



SIERRA
CLUB
FOUNDED 1892

Santa Lucia Chapter
P.O. Box 15755
San Luis Obispo, CA 93406
(805) 543-8717
www.santalucia.sierraclub.org

August 2, 2011

RE: Docket number 11-IEP-1J

Dear Commissioners,

DOCKET

11-IEP-1J

DATE AUG 02 2011

RECD. AUG 02 2011

On April 17, 2006, the California State Lands Commission passed a resolution urging “the California Energy Commission and the State Water Resources Control Board to expeditiously develop and implement policies that **eliminate** the impacts of once-through cooling on the environment, from all new and existing power plants in California.” [emphasis added]

As the Energy Commission assesses its recommendations on future energy policy in California, we would urge that the full cost of converting the Diablo Canyon Nuclear Power Plant and the San Onofre Nuclear Generating Station to closed-cycle cooling not be minimized, and that these costs be weighed against the cost of securing equivalent alternate renewable energy sources. The Commission should not assume that proposed EPA regulations on OTC, which fail to require closed cycle cooling as the Best Technology Available, will be adopted as proposed, or that California will otherwise allow PG&E and SCE to continue the impacts of once-through cooling, at a reduced level, through the end of the operational lives of their nuclear power plants.

We attach relevant excerpts from the major 2001 NIRS report “Licensed to Kill” on the damage done by DCNPP to the Central Coast’s near-shore environment and includes a chronology of the actions taken by PG&E in violation of its permit, its failure to comply, its suppression of data and fines incurred as a result. This history should be taken into account in evaluating the likelihood of the utility complying with measures to reduce the impacts of OTC rather than a requirement either to change to a non-destructive cooling technology or cease plant operations.

The summary of impacts presented in this report makes clear that, even before assessing the safety, cost and reliability of nuclear power, the Commission should conclude that the state must undertake a shift away from nuclear power plants to energy sources that will not decimate the marine environment of California’s coast.

Thank you for your attention to this matter,

Andrew Christie
Director

Falsification and False Promises

State water and wildlife authorities also fall prey to nuclear industry pressure tactics. Regulators are kept in the dark and legally intimidated by the nuclear industry in its efforts to avoid or dramatically reduce penalties and mitigation requirements for the harmful effects of the once-through cooling system. This occurs even after proof that an offending utility has deliberately withheld or misrepresented vital but unfavorable data.

For example, the California utility, Pacific Gas & Electric (PG&E), for many years, provided state water authorities with skewed data on its Diablo Canyon nuclear power station. The data showed that the plant's intake of billions of gallons of water a day did very little harm to surrounding marine life. PG&E's conclusions were based on the unscientific formula that the amount of sea life drawn into the system at the intake port could be accurately measured by the amount of small fish and other organisms at the outflow of the cooling system.

In the spring of 2000, Diablo Canyon's operators were discovered to have withheld information from environmental regulators for two decades revealing the true effect of the reactor's hot water discharges into the coastal waters off Diablo Cove and miles beyond. The concealed data included infrared images indicating more extensive thermal plume impact zones than previously admitted and time-series photographs showing the progressive deterioration of biologically important marine habitat in coastal waters around the reactor. The damage was catastrophic to the indigenous marine life community, including the near obliteration of the already threatened black and red abalone populations. The concealed findings also revealed up to a 90 percent destruction of many varieties of sea life as they passed through Diablo Canyon's cooling system. These findings had never been reported to state or federal agencies.

State water authorities viewed the escalating damage as sufficiently severe to press for a cease and desist order against the utility's previously accepted levels of waste heat discharges. A state cease and desist order would have effectively halted, or reduced the thermal discharges, or reduced their temperature, and imposed severe fines on the utility for continued heat pollution that threatened marine habitat and its indigenous species.

However, the order was undermined by the utility. Despite publicly documented evidence, and even evidence of its own, PG&E argued that no mitigation action was needed. Using a threat to outspend environmental regulators in legal actions appealing the cease and desist order, PG&E forced the authorities to back down. Instead, the state regulators have proposed to accept a settlement that ignores the reactor's ongoing thermal damage and includes a cash pay-off of just \$4.5 million for vaguely worded marine species protection measures while simultaneously reducing the scope of monitoring the harmful effects of the Diablo Canyon cooling system.

This regulatory retreat in effect allows the utility to continue its business-as-usual practices while sacrificing an entire indigenous marine life community as the cost of marketing electricity.

The coolant system discharge structure used by these same reactors presents additional hazards by expelling water warmed to a higher temperature than the water into which it flows. Recent research findings suggest that even small elevations in temperature over long periods can alter the abundance of many species of marine life.⁸ Consequently, indigenous species around reactor discharge systems are displaced and replaced by others unnatural to that environment. The warmer waters also attract sea turtles, fish, crabs, sea birds, and other organisms. Periodically, reactors are shut down, the flow of warm water stops, and the temperature of the waterway into which it flows abruptly drops. This can result in cold-stunning of the species occupying the waters. Warmer waters may also present other hazards.

Studies have shown decreased reproduction and increased mortality in seabirds coinciding with warmer water.⁹ The degradation of the marine environment as a result of this technology could have serious, and potentially irreversible, repercussions if operation of once-through nuclear reactors is allowed to continue unchecked. Marine ecosystems are home to many kinds of living things that occur nowhere else. Marine species provide a livelihood for millions of people and food, medicines, raw materials, and recreation for billions worldwide; they are intrinsically important.¹⁰ The nuclear industry argues that its negative effects, if any, are localized and temporary, and therefore have no long-term or widespread impact on species.

This view is vehemently contradicted by the California Department of Fish and Game:

The science of ecology has now generally recognized that the destruction or disturbance of vital life cycles or of the balance of a species of wildlife, even though initiated in one part of the world, may have a profound effect upon the health and welfare of people in distant parts; like pollution it does not cease to be of vital concern merely because the problem is created at a distant point.¹¹

¹¹ California Department of Fish and Game, Legal Department, "In the Matter of WDR Order 90-09 Diablo Canyon Nuclear Power Plant," Memorandum to Regional Water Quality Control Board, February 29, 2000, p. 8.

Showdown at Diablo Cove — A Utility Gets into Hot Water A Cease and Desist Order Stirs Controversy

A recent, high-profile confrontation over the destruction and alteration of the marine environment by thermal discharge pollution is exemplified by events at Pacific Gas and Electric's (PG&E's) Diablo Canyon Power Plant near San Luis Obispo, CA. The two-unit nuclear power station, first fully operational in 1986, draws in and directly discharges 2.5 billion gallons of heated water a day into the rocky intertidal zone of Diablo Cove on the Pacific Ocean.

The controversy stems from allegations by the California Water Quality Control Board (WQCB), the California Department of Fish and Game (DFG), and a host of environmental groups who allege that PG&E has been violating its National Pollution Discharge Elimination System (NPDES) permits to the detriment of ocean aquatic life. In February and March 2000, the fish and game department and water board drafted a cease and desist order for Diablo's discharges into the ocean cove. A memo from the fish and game department stated:

Overall, the effects of the discharge include loss and degradation of habitat, decreases in several species' diversity and density, and loss of entire species. It has been shown that the effects continue to expand beyond Diablo Cove and are greater than predicted. The discharge does not provide for the protection

of propagation of species and does not provide habitat suitable for indigenous species.⁷

The proposed cease and desist order cites that 97 percent of the cove's surface kelp forest (Bull Kelp) has literally been clear cut from its former habitat, with more kelp forests potentially affected beyond the cove.⁸ As a result, the intertidal communities of Diablo Cove are now devoid of historically abundant quantities of perennial algae cover. Surfgrass, once the predominant plant thriving in continuous bands throughout the cove, survives only in isolated locations.

The Decline of the Abalone

Water temperatures in north Diablo Cove now prevent the successful developmental growth of black abalone and red abalone, both indigenous coastal water mollusk species. PG&E had first predicted that black abalone would not be at risk from the reactors. From 1988 to 1991, following reactor startup, the red and black abalone population in Diablo Cove declined by almost 90 percent as the result of withering syndrome, a chronic progressive disease exacerbated by elevated sea water temperatures. NMFS lists the black abalone as a "candidate species" under the Endangered Species Act.⁹ Further population declines in the black abalone could lead to listing as a threatened or endangered species. In 1997, the California Legislature imposed a moratorium, making it unlawful to take abalone for commercial purposes from San Francisco south.¹⁰ Furthermore, the statute defines *take* as including killing or attempting to kill.¹¹ The California courts have determined that the definition of take in the Fish and Game Code included killing and that nothing suggested that the proscribed killing must result from hunting or fishing.¹² The commercial nuclear power industry, however, has so far escaped penalty for its virtual elimination of abalone populations in its waters.

The Department of Fish and Game stated that, as a result of the routine operation of Diablo Canyon, mortality does occur in species found in Diablo Cove and that substantial decreases in formerly indigenous species continue to take place.¹³ The department concluded: "This is because the temperatures that are found in the affected areas are in excess of the upper temperature limits for survival, growth, and reproduction of several indigenous species."¹⁴

The agency concluded:

The question presented is whether the degradation of the marine environment near DCP [Diablo Canyon Power Plant] is acceptable to the Department of Fish and Game. Based on review of law and policies administered by the Department, and other laws requiring enhancement and protection of the marine ecosystem, the answer is no."¹⁵

The DFG maintained, based upon "the effects of elevated water temperature and the severe decrease in adult population densities below the recommended Department levels, that it is questionable whether or not abalone populations will recover naturally in Diablo Cove should temperatures return to normal."¹⁶

The state agency went on to add, "The black abalone was listed as a candidate species by the National Marine Fisheries Service on June 23, 1999 (Federal Register, Vol. 64, No.120) throughout the entire range (Oregon, California, Baja California)."¹⁷

Evidence of Discharge Destruction Suppressed by PG&E

Like all reactors' water discharges, Diablo Canyon's are regulated by both state agencies and a federal National Pollution Discharge Elimination System permit, certified by the Environmental Protection Agency and governed by the Clean Water Act. In 1982, prior to Diablo Canyon's operation, the state established effluent limitations for heat discharge into Diablo Cove. PG&E's permit stipulated that: (1)

there shall be no degradation of indigenous species; (2) there shall be no degradation in marine communities, to include plants, invertebrate and vertebrate animals and; (3) the elevated temperatures of the receiving water shall not have any adverse effect on beneficiary uses, including shellfish harvesting and the marine habitat.¹⁸

The permit relied on a Thermal Discharge Assessment Report, prepared by PG&E. The report predicted very limited harm to a small percentage of the Diablo Cove habitat and its species. Also in 1982, PG&E submitted a report entitled “Assessment of Alternatives to the Existing Cooling Water System” that, after exploring options for reducing discharge water temperatures, concluded that all of the alternatives, including the installation of cooling towers and ponds, were economically prohibitive.¹⁹

In approving the 1982 discharge permit, the WQCB considered the utility’s high cost for a technological fix of its discharge problem and determined what were “reasonable” levels of environmental degradation in accepting a daily effluent discharge objective of 20 degrees F above ambient temperatures in the Diablo Cove and a periodical 100 degrees F above ambient discharge to kill mussel and barnacle infestations in the cooling system piping.²⁰ The WQCB recognized that, once the reactors were operational, their effects would be further studied and that additional regulation might be required if the effects were different from those predicted. The WQCB stipulated that, should the thermal effect limits prove inadequate, the regional regulator would have the authority to modify or revoke the permit in order to protect the beneficial uses of Diablo Cove.²¹

Defined as an “existing discharge” under state regulations, the NPDES permit issued in 1990 provided Diablo Canyon with a waiver to allow a maximum discharge temperature of 22 degrees F above the natural temperature of Diablo Cove. This is 2 degrees F higher than the stated water quality discharge objective. However, the 1990 discharge permit again stipulated that: “Waste discharge shall not individually or collectively cause temperature of the receiving water to adversely affect beneficial uses.”²²

As part of the permit, the utility was required to environmentally monitor Diablo Cove to analyze the hot water discharge effects on the cove. In December 1997, PG&E submitted a study that determined that there were large, statistically significant, and ecologically important changes in habitat-forming species of surf grass, kelps, seaweeds, and algae with impacts on the rest of the cove community caused by the reactors. Collapse of these plant species affected many more species in the interrelated community of marine species that graze among the plants such as limpets, snails, abalone, sea urchins, fish species that feed on the algae, and invertebrates.

The study findings not only indicated that the utility prediction of impact on a variety of species was entirely wrong but also that PG&E failed to predict accurately how far and wide the hot water discharge would extend. The original thermal plume pollution predictions were literally off by more than a mile, significantly affecting an additional area 4.2 miles to the north of the reactors. Where utility predictions had placed a 0.3 mile area of Diablo Cove at uncertain risk from thermal pollution, the actual impacts from the reactors amount to 1.4 miles of nearly complete loss of all habitat in the intertidal zone. Summing up Diablo Canyon’s effect on this once vital, densely covered marine habitat, Michael Thomas, RWQCB project manager for the Diablo Canyon Studies, said: “It’s essentially bare rock—what I call bare rock.”²³

Legal Wrangling Ends in Water Board Capitulation to Utility Demands

Completing the utility’s environmental monitoring program report was not entirely a cooperative and forthcoming process. For 10 years, PG&E did not submit 1986 infrared images that showed a much more widespread distribution pattern of Diablo Canyon thermal plumes into the cove. PG&E also withheld an extensive set of 20-year time-series photographs of ocean monitoring stations, showing a steady degradation of habitat. The submittal of temperature-monitoring data, collected by PG&E from

1997 to 1998, confirming elevated temperatures, was delayed until May 2000, even though the company had submitted annual monitoring reports for 1998 and 1999.²⁴

In 1994, PG&E attempted to reduce the state's monitoring program by about 90 percent, essentially its elimination. PG&E's effort to close down the Diablo Cove marine life monitoring program was vehemently and successfully opposed by state agencies and several environmental groups. Additionally, allegations came to the attention of the California Office of the Attorney General that the utility had omitted information from a 1988 report, analyzing the effects of taking in 2.5 billion gallons of water a day from the cove and the entrainment of marine life in the reactor cooling system. PG&E eventually settled with California for \$14.04 million and was required to reanalyze the effects through an independent review. This fine was 7 times higher than any fine ever levied by the federal Nuclear Regulatory Commission for any violation.²⁵

PG&E denies state allegations that it has violated its NPDES permit. In response to charges of environmental damage as a result of its discharges, the utility has argued that the RWQCB should reconsider the economics of Diablo Canyon station operation when enforcing the NPDES permit and thus should relax enforcement of its regulations.²⁶ The state has countered that if it were to reconsider the economics of the power plant, it should not be limited to just the costs to the utility. The regional board responded that:

[S]uch analysis would have to explore issues including the cost of disposing of the DCPD radioactive waste, the market price for electricity being produced versus the cost of production by DCPD, and whether the electricity produced by DCPD is necessary to meet electrical demands of the community.²⁷

The board's deliberations on the DCPD cease and desist order took a sharp turn in favor of the utility on June 2, 2000. Without issuing a decision on the staff-supported order, the board and PG&E reached a broad tentative settlement agreement whereby the utility would pay \$4.5 million for marine restoration projects and preservation of coastal land owned by the company. Despite the unreconciled disagreement between the parties over the significance and extent of the cooling system's harmful impacts on the marine environment, the board sought to resolve the pollution issues to avoid a lengthy and expensive legal battle in utility appeals.²⁸ (For more details on this case, see chapter 4, this report.)

Diablo Discharges Only One Piece of the Disaster

The issue of the thermal discharges is but one piece of the environmental problem caused by the wasteful once-through cooling system. The environmental consequences from the intake of large volumes of water into the system must also be taken into account. With the intake of large volumes of water into the nuclear power station cooling systems, the entrainment of wildlife and marine life has a significant, and at least equally disastrous, impact on the environment.

As California marine biologist and chemist Dr. Rimmon Fay pointed out at the Diablo Canyon hearings: "You still gotta realize that you're taking in a square mile of water, to the depth of 14 feet, per day, and passing it through that power plant, killing every bit of plankton and some of the adult fishes contained in the cove every day."²⁹

PG&E's predictions of benefits, rather than damage to Diablo Cove as a result of the heated discharge waters, proved to be way off target. Furthermore, the utility knew of the damage, but withheld evidentiary photos for more than ten years. In a 1982 PG&E

report, the utility asserted that there would be potential indirect benefits of the discharge on the Cove's marine habitat. "By causing an increase both in the turnover and, possibly, the source of the ocean water, an increase in nutrient supply may promote a more luxurious growth and production of the cove's marine plant community and marine biomass," read PG&E's report. In March 2000, testimony by the Regional Water Quality Control Board the agency stated: "In reality, bare rock has increased in Diablo Cove, and the intertidal algal community has been almost completely lost."

An aerial infrared photo showing dispersion of the thermal plume on June 12, 1986. In its March 2000 testimony, during cease and desist hearings, the Regional Water Quality Control Board observed on exhibiting this photograph: "It should be noted that the infrared images in Figures 6 and 7 [shown] are dated 1986, but were not submitted to the Regional Board until 1996, about ten years after they were taken. PG&E's 1988 annual thermal effects report did include other plume maps which did not show the plume contacting the nearshore areas."

⁷ Joseph Milton, staff counsel, California Department of Fish and Game, Memorandum to California Regional Water Quality Control Board, Draft Cease and Desist Order for Pacific Gas and Electric National Pollution Discharge Elimination System Permit Order 90-09, February 29, 2000, p. 5.

⁸ Ibid., p. 3.

⁹ 64 Federal Register 120, June 23, 1999.

¹⁰ Fish and Game Code § 5521; Stats. 1997, chapter 787, p. 2.

¹¹ Fish and Game Code, p. 86.

¹² *Department of Fish and Game v. Anderson-Cottonwood Irrigation District* (1992) 8 Cal.App.4th 1554.

¹³ Legal Office, California Department of Fish and Game, Memorandum, February 29, 2000, p. 1.

¹⁴ Ibid.

¹⁵ Legal Office, California Department of Fish and Game, Memorandum to Michael Thomas, RWQCB, February 28, 2000, p. 7.

¹⁶ California Department of Fish and Game, Memorandum to Roger Briggs, executive officer, RWQCB—Central Coast Region, February 29, 2000.

¹⁷ Ibid.

¹⁸ Jennifer Soloway, staff counsel, California Regional Water Quality Control Board—Central Coast Region, "Response to Legal Argument Opposing Adoption of Draft Cease and Desist Order 00-032 for Diablo Canyon Nuclear Power Plant, May 5, 2000, p. 2.

¹⁹ Ibid., p. 7.

²⁰ Ibid., "Response," p. 8.

²¹ Staff Counsel, CRWQCB, "Legal Argument in Support of Adoption of Draft Cease and Desist Order 00-32 for PG&E's Diablo Canyon Nuclear Power Plant," March 1, 2000, p. 3.

²² Hearing Before the California Regional Water Quality Control Board, Central Coast Region, for Consideration of a Cease and Desist Order Against Pacific Gas and Electric Company's Diablo Canyon Nuclear Power Plant for Alleged Violations of the Facility's National Pollutant Discharge Elimination Permit System, *Transcript of the Proceedings*, San Luis Obispo, CA, March 30, 2000, line 24, p. 15—line 1, p. 16.

²³ Ibid., lines 4-5, p. 79.

²⁴ Michael Thomas, project manager, CRWQCB, Rebuttal Testimony in Support of Cease and Desist Order No. 00-032, May 5, 2000, p. 6.

²⁵ NRC Office of Public Affairs, telephone conversation with Paul Gunter, December 7, 2000. In 1997, NRC levied a \$2.1 million fine on Millstone that currently stands as the agency's largest fine.

²⁶ CRWQCB, Legal Argument, March 1, 2000, p. 14.

²⁷ Ibid.

federal and state agencies has left a void in the patchwork of the regulated protection of fish stocks and their marine ecology.

²⁸ David Sneed, "Diablo Settlement Reached," *The Tribune*, June 3, 2000.

²⁹ CRWQCB, Hearing Transcript, lines 5-9, p. 299.

4-3. Diablo Canyon Nuclear Power Plant Pacific Gas and Electric Company, San Luis Obispo, CA PG&E: Cover-ups, falsifications challenged—but money talks in the end.

The Diablo Canyon Nuclear Power Plant near San Luis Obispo, CA, operates two nuclear reactors, using the once-through cooling system. Their routine operation was determined to have a damaging

effect on the coastal marine environment by the California Department of Fish and Game (DFG) and the California Regional Water Quality Control Board (RWQCB), Central Coast Region. Yet, like other utilities, Diablo Canyon's operating utility and licensee, PG&E, has long attempted to minimize and obfuscate the facts about its impact on the marine environment.

In 1982, PG&E, under its obligation to the water quality control board's San Luis Obispo office, submitted a series of reports about the plant's effect on the surrounding marine environment in Diablo Cove. However, in 1994 the regional board finally discovered, through revelations by the Department of Fish and Game, that PG&E's data contained only information that showed the plant had little or no effect on the marine environment around its reactors. "Evidence indicates PG&E omitted more than half of the actual test results which showed up to a 90 percent reduction in sea life as it passed through the cooling system," the state and federal environmental protection agencies said in a joint statement after the discovery that PG&E had suppressed data detrimental to its claims.¹ PG&E's track record of withholding data, for years and even decades, on the reactors' actual discharge impacts has further undermined the company's credibility. These revelations have led to extensive litigation between PG&E and state water authorities, revealing the lengths to which PG&E is willing to go to cover up facts, avoid mitigation, and stall or withdraw from negotiations. Meanwhile, Diablo Canyon's on-going operation further degrades the marine environment.

Chronology

PG&E fined for tampering with and withholding key data. In May 1997, in one of the largest environmental settlements reached since the 1989 Exxon Valdez disaster, PG&E was forced to pay out \$14.04 million for tampering with and withholding portions of studies that showed negative impacts on entrained marine life at Diablo Canyon.² Sued by California and U.S. Environmental Protections Agencies, the state and federal attorneys general offices and the RWQCB, Central Coast Region, PG&E was found to be in violation of the federal Clean Water Act. The utility's conclusions about the amount of sea life drawn into the system were found to be based on scientifically unsound data—measurements of the amount of fish and other organisms at the outflow of the cooling system.

PG&E refuses to admit guilt, despite overwhelming evidence. After the 1997 settlement, PG&E refused to admit guilt while the RWQCB conceded that the problem might be impossible to correct with the plant already in place. "It's not sure there would be anything that could actually be done the way the plant is currently built," said Paul Jagger, assistant executive officer at RWQCB's San Luis Obispo office.³ The government agencies that settled with PG&E issued scathing statements about the company, calling the conduct of its senior officials "rogue behavior" and saying its decision not to report findings at Diablo Canyon "lacked integrity."⁴

PG&E stalls mitigation agreements. The terms of the settlement included a new study to be done for Diablo Canyon by Moss Landing Marine Laboratory. Terms also stipulated that \$6.19 million of the \$14.04 million penalty would be directed toward environmental enhancement projects. However, agreement on conservation programs between PG&E and the regional water board led to continual breakdowns in negotiations between the two parties, resulting in delays.

Water board submits to PG&E delaying tactics. By November 1999, the regional board was tired of waiting. Prior to a November 19 board meeting, the *San Luis Obispo Telegram-Tribune* reported that the board was considering issuing a cease and desist order against the utility company for violating its water discharge permit by damaging the marine environment.⁵ This would have obligated PG&E to submit an analysis and time line for modifying its water discharge system to prevent further degradation of near-shore habitat.⁶ At the meeting, PG&E showed a 10-minute video of abundant fish swimming in the cove near the plant, an effort that some board members dismissed as "fluff, misleading and without

scientific value.”⁷ The fish flourishing in the cove were found not to be the indigenous species, but those attracted by the artificially warmed waters. Despite this, the board agreed to yet another delay, giving PG&E until March 30, 2000, to allow the utility to plan adequately for evidentiary hearings on the proposed cease and desist order.

The abundance-of-organisms argument has been shown to be flawed by ecologists and others. As awardwinning Harvard Professor of Entomology and conservation scientist Edward O. Wilson pointed out in his landmark book, *The Diversity of Life*, numerical abundance of any species is not necessarily a guarantee of survival. “The age, health and breeding patterns of individuals have an important effect on the genetic trajectory of a population and eventually its very survival,” Wilson wrote.⁸ “Even if the woods and fields are swarming with plants and animals of a certain kind, the species might be destined for extinction.”⁹

Damage proven but PG&E argues against mitigation. By December 1999, PG&E’s own new study was made public in draft form. It revealed that Diablo Canyon was killing significant numbers of nearshore fish larvae.¹⁰ “One species of kelp fish suffers 24 percent larvae mortality, two species of sculpin larvae were reduced by 10 percent and 7 percent respectively and 14 percent of monkey-faced prickleback young are killed,” the study stated.¹¹ The study also found that about 90 percent of the black abalone that once inhabited the cove had succumbed to withering syndrome, a fatal disease that has also affected the red abalone. This disease has been attributed to the higher water temperatures created by the plant’s discharge system. Despite these numbers, the PG&E legal team continued to argue that “the plant’s impacts on the ocean are predictable, minimal and temporary, and no mitigation action is needed.”¹² The state Department of Fish and Game and the state Water Resources Control Board disagreed, and both submitted substantial testimony in support of a cease and desist order.

More delays as environmental damage continues. No decision was made at the March 30, 2000, meeting. Testimony and rebuttals from both sides were provided to the board for a decision at the next meeting, on June 2, 2000. In the interim, during evidentiary hearings, PG&E turned down one mitigation proposal from the state—to preserve in perpetuity the 12,000 acres surrounding the plant. Jeff Lewis, Diablo Canyon spokesman, said that handing over 14 miles of valuable coastal land was too high a price to pay. PG&E also declared as financially unacceptable the construction of cooling towers, the less destructive alternative to the once-through cooling system.¹³

Discovery of suppressed evidence shows extensive damage. In May 2000 during the evidentiary hearings, it was discovered that PG&E had withheld, since 1986, infrared images that showed the actual distribution patterns of the thermal plume and impact zones.¹⁴ PG&E had also withheld 20-year-timeseries photographs of the monitoring stations. The extensive library of historical photos showed major deterioration of Diablo Cove.¹⁵ PG&E had also collected temperature-monitoring data during 1997 and 1998 from the area north of Diablo Cove. These data were not submitted until May 1, 2000 (even though annual monitoring reports were submitted in 1998 and 1999).¹⁶ The temperature-monitoring data only came to light during the discovery process. The state’s testimony further documents that, during earlier evidentiary hearings for the cease and desist order, PG&E’s legal counsel had argued “extensively” the degree of elevated temperatures in this same area was “unknown” while PG&E staff, aware of the data, remained silent.¹⁷

Water board buckles to PG&E pressure. Prior to the final June hearing, PG&E reportedly entertained negotiations with the RWQCB with an offer to spend \$75 million to build a deep-water intake and discharge system in lieu of paying any fines levied by the order.¹⁸ However, at the June hearing, the RWQCB instead succumbed to the utility when PG&E threatened protracted and costly law suits if faced with the issuance of a cease and desist order to mitigate fully for the damage it had caused. On October 27, 2000, the utility and the RWQCB settled for a meager \$4.5 million restoration package

and the preservation of 5.7 miles of company-owned coastline habitat. Without addressing the ongoing harmful thermal discharges, the settlement included:

- preservation of an unspecified amount of company-owned watersheds draining to the coastline from Fields Cove
- PG&E payment of \$4 million for unspecified marine restoration projects in the vicinity of the reactor
- opening of Diablo Canyon Power Plant biological research laboratories to educational organizations for a 10-year period
- payment of \$350,000 through company contributions for black abalone restoration through artificial cultivation and transplants
- reduction of PG&E's marine environment monitoring program for the Diablo Canyon discharges
- a narrow provision to protect the settlement against future changes in law, regulations, and permit conditions related to the settlement.

The public intervenors in the California case strenuously objected to the board's adoption of a settlement that failed to address the specific violations of the Diablo National Pollution Discharge System permit as documented by the board's own legal staff.¹⁹ The ongoing thermal discharges continue to violate the provisions of the water discharge permit that states that: (1) there shall be no degradation of indigenous species, (2) there shall be no degradation of marine communities, including plants and invertebrate and vertebrate animals, and also (3) the elevated temperature of the receiving water shall not have any adverse effect on beneficiary uses. The intervenors also objected to the abdication of the board's regulatory responsibilities to protect water resources and marine life from the indisputable ongoing and growing damage from the generator's cooling system.

Had the board approved and issued a cease and desist order, PG&E could have faced fines of millions of dollars a day for the past 15 years. Additionally, PG&E's proposal to extend the hot water discharges farther out into the cove or beyond, tantamount to constructing a superhighway on the ocean floor, would likely have caused new and as yet unexplored harmful environmental consequences and would have required an environmental impact statement. Furthermore, artificially cultivating black abalone and placing them back into the same environment in which they were destroyed, without reducing the rates or temperatures of the discharge water, fails to protect the species' long-term survival. This license to kill black abalone for the foreseeable future could mark the obliteration of the Diablo Cove population.