevated temperature wastes shall comply with limitations necessary to assure protection of the beneficial uses and areas of special biological significance.”

Because there is no area of special biological significance near DCPD, the only applicable portion of this objective is “shall comply with limitations necessary to assure protection of the beneficial uses.”

Although the Thermal Plan requirement for DCPD is limited to protection of beneficial uses, the Plan provides that if the Board determines that it is necessary for protection of specific beneficial uses it must impose additional restrictions on the discharge. However, the Board has discretion to determine whether or not these restrictions are necessary. The restrictions are:

“When additional limitations are established, the extent of surface heat dispersion will be delineated by a calculated 1-1/2 degree F. isotherm which encloses an appropriate dispersion area. The extent of the dispersion area shall be:

- A. Minimized to achieve dispersion through the vertical water column rather than at the surface or in shallow water.
- B. Defined by the Regional Board for each existing and proposed discharge after receipt of a report prepared in accordance with the implementation section of this plan.”

### Permit Background

The Regional Board issued DCP's first NPDES Permit in 1969, many years before the plant started full operations in 1984. The NPDES Permit was renewed several times, the last time in 1990.

In January 1982, the Regional Board adopted NPDES permit No. 82-24, which prohibited all thermal discharges from DCP until July 1, 1982.<sup>1</sup> This prohibition was based on U.S. EPA regulations that were later invalidated in court. NPDES permit No. 82-24 also directed PG&E to submit a technical report evaluating alternative plans to reduce the heat and volume of the proposed cooling water discharge, and containing information on anticipated and possible thermal and volume effects of the discharge on the beneficial uses of the ocean. On March 30, 1982, PG&E submitted a report entitled "Assessment of Alternatives to the Existing Cooling Water System" (Alternatives Report), and a report entitled "Thermal Discharge Assessment Report" (1982 TDAR). The Alternatives Report concluded that any alternatives that would reduce the discharge volume and temperature would be prohibitively expensive. The 1982 TDAR described the predicted impacts of the discharge on Diablo Cove and adjacent coastal areas.

After consideration of the 1982 TDAR, the Alternatives Report and testimony at public hearings in May and June 1982, the Regional Board adopted an amended NPDES permit No. 82-24 by adopted of Order 82-54. The amended NPDES permit contained the following finding regarding heat discharges:

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

The Regional Board then adopted effluent limitations for thermal discharge as follows:

- “g. The temperature measured at the point of discharge shall not exceed 20 degrees F. over that of the intake except during heat treatment.
- h. During discharge of heat treatment effluent from Unit 1, Unit 2 circulating water pumps shall be operated at full capacity with no commercial load.

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<sup>1</sup> This prohibition did not have any direct effect on DCP because the plant did not start regular discharges of cooling water until 1984.

Temperature measured at the point of discharge of Unit 1 shall not exceed 100 degrees F.”

The amended NPDES permit No. 82-24 retained a receiving water limitation that provided, “Elevated temperature wastes shall not adversely affect beneficial uses.”

The finding in Order No. 82-54 indicates that the Regional Board intended to authorize some reduction of water quality in Diablo Cove. Also, the Regional Board did not require PG&E to implement or even explore further, any of the alternatives in the Alternatives Report.

#### Interpretation of the NPDES Permit by SWRCB

Numerous parties petitioned the SWRCB for review of NPDES permit No. 82-24 and Order No. 82-54. The SWRCB issued a lengthy order amending the permits in part but affirming the provisions regulating the thermal discharge.

The SWRCB order, WQ No. 83-1, pointed out that some reduction of water quality was permissible and approved the effluent limitations for normal plant operations of 20 degrees F. over intake temperatures. WQ No. 83-1 approved the effluent limitations for demusseling with PG&E’s agreement to expand its investigation of methods for reducing the temperature of demusseling discharges.

The SWRCB relied primarily on the predictions in the 1982 TDAR and concluded that the predicted adverse effects on marine habitat were not unreasonable. In determining that the predicted adverse effects of the DCPD discharge were reasonable, the SWRCB considered several factors. These factors were:

1. Porter-Cologne requires a balancing process when regulating water quality as articulated in Wat. Code § 13000, and the Act recognizes that water quality can be changed by some degree without unreasonably affecting beneficial uses.
2. The SWRCB policy on Use and Disposal of Inland Waters Used for Powerplant Cooling (June 19, 1975) provides that use of marine water for cooling water is preferred over use of inland water. The policy provides, in part,

“..coastal locations provide for a wide range of cooling technologies which do not require the consumptive use of inland waters and therefore would not place an additional burden on the State’s limited supply of inland waters. These technologies include once-through cooling, which is appropriate for most

coastal sites, potential use of saltwater cooling towers, or use of brackish waters where more stringent controls are required for environmental considerations at specific sites.”

3. The Department of Fish and Game participated in the pre-discharge studies and has concluded the predicted changes are acceptable.
4. Several of the provisions in Order No. 82-24 should prevent or alleviate any long-term damage to Diablo Cove. These include the receiving water limitation, which mandates “elevated temperature wastes shall not adversely affect beneficial uses”, and the requirement that PG&E submit a thermal effects study to determine whether the thermal discharge adequately protects beneficial uses.
5. Any adverse effects of the thermal discharge are reversible. (Note: Dr. Michael Foster’s testimony at the March 2000 hearing indicated that recovery after DCPD stops discharging will take many years.)
6. Diablo Cove is not designated an Area of Special Biological Significance and so some change in water quality there is permissible.
7. The effluent limitation of 20 degrees F. over intake water temperature is the same as the water quality objective for new plants. (Note: While the overall discharge limit for new discharges is 20 degrees F. over ambient water temperature, there is an additional limitation of 4 degrees F. change in receiving water temperature at the shoreline, at the ocean surface over 1,000 feet from the discharge and touching any ocean substrate.)
8. The plant has been built at a cost of \$2.4 billion and the costs to reduce volume and heat of the discharge are very high and in some cases, have their own adverse environmental effects.
9. The thermal limitations in the NPDES permit are comparable to those imposed at other coastal plants.

The SWRCB permitted some degradation of marine beneficial uses, based on the factors described above and so approved the thermal effluent limitations in NPDES permit No. 82-54. The degradation that the SWRCB determined to be reasonable was that predicted in the 1982 TDAR. But, the SWRCB emphasized the importance of the receiving water limitation that prohibits adverse impacts on beneficial uses. The SWRCB Order said, “Should the thermal effects study reveal that the present thermal limits contained in Order No. 82-24 (*sic*) are

inadequate to protect beneficial uses, the Regional Board has ample authority to modify or revoke the permit.”

#### Variations under Clean Water Act section 316(a)

Unlike Clean Water Act section 316(b) which must be complied with every time an NPDES Permit is issued and renewed, section 316(a) provides a process under which a discharger may obtain a variance from State water quality limitations.

PG&E has not applied for a 316(a) variance for DCPD but this procedure is legally available to them and so the Board should have some understanding of this law.

Clean Water Act section 316(a) provides that when a discharger can demonstrate, “any effluent limitations more stringent than necessary to assure the protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife in and on the body of water into which the discharge is to be made (taking into account the interaction of such thermal component with other pollutants)” the U.S. EPA administrator or a state may impose less stringent alternative effluent limitations.

U.S. EPA has adopted regulations implementing this law but they are very flexible. When these regulations were adopted, U.S. EPA noted that detailed criteria for 316(a) determinations were deleted from the regulations because each variance determination is unique and so specific criteria are in appropriate. (44 Fed. Register 32895, June 7, 1979.) The regulations define a balanced indigenous population of shellfish, fish and wildlife to be a balanced indigenous community (BIC) that contains four basic elements. (40 C.F.R. § 125.71.) If any one of these elements is missing, the discharge is not assuring the protection and propagation of a BIC. The four elements are:

1. Diversity,
2. The capacity to sustain itself through cyclical seasonal changes,
3. Presence of necessary food chain species, and
4. Lack of domination of pollutant tolerant species. (Pollutant tolerant species include species whose presence or abundance is attributable to the thermal discharge.)

At the March 2000 Cease and Desist Order hearing there was much time spent on proper interpretation of section 316(a). However, PG&E had not applied for a 316(a) variance and the Permit violations alleged by staff were based on receiving water limitations in the existing permit. In any event, the Board never made a decision regarding the Cease and Desist Order nor did they interpret section 316(a) as applied to DCPD.



In this proceeding it is significant to keep section 316(a) in mind because if the Board decides to limit the flow or impose a more stringent effluent limitation on the DCPD thermal discharge PG&E may apply for a 316(a) variance. Whether the BIC standard in 316(a) is less stringent than the Thermal Plan requirements for existing discharges has yet to be determined.

### Conclusions

Given the flexibility in the Thermal Plan narrative objective and the interpretation by the SWRCB based on water code section 13000, the settlement terms calling for a conservation easement over approximately 2000 acres of coastal land could suffice to provide reasonable protection of beneficial uses. Also, if the Regional Board imposes more stringent effluent limitations for temperature and thermal discharge volume PG&E could seek a variance under Clean Water Act section 316(a).

Changes in the thermal discharge resulting indirectly from compliance with Clean Water Act section 316(b) are not subject to the variance.

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