

4.2 ENTRAINMENT OF FISH AND SHELLFISH IN EARLY LIFE STAGES

NRC

“If the applicant’s plant utilizes once-through cooling or cooling pond heat dissipation systems, the applicant shall provide a copy of current Clean Water Act 316(b) determinations...or equivalent State permits and supporting documentation. If the applicant cannot provide these documents, it shall assess the impact of the proposed action on fish and shellfish resources resulting from ...entrainment.”

10 CFR 51.53(c)(3)(ii)(B)

“...The impacts of entrainment are small at many plants but may be moderate or even large at a few plants with once-through and cooling-pond cooling systems. Further, ongoing efforts in the vicinity of these plants to restore fish populations may increase the numbers of fish susceptible to intake effects during the license renewal period, such that entrainment studies conducted in support of the original license may no longer be valid....” 10 CFR 51, Subpart A, Appendix B, Table B-1, Issue 25

The NRC made impacts on fish and shellfish resources resulting from entrainment a Category 2 issue, because it could not assign a single significance level (small, moderate, or large) to the issue. The impacts of entrainment are small at many facilities, but may be moderate or large at others. Also, ongoing restoration efforts may increase the number of fish susceptible to intake effects during the period of extended operation (Reference 18). Accordingly, the NRC must determine the type of cooling system (whether one-through or cooling pond) and the status of any Clean Water Act Section 316(b) determination or equivalent state documentation.

D CPP has a once-through heat dissipation system that withdraws from and discharges to the Pacific Ocean. The general design and operational parameters of the cooling system are provided in Section 3.1.2.

The NRC has indicated in the GEIS for license renewal (Reference 18) that issuance of a National Pollutant Discharge Elimination System (NPDES) Permit implies certification by the State. Consistent with the GEIS, PG&E provides the current, enforceable, D CPP NPDES Permit No, CA0003751, Order 90-09 (Reference 1), as evidence of Water Quality Certification under Clean Water Act (CWA) Section 401 (CCRWQCB, 1990) (see Attachment B). The permit issued to PG&E specifically states that the location, design, construction and capacity of cooling water intake structures at D CPP reflect the Best Technology Available (BTA) for minimizing adverse environmental impact under 316(b). The permit was due to expire in 1995, and has since been in administrative extension. PG&E is ~~actively working~~ *continuing to work* with the *State Water Resources*

Control Board (SWRCB) and Central Coast Regional Water Quality Control Board (CCRWQCB) to renew the permit. The current permit does not include any requirements for ongoing entrainment monitoring during power plant intake operations.

The significance of entrainment losses for early life stages of marine organisms as well as cooling system discharge thermal impacts have been the subject of discussions between PG&E and the regulatory agency directly responsible for authorization and enforcement of plant specific NPDES requirements. The issues have resulted in extensive communications and consultations between PG&E and the CCRWQCB. Other state agencies have also been involved in permit related consultations, including the ~~California State Water Resources Control Board (SWRCB)~~ and the California State Department of Fish and ~~Game Wildlife~~ (CDF ~~W&G~~). The nature of these communications and consultations are provided in the references for this Section and Section 4.4, Heat Shock.

A summary of entrainment specific issues is provided in this section and the accompanying technical data report (Reference 10). Issues related to thermal discharge are discussed in Section 4.4. PG&E anticipates that final resolution of all outstanding issues for both entrainment and thermal discharge impacts will occur during the current operating license period, and PG&E will be issued a renewed NPDES permits prior to the period of extended operation.

The primary issue regarding entrainment is whether or not the absolute loss of larval organisms or eggs due to power plant cooling system operations constitutes an adverse environmental impact regardless of whether or not those losses result in degradation of the overall health of the aquatic ecosystem. The regulatory community, including the ~~SWRCB and~~ CCRWQCB, ~~has promoted~~ *have supported* the viewpoint that absolute losses are an adverse impact regardless of the presence or absence of detectable population level effects in the environment, and therefore entrainment reduction or mitigation measures may be warranted under any circumstances. This has been a general issue throughout the electric power generation industry, as well as an issue of relevance regarding continued use of once-through cooling (OTC) systems at existing nuclear power plants that have applied for license renewal. Generically, operators of facilities with OTC systems support the interpretation that observable population or ecological level effects are the appropriate indicator of whether or not entrainment losses result in adverse environmental impacts. ~~This~~ *While this* issue continues to be discussed among the generation industry, *regulators*, and ~~components of the regulatory community~~ *various stakeholders, the United States Environmental Protection Agency (USEPA) and the SWRCB have now adopted regulations and policies that provide a compliance framework discussed below.* ~~Final resolution of issues related to the significance of entrainment impacts for DCP are pending, and current issues regarding continued use of OTC have the potential to remain open for an extended period of time.~~

Regarding the impacts of entrainment of phytoplankton and zooplankton, because of the large numbers and short regeneration times of plankton, and generally ubiquitous dispersion of these organisms in both nearshore and offshore marine habitat, localized

entrainment impacts are considered to be of little ecological consequence. Further, any potential effects from entrainment losses at a specific location would also not be expected to contribute to detectable cumulative impacts in a nearshore region because the regeneration times of remaining non-entrained plankton are so rapid.

PG&E anticipates continued operation of the existing OTC system at DCPD during the period of extended operation. This is consistent with determinations regarding use of the installed cooling system within the Final Environmental Statement (FES) for the initial operating license period. As such, the Environmental Report and the conclusions of individual assessments related to Aquatic Ecology are predicated on the continued exclusive use of OTC. Issues specific to NPDES Permitting of the cooling system are expected to be resolved through ~~the jurisdictional regulatory authority and associated processes for implementation and enforcement of Federal Clean Water Act requirements~~ *of the SWRCB's OTC policy for DCPD.*

4.2.1 STATUS OF WASTE DISCHARGE REQUIREMENTS PERMIT

Commercial plant operations began in May 1985 with cooling system wastewater discharges authorized under NPDES Permit No. CA0003751 Permit Order 82-54 as amended April 1983. In August 1985, the CCRWQCB issued modified NPDES Permit Order No. 85-101. DCPD then applied for renewal of the permit, as required, prior to expiration of Order No. 85-101.

NPDES Permit No. CA0003751 Order 90-09, for DCPD Units 1 and 2, was adopted by the CCRWQCB on May 11, 1990 with an expiration date of July 1, 1995. In accordance with Federal and State regulations (and Order 90-09 Section D. Provisions, Subsection 9), an application was submitted by PG&E for a new permit 180-days prior to the expiration of Order 90-09 on November 7, 1994, and all applicable application fees paid.

PG&E was notified on June 26, 1995 by the CCRWQCB that a timely and complete application for re-issuance of Permit No. CA0003751 was received, and pursuant to 40 Code of Federal Regulations (CFR) Part 122.6, the existing permit order would remain valid, enforceable, and fully effective until January 1, 1997 (Reference 2). Renewal of the permit was deferred pending preparation of a comprehensive final report assessing adequacy of the existing discharge thermal limits. Recommendations were being considered by the CCRWQCB to modify the permit monitoring and reporting program, and a multi-agency workgroup was established to advise on the development of the comprehensive thermal effects assessment. These various efforts significantly impacted advancement of the permit renewal process

On August 29, 1996, PG&E was informed in a letter from the CCRWQCB that under the authority of California State Code of Regulations (CCR) Title 23, Section 2235.4, the existing NPDES Permit Order (90-09) would remain valid until a new permit was issued provided the facility complied with all requirements of the permit (Reference 3). Renewal of the permit continued to be deferred pending further development of the comprehensive thermal impacts assessment, as well as initiation and completion of a

316(b) demonstration study developed and implemented under the direction of a technical work group coordinated by CCRWQCB staff. The thermal assessment and 316(b) demonstration study were subsequently completed, and reports submitted to the CCRWQCB.

PG&E submitted an amended application for renewal of waste water discharge requirements under Permit No. CA0003751 to the CCRWQCB on January 24, 2001. A hearing was conducted on July 23, 2003 to consider adoption of a renewed permit for DCPP Units 1 and 2. The draft updated permit was not adopted, and additional evaluations and analysis, primarily concerning alternative potential mitigation strategies to compensate for entrainment losses, were requested by the CCRWQCB. The agency subsequently directed a team of independent consultants to consider and develop mitigation strategies for entrainment. The consultant's draft report was presented to the CCRWQCB in a public hearing that took place in September of 2005. The draft report concluded that construction of a large scale artificial reef in the ocean could provide an acceptable mitigation strategy to provide in-kind compensation for larval organisms and egg loss due to operation of the power plant cooling system. Construction and management of such a structure in the ocean however would likely result in project costs far in excess of the monetized losses caused by plant entrainment.

No further CCRWQCB-initiated activities related to renewal of the DCPP NPDES permit have occurred subsequent to the 2005 hearing. *Regulatory focus shifted to the USEPA's development of regulations implementing Clean Water Act Section 316(b) and the SWRCB's development of a OTC Policy to implement Section 316(b) in California.* ~~Current deferral of action has primarily been due to development and subsequent litigation surrounding the US EPA Phase II Rule for regulation of impingement and entrainment (I&E) at existing power plants using OTC. Varied methods of facility compliance provided in the initial 2004 Phase II Rule were legally challenged. The Federal Second Circuit Court subsequently remanded substantial components of the rule back to US EPA in the 2007 "Riverkeeper II" decision, as well as determined that costs of compliance options versus benefits gained were not an appropriate consideration when developing compliance strategies or assessing rule applicability. The cost benefit portion of Riverkeeper II was then subsequently appealed to the US Supreme Court. The US Supreme Court ruled on April 1, 2009 that cost versus benefit evaluations can be used as a component of Federal EPA rule making, specifically as it relates to the development of I&E regulations. Development and issuance of a modified Phase II Rule by the EPA is pending.~~

~~In addition to the outstanding issues involving a final Phase II Rule, the California SWRCB developed a draft State Policy in 2008 to standardize implementation of I&E regulations by the various Regional Water Quality Control Boards, including the CCRWQCB that oversees the DCPP NPDES Permit. The draft state policy includes stringent requirements to implement significant I&E reductions at existing power plants along the California Coast. The draft policy effectively directs facilities to implement I&E reductions commensurate with closed cycle cooling (retrofit to cooling towers) regardless of cost or technical feasibility, or cease operations. However, the draft policy~~

~~did not fully account for all relevant issues involving economics, feasibility of obtaining permits or licenses to implement facility modification or replacement, other adverse environmental impacts that would result from policy implementation, or the overall effects of the policy on the State's electric generation resources. Further development of the policy is anticipated to include input from an inter-agency process that will facilitate review and consideration of those issues the initial draft did not adequately address. Additionally, a State-specific policy will likely remain incomplete pending the development of revised Federal Phase II Rule. The CCRWQCB has therefore effectively postponed further evaluation of completing renewal of the DCPD NPDES Permit pending further actions at both the Federal and State level regarding I&E regulations for existing OTC facilities.~~

~~Pending full resolution of outstanding regulatory issues involving I&E, and subsequent final approval of a revised permit, the existing NPDES Permit No. CA0003751 Order 90-09 remains current and enforceable for DCPD Units 1 and 2.~~

USEPA issued final Section 316(b) regulations in August 2014. These regulations include separate assessments for entrainment and impingement: a site-specific assessment for entrainment, allowing for the use of cost benefit considerations, and list of compliance options for impingement. However, there is exemption for facilities with very low levels of impingement. The cost benefit assessment was allowed after the Supreme Court's 2009 ruling in the Riverkeeper case. It should be noted that these regulations have been challenged, so further changes may occur.

In 2010, the State Board adopted a Once Through Cooling (OTC) Water Policy to standardize implementation of I&E regulations by the various Regional Water Quality Control Boards, including the CCRWQCB that oversees the DCPD NPDES Permit. The State Policy includes stringent requirements to implement significant I&E reductions at existing fossil-fueled power plants along the California coast, effectively requiring reductions of at least 85 percent of flow or commensurate with closed-cycle cooling. However, the Policy acknowledges the unique contribution of the state's two nuclear plants (DCPD and Southern California Edison's San Onofre Nuclear Generating Station) to meeting California's Greenhouse Gas reduction goals and creates a separate process for establishing OTC compliance at the two nuclear facilities. The final Section 316(b) regulations in August 2014 specify that the California OTC policy is at least as stringent as the federal regulations, so it will govern Section 316(b) compliance in California.

The state's OTC Policy creates a nuclear review committee to oversee the development of an alternative technology assessment report by an independent third party consultant for each nuclear plant. Additionally, the Policy includes a variance provision which requires the State Board to modify the Policy to establish alternative compliance requirements for the nuclear plants if either the cost of installing alternative technologies (e.g., cooling towers) is wholly out of proportion to the costs considered by the State Board in adopting the Policy, or if the installation would be wholly unreasonable considering factors such as engineering, permitting, and space constraints, as well

safety concerns and adverse environmental impacts. Mitigation is required for any remaining impacts after implementation of the alternative requirements, with funding provided to the California Coastal Conservancy.

4.2.2 ONCE-THROUGH COOLING (OTC) SYSTEM

Section 3.1.2 provides a general description of the DCCP OTC system. During full power operations, the plant circulates approximately 2.45 billion gallons (equivalent to 9.275 million cubic meters) of raw seawater per day through the main steam condensers. Intake is from the Pacific Ocean at ambient temperature, and discharge is returned to the Ocean approximately 20°F on average above ambient.

The 3/8-inch mesh traveling debris screens located at the intake structure do not filter out or impinge microscopic phytoplankton and zooplankton, or the eggs and larval of the vast majority of marine fish and shellfish present in the source water body susceptible to entrainment in the cooling water flow. Microscopic and small organisms carried in the flow pass unobstructed through the mesh. These entrained organisms are then subjected to pumping forces, exposure to macro-fouling cropping within the system (primarily filter feeding barnacles and mussels that populate the seawater conduit surfaces), rapid thermal change passing through the main steam condensers, and significant turbulence during discharge back to the Pacific Ocean.

No specific technological or operational methods are employed to reduce entrainment of fish and shellfish larvae or eggs. Losses for entrained fish and shellfish are administratively set by agreement between PG&E and the CCRWQCB at 100 percent when considering entrainment impacts caused by cooling system operations. Actual losses for hard bodied more-durable organisms are likely much lower than 100 percent. Soft bodied organisms such as fish larvae, however, may in fact experience relatively low survival rates when transiting the system.

The abundance and diversity of organisms present at any given time in the intake water column, oceanographic and operational conditions, and the state of system conduit macro fouling will affect actual entrainment losses during plant operations at any given time. Regardless, for all regulatory and assessment purposes, entrainment losses caused by DCCP are considered 100 percent of all organisms withdrawn from the Pacific Ocean with the intake flow under all conditions.

4.2.3 EVALUATION OF PLANT INTAKE ENTRAINMENT AND IMPACTS

The aquatic ecosystem in the vicinity of DCPD has been extensively studied and monitored both prior to operation of the plant, and throughout commercial operations. DCPD has been the subject of an extensive marine ecological impacts assessment. These studies have included extensive pre-operational evaluation and modeling, and post-operational monitoring, of the impacts from thermal discharge to the Pacific Ocean receiving waters at Diablo Cove. During operations, extensive monitoring has also been conducted on ambient control areas North and South of the facility. The detailed monitoring has provided direct assessments of the abundance of multiple species of organisms over the operational life of the facility, which provides evidence regarding population level impacts from cooling system entrainment. The details of thermal discharge assessment studies are included in [Section 4.4](#).

In addition to thermal impacts assessments, an extensive three-year long evaluation of plant entrainment and source water body fish and shellfish larval diversity and abundance was conducted from 1996-1999 *and submitted to the CCRWQCB in March 2000. Development and implementation of the study was directed by a technical work group of independent scientists established by the CCRWQCB.* The details of design, implementation, study area, and the conclusions of this study are provided in the 316(b) Demonstration Study Report ([Reference 15](#)). Descriptions of the fish and shellfish resources in the vicinity of DCPD susceptible to entrainment, including assessment of adult equivalent losses are also provided in the study report.

As recommended by USEPA, the 2000 study did not evaluate entrainment of phytoplankton and zooplankton. This is because the large numbers of short regeneration times of these forms of plankton and the generally ubiquitous dispersion of these organisms in both nearshore and offshore marine habitat. Given these circumstances, localized entrainment impacts are considered to be of little ecological consequence. Thus, the focus of the study was on the evaluation of fish and shellfish larvae.

The summary conclusion from the ~~extensive entrainment and source water body assessment~~ *2000 316(b) Demonstration Study* is that DCPD 'takes' *entrains* on average approximately 11 percent of the larval population susceptible to entrainment (~~Note: depending on species-specific factors, larval losses are generally greater than or less than 11 percent for individual species affected~~). Considering the volume of water circulated through DCPD, this results in significant absolute numbers of fish and shellfish larvae lost when the 100 percent administrative mortality estimate is ~~applied~~ *assumed*. Annual entrainment of larval fish is estimated to range between 1.48 and 1.77 billion, dependent on flow.

Though the absolute numbers are large, it is noteworthy that the natural survival rate for eggs and larvae to juvenile stages is generally <1 percent, and survivorship to adult stage for most species is far less than 1 percent. In terms of natural survivability, the loss of 11 percent of the available larval population on average is not significant in light

of the fact that 99 percent or more of larvae normally suffer mortality from natural factors before reaching juvenile stages of development.

Biological compensation ~~can be considered more~~ *is an important factor in* the development and maintenance of a healthy aquatic ecological system ~~than that can compensate for the changes in the~~ absolute ~~larval~~ *numbers of larvae produced each year*. As long as habitat is present that supports successful recruitment and development of organisms from larvae stages to juvenile stages and beyond, available larvae can successfully develop to sustain stable reproductive adult populations. This is especially true for *fishes such as the rockfishes, sculpins, and cabezon that inhabit* the nearshore rocky aquatic habitat in the ~~area that provides for shelter and foraging for rockfish, sculpins, and cabezon~~ *vicinity of DCPP*. These fish species are the most prevalent in the vicinity, and therefore are also ~~those~~ *the* most susceptible to entrainment in early life stages.

Therefore, the loss of 11 percent of the larval population on average due to DCPP operations is ultimately compensated for by the remaining ~~89 percent on average~~ *larvae* that remain available for recruitment to the habitat present in the vicinity and region of DCPP. The health and viability of habitat immediately surrounding the power plant is shown in the data available from the extensive long-term ecological studies conducted in the vicinity.

During the current period of operation, available data from both DCPP-specific ecological studies, as well as independent studies of regional marine fisheries, provide evidence that local populations of fish susceptible to entrainment in larval stages have remained relatively stable. In general, adult populations of individual species have shown varying declines or increases in abundance over time that can be attributable to *numerous natural variation alone physical and biological factors that vary in intensity from year to year*. The conclusion from the extensive data from past and ongoing monitoring has shown that overall population decreases have not occurred, and the local marine ecosystem remains healthy.

DCPP is situated on an isolated stretch of pristine coastline with no other substantial human related influences that could negatively impact the health of the marine environment, with exception of limited commercial or recreational fishing. DCPP has provided a unique setting for the assessment of OTC impacts. The design capacity and actual operation of the facility define DCPP as the largest (by volume of water circulated) OTC system on the Pacific Coast. In addition to relative seclusion, a marine protected area (MPA) exists to the immediate north of the facility, and a 1-mile security exclusion zone *around the plant site and extending offshore* has further reduced fishing in the immediate plant vicinity since 2001. The DCPP setting has provided a relatively isolated crucible for assessing population level impacts of the large scale OTC operation.

If DCPP operations were resulting in detrimental impacts to fish and shellfish populations in the vicinity, these impacts should be observable, even apparent, after

~~over 20~~ **almost 30** years of commercial operations, most of which has been at high capacity factors - essentially maximizing potential ecological impacts. However, population-level impacts have not been detected. An independent study of fisheries catch data has shown that the number of rockfish caught per fisher hour in the vicinity (catch per unit effort) has remained stable, even increasing substantially in several recent seasons, despite the fact that the larvae of rockfish are among the species most susceptible to entrainment by DCPD (*Reference 28*). This and other similar facts provide direct evidence that entrainment losses are not resulting in population level effects in the area. In summary, "The combination of length-frequency analyses, ETM [*Empirical Transport Model*] estimates, and other corroborating data support the conclusion that the local subpopulations of most nearshore taxa are not experiencing long-term declines in abundance due to entrainment" (*Reference 15*).

4.2.4 CONSIDERATION OF CUMULATIVE ECOLOGICAL IMPACTS FROM OTC OPERATIONS

Cumulative ecological impacts due to potential for additive (synergistic) impacts caused by entrainment, impingement, and thermal discharge by DCPD have been considered. Cooling system thermal discharge impacts, as described in [Section 4.4](#), are isolated to a relatively small geographic location (Diablo Cove) influenced directly by the thermal plume. Extensive thermal monitoring programs implemented throughout the history of the facility have shown that discharge impacts are localized, and do not result in substantial local habitat disruption that would be necessary to cause population level impacts in the greater marine environment - either in the immediate DCPD vicinity or in the region. Degraded ecosystems and subsequent loss of species productivity and abundance can often be attributable to extensive losses of habitat available for larval recruitment and subsequent juvenile stage to adult development for multiple species. The limited/localized influence of the thermal discharge on the expansive rocky intertidal and rocky subtidal habitat running along the coast surrounding DCPD does not support any conclusion that thermal impacts cause population levels effects, or any detrimental effects outside of the limited area directly influenced by the plume.

Impingement impacts from DCPD operations are discussed in [Section 4.3](#). Fish and shellfish biomass trapped on debris screens due to cooling system flow and subsequently lost is very small both in absolute numbers, as well as when considered in respect to the large volumes of water withdrawn by the plant intake. Population level impacts cannot be caused by DCPD impingement, because impingement losses themselves are insignificant.

Entrainment impacts may be less localized and have the potential to influence biological populations throughout the source water area. Due to the limited extent of DCPD's thermal impact, and the design features that result in a small level of impingement, cumulative impacts on populations in the vicinity are expected to primarily reflect impacts that result from entrainment. Entrainment impacts have not been shown to result in detectible population level effects in the vicinity of DCPD or in the region. *Also, many of the fishes that are impinged, such as sharks, rays, and surfperches do not*

produce planktonic larvae that would be subject to entrainment. Therefore, a conclusion can be drawn that cumulative impacts from entrainment, impingement, and thermal discharge are likewise not significant

4.2.5 TECHNOLOGY OR MITIGATION MEASURES TO REDUCE ENTRAINMENT LOSSES

There have been no specific measures implemented during the initial operating license period to reduce the potential adverse impacts of entrainment. As previously discussed, no population level or ecological system level adverse impacts have been identified. ~~The CCRWQCB has previously determined that the loss of larval organisms alone may constitute an adverse impact; however, this same Agency also determined that "Regarding entrainment of larvae in the cooling water system, the proportional loss of larvae is significant. However, the costs of DCPP modifications or operational changes are wholly disproportionate to the benefit to be gained."~~ (Reference 4) *The State OTC Policy establishes a December 2024 deadline for DCPP to be in compliance and further establishes a process to determine compliance requirements. The policy requires the SWRCB to review the results of the Bechtel Alternatives Analysis and determine whether the costs of alternative technologies are "wholly out of proportion" to the costs considered by the Board in adopting the policy or if installation of alternative technologies are "wholly unreasonable" based on a number of factors including engineering, permitting, space and safety constraints, as well as adverse environmental impacts. Any difference in impacts to marine life resulting from alternative, less stringent requirements must be fully mitigated.*

Consideration of technology or mitigation measures that have the potential to reduce or offset entrainment losses from DCPP OTC system operations are detailed in the supporting references for this report section (*References 10, 19, and 27*).

As noted above, in accordance with the State's OTC policy, Bechtel was selected to prepare an alternative technologies report for the DCPP. The report developed a cost assessment and schedule for each of the technically feasible options, including fine mesh screens, offshore wedgewire screens, and closed-cycle cooling. A final report was submitted to the SWRCB in September 2014 (Reference 27). The SWRCB is expected to make a compliance determination by the second quarter of 2015.

No available technologies, other than retrofitting DCPP to closed-cycle cooling, have been identified that could appreciably reduce entrainment losses from cooling system operations. However, retrofitting DCPP to a closed-cycle cooling system is only a conceptual possibility, and would require implementation of a project at an unprecedented scale compared to any other similar undertaking previously conducted in the power generation industry. Additionally, evaluation of retrofitting DCPP has determined that likely insurmountable site-specific permitting, licensing, technical, and economic factors make such a project essentially infeasible. There are no technology or mitigation measures available in which the costs of implementation would not be very significant in relation to potential benefits that could be gained (*References 19 and 27*).

~~It is unknown if implementation of any mitigation strategy, if required, during the period of extended operation would reduce ongoing DCPP entrainment. Any effort to increase the abundance of larvae in the source water body (such as the CCRWQCB consultant's proposal to establish an artificial reef in the vicinity of DCPP) could cause an increase in the abundance of larval populations susceptible to entrainment (Reference 4). Increases in abundance in the source water body could result in related increases in the absolute number of larvae drawn into the cooling system within a given volume of water. However, such increased absolute losses would likely translate to similar percentage losses as those now experienced, ultimately not changing the relative larval 'take' and/or impact of the power plant due to entrainment. As population level impacts attributable to entrainment are currently not witnessed, similarly none would be anticipated if any specific mitigation strategy was implemented in the vicinity.~~

4.2.6 CONCLUSION - IMPACTS ON FISH AND SHELLFISH RESOURCES RESULTING FROM ENTRAINMENT DURING THE PERIOD OF EXTENDED OPERATION

PG&E anticipates that ~~current uncertainty regarding final regulatory policies regarding reduction or mitigation requirements for absolute entrainment losses resulting from power plant cooling system operations will be resolved through ongoing legislative and administrative processes, and ultimately~~ *the SWRCB will complete its evaluation of the Bechtel study and make a compliance determination in 2015 and that the CCRWQCB will then renew the NPDES permit, incorporating compliance findings and any required mitigation. PG&E believes that* the existing OTC system will continue to be considered best technology available for DCPP due to site specific considerations.

It is unknown currently what type of mitigation would ever be required for cooling system entrainment during a period of extended operation. In a case in which mitigation would be necessary to offset absolute entrainment losses, the specifics of the mitigation option would be developed and implemented under the guidance of the *SWRQB and CCRWQCB* as part of the NPDES permitting process.

Based on evidence from the extensive ecological studies conducted during the initial operating license period, entrainment losses of marine organism larvae and/or eggs do not result in observable population level impacts, and subsequently observable detrimental impacts to the overall ecological system susceptible to influence by cooling system withdrawal. Therefore, entrainment impacts to marine fish and shellfish resources from operation of DCPP's OTC system during the period of extended operation are projected to be SMALL. *Species-specific evaluations of impacts to threatened or endangered species due to entrainment are discussed in further detail in Section 4.10.*

4.3 IMPINGEMENT OF FISH AND SHELLFISH

NRC

“If the applicant’s plant utilizes once-through cooling or cooling pond heat dissipation systems, the applicant shall provide a copy of current Clean Water Act 316(b) determinations...or equivalent State permits and supporting documentation. If the applicant cannot provide these documents, it shall assess the impact of the proposed action on fish and shellfish resources resulting from...impingement....”

10 CFR 51.53(c)(3)(ii)(B)

“...The impacts of impingement are small at many plants but may be moderate or even large at a few plants with once-through and cooling-pond cooling systems....” 10 CFR 51, Subpart A, Appendix B, Table B-1, Issue 26

The NRC made impacts on fish and shellfish resources resulting from impingement a Category 2 issue, because it could not assign a single significance level to the issue. Impingement impacts are small at many facilities, but might be moderate or large at other plants (Reference 18). Information that needs to be ascertained includes (1) type of cooling system (whether once through or cooling pond) and (2) a current Clean Water Act 316(b) determination or equivalent state documentation.

DCPP has a once-through heat dissipation system that withdraws from and discharges to the Pacific Ocean. The general design and operational parameters of the cooling system are provided in Section 3.1.2.

As discussed in Section 4.2, the Central Coast Regional Water Quality Control Board (CCRWQCB) issued an NPDES Permit (CA0003751) (see Attachment B) to PG&E in 1990. The permit ~~was due to expire~~ in 1995, and has since been in administrative extension. PG&E is ~~actively continuing to working~~ with the *SWRCB and the CCRWQCB* to renew this permit. The current permit does not include any requirements for ongoing impingement monitoring during plant intake operations.

PG&E completed an impingement assessment of the OTC system in 1986. The year long study concluded that impingement of all marine organisms was very low, and further studies have not been warranted. *The study found that impingement losses during full flow intake operations (4 main circulating water pumps and 2 auxiliary water pumps in operation) amount to approximately 2.5 pounds of fish and shellfish biomass daily for a maximum of between 900-1200 pounds of biomass on an annual basis. This is in comparison to intake system performance of other west coast power generation facilities using OTC in which impingement can exceed DCPP’s annual biomass total in a single day, even with lower net intake withdrawal volumes at full power. The low*

impingement rates of the DCPD intake system are attributable to initial design and installation intended to reduce loss of fish due to impingement, as well as placement of the shoreline intake within an engineered protective cove. A study for the SWRCB showed that DCPD has the lowest impingement rate of any power plant in California using coastal waters for cooling (Reference 29).

In 2003, the CCRWQCB staff found determined that “regarding impingement of adult fish in the intake structure, the number of fish lost per year is so minor (a few hundred fish per year) that intake structure modifications or operational changes are not necessary. These losses are already minimized pursuant to Clean Water Act Section 316(b)” (Reference 4). Additionally, as part of the 2000 316(b) Demonstration Study, the CCRWQCB’s Technical Work Group reviewed the 1986 impingement study results, as well as additional data, and agreed that the low levels of impingement did not warrant further study (Reference 13).

~~Impingement losses during full flow intake operations (4 main circulating water pumps and 2 auxiliary water pumps in operation) amount to approximately 2.5 pounds of fish and shellfish biomass daily for a maximum of between 900–1200 pounds of biomass on an annual basis. This is in comparison to intake system performance of other west coast power generation facilities using OTC in which impingement can exceed DCPD’s annual biomass total in a single day, even with lower net intake withdrawal volumes at full power. The low impingement rates of the DCPD intake system are attributable to initial design and installation intended to reduce loss of fish due to impingement, as well as placement of the shoreline intake within an engineered protective cove. Refer to the Impingement of Fish and Shellfish Technical Data Report for more information regarding intake structure design, and the results of impingement assessments conducted (Reference 9).~~

PG&E concludes that impingement impacts to fish and shellfish resources from operation of the OTC system during the period of extended operation, based on the determination of impacts during the initial operating license period, are projected to be SMALL. *Species-specific evaluations of impacts to threatened or endangered species due to impingement are discussed in further detail in Section 4.10.*

4.4 HEAT SHOCK

NRC

"If the applicant's plant utilizes once-through cooling or cooling pond heat dissipation systems, the applicant shall provide a copy of current Clean Water Act...316(a) variance in accordance with 40 CFR 125, or equivalent State permits and supporting documentation. If the applicant cannot provide these documents, it shall assess the impact of the proposed action on fish and shellfish resources resulting from heat shock..." 10 CFR 51.53(c)(3)(ii)(B)

"...Because of continuing concerns about heat shock and the possible need to modify thermal discharges in response to changing environmental conditions, the impacts may be of moderate or large significance at some plants...." 10 CFR 51, Subpart A, Table B-1, Issue 27

The NRC made impacts on fish and shellfish resources resulting from heat shock a Category 2 issue because of continuing concerns about thermal discharge effects and the possible need to modify thermal discharges in the future in response to changing environmental conditions (Reference 18). Information to be ascertained includes (1) Type of cooling system (whether once-through or cooling pond), and (2) Evidence of a CWA Section 316(a) variance or equivalent State documentation.

DCPP has a once-through heat dissipation system that withdraws from and discharges to the Pacific Ocean. The general design and operational parameters of the cooling system are provided in Section 3.1.2.

As discussed in Section 4.2, the Central Coast Regional Water Quality Control Board (CCRWQCB) issued an NPDES Permit (CA0003751) (see Attachment B) to PG&E in 1990. The permit ~~was due to~~ expired in 1995 and has since been in administrative extension. PG&E is ~~actively~~ continuing to working with the SRWQCB and the CCRWQCB to renew this permit. *The permit includes an effluent limit that requires the discharge temperature be no more than 22°F above the ambient receiving water and also includes numerous narrative receiving water limits including requirements that the discharge not cause objectionable aquatic growth or degradation of indigenous biota, degradation of marine communities, including vertebrate, invertebrate, and plant species and temperature of receiving water to adversely affect beneficial uses.*

In accordance with permit requirements, PG&E monitors discharge characteristics (including heat shock) and reports the results to the CCRWQCB. Refer to the Heat Shock Technical Data Report for more information regarding the history of studies completed for thermal discharge (Reference 7).

The physical characteristics and biological effects of the DCPD thermal discharge have been extensively studied beginning in the mid-1960s when the area was first considered as a power plant site. During plant operations in the initial license period, actual effects of the thermal discharge were found to be only slightly greater in spatial extent than predicted, but are largely confined to the shoreline and shallow areas of Diablo Cove. The most recent completed detailed analysis of the effects of the thermal discharge *using data through 2002* (Reference 16) showed that the nature and spatial extent of the effects had not increased since the previous assessment detailing changes through 1995 (Reference 14). In general, pre-operational assessments have been confirmed by actual plant operations, and thermal discharge impacts are not significantly changing over time as a result of continued plant operations.

Currently, DCPD is updating the cooling system thermal discharge impacts assessment using data gathered through ~~2008-2013~~ from the ongoing Receiving Water Monitoring Program (RWMP). ~~The final report from the effort expands the second operational period (OpPeriod-2) data set used in the last comprehensive analysis (Reference 16) from 1995-2002 to 1995-2008.~~ It is scheduled for completion during ~~1st~~ *2nd* Quarter ~~2010~~ *2015*, and preliminary conclusions from the in-progress project are not substantially different from those in the earlier comprehensive reports.

Continued monitoring of the marine environment influenced by the DCPD discharge is anticipated to further support previous conclusions regarding thermal impacts. Once-through cooling system thermal effects are not significantly changing or increasing, and protection of the beneficial uses of the receiving water will continue in the period of extended operation.

PG&E concludes that heat shock impacts to fish and shellfish resources from operation of the OTC system during the period of extended operation, relative to the determinations of thermal discharge impacts during the initial operating license period, are projected to be SMALL. *Species-specific evaluations of impacts to threatened or endangered species due to heat shock are discussed in further detail in Section 4.10.*

4.5 GROUNDWATER USE CONFLICTS (PLANTS USING >100 GPM OF GROUNDWATER)

NRC

"If the applicant's plant...pumps more than 100 gallons (total onsite) of ground water per minute, an assessment of the impact of the proposed action on groundwater use must be provided." 10 CFR 51.53(c)(3)(ii)(C)

"...Plants that use more than 100 gpm may cause ground-water use conflicts with nearby ground-water users...." 10 CFR 51, Subpart A, Table B-1, Issue 33

The NRC made this groundwater use conflict a Category 2 issue because at a withdrawal rate of more than 100 gpm, a cone of depression could extend offsite. This could deplete the groundwater supply available to offsite users, creating an impact that could warrant mitigation. Information needed to address this issue includes the DCPP groundwater withdrawal rate (whether greater than 100 gpm), offsite drawdown, and impact on neighboring wells.

Based on information presented in Section 3.1.2, DCPP average¹ groundwater use is less than 100 gpm. Groundwater reserves at the site are limited by the nature of the plant location, and lack of hydraulic connection with groundwater resources on properties outside of plant controlled lands.

DCPP has a groundwater well (Deep Well #2) available as a backup freshwater resource. The deep well has a maximum capacity of 170 gpm, and a tested reliable production rate of 150-155 gpm that can be maintained even during drought conditions without depleting the *trapped* aquifer. However, the well is not intended to operate continuously, and is only in-service as needed. Average production from the well on an annual basis is projected to be *significantly* less than 100 gpm during the period of extended operation. The estimate for total well use is approximately *12* weeks (or approximately *350-2000* hours) on average per year at the 150 gpm production rate.

Deep Well #2 will normally only be used in the event the Seawater Reverse Osmosis (SWRO) Unit freshwater production is insufficient to maintain plant makeup or firewater reserves. This is anticipated to occur only during a non-routine period of unusually high freshwater consumption by Unit 1 and/or Unit 2 (such as an extended dual unit forced outage with Units maintained in hot standby), or during periodic planned or unplanned clearance of the SWRO. SWRO supply is generally only insufficient when the system is unavailable for an extended period of time due to scheduled equipment maintenance,

¹ Regulatory Guide 4.2 Supplement 1 Section 4.5 states that this section is applicable to plants that use more than an *annual average* of 100 gpm. Thus, DCPP's evaluation is based on the annual average use of groundwater.

an unplanned equipment failure, or a system trip from a transient event such as electrical power loss or excessive pump backpressures. Continuous use of the well at maximum rated capacity is therefore not anticipated during the period of extended operation. The system will remain a back-up freshwater resource, and *will* be used *primarily for SWRO backup, as well as conditioning of SWRO product water* only infrequently.

When in operation, the well draws from an isolated source specific to DCP. The topography of the location precludes any connection between the well source water and offsite water resources. There are no neighboring wells (outside of the DCP industrial site and adjacent controlled property) that can be impacted or made unavailable due to operation of the onsite well. Therefore, no cone of depression can be created from groundwater use on the plant site that could extend offsite regardless of pump withdrawal rate or an extended period of withdrawal. Further assessment of the issue of groundwater use conflicts (required for plants using more than 100 gpm groundwater) is not necessary and the impacts of this issue are SMALL.

4.10 THREATENED OR ENDANGERED SPECIES

NRC

“Additionally, the applicant shall assess the impact of the proposed action on threatened and endangered species in accordance with the Endangered Species Act.” 10 CFR 51.53(c)(3)(ii)(E)

“Generally, plant refurbishment and continued operation are not expected to adversely affect threatened or endangered species. However, consultation with appropriate agencies would be needed at the time of license renewal to determine whether threatened or endangered species are present and whether they would be adversely affected.” 10 CFR 51, Subpart A, Appendix B, Table B-1, Issue 49

The NRC made impacts to threatened and endangered species a Category 2 issue because the status of many species is being reviewed continuously, and site-specific assessment is required to determine whether any identified species could be affected by refurbishment activities or continued plant operations through the renewal period. In addition, compliance with the Endangered Species Act requires consultation with the appropriate federal agency (Reference 18, Sections 3.9 and 4.1).

Section 2.2 describes the aquatic communities near the plant site, *presents special status (State and Federal) aquatic species that have the potential to occur in the vicinity of DCPD*, and discusses population trends in recreationally and commercially important populations. Section 2.4 describes important terrestrial habitats at DCPD *and presents special status (State and Federal) terrestrial species that have the potential to occur on the Diablo Canyon lands*. Section 2.5 discusses State- and Federally-listed threatened or endangered species that occur or may occur *at on the DCPD site (Parcel P)*, or along associated transmission corridors *and potential impacts to these species*.

~~PG&E is currently unaware of any adverse issues that involve State and Federally-listed threatened or endangered species associated with the operation and/or maintenance of DCPD, including the existing transmission lines, towers, and access roads. PG&E corresponded with appropriate agencies (USFWS, CSLC, BLM, NMFS, and CDFG CDFW) requesting information on the role each agency would expect to play in the license renewal process and the scope of information that may be required to fulfill those responsibilities. Agency consultation correspondence is provided in Attachment C.~~

As discussed in Section 3.2, PG&E has no plans to conduct refurbishment activities at DCPD during the license renewal term. Therefore, there would be no refurbishment-

related impacts to special-status species and no further analysis of refurbishment-related impacts is warranted.

Furthermore, plant operations will continue to be conducted in accordance with the Environmental Protection Plan (Reference 30) which ensures that the plant is operated in an environmentally acceptable manner, as established by the FES and other NRC environmental impact assessments. Furthermore, because PG&E has no plans to alter current operations, PG&E concludes that license renewal related impacts to State and Federally-listed threatened or endangered species from license renewal discussed below and to special status species listed in Tables 2.2-3 and 2.4-1 would be SMALL and do not warrant mitigation beyond current management programs and existing regulatory controls.

Threatened or endangered species are discussed in detail in Section 2.5. The species-specific impact conclusions are summarized below:

Terrestrial Species

- California tiger salamander and California red-legged frog are the only terrestrial threatened or endangered species with the potential to occur on the DCPD site (Parcel P). There is only marginal habitat for these species on the DCPD site and despite long-term monitoring and other site specific surveys, none have ever been recorded on the plant site or even on the surrounding Diablo Canyon lands. In addition, there are no refurbishment or construction activities associated with DCPD license renewal. Thus, there is no anticipated impact to these species due to DCPD continued operation and PG&E concludes that impacts to threatened or endangered terrestrial species would be SMALL.*

Aquatic Species

- Cooling system thermal discharge impacts, as described in Section 4.4, are isolated to a relatively small geographic location (Diablo Cove) influenced directly by the thermal plume. Extensive thermal monitoring programs implemented throughout the history of the facility have shown that discharge impacts are localized, and do not result in substantial local habitat disruption that would result in population level impacts in the greater marine environment - either in the immediate DCPD vicinity or in the region. The limited/localized influence of the thermal discharge on the expansive rocky intertidal and rocky subtidal habitat running along the coast surrounding DCPD does not provide any evidence that thermal impacts cause population levels effects, or any detrimental effects outside of the limited area directly influenced by the plume. Thus, PG&E concludes that heat shock impacts to fish and shellfish resources from operation of the OTC system during the period of extended operation would be SMALL.*
- Discussion of potential impacts to threatened and endangered species due to impingement and entrainment are discussed specific to each species below.*
- Because the NRC is responsible for licensing nuclear power plants to operate, it is their responsibility under Section 7 (a) (2) of the ESA to request consultation*

on the take of listed species during the operation of DCP. The NMFS issued a biological opinion on the effects of continued operation of DCP on federally listed aquatic species subsequent to formal consultation with the NRC entered into on July 20, 2005 (Reference 24). The biological opinion evaluated direct and indirect effects of DCP operations over a study area including DCP facilities, the intake and discharge structures, and the region where the discharge of warm and chlorinated water extends. The biological opinion concluded that operation of DCP is not likely to jeopardize federally listed green sea turtles, leatherback sea turtles, loggerhead sea turtles, and olive ridley sea turtles (Reference 24). In addition, blue whale, sperm whale, fin whale, humpback whale, sei whale, Guadalupe fur seal, white abalone, green sturgeon, and steelhead may be found in the study area for limited amounts of time, but in the NMFS opinion, are not likely to be adversely affected by DCP operation. Species specific conclusions of the 2006 biological opinion are provided below. While killer whale and north Pacific right whale were not identified as a threatened or endangered species that may be present in the study area at the time the biological opinion was published, the effects to killer whale and north Pacific right whale would be the same as those whale species discussed in the biological opinion and thus, PG&E concludes killer whale and north Pacific right whale not likely to be adversely affected by DCP operation. Therefore, PG&E concludes impacts to these species due to DCP continued operation would be SMALL.

SCCC Steelhead DPS

- The Federal Register rule package identifies streams that provide habitat suitable for this species. Within the vicinity of DCP, only Coon Creek, located north on the boundary with Montana de Oro State Park, is described (Reference 25). Current freshwater habitat on the Diablo Canyon lands is not anticipated to decline with continued operations as current operation has no effect on this designated critical habitat. In contrast, beginning in 2002, PG&E partnered with the City of San Luis Obispo, the NMFS, and the CDFW in a successful steelhead habitat restoration project on Coon Creek (Reference 26). Given that steelhead are an anadromous species (spawn in fresh water), there is no anticipated entrainment of steelhead larvae because the presence of larval steelhead in the intake cove is not likely. In addition, the likelihood of adult steelhead impingement is low due to the low uniform intake approach velocity (which allows fish to swim away from the intake structure), and lack of any steelhead identified in the vicinity of the intake cove in past DCP monitoring efforts. Therefore, incidental take is unlikely and PG&E concludes that impacts to the Federally-listed SCCC steelhead DPS from continued operations would not likely adversely affect the species, and thus, impacts will be SMALL.*

Tidewater Goby

- No streams traversing the Diablo Canyon lands have designated critical habitat for the tidewater goby (78 FR § 8745). No suitable habitat is available in Diablo Creek, as the creek has no estuary and ascends steeply over rocky substrate*

from the mouth upstream, precluding the occurrence of gobies. Coon Creek presents very limited and marginal habitat for the tidewater goby at the very mouth of the stream; however, no adult gobies are currently or historically known to inhabit this stream. Entrainment of tidewater goby larvae is unlikely due to the lack of historical presence or potential habitat (coastal lagoon or estuary) in the vicinity of the intake cove. In addition, the likelihood of adult tidewater goby impingement is low due to the lack of habitat. Tidewater gobies are uniquely adapted to coastal lagoons and the uppermost brackish zone of larger estuaries, rarely occurring in marine habitats. Therefore, it is highly unlikely that tidewater goby would be in the vicinity of the intake cove. This is supported by the fact that there are no records of adult tidewater goby presence in the vicinity of the intake cove throughout the history of DCPD operation during extensive marine monitoring. Therefore, incidental take is unlikely, and PG&E concludes that impacts to the tidewater goby from continued operations would not likely adversely affect the species, and thus, impacts will be SMALL.

Green Sturgeon

- No critical habitat for the green sturgeon is designated in the vicinity of the DCPD (74 FR § 52300). Given that green sturgeon are an anadromous species (spawn in fresh water), there is no anticipated entrainment of green sturgeon larvae. In addition, green sturgeon spawning grounds are very distant from DCPD (several hundred miles away), with the nearest confirmed location in the Sacramento River. Therefore, the presence of larval green sturgeon in the vicinity of the intake cove is highly unlikely. Although the marine habitat around DCPD is within the range of adult green sturgeon, the likelihood of adult green sturgeon impingement is low due to the low uniform intake approach velocity (which would allow fish to swim away from the screens), and the lack of any green sturgeon identified in the vicinity of the intake cove throughout the history of DCPD operation during extensive marine monitoring. Therefore, incidental take is unlikely, and PG&E concludes that impacts to the green sturgeon from continued operations would not likely adversely affect the species, and thus, impacts will be SMALL.*

Coho Salmon

- No critical habitat for the coho salmon is designated in the vicinity of the DCPD (64 FR § 24049). Given that coho salmon are an anadromous species (spawn in fresh water), there is no anticipated entrainment of coho salmon larvae because presence of larval coho salmon in the intake cove is not likely. Although the marine habitat around DCPD is within the range of adult coho salmon, the likelihood of adult coho salmon impingement is low due to the low uniform intake approach velocity (which would allow fish to swim away from the screens), and the lack of any coho salmon identified in the vicinity of the intake cove throughout the history of DCPD operation during extensive marine monitoring. Therefore, incidental take is unlikely, and PG&E concludes that impacts to the coho salmon*

from continued operations would not likely adversely affect the species, and thus, impacts will be SMALL.

Southern Sea Otter

- Sea otter populations from Point Buchon to near Point San Luis (including geographic area off the coast of DCPD) have been monitored since 1973. This extensive monitoring effort has identified no impact to southern sea otter populations from DCPD operation. Therefore, incidental take is unlikely, and PG&E concludes that impacts to the southern sea otter from continued operations would not likely adversely affect the species, and thus, impacts will be SMALL.*

Guadalupe Fur Seal

- Marine mammal populations off the coast of DCPD have been monitored throughout plant operation. This monitoring effort has identified no impact to Guadalupe fur seal populations from DCPD operation. Therefore, incidental take is unlikely, and PG&E concludes that impacts to the Guadalupe fur seal from continued operations would not likely adversely affect the species, and thus, impacts will be SMALL.*

Green Sea Turtle

- During the period of 1977 (prior to reactor start-up and plant commercial operation) through 2014, there were 14 occurrences of a green sea turtle found stranded in the forebay of the DCPD intake structure. NMFS issued a Biological Opinion and Incidental Take Statement, in accordance with Section 7 of the ESA (16 U.S.C 1531 et seq.), on September 18, 2006 for the possession and disposition of impinged or stranded sea turtles within the DCPD intake structure (Reference 24). The biological opinion on the effects of DCPD operation on federally listed species issued by NMFS in September 2006 concluded operation of DCPD is not likely to jeopardize green sea turtles. Sea turtles would not likely be directly harmed by elevated water temperatures. While it is possible that temperature increases from thermal discharge could affect the turtle's normal distribution or foraging patterns (as sea turtles have been known to aggregate in warm water effluent elsewhere), based on stranding and sighting data, there have been no known cases of sea turtles aggregating near the DCPD discharge area. In addition, the warm water effluent does not extend to the intake cove and, therefore, would not likely modify turtle behavior near the intake structure (Reference 24). While PG&E is covered under the Biological Opinion and Incidental Take Statement for the possession and disposition of impinged or stranded sea turtles at DCPD, stranding of green sea turtles within the intake structure at DCPD has never resulted in a green sea turtle mortality or injury, and there has never been an instance of sea turtle impingement against the bar racks at DCPD due to the low uniform intake approach velocity. Thus, PG&E concludes that impacts to the green sea turtle from continued operations would not likely adversely affect the species, and therefore, impacts will be SMALL.*

Leatherback Sea Turtle

- *While designated critical habitat for the leatherback turtle includes geographic area off the coast of the DCP, in the almost 30 years since DCP started operating, PG&E has never observed leatherback sea turtles in the vicinity of DCP. However, in the event that a leatherback sea turtle were encountered in the vicinity of DCP, PG&E is covered under the Biological Opinion and Incidental Take Statement for the possession and disposition of impinged or stranded sea turtles at DCP. NMFS issued a Biological Opinion and Incidental Take Statement, in accordance with Section 7 of the ESA (16 U.S.C 1531 et seq.), on September 18, 2006 for the possession and disposition of impinged or stranded sea turtles within the DCP intake structure (Reference 24). The biological opinion on the effects of DCP operation on federally listed species issued by NMFS in September 2006 concluded operation of DCP is not likely to jeopardize leatherback sea turtles. Sea turtles would not likely be directly harmed by elevated water temperatures. While it is possible that temperature increases from thermal discharge could affect the turtle's normal distribution or foraging patterns (as sea turtles have been known to aggregate in warm water effluent elsewhere), based on stranding and sighting data, there have been no known cases of sea turtles aggregating near the DCP discharge area. In addition, the warm water effluent does not extend to the intake cove and, therefore, would not likely modify turtle behavior near the intake structure (Reference 24). Based on past stranding events with green sea turtles, which have not resulted in an injury or mortality, there would be no anticipated injury or mortality from stranding of a leatherback. Additionally, there would be no anticipated impingement of a leatherback sea turtle due to the low uniform intake approach velocity and the lack of any sea turtle impingement against the intake structure bar racks throughout the history of DCP operation. Thus, PG&E concludes that impacts to the leatherback sea turtle from continued operations would not likely adversely affect the species, and therefore, impacts will be SMALL. In addition, the limited range of the thermal plume from DCP thermal discharge in relation to the widespread species' range, lends to the conclusion that impacts to the species' critical habitat from DCP thermal discharge would be SMALL.*

Pacific Olive Ridley Sea Turtle

- *NMFS issued a Biological Opinion and Incidental Take Statement, in accordance with Section 7 of the ESA (16 U.S.C 1531 et seq.), on September 18, 2006 for the possession and disposition of impinged or stranded sea turtles within the DCP intake structure (Reference 24). The biological opinion on the effects of DCP operation on federally listed species issued by NMFS in September 2006 concluded operation of DCP is not likely to jeopardize olive ridley sea turtles. Sea turtles would not likely be directly harmed by elevated water temperatures. While it is possible that temperature increases from thermal discharge could affect the turtle's normal distribution or foraging patterns (as sea turtles have been known to aggregate in warm water effluent elsewhere), based on stranding*

and sighting data, there have been no known cases of sea turtles aggregating near the DCPD discharge area. In addition, the warm water effluent does not extend to the intake cove and, therefore, would not likely modify turtle behavior near the intake structure (Reference 24). While PG&E is covered under the Biological Opinion and Incidental Take Statement for the possession and disposition of impinged or stranded sea turtles at DCPD, in the almost 30 years since DCPD started operating, PG&E has never observed olive ridley sea turtles in the vicinity of DCPD. However, in the event that an olive ridley sea turtle were encountered in the vicinity of DCPD, based on past stranding events with green sea turtles, which have not resulted in an injury or mortality, there would be no anticipated injury or mortality from stranding of an olive ridley sea turtle. Additionally, there would be no anticipated impingement of an olive ridley sea turtle due to the low uniform intake approach velocity and the lack of any sea turtle impingement against the intake structure bar racks throughout the history of DCPD operation. Thus, PG&E concludes that impacts to the olive ridley sea turtle from continued operations would not likely adversely affect the species, and therefore, impacts will be SMALL.

Loggerhead Sea Turtle

- NMFS issued a Biological Opinion and Incidental Take Statement, in accordance with Section 7 of the ESA (16 U.S.C 1531 et seq.), on September 18, 2006 for the possession and disposition of impinged or stranded sea turtles within the DCPD intake structure (Reference 24). The biological opinion on the effects of DCPD operation on federally listed species issued by NMFS in September 2006 concluded operation of DCPD is not likely to jeopardize loggerhead sea turtles. Sea turtles would not likely be directly harmed by elevated water temperatures. While it is possible that temperature increases from thermal discharge could affect the turtle's normal distribution or foraging patterns (as sea turtles have been known to aggregate in warm water effluent elsewhere), based on stranding and sighting data, there have been no known cases of sea turtles aggregating near the DCPD discharge area. In addition, the warm water effluent does not extend to the intake cove and, therefore, would not likely modify turtle behavior near the intake structure (Reference 24). While PG&E is covered under the Biological Opinion and Incidental Take Statement for the possession and disposition of impinged or stranded sea turtles at DCPD, in the almost 30 years since DCPD started operating, PG&E has never observed loggerhead sea turtles in the vicinity of DCPD. However, in the event that a loggerhead sea turtle were encountered in the vicinity of DCPD, based on past stranding events with green sea turtles, which have not resulted in an injury or mortality, there would be no anticipated injury or mortality from stranding of a loggerhead sea turtle. Additionally, there would be no anticipated impingement of a loggerhead sea turtle due to the low uniform intake approach velocity and the lack of any sea turtle impingement against the intake structure bar racks throughout the history of DCPD operation. Thus, PG&E concludes that impacts to the loggerhead sea turtle from continued operations would not likely adversely affect the species, and therefore, impacts will be SMALL.*

Black Abalone

- *Entrainment of fish and shellfish larvae is discussed in detail in Section 4.2. While there is potential for entrainment of black abalone larvae at DCP, there are factors that greatly reduce the potential for entrainment to adversely impact the species population. The duration of time that abalone larvae are in the water column where they might be subject to entrainment is limited by the short dispersal potential for this species. Laboratory studies at DCP also showed that the larval stage where dispersal is most likely to occur is limited to 10 to 20 hours. Therefore, any larvae would be subject to entrainment for a limited period of time and within an area limited to the direct vicinity of the intake cove, and any minimal entrainment would not adversely affect the population. Thus, PG&E concludes impacts to the species from DCP continued operation due to entrainment would be SMALL.*
- *Temperatures found in Diablo Cove are within the range of the optimum temperatures for the species. The biogeographical water temperature range of black abalone is from 53.6 to 77°F, but they are most abundant in areas where the water temperature ranges from 64.4 to 71.6°F (Reference 31). This is further demonstrated by laboratory studies at DCP showing tolerance of the species for seawater temperatures higher than the temperatures experienced inside Diablo Cove during plant operation and abundances inside Diablo Cove remaining consistent with abundances outside Diablo Cove prior to the discovery of WS. While elevated water temperature has been demonstrated to accelerate the mortality of black abalone with withering syndrome (WS), it is not a direct cause of WS. The rate of decline due to WS was greater in areas within the range of the DCP thermal plume. However areas within the range of the thermal plume and areas outside the range of the thermal plume (other areas of the central coast south of Cayucos) eventually reached the same level of absolute population decline. This is shown in the DCP monitoring data depicted in Figure 2.5-2. Therefore, PG&E concludes impacts to this species from continued DCP thermal discharge during the renewal period would be SMALL.*
- *There would be no anticipated impingement of juvenile or adult black abalone because black abalone are a sessile species, not free swimming. In addition, black abalone do not occur within or on the submerged exterior of the intake structure itself due to the lack of suitable protective habitat. Thus, PG&E concludes that impacts to black abalone from continued operation of DCP due to impingement would be SMALL.*

4.11 AIR QUALITY DURING REFURBISHMENT (NON-ATTAINMENT AREAS)

NRC

“...If the applicant’s plant is located in or near a nonattainment or maintenance area, an assessment of vehicle exhaust emissions anticipated at the time of peak refurbishment workforce must be provided in accordance with the Clean Air Act as amended....” 10 CFR 51.53(c)(3)(ii)(F)

“...Air quality impacts from plant refurbishment associated with license renewal are expected to be small. However, vehicle exhaust emissions could be cause for concern at locations in or near nonattainment or maintenance areas. The significance of the potential impact cannot be determined without considering the compliance status of each site and the numbers of workers expected to be employed during the outage....” 10 CFR 51, Subpart A, Appendix B, Table B-1, Issue 50

The NRC made impacts to air quality during refurbishment a Category 2 issue because vehicle exhaust emissions could be cause for some concern, and a general conclusion about the significance of the potential impact could not be drawn without considering the compliance status at each site and the number of workers expected to be employed during an outage (Reference 18). Information needed would include: (1) the attainment status of the plant-site area, and (2) the number of additional vehicles as a result of refurbishment activities.

DCPP is located in a State non-attainment area for ozone *and PM₁₀* (Refer to Section 2.10). The issue of air quality during refurbishment is not applicable to DCPP because, as discussed in Section 3.2, PG&E has no plans for refurbishment or other license renewal-related construction activities at DCPP. Further, since air emissions from the site, including emissions from testing emergency diesel generators, is regulated by a site-specific permit (Refer to Table 9-1) based on review of emissions in order to be protective of the State's air quality standards, impacts from continued operation are anticipated to be SMALL.

4.17 OFFSITE LAND USE

4.17.1 OFFSITE LAND USE - REFURBISHMENT

NRC

The environmental report must contain "...an assessment of the impact of the proposed action on... land-use... (impacts from refurbishment activities only) within the vicinity of the plant..." 10 CFR 51.53(c)(3)(ii)(I)

"...Impacts may be of moderate significance at plants in low population areas...." 10 CFR 51, Subpart A, Appendix B, Table B-1, Issue 68

"...[I]f plant-related population growth is less than 5 percent of the study area's total population, off-site land-use changes would be small, especially if the study area has established patterns of residential and commercial development, a population density of at least 60 persons per square mile, and at least one urban area with a population of 100,000 or more within 50 miles...." (NRC 1996)

The NRC made impacts to offsite land use as a result of refurbishment activities a Category 2 issue because land-use changes could be considered beneficial by some community members and adverse by others. Local conditions to be ascertained include: (1) plant-related population growth, (2) patterns of residential and commercial development, and (3) proximity to an urban area with a population of at least 100,000.

This issue is not applicable to DCPD because, as Section 3.2 discusses, PG&E has no plans for refurbishment as a result of license renewal at DCPD.

4.17.2 OFFSITE LAND USE – LICENSE RENEWAL TERM

NRC

The environmental report must contain "...an assessment of the impact of the proposed action on ...land-use...within the vicinity of the plant..." 10 CFR 51.53(c)(3)(ii)(I)

"Significant changes in land use may be associated with population and tax revenue changes resulting from license renewal." 10 CFR 51, Subpart A, Appendix B, Table B-1, Issue 69

"...[I]f plant-related population growth is less than five percent of the study area's total population, off-site land-use changes would be small..." (NRC 1996, Section 3.7.5)

"If the plant's tax payments are projected to be small, relative to the community's total revenue, new tax-driven land-use changes during the plant's license renewal term would be small, especially where the community has pre-established patterns of development and has provided adequate public services to support and guide development." (NRC 1996, Section 4.7.4.1)

The NRC made impacts to offsite land use during the license renewal term a Category 2 issue because land-use changes may be perceived as beneficial by some community members and adverse by others. Therefore, the NRC could not assess the potential significance of site-specific offsite land-use impacts (Reference 18, Section 4.7.4.1). Site-specific factors to be considered in an assessment of new tax-driven land-use impacts include: (1) the size of plant-related population growth compared to the area's total population, (2) the size of the plant's tax payments relative to the community's total revenue, (3) the nature of the community's existing land-use pattern, and (4) the extent to which the community already has public services in place to support and guide development.

The GEIS presents an analysis of offsite land use for the renewal term that is characterized by two components: population-driven and tax-driven impacts (Reference 18, Section 4.7.4.1).

4.17.2.1 Population-Related Impacts

As discussed in Section 2.6.1, from 1970 through ~~2000~~2010, the population increases in San Luis Obispo County and Santa Barbara County were relatively large. Only a small fraction of these increases could be attributed to construction and operation of DCP. During the period of extended operation, PG&E has no plans to increase DCP staff

because no refurbishment-related activities required for extended operations have been identified.

Further, based on the GEIS case-study analysis, the NRC concluded that all new population-driven land-use changes during the license renewal term at all nuclear plants would be small. Population growth caused by license renewal would represent a much smaller percentage of the local area's total population than the percentage presented by operations-related growth (Reference 18, Section 4.7.4.2).

4.17.2.2 Tax-Revenue-Related Impacts

The NRC has determined that the significance of tax payments as a source of local government revenue would be large if the payments are greater than 20 percent of revenue, moderate if the payments are between 10 and 20 percent of revenue, and small if the payments are less than 10 percent of revenue (Reference 18, Section 3.7.3).

The NRC defined the magnitude of land-use changes as follows (Reference 18, Section 4.7.4):

SMALL – very little new development and minimal changes to an area's land-use pattern

MODERATE – considerable new development and some changes to an area's land-use pattern

LARGE – large-scale new development and major changes in land-use pattern

The NRC further determined that, if a plant's tax payments are projected to be small relative to the community's total revenue, new tax-driven land-use changes would be small, especially where the community has pre-established patterns of development and has provided adequate public services to support and guide development.

Table 2.7-1 provides a comparison of total tax payments made by PG&E to San Luis Obispo County's property tax revenues. For the ~~3~~10-year period from 2004 through ~~2008~~2014, PG&E's tax payments to San Luis Obispo represented about 6 percent of the San Luis Obispo County's total annual property tax revenues. Using the NRC's criteria, PG&E's tax payments are of SMALL significance to San Luis Obispo County.

As stated in Section 2.6, San Luis Obispo County is a fast growing county in California (San Luis Obispo County 1980-~~2000~~2010 population growth of ~~59~~74 percent compared to California State 1980-~~2000~~2010 population growth of ~~43~~57 percent). San Luis Obispo County has a growing population and the region's economic base is increasingly diverse, with a variety of industries now supplementing traditional tourist-related businesses.

The surrounding population and the level of commercial and industrial activity in this region support the conclusion that DCPD has a small impact on the local economy and tax base. The local tax base is very large and tax payments made by PG&E are comparatively small.

PG&E does not anticipate refurbishment or license renewal-related construction during the license renewal period. Therefore, PG&E does not anticipate any increase in the assessed value of DCPD due to refurbishment-related improvements, or any related tax-increase-driven changes to offsite land-use and development patterns.

Any changes to the infrastructures of San Luis Obispo County would be attributable to the large population immigration already experienced by the County and a large pool of residential, industrial, and commercial tax payers.

4.17.2.3 Land Use and Public Services Impacts

San Luis Obispo County uses comprehensive land use plans and zoning and subdivision ordinances to guide development. These plans and ordinances have been in place for several decades. The ordinances promote open space preservation; protect agricultural land from urban sprawl; and provide a basis for orderly development. The ordinances require building permits, conditional use permits, minor use permits, plot and site plans, zoning clearances, and variance requests.

San Luis Obispo County has a pre-established pattern of development with controls for future development and has been able to provide the infrastructure needed to accommodate this growth. DCPD's presence is not expected to directly attract support industries and commercial development or to encourage or deter residential development. For these reasons, PG&E concludes that the land use impact would be SMALL. Mitigation for land-use impacts during the license renewal term would not be warranted.

4.18 TRANSPORTATION

NRC

The environmental report must "...assess the impact of highway traffic generated by the proposed project on the level of service of local highways during periods of license renewal refurbishment activities and during the term of the renewed license." 10 CFR 51.53(c)(3)(ii)(J)

"...Transportation impacts...are generally expected to be of small significance. However, the increase in traffic associated with additional workers and the local road and traffic control conditions may lead to impacts of moderate or large significance at some sites...." 10 CFR 51, Subpart A, Table B-1, Issue 70

Small impacts would be associated with U.S. Transportation Research Board Level of Service A, having the following condition: "...Free flow of the traffic stream; users are unaffected by the presence of others." And Level of Service B, having the following condition: "...Stable flow in which the freedom to select speed is unaffected but the freedom to maneuver is slightly diminished...." (NRC 1996)

The NRC made impacts to transportation a Category 2 issue because impacts are determined primarily by road conditions existing at the time of the project, which the NRC could not forecast for all facilities (Reference 18). Local road conditions to be ascertained are: (1) level of service conditions, and (2) incremental increase in traffic associated with refurbishment activities and license renewal staff.

As described in Section 3.2, no refurbishment is planned and no refurbishment impacts to local transportation are anticipated. Further evaluation for this impact is not applicable.

DCPP workforce currently includes approximately 1,3501,440 employees. On a nominal 18-month cycle for each Unit, as many as 1,200 additional workers join the permanent workforce during a refueling outage, which typically lasts approximately 40 days. Given these employment projections and the average number of vehicles per day currently using the surrounding roads to DCPP (Table 2.9-1), PG&E concludes that impacts to transportation would be SMALL and mitigative measures would be unwarranted.

4.21 ENVIRONMENTAL JUSTICE

From Regulatory Guide 4.2, Supplement 1
Environmental Justice was not reviewed in NUREG-1437. Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," issued on February 11, 1994, is designed to focus the attention of Federal agencies on the human health and environmental conditions in minority and low-income communities. The NRC Office of Nuclear Reactor Regulation (NRR) is guided in its consideration of environmental justice by Attachment 4, "NRR Procedures for Environmental Justice Reviews," to NRR Office Letter No. 906, Revision 2, "Procedural Guidance for Preparing Environmental Assessments and Considering Environmental Issues," September 21, 1999. NRR Office Letter No. 906 is revised periodically. The environmental justice review involves identifying off-site environmental impacts, their geographic locations, minority and low-income populations that may be affected, the significance of such effects and whether they are disproportionately high and adverse compared to the population at large within the geographic area, and if so, what mitigative measures are available, and which will be implemented. The NRC staff will perform the environmental justice review to determine whether there will be disproportionately high human health and environmental effects on minority and low-income populations and report the review in its SEIS. The staff's review will be based on information provided in the ER and developed during the staff's site-specific scoping process.

The consideration of environmental justice is required to assure that federal programs and activities will not have "disproportionately high and adverse human health or environmental effects...on minority populations and low income populations...."
Section 2.6.2 notes minority and low-income groups within a 50-mile radius of this site.

As part of its environment assessment of this proposed action, PG&E has determined that the environmental impacts of renewing the DCPD license are SMALL. This conclusion is supported by the review of the Category 2 issues defined in 10 CFR 51.53(c)(3)(ii) presented in this ER.

No ~~significant~~ *discernable* adverse impacts to the general population from the renewal of the DCPD license have been identified. Likewise, no unique disproportionately high or adverse impacts on minority or low-income populations would occur from the proposed action. Accordingly, no detailed review for environmental justice is necessary.

4.22 REFERENCES

1. Diablo Canyon Power Plant NPDES Permit, CA 0003751; Order No. 90-09, Central Coast Regional Water Quality Control Board, May 1990.
2. PG&E Diablo Canyon, Continuation of NPDES Permit No. CA0003751. Central Coast Regional Water Quality Control Board, Letter Dated June 26, 1995.
3. ["regulations (Title 23, Section 2235.4) allow your permit to remain valid until the new permit is issued"]. Central Coast Regional Water Quality Control Board, Letter Dated August 29, 1996.
4. Staff Testimony for Regular Meeting of July 10, 2003 Pacific Gas and Electric Company's (PG&E's) Diablo Canyon Power Plant Renewal of NPDES Permit. Central Coast Regional Water Quality Control Board, 2003.
5. Transmission Line Reference Book. 345 kV and Above. Third Edition, Revised. Electric Power Research Institute. Palo Alto, California. 2004.
6. Archaeological Resources Management Plan: Diablo Canyon Site, Greenwood, Roberta S., Pacific Gas and Electric Company, April 1980.
7. Diablo Canyon License Renewal Feasibility Study Environmental Report: Heat Shock Technical Data Report. Pacific Gas and Electric Company, San Francisco, CA. 2008.
8. Best Management Practices to Reduce Environmental Impacts. Revision 2. Pacific Gas and Electric Company. March 1, 2006.
9. Diablo Canyon License Renewal Feasibility Study Environmental Report: Impingement of Fish and Shellfish Technical Data Report. Pacific Gas and Electric Company, San Francisco, CA. 2009.
10. Diablo Canyon License Renewal Feasibility Study Environmental Report: Entrainment of Fish and Shellfish Technical Data Report. Pacific Gas & Electric Company, 2009.
11. DCCP Procedure EV1.ID2, CA-SLO-2 Site Management. Revision 3. Pacific Gas and Electric Company. May 14, 2008.
12. Diablo Canyon Power Plant Transmission Lines Induced Current Analyses. Prepared by Enercon Services, Inc. for Pacific Gas and Electric Company. 2009.
13. Diablo Canyon Power Plant Cooling Water Intake Structure 316(b) Demonstration. Tenera Inc. 1988.

14. Diablo Canyon Power Plant Thermal Effects Monitoring Program Analysis Report. Chapter 1. Changes in the marine environment resulting from the Diablo Canyon Power Plant thermal discharge. Prepared by Tenera Inc. for Pacific Gas and Electric Company, San Francisco, CA. 1997.
15. Diablo Canyon Power Plant 316(b) Demonstration Report. Tenera Inc. 2000.
16. Diablo Canyon Power Plant Receiving Water Monitoring Program: 1995 - 2002 Analysis Report. Prepared by Tenera Inc. for Pacific Gas and Electric Company, San Francisco, CA. 2002.
17. Final Environmental Statement related to operation of Diablo Canyon Power Plant Units 1 and 2. Pacific Gas & Electric Company, Docket Nos. 50-275 and 50-323, U.S. Atomic Energy Commission. May 1973.
18. NUREG-1437: Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Volumes 1 and 2. U. S. Nuclear Regulatory Commission. Washington, D.C. May 1996.
19. Diablo Canyon Power Plant Cooling Tower Feasibility Study. Prepared by Enercon Services Inc. for Pacific Gas and Electric Company. March 2009.
20. Regulatory Guide 4.2, Supplement 1, Preparation of Environmental Reports for Nuclear Power Plant License Renewal Applications, Revision 1. Office of Nuclear Regulatory Research. June 2013.
21. Area Designation Maps/ State and National. California Air Resources Board. September 2012. Accessed on March 25, 2014 at: <http://www.arb.ca.gov/desig/adm/adm.htm>
22. Energy Almanac, Database of California Power Plants. California Energy Commission. May 1, 2014. Accessed on May 7, 2014 at: <http://energyalmanac.ca.gov/powerplants/index.html>
23. Permit Compliance System (PCS) and Integrated Compliance Information System (ICIS) databases in Envirofacts. United States Environmental Protection Agency. March 26, 2014. Accessed on May 7, 2014 at: <http://www.epa.gov/enviro/facts/pcs-icis/search.html>
24. Endangered Species Act Section 7 Consultation, Biological Opinion, and Incidental Take Statement, National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS). 2006.
25. 52488 Federal Register / Vol. 70, No. 170 / Friday, September 2, 2005 / Rules and Regulations. National Oceanic and Atmospheric Administration (NOAA). Department of Commerce. 2005.

26. Year 2 Monitoring Report for the Coon Creek Culvert Removal and Steelhead Passage Enhancement Project. City of San Luis Obispo, Natural Resources Program. 2006.
27. Alternative Cooling Technologies or Modification to the Existing Once-Through Cooling System for the Diablo Canyon Power Plant. Prepared for PG&E and the State Water Resources Control Board Nuclear Review Committee. Bechtel Power Corporation. Report No. 25762-000-30H-G01G-00001. September 17, 2014. Accessed on 11/12/2014 at: http://www.swrcb.ca.gov/water_issues/programs/ocean/cwa316/rcnfpp/
28. Rockfish Resources of the South Central California Coast: Analysis of the Resource from Partyboat Data, 1980-2005. Stephens et al. California Cooperative Oceanic Fisheries Investigations Report, Vol. 47, 2006.
29. Compilation of California Coastal Power Plant Entrainment and Impingement Estimates for California State Water Resources Control Board Staff Draft Issue Paper on Once-Through Cooling. Prepared for Dr. Michael Foster, Coastal Solutions Group. Steinbeck, July 2008.
30. Facility Operating Licenses DPR-80 and DPR-82 Diablo Canyon Nuclear Generating Station, Units 1 and 2, Appendix B: Environmental Protection Plan (Non-Radiological). Pacific Gas & Electric Company. August 1985.
31. Endangered and Threatened Wildlife and Plants: Final Rulemaking to Designate Critical Habitat for Black Abalone. National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA). Federal Register / Vol. 76, No. 208, pp 66806 - 66844.

CHAPTER 5 – ASSESSMENT OF NEW AND SIGNIFICANT INFORMATION

NRC

“...The environmental report must contain any new and significant information regarding the environmental impacts of license renewal of which the applicant is aware.” 10 CFR 51.53(c)(3)(iv)

The U.S. Nuclear Regulatory Commission (NRC) licenses the operation of domestic nuclear power plants and provides for license renewal. License renewal applications must include an environmental report (10 CFR 54.23) with the content as prescribed in 10 CFR 51. In an effort to streamline the environmental review, the NRC has resolved most of the environmental issues generically and only requires an applicant’s analysis of the remaining issues.

While NRC regulations do not require an applicant’s environmental report to contain analyses of the impacts of those environmental issues that have been generically resolved [10 CFR 51.53(c)(3)(i)], the regulations do require that an applicant identify any new and significant information of which the applicant is aware [10 CFR 51.53(c)(3)(iv)]. The purpose of this requirement is to alert the NRC staff to such information so the staff can determine whether to seek the Commission’s approval to waive or suspend application of the rule with respect to the affected generic analysis. The NRC has explicitly indicated, however, that an applicant is not required to perform a site-specific validation of Generic Environmental Impact Statement for License Renewal of Nuclear Plants (GEIS) conclusions (Reference 1).

New and significant information would include:

- Information that identifies a significant environmental issue not covered in the GEIS and codified in the regulation, or
- Information that was not covered in the GEIS analyses and that leads to an impact finding different from that codified in the regulation.

The NRC does not specifically define the term “significant”. For the purpose of its review, review, PG&E used guidance available in Council on Environmental Quality (CEQ) regulations. CEQ guidance provides that federal agencies should prepare environmental environmental impact statements for actions that would significantly affect the environment (40 CFR 1502.3), focus on significant environmental issues (40 CFR 1502.1), 1502.1), and eliminate from detailed study issues that are not significant [40 CFR 1501.7(a)(3)]. The CEQ guidance includes a lengthy definition of “significantly” that requires consideration of the context of the action and the intensity or severity of the impact(s) (40 CFR 1508.27). PG&E expects that moderate or large impacts, as defined by

by the NRC, would be significant. Chapter 4 presents the NRC definitions of “moderate” and “large” impacts.

The new and significant assessment process that PG&E used during preparation of the license renewal application included:

- Interviews with PG&E subject-matter experts on the validity of the conclusions in the GEIS as they relate to DCP;P;
- A review of internal and external documents related to environmental issues at DCP;P, including, but not limited to: environmental assessments and monitoring reports, procedures and other management controls, compliance history reports, and environmental resource plans and data;
- Correspondence with state and federal agencies to determine if the agencies had concerns not addressed in the GEIS;
- A review of other nuclear power plant license renewal applications for pertinent issues; and
- Credit for the oversight provided by inspections of plant facilities by state and federal regulatory agencies.

More specifically, PG&E environmental and license renewal personnel interviewed internal subject-matter experts, providing them with a written list of GEIS issue(s). The interviews focused on three general and five issue-specific questions in an effort to identify any new and potentially significant information, and participants were encouraged to identify any other information beyond that in the GEIS of which they may be aware. All responses were reviewed and documented with concurrence from each individual.

As a result of this assessment, PG&E is aware of no new and significant information regarding the environmental impacts of renewing DCP;P’s operating licenses.

Several issues have been deemed new issues, but their impacts are not considered significant. These issues are: (1) groundwater monitoring for tritium, (2) long-term storage of low level radioactive waste, (3) the ~~potential~~ presence of *the Shoreline fault* ~~Fault~~, 15-45km in length, located approximately 1 km offshore, and (4) the September 11, 2001 terrorist attack.

TRITIUM GROUNDWATER MONITORING

Tritium groundwater sampling was initiated at DCP;P in 2003-2006 through the Radiological Environmental Monitoring Program (REMP). Groundwater sampling became an industry wide initiative in 2006. *DCPP is committed to the NEI 07-07 Groundwater Protection Initiative (GPI) and implements this initiative through a plant*

procedure. Results of this monitoring program are submitted to local, State, and Federal agencies on an annual basis *via the Annual Radiological Environmental Operating Report (AREOR).*

DCCP Radiation Protection personnel undertook a review of the hydro-geological environment and the potential for a proximal receptor source for water borne pathways. As described in Sections 2.3 and 4.5, the only groundwater that is used for drinking water at the DCCP site is from Deep Well #2, located at a higher elevation (333.3 ft MSL) east of the power plant. Deep Well #2 draws from an isolated source specific to Diablo Canyon that is replenished by flows through the alluvium near 200 ft MSL (Section 2.3). The well is only a supplemental resource *that is used as a backup to the primary Seawater Reverse Osmosis system that is infrequently used.* Freshwater production from the Seawater Reverse Osmosis (SWRO) Unit is the primary drinking water source. *The reverse osmosis drinking water supply is sampled monthly by the REMP at station DW1 and results reported in the AREOR.* Potential releases of tritiated water from the operating power plant at 85 ft MSL cannot lead to any drinking water source due to overall site hydro-geological characteristics, and the higher elevation of the aquifer replenishing the location tapped by the deep water well. Thus, the DCCP Radiation Protection analysis concluded that DCCP site releases of tritiated water, should they occur, would not affect domestic water sources since there is no groundwater under the DCCP site that would lead to sources of offsite drinking water. There has been no detectable *plant-related* tritium in any possible sources of drinking water.

Furthermore, PG&E conducted studies of tritium contribution sources around the DCCP site from 2006-2008. Tritium was found to "wash-out" during rain events due to gaseous releases from the plant vents (direct rain collection and building downspouts). Tritium was found to concentrate into stagnant water due to diffusion in air from the plant vents and in condensation of air moisture in proximity to the plant vents.

~~In~~ *From 2008 to 2014, PG&E has consistently* discovered tritium levels in excess of 400 pCi/L *within French drains* beneath the DCCP powerblock. The low levels and the location of the tritium found in ~~groundwater~~ *the French drains* at DCCP do not indicate a leak from the spent fuel pool or any other ~~major-plant equipment~~ source of tritium. Instead, the low levels are consistent with the minor tritium "wash-out" pathways discussed above.

Based on the above assessments and environmental staff evaluation, it was concluded that the potential for the communication of contaminated waters originating at the DCCP site with domestic water supplies regulated, owned, managed, or certified by State and Local governmental bodies does not exist. Therefore, impacts associated with tritium found in groundwater are determined to be SMALL and would not invalidate the NRC conclusions found in the DCCP FES or the GEIS.

LONG-TERM STORAGE OF LOW LEVEL RADIOACTIVE WASTE

PG&E's assessment process for potentially new and significant information regarding the environmental impacts of renewing the DCPD operating licenses identified a potential issue related to long-term storage of Low Level Radioactive Waste (LLW). Specifically, after June 30, 2008, LLW generators and licensees in 36 States, the District of Columbia, the Commonwealth of Puerto Rico, and the U.S. Territories no longer have access to the full-service LLW disposal facility in Barnwell, South Carolina. Consequently, many LLW generators *stored accumulated wastes on site* must store a portion of their LLW for an indefinite period. This will include Class B and C waste as well as certain Class A waste streams that do not meet the waste acceptance criteria of the LLW disposal facility in Clive, Utah. *However, the Waste Control Specialist (WCS) LLC Facility in Texas is now licensed for disposal of Class A, B, and C wastes; therefore, this facility could be utilized for disposal of DCPD Class B and Class C wastes as needed in the future. Disposal of greater than Class C waste remains the responsibility of the federal government.*

The Commission also concluded in Section 6.4.4.6 of the GEIS (Reference 2) "that there is reasonable assurance that sufficient LLW disposal capacity will be made available when needed for facilities to be decommissioned consistent with NRC decommissioning requirements" and that "LLW storage and disposal will have small environmental impacts." Consequently, LLW storage and disposal is a Category 1 issue.

Based on the review of the discussion of the environmental impacts of LLW storage and disposal in the GEIS, PG&E concludes that the closure of Barnwell to out-of-compact waste *and the opening of WCS* is not new *and-or* significant information that warrants further discussion in this report. The environmental impacts of extended on-site storage are addressed in the GEIS.

POTENTIAL *SHORELINE* FAULT

On November 14, 2008, PG&E notified the NRC that preliminary results from ongoing studies by PG&E and the U.S. Geological Survey (USGS) indicate that there is a zone of seismicity that could indicate the presence of a fault approximately 15 km in length, located approximately 1 km offshore from DCPD. Subsequently, PG&E has informally referred to this zone of seismicity as the *potential* "Shoreline Fault *Zone*." PG&E has been collaborating with the USGS to collect and analyze new geological, geophysical, and seismic data to develop improved tectonic models for the central California coastal region through the Collaborative Research and Development Agreement.

In its November 2008 notification, PG&E informed the NRC staff that it had performed an initial evaluation of the potential ground motion levels at DCPD from the *hypothesized hypothesized* fault which concluded that these motions would be bounded by the ground motion levels previously determined for the current licensing basis (the larger Hosgri fault). In addition, PG&E stated that the tsunami hazard threat is relatively small since it is a strike-slip fault rather than a reverse fault and, therefore, the tsunami hazard

from the ~~potential~~ new fault is not expected to exceed the plant's design basis tsunami hazard levels.

The NRC staff undertook a preliminary independent review of possible implications of the ~~potential~~ Shoreline Fault to DCPD using the initial information provided by USGS through PG&E. This review is documented in Research Information Letter RIL 09-001, "Preliminary Deterministic Analysis of Seismic Hazard at Diablo Canyon Nuclear Power Plant from Newly Identified 'Shoreline Fault'," and can be found in Agencywide Documents Access and Management System (ADAMS) Accession No. ML090330523 (Reference 3).

The NRC staff's assessment indicates that the best estimate 84th percentile deterministic seismic-loading levels predicted for a maximum magnitude earthquake on the ~~potential~~ Shoreline Fault are below those levels for which the plant was previously analyzed in the DCPD Long-Term Seismic Program. Considering the results of the deterministic analyses as a whole and the current level of uncertainty, the NRC staff concludes that the postulated Shoreline Fault will not likely cause ground motions that exceed those for which DCPD has already been analyzed. The NRC staff also concludes that the ~~potential~~ Shoreline Fault has a dominant strike-slip faulting mechanism. It is highly unusual for strike-slip faulting to cause the type of significant seafloor elevation change necessary to cause a sizable tsunami and so the NRC staff would not expect any significant changes in the tsunami hazard assessment.

PG&E submitted a comprehensive report on the Shoreline Fault to the NRC on January 7, 2011 (Reference 6). The Shoreline Fault Report confirmed the seismic safety of continued operation of Diablo Canyon.

In a September 2012 report, the NRC Staff documented its review of PG&E's Shoreline Fault Report and confirmed its earlier, preliminary assessment in RIL 09-001 (Reference 7). In RIL 12-01 the NRC Staff presented a conservative deterministic assessment intended to allow the NRC Staff to determine if a safety concern exists as a result of the Shoreline fault. The NRC Staff concluded that deterministic seismic-loading levels predicted for the Shoreline fault earthquake scenarios developed and analyzed by NRC are at, or below, those levels considered previously and demonstrated to have reasonable assurance of safety. There NRC Staff concluded that the existing design basis for the plant already is sufficient to withstand those ground motions.

Between 2010 and 2013, PG&E conducted advanced seismic research by land and sea to further document the seismic characteristics of the fault zones in the region surrounding DCPD, including the Shoreline Fault. In September 2014, PG&E submitted the results of the study to the NRC (Reference 5). Applying deterministic methodology to the updated seismic information, and consistent with prior PG&E and NRC Staff conclusions, the report concluded that the research confirmed previous analyses that the plant and its major components are designed to withstand and perform their safety functions during and after a major seismic event. Deterministic ground motions (84th

percentile) for the Shoreline Fault scenarios are bounded by the 1977 Hosgri Earthquake and the 1991 LTSP spectra for both the DCPD powerblock and the turbine building.

Although the presence of the ~~potential~~ Shoreline Fault offshore of DCPD is new information, based on the PG&E and NRC assessments of the ~~potential~~ Shoreline Fault, it is not significant information since the design and licensing basis evaluations of the DCPD structures, systems, and components are not expected to be adversely affected.

TERRORISM

The NRC has evaluated whether the environmental impacts of the September 11, 2001 terrorist act need to be considered under NEPA as part of the renewed operating license review. The NRC has concluded, for license renewal applications, that terrorist attacks are too far removed from natural or expected consequences of NRC action to require an environmental impact analysis (Reference 4). Moreover, the NRC has nonetheless already included a sabotage/terrorism assessment in the license renewal GEIS, Chapter 5 (Reference 2). The NRC concludes (at 5-18) that “the regulatory requirements under 10 CFR part 73 provide reasonable assurance that the risk from sabotage is small. Although the threat of sabotage events cannot be accurately quantified, the commission believes that acts of sabotage are not reasonably expected. Nonetheless, if such events were to occur, the Commission would expect that the resultant core damage and radiological releases would be no worse than those expected from internally initiated events.”

Given the inherent inability to quantify the probability of hypothetical aircraft impacts and other terrorist-initiated events, and the NRC’s previous conclusion that impacts initiated by a terrorist attack can be correlated to the generic assessment of other internally initiated severe accidents, intentional aircraft impacts and other terrorist-initiated events are not considered further in the DCPD environmental analysis (see Attachment F). To the extent necessary, the NRC can address this issue further based on information available in agency records.

5.1 REFERENCES

1. NUREG-1529: Public Comments on the Proposed 10 CFR Part 51 Rule for Renewal of Nuclear Power Plant Operating Licenses and Supporting Documents: Review of Concerns and NRC Staff Response. U.S. Nuclear Regulatory Commission. Office of Nuclear Regulatory Research, Washington, D.C. May 1996.
2. NUREG-1437: Generic Environmental Impact Statement for License Renewal of Nuclear Plants (GEIS), Volumes 1 and 2. U.S. Nuclear Regulatory Commission. Washington, D.C. May 1996.
3. Research Information Letter RIL 09-001. Preliminary Deterministic Analysis of Seismic Hazard at Diablo Canyon Nuclear Power Plant from Newly Identified 'Shoreline Fault'. U.S. Nuclear Regulatory Commission. 2009. Available at Agencywide Documents Access and Management System (ADAMS) Accession No. ML090330523.
4. New Jersey Department of Environmental Protection v. U.S. Nuclear Regulatory Commission & Amergen Energy Company. U.S. Court of Appeals for the Third Circuit. Case 07-2271, Document 00318362723, Date Filed: 03/31/2009.
5. Central Coastal California Seismic Imaging Project Report. Pacific Gas and Electric Company. September 2014. Available at Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML14260A024 through ML14260A069.
6. PG&E Letter No. DCL-11-005, "Report on the Analysis of the Shoreline Fault Zone, Central Coastal California," dated January 7, 2011 ("Shoreline Fault Report"). Available at ADAMS Accession No. ML110140431.
7. Research Information Letter 12-01 "Confirmatory Analysis of Seismic Hazard at the Diablo Canyon Power Plant from the Shoreline Fault Zone" (September 2012) Available at ADAMS Accession No. ML121230035.

CHAPTER 6 – SUMMARY OF LICENSE RENEWAL IMPACTS & MITIGATING ACTIONS

6.1 LICENSE RENEWAL IMPACTS

PG&E has reviewed the environmental impacts of renewing the DCPD operating licenses and has concluded that all impacts would be SMALL and would not require additional mitigation. This environmental report documents the basis for PG&E's conclusion. Chapter 4 incorporates by reference the NRC findings for the 52-59 Category 1 issues that apply to DCPD, all of which have impacts that are SMALL (Attachment A, Table A-1 and A-2). Chapter 4 also analyzes Category 2 issues, all of which are either not applicable or have impacts that would be SMALL. Table 6-1 identifies the impacts that DCPD license renewal would have on resources associated with Category 2 issues.

6.2 MITIGATION

NRC

“The report must contain a consideration of alternatives for reducing adverse impacts...for all Category 2 license renewal issues...” 10 CFR 51.53(c)(3)(iii)

“The environmental report shall include an analysis that considers and balances...alternatives available for reducing or avoiding adverse environmental effects...” 10 CFR 51.45(c) as incorporated by 10 CFR 51.53(c)(2) and 10 CFR 51.45(c)

Impacts of license renewal are SMALL and would not require mitigation. Current operations include monitoring activities that would likely continue during the license renewal term. PG&E performs routine mitigation and monitoring in accordance with the current operating license requirements (DPR-80 and DPR-82, Appendix B) to ensure the safety of workers, the public, and the environment. These activities include, but are not limited to:

- Biological Monitoring (Proximal Marine and Terrestrial Environments)
- Radiological Environmental Monitoring Program
- Once-Through Cooling System Influent and Effluent Monitoring
- Receiving Water Monitoring Program (Thermal Discharge Impacts Assessment)
- Plant Systems Waste Water Discharge Quality Monitoring
- Diesel Fuel Oil Use and Combustion Emissions Monitoring

Results of these monitoring programs are submitted to local, state, and federal agencies on a periodic basis. Additionally, the NRC periodically performs inspections and evaluates the effectiveness of the programs. Recent NRC inspection report findings (IR 2004-009; IR 2006-013; *IR 2008-009*; *IR 2012-004*) | have not identified any findings of significance.

The monitoring programs ensure that the plant's permitted emissions and discharges are within regulatory limits and any unusual or off-normal emissions/discharges would be quickly detected, mitigating potential impacts. Therefore, this environmental report finds that no additional mitigation measures are sufficiently beneficial as to be warranted.

6.3 UNAVOIDABLE ADVERSE IMPACTS

NRC

The environmental report shall discuss "Any adverse environmental effects which cannot be avoided should the proposal be implemented;" 10 CFR 51.45(b)(2) as adopted by 10 CFR 51.53(c)(2)

This environmental report adopts by reference the NRC findings for applicable Category 1 issues, including discussions of any unavoidable adverse impacts (Attachment A, Table A-1). PG&E examined ~~24~~ 24 Category 2 issues and identified the following unavoidable adverse impacts of license renewal.

- Water for cooling would continue to be withdrawn from the Pacific Ocean.
- Waste heat from operation of DCPD would continue to be discharged to the Pacific Ocean.
- Small numbers of juvenile and adult fish, and some shellfish, would continue to be impinged on the intake traveling screens.
- Sea turtles may occasionally be ~~impinged on~~ *stranded within* the intake structures. DCPD has mitigation measures in place to minimize adverse impacts.
- A small percentage of larval fish and shellfish in the cooling system source water would continue to be entrained at the intake structure.
- Operation of DCPD would result in a very small increase in radioactivity in the air and Pacific Ocean. However, fluctuations in natural background radiation would be expected to exceed the small incremental increase in dose to the local population. Operation of DCPD also would create a very low probability of accidental radiation exposure to inhabitants of the area.
- Procedures for the disposal of sanitary, chemical, and radioactive wastes are intended to reduce adverse impacts from these sources to acceptably low levels. Solid radioactive wastes are a product of plant operations and long-term disposal of these materials will be required.

Based on the discussion and analyses presented in Chapter 4, PG&E expects that all unavoidable adverse impacts resulting from renewal of the DCPD operating licenses would be SMALL.

6.4 IRREVERSIBLE AND IRRETRIEVABLE RESOURCE COMMITMENTS

NRC

The environmental report shall discuss "Any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented." 10 CFR 51.45(b)(5) as adopted by 10 CFR 51.53(c)(2)

The continued operation of DCCP for the period of extended operation will result in irreversible and irretrievable resource commitments, including the following:

- Nuclear fuel, which is consumed in the reactor and converted to radioactive waste.
- The land required to store, or dispose of low-level radioactive wastes generated as a result of plant operations, and solid and sanitary wastes generated from normal industrial operations.
- PG&E's preferred approach for additional spent fuel storage is to either ship the spent fuel to a Federal waste repository or waste reprocessing facility. In the Agency's 1990 Waste Confidence findings, the NRC previously assessed its degree of confidence that radioactive wastes produced by nuclear power plants could be safely disposed of, and made 5 findings (55 FR 38474, September 18, 1990). These 5 findings form the basis of the NRC's generic determination of no significant environmental impact from temporary storage of spent nuclear fuel. In 1999, the NRC confirmed these findings (64 FR 68005, December 6, 1999). In 2008, the NRC proposed updated Waste Confidence findings (FR 59551, dated October 9, 2008), including findings that there is reasonable assurance a sufficient mined geologic repository can reasonably be expected to be available within 50-60 years beyond the licensed life for operation of any reactor to dispose of the commercial high-level waste and spent fuel. The NRC further concluded there is reasonable assurance that, if necessary, spent fuel generated in any reactor can be stored safely without significant environmental impacts for at least 60 years beyond the licensed life for operation (which may include the term of a revised or renewed license) of that reactor in a combination of storage in its spent fuel storage basin and either onsite or offsite independent spent fuel storage installations. *In 2014, the NRC issued a final rule on the environmental effects of continued storage of spent nuclear fuel (73 FR 59551) and NUREG-2157, Generic Environmental Impact Statement (GEIS) for Continued Storage of Spent Nuclear Fuel (Reference 2). The GEIS concluded that impacts from continued storage of spent nuclear fuel for 60 years would be SMALL. The continued storage*

rule adopts the findings of the GEIS regarding the environmental impacts of storing spent fuel at any reactor site after the reactor's licensed period of operations. As a result, those generic impacts do not need to be re-analyzed in the environmental reviews for individual licenses.

- Elemental materials that will become radioactive.
- Materials used for the normal industrial operations of the plant that cannot be recovered or recycled or that are consumed or reduced to unrecoverable forms.

PG&E has not identified any activities during the license renewal term that would irreversibly or irretrievably commit additional resources beyond those committed during the construction and operation of DCPD during the initial operating license terms, and the preemption of land and consumption of materials such as those discussed above. Consistent with conclusions of the AEC with regard to operations in the current license terms (Reference 1), PG&E concludes that these resource commitments are appropriate for the benefits gained by license renewal and extended DCPD operation.

6.6 REFERENCES

1. Final Environmental Statement related to the Nuclear Generating Station Diablo Canyon Units 1 and 2, Docket Numbers 50-275 and 50-323, Pacific Gas and Electric Company. U.S. Atomic Energy Commission. 1973.
2. *Generic Environmental Impact Statement (GEIS) for Continued Storage of Spent Nuclear Fuel, NUREG-2157. Nuclear Regulatory Commission. September 2014.*

TABLE 6-1

CATEGORY 2 ENVIRONMENTAL IMPACTS RELATED TO LICENSE
 RENEWAL AT DCPD

1996 GEIS No.	Revised GEIS No.	Issue	Environmental Impact
Surface Water Quality, Hydrology, and Use (for all plants)			
13	17	Water use conflicts (plants with cooling ponds or cooling towers using make-up water from a small river with low flow)	NONE. This issue does not apply because DCPD does not use cooling ponds or cooling towers that withdraw makeup water from a small river with no flow.
Aquatic Ecology (for plants with once-through and cooling pond heat dissipation systems)			
25	36	Entrainment of fish and shellfish in early life stages (for plants with once-through and cooling pond heat dissipation systems)	SMALL. PG&E has a current NPDES permit which constitutes compliance with CWA Section 316(b) requirements.
26	36	Impingement of fish and shellfish in early life stages (for plants with once-through and cooling pond heat dissipation systems)	SMALL. PG&E has a current NPDES permit which constitutes compliance with CWA Section 316(b) requirements.
27	39	Heat shock (for plants with once-through and cooling pond heat dissipation systems)	SMALL. PG&E has a current NPDES permit which constitutes compliance with CWA Section 316(a) requirements.
Groundwater Use and Quality			
33	22	Groundwater use conflicts (potable, service water, and dewatering; plants that use >100 gpm)	SMALL. DCPD does not withdraw groundwater at an average rate greater than 100 gpm.
34	23	Groundwater use conflicts (plants using cooling towers withdrawing makeup water from a small river)	NONE. This issue does not apply because DCPD does not use cooling towers that withdraw makeup water from a small river.
35	22	Groundwater use conflicts (Ranney wells)	NONE. This issue does not apply because DCPD no longer uses Ranney wells.

TABLE 6-1

1996 GEIS No.	Revised GEIS No.	Issue	Environmental Impact
39	26	Groundwater quality degradation (cooling ponds at inland sites)	NONE. This issue does not apply because DCPP is not located at an inland site and does not use cooling ponds.
None	27	<i>Radionuclides released to groundwater</i>	SMALL. <i>Groundwater monitoring at DCPP was initiated in 2003 through the REMP. The potential for the communication of contaminated waters originating at the DCPP site with domestic water supplies regulated, owned, managed, or certified by State and Local governmental bodies does not exist.</i>
Terrestrial Resources			
40	28	Refurbishment impacts to <i>Effects on</i> terrestrial resources (<i>non-cooling system impacts</i>)	NONE. No impacts are expected because PG&E has no plans to undertake refurbishment because of license renewal. SMALL. <i>PG&E has no plans for refurbishment or other license renewal-related construction activities at DCPP. DCPP operations have had a small impact on terrestrial ecosystems. The impacts to terrestrial ecosystems from continued plant operations and maintenance are expected to be unchanged.</i>
Environmental Justice			
None	67	<i>Minority and low-income population</i>	SMALL. <i>The impacts of the extended operation of DCPP were determined to be SMALL for all issues. No disproportionately high and adverse human health or environmental effects on low-income or minority populations would result from license renewal.</i>
Threatened or Endangered Species (for all plants)			
49	50	Threatened or endangered species	SMALL. No effects <i>The impacts on any state or federally-listed or other special status plant or animal species, including designated critical habitat, are anticipated to be SMALL</i>

TABLE 6-1

1996 GEIS No.	Revised GEIS No.	Issue	Environmental Impact
			as a result of extending the operating license. PG&E does not plan to alter current operations over the license renewal period.
Air Quality			
50	5	Air quality during refurbishment (non-attainment and maintenance areas)	NONE. No impacts are expected because PG&E will not undertake refurbishment because of license renewal.
Human Health			
57	60	Microbiological organisms (plants using lakes or canals, or cooling towers or cooling ponds that discharge to a small river)	NONE. This issue does not apply because DCPD does not use cooling ponds, lakes, canals, or small rivers.
59	64	Electromagnetic fields, acute effects	SMALL. The largest modeled induced current under the DCPD lines is less than the 5-mA limit. Therefore, the DCPD transmission lines conform to the National Electrical Safety Code provisions for preventing electric shock from induced current.
Socioeconomics			
63	53	Housing impacts	SMALL. For the purpose of license renewal, PG&E does not plan on any refurbishment and does not plan to add employees. Therefore, there will be no increased demand on housing because of license renewal.
65	54	Public services: public utilities	SMALL. For the purpose of license renewal, PG&E does not plan on any refurbishment and does not plan to add employees. Therefore, there will be no increased demand on public utilities because of license renewal.
66	54	Public services: education (refurbishment)	NONE. No impacts are expected because PG&E will not undertake refurbishment because of license renewal.
68	2	Offsite land use (refurbishment)	NONE. No impacts are expected because PG&E will not undertake

TABLE 6-1

1996 GEIS No.	Revised GEIS No.	Issue	Environmental Impact
69	2	Offsite land use (license renewal term)	<p>refurbishment because of license renewal.</p> <p>SMALL. Although taxes paid by the plant constitute a large fraction of the county revenue, the county has not shown significant offsite land use change since DCPD construction. No plant-induced changes to offsite land use are expected from license renewal. Therefore, continued operation is expected to have positive impacts.</p>
70	56	Public services: transportation	<p>SMALL. For the purpose of license renewal, PG&E does not plan on any refurbishment and does not plan to add employees. Therefore, there will be no increased demand on local transportation because of license renewal.</p>
71	51	Historic and archaeological resources	<p>SMALL. PG&E does not plan on any refurbishment or transmission-line corridor changes because of license renewal. Continued plant site operations are not expected to impact cultural resources.</p>
Postulated Accidents			
76	66	Severe accidents	<p>SMALL. The benefit/cost analysis did not identify any cost-effective aging-related severe accident mitigation alternatives.</p>

TABLE 6-1

1996 GEIS No.	Revised GEIS No.	Issue	Environmental Impact
Cumulative Impacts			
N/A	73	<i>Cumulative Impacts</i>	<p>SMALL. Evaluations of the groundwater, air, threatened or endangered species, critical habitats, cultural resources, socioeconomics, and radiological doses concluded that all impacts from DCPD are SMALL. DCPD operations will not change during the license renewal term. Radiological doses are limited by regulation. Threatened or endangered species and cultural resources are protected by state and federal regulations. The County of San Luis Obispo expects growth during the license renewal term and is planning for growth. However, no development would occur within the approximately 12,000 acres of land adjoining the DCPD, such that no cumulative impacts to these resources would occur.</p>

CHAPTER 9 – STATUS OF COMPLIANCE

9.1 PROPOSED ACTION

NRC

“The environmental report shall list all Federal permits, licenses, approvals and other entitlements which must be obtained in connection with the proposed action and shall describe the status of compliance with applicable environmental quality standards and requirements including, but not limited to, applicable zoning and land-use regulations, and thermal and other water pollution limitations or requirements which have been imposed by Federal, State, regional, and local agencies having responsibility for environmental protection...” 10 CFR 51.45(d) as adopted by 10 CFR 51.53(c)(2)

9.1.1 GENERAL

Table 9-1 lists environmental authorizations that PG&E has obtained for current DCPD operations. In this context, PG&E uses “authorizations” to include any permits, licenses, approvals, or other entitlements. PG&E expects to continue renewing these authorizations during the current license period. PG&E is in compliance with applicable environmental standards and requirements.

Table 9-2 lists additional environmental authorizations and consultations related to NRC renewal of the DCPD licenses to operate. As indicated, PG&E anticipates needing relatively few such authorizations and consultations. Sections 9.1.2 through 9.1.5 discuss some of these items in more detail.

9.1.2 THREATENED OR ENDANGERED SPECIES

Section 7 of the Endangered Species Act (16 USC 1536) requires federal agencies to ensure that agency action is not likely to jeopardize any species that is listed or proposed for listing as threatened or endangered. If review of the proposed action indicates the potential for adversely affecting listed or candidate species, the federal agency must consult with the U.S. Fish and Wildlife Service (USFWS) regarding effects on non-marine species, the National Marine Fisheries Service (NMFS) for marine species, or both. USFWS and NMFS have issued joint procedural regulations at 50 CFR 402, Subpart B, that address consultation, and USFWS maintains the joint list of threatened and endangered species at 50 CFR 17.

Although not required by federal law or NRC regulation, PG&E has chosen to invite comment from federal and state agencies regarding potential effects that DCPD license renewal might have. Attachment C includes copies of PG&E correspondence with

USFWS, NMFS, California Department of Fish and ~~Wildlife~~Game (CDF&GW), State Lands Commission (CSLC), and Bureau of Land Management (BLM).

9.1.3 HISTORIC PRESERVATION

Section 106 of the National Historic Preservation Act (16 USC 470f) requires federal agencies having the authority to license any undertaking to, prior to issuing the license, take into account the effect of the undertaking on historic properties and to afford the Advisory Council on Historic Preservation an opportunity to comment on the undertaking. ~~Although not required of an applicant by federal law or NRC regulation,~~ PG&E has ~~chosen to~~ invited comment by the California SHPO. Attachment D includes a copy of PG&E correspondence with the SHPO regarding potential effects that DCPD license renewal might have on cultural resources. The SHPO requested that DCPD develop a Programmatic Agreement and Historic Resources Management Plan to replace the current Archaeological Resources Management Plan.

9.1.4 COASTAL ZONE MANAGEMENT PROGRAM COMPLIANCE

The federal Coastal Zone Management Act (16 USC 1451 et seq.) imposes requirements on applicants for a federal license to conduct an activity that could affect a state's coastal zone. The Act requires the applicant to certify to the licensing agency that the proposed activity would be consistent with the state's federally approved coastal zone management program [16 USC 1456(c)(3)(A)]. The National Oceanic and Atmospheric Administration has promulgated implementing regulations that indicate that the requirement is applicable to renewal of federal licenses for activities not previously reviewed by the state [15 CFR 930.51(b)(1)]. The regulation requires that the license applicant provide its certification to the federal licensing agency and a copy to the applicable state agency [15 CFR 930.57(a)].

California has a coastal zone management program and DCPD, located in San Luis Obispo County, is within the California coastal zone. Therefore, concurrence from the California Coastal Commission (CCC) is necessary. The *original* certification prepared by PG&E is in Attachment E. ~~PG&E is awaiting concurrence of the certification by the CCC.~~ *The response from the CCC, dated December 29, 2009, is also provided in Attachment E.*

9.1.5 WATER QUALITY (401) COMPLIANCE

Federal Clean Water Act (CWA) Section 401 requires an applicant for a federal license to conduct an activity that might result in a discharge into navigable waters to provide the licensing agency a certification from the state that the discharge will comply with applicable Clean Water Act requirements (33 USC 1341). NRC has indicated in its *Generic Environmental Impact Statement for License Renewal (GEIS) (Reference 1)* that issuance of a National Pollutant Discharge Elimination System (NPDES) permit ~~implies~~ *is considered* certification by the state.

Consistent with the GEIS, PG&E is providing DCP's NPDES permit, in Attachment B, as evidence of state water quality (401) certification. As discussed in Section 4.2, the Central Coast Regional Water Quality Control Board (CCRWQCB) issued a NPDES Permit (CA0003751) to PG&E in 1990. The permit was due to expire in 1995 and has since been in administrative extension. PG&E is **actively continuing to** working with the CCRWQCB **and the SWRCB** to renew this permit. In accordance with permit requirements, PG&E monitors discharge characteristics and reports the results to the CCRWQCB.

TABLE 9-1

ENVIRONMENTAL AUTHORIZATIONS FOR CURRENT DCPD OPERATIONS

Agency	Authority	Requirement	Number	Issue or Expiration Date ¹	Activity Covered
U.S. Nuclear Regulatory Commission	Atomic Energy Act (42 USC 2011, et seq.), 10 CFR 50.10	License to Operate	DPR- 80 – Unit 1	Issued 11/02/1984 Expires 11/02/2024	Operation of Units 1 and 2
			DPR- 82 – Unit 2	Issued 11/26/1985 Expires 08/26/2025	
Central Coast Regional Water Quality Control Board	Clean Water Act (33 USC 1251 et seq.)	California Pollutant Discharge Elimination System Permit	CA0003751	Issued 05/11/1990 Expired 07/01/1995 (in administrative extension)	Plant discharges to the Pacific Ocean
<i>State Water Resources Control Board</i>	<i>State of California</i>	<i>State General Industrial Storm Water Discharge</i>	<i>97-03-DWQ</i>	<i>Renewed Annually</i>	<i>Storm water discharges to Diablo Creek and the Pacific Ocean</i>
State Lands Commission	Public Resources Code 4307.91	Lease	2231-10-0044	Issued 08/28/1969 Expires 08/28/2018	Lease for Breakwaters
State Lands Commission	Public Resources Code 4449.91	Right-of-Way	2231-10-0048	Issued 06/01/1970 Expires 06/01/2019	Right-of-Way for Breakwaters
Department of Interior	Bureau of Land Management	Right-of-Way	2231-10-0041	Issued 08/22/1969 <i>Renewed 06/17/2014</i> Expires 08/22/2018 <i>12/31/2042</i>	Right-of-Way for Construction and Maintenance of Breakwaters
California Department of Toxic Substances Control	Ca H&S Code Section 25200, CCR Title 22 Division 4.5.	RCRA Equivalent Waste Treatment Storage & Disposal (TSD) Permit	CAD077966349	Issued 11/16/2006 Expires 07/30/2016	Operation of Hazardous Waste Facility at DCPD

¹ Issuance and expiration dates are accurate as of 08/30/2009.

TABLE 9-1

ENVIRONMENTAL AUTHORIZATIONS FOR CURRENT DCPD OPERATIONS

Agency	Authority	Requirement	Number	Issue or Expiration Date ¹	Activity Covered
San Luis Obispo County Environmental Health Department	40 CFR 112 (et. seq.) CA H&S Code 19 CCR (et. seq.) 22 CCR (et. seq.) 23 CCR (et. seq.)	Permit to Operate	0301 PR0002823 (UST) 0728 PR0002022 (HM) 1126 PR0002512 (HW) 1201 PR0015253 (AST)	Issued 01/01/2014 Expired 12/31/2014	Operation of underground and aboveground petroleum storage tanks, hazardous materials handling, hazardous waste generation, SPCC Plan
San Luis Obispo County Environmental Health Department	N/A CA H&S Code 19 CCR (et. seq.) 22 CCR (et. seq.) 23 CCR (et. seq.)	Underground Storage Tank Operating Permit & Hazardous Materials Handler Authorization to operate	40-000-17604-006 40-000-17604-002-0726 PR0001853 (HM)	Issued 01/01/2009 Expires 12/31/2009	Operation of Diesel Storage Tanks Emergency Operations Facility (EOF) Hazardous materials handling, and operation of above ground petroleum storage tank
National Marine Fisheries Service	Endangered Species Act of 1973 (16 USC 1531-1544)	Biological Opinion and Incidental Take Statement		Issued 09/18/2008 Expires 08/26/2025	Possession and disposition of impinged or stranded sea turtles
San Luis Obispo County Air Pollution Control District	Clean Air Act (42 USC 7401, et seq.)	Permit to Operate	919-3	Issued 07/21/2009 Expires 06/30/2010	Operation of the Emergency Diesel Generators (DGPP)

TABLE 9-1

ENVIRONMENTAL AUTHORIZATIONS FOR CURRENT DCPD OPERATIONS

Agency	Authority	Requirement	Number	Issue or Expiration Date ¹	Activity Covered
San Luis Obispo County Air Pollution Control District	Clean Air Act (42 USC 7401, et seq.)	Permit to Operate	886-1	Issued 04/30/2009 Expires 03/31/2010	Operation of the Emergency Diesel Generator (EOF)
San Luis Obispo County Air Pollution Control District	Clean Air Act (42 USC <i>CFR</i> 7401, et seq.)	Permit to Operate	49-1	Issued 07/21/2009 <i>07/15/2014</i> Expires 06/30/2010 <i>06/30/2015</i>	Operation of the <i>DCPD</i> Auxiliary Boiler
San Luis Obispo County Air Pollution Control District	Clean Air Act (42 USC 7401, et seq.)	Permit to Operate	533-2	Issued 07/21/2009 Expires 06/30/2010	Operation of the Abrasive Blast Facility
San Luis Obispo County Air Pollution Control District	17 CCR et seq. Clean Air Act (42 USC <i>CFR</i> 7401, et seq.) <i>17 CCR et seq.</i>	Permit to Operate	338-1	Issued 07/21/2009 <i>07/15/2014</i> Expires 06/30/2010 <i>2015</i>	Operation of a <i>DCPD</i> Paint Spray Booth
San Luis Obispo County Air Pollution Control District	Clean Air Act (42 USC <i>CFR</i> 7401, et seq.) <i>17 CCR et seq.</i>	Permit to Operate	415- 43	Issued 08/22/2007 <i>07/15/2014</i> Expires 06/30/2010 <i>2015</i>	Operation of <i>DCPD</i> Portable Sandblast <i>Equipment</i> Devices

TABLE 9-1

ENVIRONMENTAL AUTHORIZATIONS FOR CURRENT DCPD OPERATIONS

Agency	Authority	Requirement	Number	Issue or Expiration Date ¹	Activity Covered
San Luis Obispo County Air Pollution Control District	42 CFR 7401, et seq. 17 CCR et seq.	Permit to Operate	533-2	Issued 06/12/2013 Expires 06/30/2014	Operation of the DCPD Abrasive Blast Facility
San Luis Obispo County Air Pollution Control District	Clean Air Act (42 USC CFR 7401, et seq.). 17 CCR 94010, 42 CFR 7401, et seq.	Permit to Operate	546-42	Issued 08/05/2009 07/02/2013 07/25/2014 Expires 07/31/2010 06/30/2015	Operation of a DCPD non-retail gasoline dispensing facility
San Luis Obispo County Air Pollution Control District	42 CFR 7401, et seq. 17 CCR 93115	Permit to Operate	886-2	Issued 06/11/2014 Expires 03/31/2015	Operation of the EOF stationary Emergency Diesel Generator
San Luis Obispo County Air Pollution Control District	42 CFR 7401, et seq. 17 CCR 93115	Permit to Operate	919-3	Issued 07/15/2014 Expires 06/30/2015	Operation of the DCPD stationary Emergency Diesel Generators
San Luis Obispo County Air Pollution Control District	Clean Air Act (42 USC CFR 7401, et seq.). 17 CCR 93115 17 CCR 93116	Permit to Operate	1065-56	Issued 07/21/2009 07/15/2014 Expires 06/30/2010 2015	Operation of a DCPD transportable diesel-fueled internal combustion unit engines

TABLE 9-1

ENVIRONMENTAL AUTHORIZATIONS FOR CURRENT DCPD OPERATIONS

Agency	Authority	Requirement	Number	Issue or Expiration Date ¹	Activity Covered
San Luis Obispo County Air Pollution Control District	42 CFR 7401, et. seq. 17 CCR 93115	Permit to Operate	1820-1	Issued 06/11/2014 Expires 03/31/2015	Operation of JIC stationary emergency diesel generator
San Luis Obispo County Air Pollution Control District	42 CFR 7401, et. seq. 17 CCR 93115 17 CCR 93116	Permit to Operate	1845-1	Issued 06/12/2013 Expires 06/30/2014	Operation of DCPD emergency portable diesel-fueled internal combustion engines
San Luis Obispo County Air Pollution Control District	42 CFR 7401, et. seq. 17 CCR 93115 17 CCR 93116	Permit to Operate	1944-1	Issued 09/09/2014 Expires 06/30/2015	Operation of DCPD emergency portable diesel-fueled internal combustion engines
San Luis Obispo County Air Pollution Control District	42 CFR 7401, et. seq. 17 CCR 93115	Permit to Operate	1946-1	Issued 09/02/2014 Expires 08/31/2015	Operation of the Kendall Road Campus Emergency Diesel Generator
San Luis Obispo County Public Health Department	Safe Drinking Water Act (42 USC 300 F, et seq.)	Non-Community Drinking Water System Permit	PT 0004769	N/A	Authorization to operate non-community drinking and domestic water system

TABLE 9-1

ENVIRONMENTAL AUTHORIZATIONS FOR CURRENT DCPP OPERATIONS

Agency	Authority	Requirement	Number	Issue or Expiration Date ¹	Activity Covered
Port San Luis Harbor District	N/A	Lease Agreement	2232-11-0041 2232-11-0037 2232-11-0038	Issued 07/01/1986 Expires 06/30/2011	For access road enlargement and siren location
California Secretary of Resources	California Department of Fish and Game <i>Wildlife</i>	License	710027-01	Issued 04/23/2009 Expires 12/31/2009 <i>2013, pending renewal on necessity</i>	Surface Canopy Kelp Harvesting
California Secretary of Resources	California Department of Fish and Game <i>Wildlife</i>	Special Use Permit	710006-02	Issued 12/31/1999 Does not expire	Removal of Benthic Kelp from the DCPP Intake Cove Exclusion Zone

TABLE 9-2

ENVIRONMENTAL AUTHORIZATIONS FOR DCPD LICENSE RENEWAL

Agency	Authority	Requirement	Remarks
U.S. Nuclear Regulatory Commission	Atomic Energy Act (42 USC 2011 et seq.)	License Renewal	Environmental Report submitted in support of license renewal application.
U.S. Fish and Wildlife Service (USFWS)	Endangered Species Act Section 7 (16 USC 1536)	Consultation	Requires federal agency issuing a license to consult with USFWS (Attachment C).
California Central Coast Regional Water Quality Control Board	Clean Water Act Section 401 (33 USC 13411)	Certification	State issuance of NPDES permit (Section 9.1.5) constitutes 401 certification (Attachment B)
California Coastal Commission	Federal Coastal Zone Management Act (16 USC 1452 et seq.)	Certification	Requires applicant to prove <i>obtain Coastal Development Permit and</i> certification to Federal agency issuing the <i>that</i> license renewal would be consistent with the Federally approved State Coastal Zone Management program. Based on its review of the proposed activity, the State must concur with or object to the applicant's certification (Attachment E).
California State Office of Historic Preservation	National Historic Preservation Act Section 106 (16 USC 470f)	Consultation	Requires federal agency issuing a license to consider impacts to historical properties and consult with State Historic Preservation Officer (SHPO). SHPO must concur that license renewal will not affect any sites listed or eligible for listing (Attachment D).

ATTACHMENT A - NRC NEPA ISSUES FOR LICENSE RENEWAL OF NUCLEAR POWER PLANTS

PG&E has prepared this environmental report in accordance with the requirements of NRC regulation 10 CFR 51.53. NRC included in the regulation a list of National Environmental Policy Act (NEPA) issues for license renewal of nuclear power plants.

Table A-1 lists these 92 issues and identifies the section in which PG&E addressed each applicable issue in this environmental report. For organization and clarity, PG&E has assigned a number to each issue and uses the issue numbers throughout the environmental report.

As discussed in Section 4.02, on June 20, 2013, the NRC published a final rule (78 FR 37282) revising its environmental protection regulation, 10 CFR 51, and the associated GEIS. The final rule identified 78 environmental impact issues, of which 19 require plant-specific analysis. The final rule consolidated similar Category 1 and 2 issues, changed some Category 2 issues into Category 1 issues, and consolidated some of those issues with existing Category 1 issues. The final rule also added nine new Category 1 and 2 issues.

In the same manner as was done for the 92 issues identified in the 1996 GEIS, PG&E has assigned a number to each of the 78 issues. The issue numbers mentioned in Table A-2 below are based on those numbers. Only the nine new Category 1 and Category 2 issues are named in Table A-2. For each applicable issue, Table A-2 identifies the sections in this environmental report and in the revised GEIS that address the issue

TABLE A-2
DCPP ENVIRONMENTAL REPORT CROSS-REFERENCE OF NEW LICENSE
RENEWAL NEPA ISSUES IDENTIFIED IN THE REVISED GEIS

<i>Issue^a</i>	<i>Category</i>	<i>Section of this Environmental Report</i>	<i>Revised GEIS Section/Page^b</i>
Geologic Environment			
8. Geology and Soils	1	2.13 and 4.02	4.4/4-29
Groundwater Resources			
27. Radionuclides released to groundwater	2	4.02	4.5.1.2/4-51
Terrestrial Resources			
28. Effects on terrestrial resources (non-cooling system impacts)	2	4.02	4.6.1.1/4-59
29. Exposure of terrestrial resources to radionuclides	1	4.02	4.6.1.1/4-61
Aquatic Resources			
44. Exposure of aquatic resources to radionuclides	1	4.02	4.6.1.2/4-105
Human Health			
59. Human health impact from chemicals	1	4.02	4.9.1.1.2/4-147
63. Physical occupational hazards	1	4.02	4.9.1.1.5/4-156
Environmental Justice			
67. Minority and low-income populations	2	2.6.2 and 4.02	4.10.1/4-167
Cumulative Impacts			
73. Cumulative impacts	2	4.02	4.13/4-243
a. Source: 10 CFR 51, Subpart A, Appendix A, Table B-1. (Issue numbers added to facilitate discussion.)			
b. Source: Generic Environmental Impact Statement for License Renewal of Nuclear Plants (NUREG-1437, Revision 1).			

ATTACHMENT E – COASTAL ZONE CONSISTENCY CERTIFICATION

This is the Diablo Canyon Power Plant (DCPP) certification to the U.S. Nuclear Regulatory Commission (NRC) that the renewal of the DCPP Units 1 and 2 Operating Licenses will be consistent with enforceable policies of the federally approved state coastal zone management program. The certification describes the proposed action (i.e. license renewal), DCPP background, anticipated environmental impacts, California Coastal Management Program (CCMP) policies, and DCPP compliance status.

This *original* Certification ~~has not yet been~~*was* submitted to the California Coastal Commission for review *in 2009. The response from the CCC, dated December 29, 2009, is also provided in this Attachment (Page E-51).*

CALIFORNIA COASTAL COMMISSION

45 FREMONT, SUITE 2000
SAN FRANCISCO, CA 94105-2219
VOICE (415) 904-5200
FAX (415) 904-5400
TDD (415) 597-5885



December 29, 2009

Mr. James Becker
Pacific Gas & Electric Company
Diablo Canyon Power Plant
Mail Code 104/6/601
P.O. Box 3
Avila Beach, CA 93424

RE: Consistency Certification for Pacific Gas & Electric Company's Requested Nuclear Regulatory Commission License Renewal for Diablo Canyon Power Plant, San Luis Obispo County

Dear Mr. Becker:

Thank you for your submittal of the above-referenced consistency certification for the Diablo Canyon nuclear power plant license renewal that you are seeking from the Nuclear Regulatory Commission. The California Coastal Commission (Commission) received your consistency certification here in our headquarters office on December 1, 2009.

Our review shows the certification is not yet complete, for the reasons provided below. Accordingly, the Commission's six-month review period under the Coastal Zone Management Act (CZMA), *see* 16 U.S.C. §§ 1456(c)(3)(A), has not commenced and will not commence until we receive the missing necessary data and information, pursuant to CZMA implementing regulations. 15 C.F.R. § 930.60(a). Additionally, as we discussed at our December 17, 2009 meeting, the project will require a coastal development permit (CDP) from the Commission. Because the Commission's CDP review and approval would also be sufficient for purposes of confirming the project's consistency with the California Coastal Management Program (CCMP), and thus establishing the Commission's concurrence with your federal consistency certification, we recommend you submit a CDP application instead of completing the consistency certification. This will allow for a single and more efficient review process.

Nonetheless, pursuant to requirements of the CZMA, we have identified below the information that would be needed to complete the consistency certification. Please note that much of the requested information will also need to be submitted as part of PG&E's permit application. We are happy to assist and answer any questions you may have about the needed information and the review process.

REQUIRED ADDITIONAL INFORMATION AND ANALYSES

As we discussed at the December 17, 2009 meeting, the Commission did not receive some of the necessary data and information as described in the CZMA implementing regulation at 15 C.F.R. section 940.58(a), and, accordingly, we will need several additional informational items to allow

Review of Consistency Certification for PG&E Diablo Canyon NRC License Renewal
December 29, 2009
Page 2 of 5

us to adequately evaluate this proposal and to complete consistency review.¹ These include two general elements that apply to several sections of the consistency certification as well as a number of specific information needs.

General Information Requests and Additional Analyses

Applying the CCMP definition of “development”: The certification states in several sections that “[L]icense renewal is not a new development, but a continuation of existing development.”² Several other sections state that a particular CCMP policy is not applicable to the requested license renewal because the renewal does not include development that would be subject to those policies.³ However, it appears that in reaching these conclusions, the certification did not fully apply the CCMP’s definition of “development”,⁴ resulting in the need for some of the additional information and analyses identified herein as necessary to complete the certification.

¹ The CZMA regulations at Section 930.58 state: “Necessary data and information. (a) The applicant shall furnish the State agency with necessary data and information along with the consistency certification. Such information and data shall include the following: (1) A detailed description of the proposed activity, its associated facilities, the coastal effects, and comprehensive data and information sufficient to support the applicant’s consistency certification. Maps, diagrams, technical data and other relevant material shall be submitted when a written description alone will not adequately describe the proposal (a copy of the federal application and all supporting material provided to the Federal agency should also be submitted to the State agency); ... and (3) An evaluation that includes a set of findings relating the coastal effects of the proposal and its associated facilities to the relevant enforceable policies of the management program. Applicants shall demonstrate that the activity will be consistent with the enforceable policies of the management program. Applicants shall demonstrate adequate consideration of policies which are in the nature of recommendations. Applicants need not make findings with respect to coastal effects for which the management program does not contain enforceable or recommended policies.”

The CZMA regulations also authorize the Commission to not start the review period if it has not received all the necessary data and information to analyze the proposed activity for consistency with the enforceable policies of the California Coastal Management Program (CCMP). Specifically, Section 930.60 of those regulations provides: “Commencement of State agency review. (a) Except as provided in §930.54(e) and paragraph (a)(1) of this section, State agency review of an applicant’s consistency certification begins at the time the State agency receives a copy of the consistency certification, and the information and data required pursuant to §930.58. (1) If an applicant fails to submit a consistency certification in accordance with §930.57, or fails to submit necessary data and information required pursuant to §930.58, the State agency shall, within 30 days of receipt of the incomplete information, notify the applicant and the Federal agency of the missing certification or information, and that: (i) The State agency’s review has not yet begun, and that its review will commence once the necessary certification or information deficiencies have been corrected; or (ii) The State agency’s review has begun, and that the certification or information deficiencies must be cured by the applicant during the State’s review period.

² Including, for example, Sections 30200, 30212, 30251, 30252, and 30253.

³ These include Sections 30234.5, 30253, and 30260.

⁴ The CCMP’s Section 30106 states, in relevant part: “‘Development’ means, on land, in or under water, the placement or erection of any solid material or structure; discharge or disposal of any dredged material or of any gaseous, liquid, solid, or thermal waste; grading, removing, dredging, mining, or extraction of any materials; change in the density or intensity of use of land, including, but not limited to, subdivision pursuant to the Subdivision Map Act (commencing with Section 66410 of the Government Code), and any other division of land, including lot splits, except where the land division is brought about in connection with the purchase of such land by a public agency for public recreational use; change in the intensity of use of water, or of access thereto; construction, reconstruction, demolition, or alteration of the size of any structure, including any facility of any private, public, or municipal utility...”

Review of Consistency Certification for PG&E Diablo Canyon NRC License Renewal
December 29, 2009
Page 3 of 5

The certification does not describe several forms of development that are part of the requested license renewal. The renewal would include new development in the form of “change in the intensity of use of water, or of access thereto”, as it would result in twenty years of ocean water use for cooling purposes that would otherwise not occur. License renewal would also result in twenty years of restricted access to nearby ocean waters that would otherwise end or be phased out. Additionally, some of the studies PG&E is conducting to implement license renewal may result in other forms of development that would need to be evaluated for consistency with the CCMP. For example, studies needed to update the site’s and facility’s seismic characteristics may result in the need for license renewal to include modifying foundations, adding support structures, grading slopes, etc. – any of which would constitute “development” and require coastal development permit approval from either the Coastal Commission or San Luis Obispo County. Further, extending the life of the facility is likely to require an expansion of the Independent Spent Fuel Storage Installation (ISFSI), which was designed to hold spent fuel only until the end of the current licensed operations. Please therefore revise the relevant sections of the certification and needed analyses to incorporate the full CCMP definition of “development”. Please also identify any project-related development known or anticipated to result from the studies being implemented as part of PG&E’s license renewal.

The consistency certification includes several statements of consistency without supporting analyses or documentation: Several sections of the certification state that the proposed project is consistent with an applicable CCMP provision but provide little or none of the necessary documentation or analyses to support that statement. For example, the certification’s review of conformity to Section 30220 states only that “License renewal is consistent with Section 30220 of the Coastal Act requiring the protection of water-oriented recreational activities because it will not interfere with the recreational water activities at the adjacent San Luis Obispo Harbor District and nearby Avila Beach community.” It does not analyze the additional twenty years of restricted access mentioned above or the effects of that restricted access on water-oriented recreational activities in the area around Diablo Canyon.⁵ Therefore, pursuant to Section 930.58(a) of the CZMA regulations, please provide the comprehensive information and analyses necessary to support PG&E’s consistency certification and its conclusions.

Specific Comments [*Note: Page references are from PG&E’s November 2009 Diablo Canyon Power Plant Federal Consistency Certification for Federal Permits and License Applications and License Renewal Application, Attachment E-1.*]

- **Filing fee:** The Commission’s filing fees are enforceable policies of the CCMP and constitute necessary data and information.⁶ Fees for consistency review are determined in the same manner

⁵ Other sections of the certification with similar assertions and inadequate analyses include Sections 30210, 30211, 30221, 30224, 30230, 30231, and 30251.

⁶ In March 2008, the Coastal Commission amended Title 14, California Code of Regulations, Section 13055 to authorize filing fee increases for federal consistency certifications pursuant to 16 U.S.C. Sections 1356(c)(3)(A) or (B). On April 24, 2008, the National Oceanic and Atmospheric Administration’s Office of Ocean and Coastal Resource Management approved the revised fee schedule as a routine program change to California’s CCMP. The filing fees constitute necessary data and information within the meaning of 15 CFR Sections 930.58(a) and 930.76(a)(3).

Review of Consistency Certification for PG&E Diablo Canyon NRC License Renewal
December 29, 2009
Page 4 of 5

as for coastal development permit applications. Based on your project description, please provide the fee based on project costs as described in the attached Coastal Commission Filing Fee Schedule, Section 13055(a)(5)(B).

- **p. E-12, Table E-2, Environmental Authorizations for DCP License Renewal:** Please note that the requirement for a CDP is an additional authorization to be added to this table.
- **pp. E-15-22, Table 3:** Please note that CCMP review is likely to require more specific and detailed review than was conducted under the General EIS described in this table.
- **p. E-28, CCMP Section 30200:** As noted above, this section does not fully evaluate project-related development as defined by the CCMP. This section may need additional information for completeness, based on subsequent submittals for other sections of this certification.
- **pp. E-29-35, CCMP Sections 30210 – 30224 Public Access and Recreation:** The certification states that the proposed license renewal does not constitute new development; however, as noted above, this is not a correct application of the CCMP's definition of development. The certification also identifies use limitations on nearby shorelines and ocean waters due to the project's security needs, but does not adequately analyze the effects of those use limitations on public access and recreation in those areas. Please provide a revised analysis of the project's effects on recreation and public access to the shoreline and nearby coastal waters due to an additional twenty years of project-related access limitations.
- **pp. E-35-41, CCMP Sections 30230 – 30233 Marine Environment:** The certification does not identify how the proposed project will "maintain, enhance, and, where feasible, restore the marine environment", or how it will result in special protection of nearby areas of special biological significance, as required pursuant to CCMP Section 30230. It also does not provide complete analyses from the various entrainment, impingement, and thermal effects studies done at Diablo Canyon and does not identify feasible mitigation measures to minimize the adverse effects of entrainment, as required pursuant to CCMP Section 30231. Please provide copies of these studies, including results of Empirical Transport Model studies, to document the necessary analyses.
- **pp. E-40-41, CCMP Section 30235 Construction Altering Natural Shoreline:** The certification states that no shoreline alterations are necessary. However, by extending plant operations until about 2045, license renewal would subject the facility to the effects of sea level rise (which could include direct effects on the facility's intake and outfall as well as indirect effects due to coastal erosion, landslides, or other similar geomorphic changes). Please provide analyses of whether predicted sea level changes would result in the need for shoreline alterations during the term of the proposed renewed license (see also Section 30253(1) below).
- **p. E-46, CCMP Section 30253(1) Minimize Risks to Life and Property in Areas of High Geologic, Flood, and Fire Hazard:** Please provide all data and interpretive summaries, such as those conducted by PG&E and USGS under their CRADA agreement and the Long Term Seismic Program of PG&E, characterizing the seismicity and tectonic structure in the vicinity of the plant. These data should include characterization of the Hosgri and Shoreline Faults, including fault geometry, seismicity, and sense of movement; estimates of maximum credible earthquake (from a deterministic perspective) on these and all other faults; the ground shaking expected at the site

*Review of Consistency Certification for PG&E Diablo Canyon NRC License Renewal
December 29, 2009
Page 5 of 5*

from such earthquakes; and the deep crustal structure beneath the plant (in particular an evaluation of the "Namson model" of thrust ramps beneath the plant). Additionally, and as recommended by the Technical Advisory Team established pursuant to AB 1632,⁷ please provide the three-dimensional seismic data should be collected and interpreted as part of this evaluation. Please confer with the Commission's staff geologist, Dr. Mark Johnsson, at 415-904-5200 for any necessary clarification.

- **p. E-47, CCMP Sections 30255 and 30260 – Priority of Coastal-Dependent Developments and Industrial Development:** The certification does not evaluate the project's "coastal-dependent"⁸ status or, as required by these CCMP Sections. Coastal Commission staff will likely address this issue as part of PG&E's permit application, but you may wish to provide additional information about the "coastal-dependent" nature of the project.

CONCLUSION

In conclusion, the Commission staff has determined PG&E's submittal does not contain the information necessary for a complete consistency certification. Therefore, pursuant to 15 C.F.R. section 930.60(a), the six-month time period for this submittal has not begun and will not begin until the Commission staff receives the information discussed above. However, as noted previously, we recommend PG&E instead submit a complete CDP application in lieu of completing this consistency certification to allow one, rather than two, review processes. Please feel free to contact me at (415) 904-5248 if you have any questions.

Sincerely,



Tom Luster
Energy, Ocean Resources, and Federal Consistency Division

Cc (via email): PG&E – Mr. Mark Krausse
NRC – Kimberly Green
CEC – Barbara Byron

⁷ Assembly Bill 1632 (2006) directs the California Energy Commission to assess the vulnerability of the state's operating nuclear power plants to a major disruption due to a major seismic event or plant aging, the potential impacts of such a disruption, potential impacts from the accumulation of nuclear waste at the state's existing nuclear plants, and other key policy and planning issues regarding the future role of California's existing nuclear plants.

⁸ The CCMP, at Section 30101, defines a "coastal-dependent development or use" as "any development or use which requires a site on, or adjacent to, the sea to be able to function at all."