# RESPONSE TO PUBLIC COMMENTS

## DETERMINATION TO APPROVE MITIGATION MEASURES FOR THE WATER QUALITY CONTROL POLICY ON THE USE OF COASTAL AND ESTUARINE WATERS FOR POWER PLANT COOLING (ONCE-THROUGH COOLING POLICY) FOR DIABLO CANYON NUCLEAR POWER PLANT

| Comment Letter | Commenter | Submitted by |
|---|---|---|
| 1 | General Public | Gene Nelson |
| 2 | General Public | Abraham Weitzberg |
| 3 | General Public | Alexander Cannara |
| 4 | California Coastkeeper Alliance<br>Natural Resources Defence Council | Sean Bothwell<br>Elizabeth Murdock |

| Comment | Comment | Response | Revision[1] |
|---|---|---|---|
| 1.1 | PG&E, the owner of DCPP should continue its policy of mitigating any ***claimed*** damage to sea life by continuing to pay the very modest annual fees to help construct artificial reefs for California sea life. Multiplying the proposed 2015-16 annual mitigation fee of $3.852 million by 20 years to get a sense of the approximate mitigation fee for the period from 2025 to 2045 yields about **$77.042 million.** | The Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling (Once-Through Cooling [OTC] Policy) established a time schedule for compliance for Diablo Canyon Nuclear Power Plant (Diablo Canyon Plant). The compliance date for Diablo Canyon Plant is December 31, 2024. Therefore, the owner and operator of Diablo Canyon Plant, Pacific Gas and Electric (PG&E) will be responsible for interim mitigation payments commencing October 1, 2015, and continuting up until Diablo Canyon Plant achieves final compliance. In addition, Diablo Canyon Plant's interim mitigation payment will be calculated each year, using the actual volume for each mitigation time frame based on the intake flows during that time period. | No |

[1] This column refers to revisions to the Draft Determination released on September 5, 2017, or a change that has impacted the Final Determination.

| Comment | Comment | Response | Revision[1] |
|---|---|---|---|
| 1.2 | An annual mitigation fee of $3.85 million is a minuscule fraction of the annual operational cost of DCPP, which was estimated to be about $0.5 billion in 2015. There are no credible research results showing significant harm to California sea life from "Once Through Cooling." (OTC) The cost-effective precedent of alternative compliance was set by California's San Onofre Nuclear Generating Station (SONGS) which began operation in 1968. | The OTC Policy was adopted by the State Water Resources Control Board (State Water Board) on October 1, 2010. The Final Substitue Environmental Document (SED) for the adoption of the OTC Policy identifies that OTC can cause adverse impacts to aquatic life, specifically due to impingement and entrainment (Section 2.2.1, 2.2.2, and 2.3). However, the State Water Board recognized that adverse impacts associated with OTC are often difficult to accurately quantify, particularly with regard to entrainment. For this reason the State Water Board contracted with Moss Landing Marine Laboaratory to convene an Expert Review Panel (ERP) to review the scoping document and the OTC Policy. Furthermore, the ERP was reconvened to determine an appropriate method to calculate interim mitigation payments based on existing sound science.<br><br>In Section 3.12 of the OTC Policy's SED, San Onofre Nuclear Generating Station (SONGS) was one of several power plants with existing restoration efforts discussed for the consideration of alternative interim requirements. In addition to SONGS, restoration efforts for Moss Landing Generating Station and Huntington Beach Generating Station were also discussed and considered in the alternative analysis for interim requirements. | No |
| 1.3 | DCPP's outfall lagoon is teeming with sea life. The species that are found there are well-adapted to the slightly warmer temperature there, including Garabaldi, the California state fish. DCPP's exclusion zone (as an extension of the adjacent marine preserve to the north) protects adult fish from harvesting, strengthening local fisheries. | Comment noted. | No |

| Comment | Comment | Response | Revision[1] |
|---|---|---|---|
| 1.4 | There is no value or utility to follow the advocacy of some anti-nuclear power groups that demand that PG&E install incredibly expensive and unnecessary cooling towers at DCPP. I believe that those demands serve the purpose of abusing a California state agency's regulatory power to indirectly shut down DCPP to serve their special interests, instead of the general interests of those Californians dedicated to environmental stewardship. | This comment is outside the scope of the determination on the interim mitigation requirements for Diablo Canyon Plant to address the impacts of impingement and entrainment associated with OTC. | No |
| 2.1 | I fully support State Water Board's Draft Determination for Diablo Canyon Plant (DCPP) which states that a site-specific entrainment cost, calculated as the average cost from the two studies, is appropriate. By established Water Board policy, power plant owners or operators can, on a case-by-case basis, comply with interim mitigation by selecting the mitigation option of providing funding to the Coastal Conservancy for appropriate mitigation.<br><br>This option has been used previously by DCPP, and there is no environmental reason for not continuing its use. There is ample evidence that costly alternatives will potentially harm the environment both on land and in the ocean. | Comment noted. | No |
| 3.1 | Related to past hearings (such as 18 November 2014) representatives of the California Department of Fish and Wildlife have indicated to SWRCB and other agencies that an estimated 1.5 billion larvae of coastal species are seriously damaged or killed during passage through Diablo Canyon's final turbine-cooling system.<br><br>Taking together that estimate, and the plant's known water flow of about 2 billion gallons per day, we can estimate the density of damaged/killed larvae. In a 365-day year, 1,500,000,000/365 implies about 4,110,000 larvae being affected daily, as 2 billion gallons of water flow through the plant. The inverse density of damaged larvae is thus 2 billion/4.11 million or about one larva lost per 480 gallons of water. | Comment noted. Diablo Canyon Plant's impingement and entrainment estimates are based on data presented in the OTC Policy's SED and data collected in two separate intake studies performed for Diablo Canyon Plant, the first study from 1996 to 1999, and the second study from 2008 to 2009. Additionally, the State Water Board recognized that adverse impacts associated with OTC are often difficult to accurately quantify, particularly with regard to entrainment. For this reason the State Water Board contracted with Moss Landing Marine Laboaratory to convene ERP to review the scoping document and the OTC Policy. Furthermore, the ERP was reconvened to determine an appropriate method to calculate interim mitigation payments based on existing sound science. The ERP | No |

| Comment | Comment | Response | Revision[1] |
|---|---|---|---|
| | The coastal marine density of larvae is far higher, as is the density consumed by natural coastal predators. Over the decades of Diablo canyon operation, local fisheries have seen no declines in catches and current local fisherman volunteer statements like “fishing has never been better” when asked. I encourage SWRCB members to perform such queries, if they wish first-hand opinions from those most exposed to Diablo’s OTC.<br><br>In addition a local marine biologist studied the coastal region for many years, finding no marine detriments from Diablo Canyon operations. He verbally related his study results at the 5 August 2016 public meeting held by the US NRC local to the plant. He passed away recently, but SWRCB staff may be able to uncover some of his work and analyses by contacting knowledgeable residents, citizens groups*, or NRC and plant staff. | was valuable in ensuring the State Water Boards process results in confident estimates of impacts. | |
| 3.2 | Some of the filings by Californians for Green Nuclear Power (CGNP.org) in the CPUC proceeding re Application A.16-08-006 may be relevant to the SWRCB. I am one of several expert witnesses for CGNP. A complete record of our testimony can be found at the links below**. Scope Sections 2.2 and 2.6 may be most relevant for SWRCB. | Comment noted. It appears that Section 2.2 speaks to the replacement power procurement and Section 2.6 speak to the proposed ratemaking and cost allocation issues. This is outside of the scope of the interim mitigation payment determination, which is intended to mitigate for the interim impacts of impingement and entrainment associated with OTC from October 1, 2015 and continuing up and until the plant is in compliance with the OTC Policy. | No |
| 4.1 | From the outset, we want to thank State Water Board staff for their efforts to verify Diablo’s site-specific Determination. We greatly appreciate the consultation with Dr. Raimondi to verify the accuracy of PG&E’s proposal. It is important to note that we do not oppose Diablo’s site-specific mitigation proposal – even though that results in a lower mitigation fee. However, given Diablo’s intake volume – expected to continue through 2024 – we want to ensure that the variables used in the Determination is accurate and verifiable. | Comment noted. | No |

| Comment | Comment | Response | Revision[1] |
|---|---|---|---|
| 4.2 | The Diablo Determination contains minor but significant flaws that need to be revised. The Draft Determination states that maximum intake volume is being used to determine the mitigation fee, which is inaccurate. We respectfully request that staff either use the correct maximum permitted intake volume of 2,760 MGD, or accurately describe 827,196 MG as the actual flow rate. | In the calculation of the entrainment mitigation payment, the actual intake volume was used along with the site-specific cost factor per million gallons (MG). The use of the term maximum was incorrect and thus the determination has been revised to specify that the actual volume was used in the calculation instead of the maximum.<br><br>Based on the plant operations between October 1, 2015, and September 30, 2016, the actual intake volume was determined to be 827,196 MG per day (MGD). This volume was provided in PG&E's interim mitigation information response email dated December 1, 2016.[2] This volume was further confirmed with the flows and days of operation reported by PG&E in their NPDES Permit monitoring reports submitted through California Integrated Water Quality System (CIWQS). The State Water Board has summarized the data from the CIWQS reports to clarify how the actual volume was obtained and confirmed in an attachment to this response to comments.<br><br>However, in the calculation of the site-specific cost factors of $3.44/MG and $4.32/MG discussed in the determination, the daily maximum intake flow of 2,486 MGD was used, which equals 827,196 MG during the 2015-2016 interim mitigation period, since this captures the worst case scenario when the plant operates at full OTC intake pumping capacity.<br><br>The maximum flow of 2,760 MGD is the maximum effluent discharge flow. The effluent flow is not representative of the impacts of impingement and entrainment associated with intakes at Diablo Canyon Plant and is not appropriate to use in the calculation of | Yes |

[2] Email from Mr. Krausse, PG&E, to Ms. Faick, State Water Board. December 1, 2016. <https://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/powerplants/diablo_canyon/docs/diablocanyon_imf16.pdf>

| Comment | Comment | Response | Revision[1] |
|---|---|---|---|
| | | the interim mitigation payment. Additionally, as stated in Resolution No. 2015-0057, the intake volume is used in the calculation of interim mitigation payments. With regards to the value of 2,670 MGD in Table 1, it seems this value was related to the effluent flow and not the intake flow. The Expert Review Panel referenced it and used it in their final report as this was the best available value at that time. However, for the calculation of the site-specific mitigation cost for Diablo Canyon Plant, the maximum intake flow of 2,486 MGD has been used instead. | |
| 4.3 | We also request that the use of 2,670 MGD in Table 1 be verified as correct, and if not, recalculate using the correct flow rate. | As indicated in Response to Comment 4.2, the maximum flow of 2,760 MGD is actually the maximum effluent discharge flow, not the intake flow, and thus is not appropriate to use in the calculation associated with impacts from the intake. With regards to the value of 2,670 MGD in Table 1, it seems this value was also related to the effluent flow and not the intake flow. The Expert Review Panel referenced it and used it in their final report as this was the best available value at that time. The maximum intake flow cannot be higher than 2,486 MGD based on hours/minutes each intake circulating water pump is operated, and the maximum pumping capacity in gallons per minute (gpm) for each respective pump. Therefore, for the calculation of the site-specific mitigation cost for Diablo Canyon Plant, the maximum intake flow of 2,486 MGD has been used instead. A footnote was added to Table 1 in the Final Determination to provide clarity. | Yes |
| 4.4 | Lastly, we respectfully request that additional supporting information be provided to explain how the impingement mass of 710 pounds was derived. | The 710 pounds value for impingement mass was reported in the OTC Policy's SED. PG&E's prior evaluation determined that impingement effects were insignificant due to the low numbers and biomass of | No |

| Comment | Comment | Response | Revision[1] |
|---|---|---|---|
| | | impinged organisms.[3] Additionally, the State Water Board's NPDES Permit No. CA0003751, Order No. 90-09 does not require impingement monitoring for Diablo Canyon Plant.<br><br>The value reported in the OTC Policy's SED is the only impingement data available for Diablo Canyon Plant and is used for the interim mitigation payment calculation. | |
| 4.5 | Discrepancies in the draft determination between intake flow volume utilized for calculations and description of volumes must be corrected. The Diablo Draft Determination cites an intake flow rate of 827,196 MG for the period of October 1, 2015 to September 30, 2016, and describes this flow as the "maximum intake volume"[1]. We have attempted to verify the accuracy of this flow rate by examining the publicly available data reported by the Permittee in CIWQS and we have been unable to do so. This flow rate is not consistent with the various flow rates reported in CIWQS, and the discrepancies between what is reported in publically available data and what is described in the Draft Determination could result in very significant differences in the entrainment payment calculation. The CIWQS reports referenced in our review have been attached for reference, and the volumes reported therein have been transferred to the table in Attachment 1, for ease of comparison.<br>Footnote 1: Draft Determination at 7. | See response to comment 4.2. | Yes |
| 4.6 | The Draft Determination states that to "determine the intake flow volume, staff used the *maximum intake volume* for the interim mitigation period" (at 7, emphasis added). At the outset, this raises an issue of whether in referencing "maximum intake volume", the State Water Board is referring to the maximum permitted volume (2,760 MGD) or the maximum design flow volume (2,540 MGD)?[2] If the | See response to comment 4.2. In addition, the calculation of the actual volume can also be seen in PG&E's interim mitigation information response email dated December 1, 2016. For January, March, July, and August 2016, the volume of 77,066 MG was calculated by using the maximum intake capacity and the total number of days in that month (2,486 MG x 31 | No |

[3] Memorandum from Mr. Steinbeck, Tenera Environmental, to Mr. Strickland, Mr. Krausse and Mr Cunningham, PG&E. April 26, 2017. < https://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/powerplants/diablo_canyon/docs/revised_tenera_memo.pdf>

| Comment | Comment | Response | Revision[1] |
|---|---|---|---|
| | maximum permitted volume is used, than the total volume for the interim mitigation period is 1,007,400 MG and the entrainment fee due, based on a $3.88/MGD rate, is $3,908,712. This amount due is $699,192 more than the entrainment fee that the Draft Determination states is due: $3,209, 520.<br><br>Alternatively, if staff intent is to utilize the actual flow volumes, the text of the Draft Determination should be corrected to precisely and accurately describe the numbers cited in the document, and the supporting flow data utilized to arrive at these calculations should be included as an attachment to this and all future interim mitigation determinations. While the intake flow rate of 827,196 MG is closer to the sum of the average flow as reported in the discharge reports for the period of time in question (824,704), there is still a discrepancy between the numbers.<br><br>Footnote 2: 2015 & 2016 Annual Discharge Monitoring Reports, Appendix 2, Tabular Summaries of Influent and Effluent Monitoring. | days = 77,066 MG). The other months show a different volume, which is a result of the number of days the plant operated that particular month. These values were confirmed with the data submitted in the monitoring reports in CIWQS. | |
| 4.7 | We respectfully request that the State Water Board Executive Director revise the draft Diablo Determination to either use the correct maximum permitted intake volume of 2,760 MGD, or to accurately describe the actual flow rate, if that is what is being utilized, and to support that rate with accompanying documentation. | See response to comment 4.2. | Yes |
| 4.8 | This Draft Determination sets a critically important precedent that will impact interim mitigation fees through 2024. Our review of the Draft Determination reveals a number of additional factual issues that should be checked. We recommend that the Final Determination be issued, including supporting documentation of numeric inputs.<br><br>First, Table 1 in the Draft Determination, "Calculation of default entrainment cost adopted in the State Water | See the response to comment 4.3. The value of 2,670 MGD may seem to be a transposition error of 2,760 MGD. However, the 2,760 MGD applies to the effluent flow and not the intake flow, thus it is not appropriate to use this value since the OTC interim mitigation requirements are associated with the intake impacts not the effluent. Furthermore, Resolution No. 2015-0057 has already been adopted and it was adopted using 2,670 MGD to come up with an acceptable estimate of what could be an average cost factor per | No |

| Comment | Comment | Response | Revision[1] |
|---|---|---|---|
| | Boards Resolution No. 2015-0057", utilizes an intake volume of 2,670 MGD to calculate the site-specific entrainment cost for Diablo Canyon. This number appears to be an incorrect transposition of 2,760, the maximum permitted volume in Diablo Canyon's Annual Discharge Reports. We request that the use of 2,670 MGD be verified as correct; if it is not correct, the calculations in the Table, and potentially throughout the Determination, must be revised. | million gallons for plants not seeking a site specific cost factor. Diablo Canyon Plant is seeking a site-specific cost factor and the determination has used the maximum intake flow of 2,486 MGD in calculating the cost factor and has used the actual intake volume in calculating the entrainment payment amount. | |
| 4.9 | Second, we respectfully request that additional supporting information be provided to explain how the impingement mass of 710 pounds was derived. The Draft Determination references the OTC Policy Substitute Environmental Document, but this is a vague reference, the accuracy of which is difficult to verify. We request that the methodology for calculating the impingement mass be explained, and information to assist in verifying the accuracy of the mass utilized in the calculation be provided. | Please see response to comment 4.4. | No |
| 4.10 | Again, we greatly appreciate State Water Board staff efforts to ensure Diablo's site-specific Determination is accurate and consistent with the 2015 Mitigation Fee Resolution. The Diablo OTC Plant will have significant and ongoing marine life impacts – that need to be mitigated properly. Because of the highly fact-dependent nature of the interim mitigation calculations, it is essential for the draft determinations to be precise and for the public to have ready access to the specific flow reports utilized to calculate interim mitigation amounts due. | See response to comment 4.3. Additionally, the State Water Board performed the interim mitigation payment calculations and prepared the determinations using the most current information available. | No |