December 23, 2005

Mr. Jonathan Bishop
Executive Officer
Los Angeles Regional Water Quality Control Board
320 West 4th Street, Suite 200
Los Angeles, CA 90013
VIA FAX (213) 576-6640

Re: Comments concerning the AES Alamitos Generating Station and the AES Redondo Beach Generating Station "Proposals for Information Collection"

Dear Mr. Bishop:

On behalf of Heal the Bay and Santa Monica Baykeeper, we submit the following comments concerning the Proposals for Information Collection ("PICs") for two power plants owned by AES corporation. Information collected as specified in the PICs will form the basis for determining compliance with federal and state laws, and any further policies adopted by the State Water Resources Control Board. Your responsibilities, especially under the federal "Phase II" rule, may require you to certify that once-through-cooled power plants in the L.A. region operate as close as practicable to national performance standards. Thus, it is important that sufficient studies are performed to properly support any later determinations. Revisions are required to the PICs for both the Alamitos Generating Station (AGS) and the Redondo Beach Generating Station (RBGS) to ensure a rigorous and thorough examination of, and justification for, the plants' environmental impacts.

On December 21, 2005, David Hung and Tony Rizk of your staff facilitated a very useful meeting where several important issues were raised regarding the AGS and RBGS PICs. We appreciate the opportunity to have participated in that meeting, and with this letter, we aim to provide further helpful comments. This letter supplements the comments we provided specific to the RBGS on November 2, 2005.

As currently fashioned, the AGS and RBGS PICs do not clearly specify that alternative cooling technologies will be rigorously evaluated. However, in the December 21, 2005 meeting, Dave Bailey of EPRI Solutions stated (both in his presentation and in a follow-up answer) that AES will be evaluating the use of "closed-cycle cooling" at both plants. Your staff should ensure not only that these analyses are performed, but also that they are appropriately broad and rigorous. Alternative cooling technologies include not only closed-cycle wet cooling towers, but also include the use of alternative source water (e.g., reclaimed water) and the use of dry cooling and hybrid technologies. Moreover, these

analyses must not summarily conclude that such alternatives "are not feasible," as has been the case with other analyses performed in California. Obviously, the analysis of alternative cooling technologies should be every bit as rigorous as every other study that is required by law. We expect all plants in the L.A. region to support their conclusions with substantial evidence.

Consideration of cumulative impacts is another issue of general importance. We applaud the Regional Board for requiring cumulative impact studies, especially as both AES plants operate close to other power plants withdrawing large quantities of seawater. The AGS is located adjacent to the Haynes Generating Station on Alamitos Bay. The RBGS is sited on Santa Monica Bay just south of the Scattergood and El Segundo plants. While the discussion of cumulative impacts at the December 21, 2005 meeting was enlightening, we are concerned that AES may only be interpreting your interest in this topic as a polite suggestion. Thus, it is important to clarify that such cumulative impact studies are mandatory, as buttressed by the generous grant of federal and state legal authority given to the Regional Board.

One final issue of general importance is the role of "restoration." We are in full agreement with Regional Board staff that this alternative should be viewed as a last resort. This is especially so, given the precarious status of restoration in the Second Circuit litigation and the uncertain state of science concerning the linkage between proposed restoration projects and actual power plant impacts.

In addition to these general comments, we set forth below several specific concerns regarding the proposed PIC.

1. **The PICs fail to include evaluation of closed-cycle cooling and other environmentally preferred compliance alternatives**

As stated above, the PICs do not state clearly that alternative cooling options will be thoroughly and rigorously evaluated. Under the Phase II rule, PICs are prerequisites to meeting the requirements of three of five potential compliance options.[1] While information collected pursuant to an approved PIC is the basis for selecting among these alternatives, the PIC should not be designed to satisfy the preconceived preference of the plant operator. Instead, information from the proposed studies is necessary to inform the regulatory agency and the plant operator about the feasibility and appropriateness of different mitigation approaches.

The AGS PIC improperly rearranges this order. The PIC identifies restoration as its preferred compliance alternative, and uses this preference to defend a limited analysis of alternative cooling technologies. Under the Phase II rule, a plant operator's preferred compliance option does not justify providing incomplete analyses of all available technologies. For example, after completing studies identified in the PIC, if a plant operator views restoration in a favorable light, the operator must demonstrate to the Executive Officer how the operator has "evaluated the use of design and construction technologies and/or operational measures for [the] facility and [explain how] restoration

[1] 40 C.F.R. § 125.95; 69 Fed. Reg. 41592-41593

would be more feasible, cost-effective, or environmentally desirable."[2] How is the operator to make this showing without sufficiently broad studies designated in the PIC?

Moreover, the Phase II rule vests broad discretion, *but also great responsibility*, in the Executive Officer. When a facility requests a site-specific determination of BTA, the Executive Officer is allowed to "request revisions to the information submitted by the facility in accordance with §125.95(b)(6) if it does not provide an adequate basis for you to make this determination."[3] This broad discretion to request information complements the obligation imposed on the Executive Officer to ensure that the ultimate site-specific compliance requirements "achieve an efficacy that is, in [the Executive Officer's] judgment, *as close as practicable to the applicable performance standards*…."[4] This ultimate decision can only be rational and legally defensible if it is made on the basis of *complete* information. Thus, it benefits the Executive Officer (as well as interested stakeholders) to request complete information at this stage of the process.

An example from another state should further persuade the Regional Board of the prudence of this course. The New York State Department of Environmental Conservation, New York's steward of the Clean Water Act, requires the evaluation of *all* alternative cooling technologies in detail, including closed-cycle cooling for Clean Water Act §316(b) studies. The evaluation must include a detailed description, analysis of the engineering feasibility, assessment of mitigative benefits (reduction of impingement and entrainment), cost analysis, implementation timeline, and evaluation of adverse environmental impacts caused by the alternative.[5] Obtaining comprehensive information from these analyses is a necessary prerequisite to intelligently and rationally approving a given compliance option as required by law.

Thus, we urge the Regional Board to ensure that AGS, RBGS, and all other Region 4 facilities to conduct a thorough analysis of *all* alternative cooling technologies. The Regional Board must then evaluate these analyses with an eye toward its mission and the particular laws it is charged with implementing. Moreover, it is imprudent and insufficient to substitute another agency's conclusions on these matters without a tailored technological and legal review.

2. Cumulative impacts are ignored

We applaud the Regional Board for requiring cumulative impact studies for the closely sited power plants in the Santa Monica Bay, and urge you to require the same type of analysis for facilities on Alamitos Bay. The AGS PIC fails to include an assessment of cumulative impacts associated with nearby plants also utilizing once-through cooling. The facilities at Haynes Generating Station and AGS are located in close proximity to one another, on the same small body of water. This raises a great deal of concern, as each is impacting the same coastal waters and ecosystems. Based on circulation and

[2] 69 Fed. Reg. 41689
[3] 40 C.F.R. § 125.98(b)(1)(vi)
[4] *Id.* [emphasis added]
[5] New York Department of Environmental Conservation (January 24, 2005) Letter to Benjamin H. Grumbles, USEPA, pp.4-5.

volumetric relationships, the combined once-through cooling of these two power plants consumes all of the water in Alamitos Bay every 5 days.[6]

In addition, the Bay is likely to suffer from other categories of cumulative impacts, including:

1) Effects from closely sited power plants (intakes from multiple power plants in a small area may have a greater impact than intakes from single facility); and

2) Effects of multiple uses within the coastal zone (i.e. combined impacts from industrial uses, stormwater runoff, and other anthropogenic impacts).

Clearly, *all* cumulative impacts must be examined to provide a complete assessment of the environmental impacts associated with cooling water intake systems (CWIS) at AGS.

Notably, the most recent impingement and entrainment study, conducted at Huntington Beach Generating Station, included an evaluation of cumulative impacts. Although there are concerns about the methodology used for this cumulative impact assessment, it plainly underscores and recognizes the importance of such an analysis. Following this example and learning from these mistakes, the Regional Board should require a cumulative impact assessment that is comprehensive and systematic to avoid the pitfalls encountered in Huntington Beach's study, including using a disproportionately large study area (the entire Southern California Bight), combining variable methods and frequencies of monitoring at each plant, and using incomplete entrainment data for each plant. As discussed at the December 21st meeting, the cumulative impact study at AGS also should include assessment of a wide variety of species to account for both ecosystem functions and services and use a source water area that is realistic and representative of the potential impacts.

While, the proposed entrainment sampling design includes source water sampling, it does not appear that AGS intends to use this data to study cumulative impacts. Instead, AGS plans to conduct "coordinated" source water sampling with Haynes Generating Station due to the close proximity of these power plants to design and scale restoration projects.[7] The PIC fails to make any mention of the need for source water sampling to examine cumulative impacts. Moreover, the PIC states that AGS will discontinue source water sampling if the courts decide to reject restoration as a Clean Water Act §316(b) compliance alternative.[8] Regardless of the court decision, source water sampling should be required for all entrainment characterization studies as it provides essential information for assessing cumulative impacts.

We thus urge the Regional Board to require that AGS pursue a cumulative impact analysis that accounts for all of the above considerations. In the case of AGS, a true

[6] Tenera Environmental and MBC *Applied Environmental Science* (September 28, 2005) Summary of Existing Physical and Biological Information and Impingement Mortality and Entrainment Characterization Study Sampling Plan, p. 2.
[7] Tenera Environmental and MBC *Applied Environmental Science* (September 28, 2005) Summary of Existing Physical and Biological Information and Impingement Mortality and Entrainment Characterization Study Sampling Plan, p. 11.
[8] *Id.* p. 12.

evaluation of ecosystem impacts is not possible without including a cumulative impact assessment. Further, if the Regional Board requires AGS to conduct a Radius of Influence study to assess cumulative impacts, similar to that required at El Segundo Generating Station, its requirements must be clearly delineated. All categories of cumulative impacts (listed above) should be examined in the Radius of Influence study including impacts from other cooling water intake systems and those from multiple uses within the coastal zone.

3. The list and descriptions of proposed technologies is not sufficient

We support comments made by Regional Board staff at the December 21st meeting requiring AES to consider *all* technologies that could potentially benefit the environment. The list of proposed technologies currently submitted in the PIC is severely limited. By only considering one technology for Units 3, 4, 5, & 6, and two technologies for Units 1 &2, AES is unreasonably restricting the set of alternatives that will be examined. The Regional Board staff raised this concern at the December 21st meeting, and should make this request formal in its upcoming correspondence.

At present, AGS only considers fine-mesh Ristroph traveling water screens as an alternative technology for Units 3, 4, 5, & 6. We have concerns with this evaluation. The normal design for this technology is an approach velocity of 0.5fps, however, the approach velocity at AGS is 2.7fps at units 3 & 4, and 1.1fps at units 5 &6.[9] The effects of high velocity flow on impingement and entrainment survival must be understood for a variety of species and lifestages before employing such technology. Additionally, safe return of organisms to a location that maximizes their survival poses a problem at AGS. Returning organisms to the Los Cerritos channel would put them at high risk of becoming re-impinged or re-entrained, while returning organisms to the Pacific Ocean requires transportation over a long distance. The sensitivity of organisms to transportation and handling differs depending on the species, as this can be a highly stressful activity. Thus, the feasibility of this alternative is unlikely.

Additionally, AGS only proposes to evaluate two technologies for Units 1 & 2 – barrier nets and wide-slot cylindrical wedgewire screens. According to the PIC, these Units are only subject to the impingement performance standard. We support the Regional Board's concern regarding this conclusion, and concur that this supposition should be re-evaluated to base performance standard qualifications on operational intake. If this reassessment finds that Units 1 & 2 only qualify for the impingement performance standards, we have significant concerns about the limited alternative technology analysis. Wide-slot cylindrical wedgewire screens have not been deployed in marine environments, and may be subject to high rates of biofouling. This technology uses an air-blast system to remove fouling debris, which has also not been tested in the ocean. The success of wide-slot wedgewire screens in marine environments is unknown, and consequently it should not be a viable alternative technology option for complying with impingement reduction requirements. We support conducting pilot studies of this technology in the ocean; Phase II facilities should be responsible for funding any

[9] EPRI Solutions (September 2005) 316(b) Proposal for Information Collection for AES's Alamitos Generating Station, p. 21.

preliminary analyses, and should not plan to use this alternate technology unless the pilot studies support its feasibility.

A question related to the consideration of appropriate technologies is the setting of the calculation baseline. Neither PIC clearly addresses how AES plans to account for the mesh size on the traveling screens at either the AGS or RBGS. At both plants, the mesh size is larger than EPA's assumed baseline mesh size of 3/8 inches. The PICs are also less than clear about other elements of AES's intended calculation baseline.

4. The list of target species is inadequate

The proposed list of target species for entrainment and impingement analyses is severely limited, including only a few commercially important and abundant species. It is not sufficient to restrict the list of target species to common, fished organisms. At the December 21st meeting and in your comment letter to El Segundo Power, the Regional Board raises the same concern. We agree that the list of species assessed in impingement and entrainment analyses needs to be expanded. For impingement analyses, the proposed list of species includes all fish, crabs, shrimp, squid, octopus, and spiny lobster; while entrainment analyses propose to monitor all fish life stages beyond egg, rock crab megalopal larvae, market squid hatchlings (paralarvae), and spiny lobster phyllosoma larvae. Although these species are economically important and provide essential ecosystem functions, the PIC fails to address impingement and entrainment of other ecologically important species waters in and around the Alamitos Bay. Representative species that characterize the ecosystem should be included in the analysis, including predators, forage species, detritivores, and nutrient recyclers. Each of these groups provides a unique ecosystem function.

In addition, the list of target species in the proposed PIC represents only taxa that have high abundance in historical entrainment and impingement samples. When assessing CWIS impacts, it is critical to include less populous species. Neglecting species that have low absolute entrainment and impingement is a fundamental flaw in the proposed study, as populations of these species may be smaller and yet experience a higher proportional impact. Small populations are less likely to exhibit resilience than large populations to the indiscriminate mortality caused by once-through cooling.

Sensitive species and those of high intrinsic value also should be included in the proposed entrainment and impingement study. Voluntary reporting illustrates that it is not unusual for marine mammals and sea turtles to suffer impingement at coastal power plants. Although AGS has not reported any marine mammal or sea lion impingement, an adjacent plant, Haynes Generating Station reported taking two California sea lions from 1998-2004.[10] Due to the voluntary nature of the reporting, these numbers are not verified by the responsible agency and have high uncertainty. We also believe that the numbers may be underestimated. Further investigation of such impingement is necessary.

The take of protected species cannot be ignored. Take of marine mammals, sea turtles, tidewater gobies, boccacio, canary and yelloweye rockfish, garibaldi, abalone, and various other sensitive species must be specifically planned for in the PIC and

[10] National Marine Fisheries Service Stranding Network (June 2005)

documented by AGS. The impingement and entrainment of any rare, threatened or endangered species should be recorded in detail, including the species, and if appropriate, size and weight of the organism.

In addition to providing an incomplete list of target species, the proposed entrainment study neglects fish eggs. The study considers the life stages of larval and adult fish, but fails to consider eggs. The egg represents a critical life stage, and may not be accurately represented based on larval, juvenile, and adult presence. In its final letter to El Segundo Generating Station, the Regional Board requires the plant to identify and enumerate fish eggs in its entrainment analyses. Specifically the letter states, "Enumeration and identification of fish eggs in the entrainment study should be included not only to increase the scientific validity of the study and allow for a more accurate estimate of entrainment effects, but also because the Phase II regulations mandate their inclusion."[11] The importance of this requirement was further discussed at the December 21st meeting, and we support the Regional Board's push to ensure that fish eggs are included in El Segundo Generating Station, AGS, and all other entrainment studies. AGS must remain consistent with the Regional Board's comments, and include fish eggs in its entrainment characterization study.

Moreover, we concur with the Regional Board that classification of eggs should be a priority in any entrainment analysis. CalCOFI data show a high abundance of fish eggs in coastal waters of the Southern California Bight.[12] Furthermore, fish eggs comprise a large portion of the entrained organisms and the entrainment analysis results will be deficient without species-specific egg information. There are many methods available to identify fish eggs, including relatively simple rapid photographic surveys. These and other methods base egg identification on unique characteristics including size, shape, color, character of the yolk, presence/absence of oil globules, and character of the developing embryo.[13] When species-specific classification cannot be derived, the eggs should be identified to the lowest taxonomic level possible and an egg count should be provided for all samples. It is imperative that species-specific fish egg identification be conducted in entrainment studies.

5. The proposed methods for entrainment mortality sampling are insufficient and must be improved

Insufficient entrainment studies should no longer be acceptable at AGS or any other once-through cooling facility. In the past, coastal power plants commonly downplayed the environmental impacts of entrainment. Recent studies at Moss Landing and Morro Bay have shown that CWIS previously thought to have no harmful biological impacts

[11] Los Angeles Regional Water Quality Control Board (December 6, 2005) Comments to Phase II 316(b) Proposal for Information Collection and Impingement Mortality and Entrainment Characterization Study Sampling Plan, El Segundo Power, LLC; El Segundo Generating Station, NPDES Permit No. CA001147, CI-4667, p. 3.
[12] Moser (2001) [*available at*: http://www.energy.ca.gov/sitingcases/elsegundo/documents/applicants_files/2003-02-10_testimony/BIO-6-7.PDF]
[13] Murdoch et al. (1990) Rapid Shipboard Identification and Enumeration of Pelagic Marine Fish Eggs by a Simple Photographic Technique, *New Zealand Journal of Marine and Freshwater Research*, vol 24: pp. 137-140.

may actually kill 10-30% of fish larvae from individual species in the source water.[14] These impacts can no longer be overlooked.

Thorough entrainment analyses have never been conducted at AGS. A one-year entrainment study was conducted at Haynes Generating Station in 1979. The results of this study were used to assess entrainment at AGS by scaling to its flow and intake. Aside from being conducted at a separate facility, this study is severely outdated, which is problematic for several reasons. Historic studies describe physical and/or biological conditions that may no longer exist and many of the natural populations, particularly fish, have changed since it was conducted. In addition, these analyses were conducted using sampling techniques and modeling approaches that do not reflect our current understanding of science and marine ecology.[15]

Additionally, some of the methods used in the Haynes Generating Station 1979 entrainment study are questionable from a scientific standpoint. The sample net size was reduced from 335μm to 202μm midway through the study, resulting in an inconsistent sampling regime and less selective sampling methods during the latter half of the study. Moreover, entrainment was studied using pump and net sampling, but it is unclear as to how well pump sampling actually samples entrained larvae. In addition to this potential problem, the comparability of pump and net sampling is uncertain.[16] Furthermore, each sampling event was reported to occur biweekly for a period of 24 hours; however, the time and duration of sampling during each 24 period is not reported.[17] Due to the uncertainty associated with historic entrainment sampling and the fact that no sampling actually occurred at AGS, the data from this entrainment analyses should not be used for any baseline calculations.

Further, elements within the ocean ecosystem (i.e. species distribution, currents, temperature, wind, nutrient concentrations) are highly variable. In the PIC, AGS proposes to conduct a year-long entrainment characterization study. A one-year study will not provide sufficient results due to the highly variable nature of the marine environment. A longer-term study would more accurately characterize the entrainment impacts of AGS by examining trends through time. As required for El Segundo Generating Station, the Regional Board should call for AGS to conduct a multiyear entrainment study.[18]

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[14] California Energy Commission (2005) Issues and Environmental Impacts Associated with Once-Through Cooling at California's Coastal Power Plants: Staff Report. Appendix A: An Assessment of the Studies Used to Detect Impacts to Marine Environments by California's Coastal Power Plants Using Once-Through Cooling, p. 4.

[15] California Energy Commission (2005) Issues and Environmental Impacts Associated with Once-Through Cooling at California's Coastal Power Plants: Staff Report. Appendix A: An Assessment of the Studies Used to Detect Impacts to Marine Environments by California's Coastal Power Plants Using Once-Through Cooling, p. 4; California Coastal Commission (March 2004) Seawater Desalination and the California Coastal Act, p. 70.

[16] California Energy Commission (2005) Issues and Environmental Impacts Associated with Once-Through Cooling at California's Coastal Power Plants: Staff Report. Appendix A: An Assessment of the Studies Used to Detect Impacts to Marine Environments by California's Coastal Power Plants Using Once-Through Cooling, p.31

[17] *Id.*

[18] Los Angeles Regional Water Quality Control Board (October 21, 2005) Comments to Phase II 316(b) Proposal for Information Collection and Impingement Mortality and Entrainment Characterization Study

6. Methods for impingement mortality sampling are insufficient

AGS has conducted periodic impingement sampling during normal plant operations and heat treatments as part of the National Pollutant Discharge Elimination System (NPDES) monitoring program. The Clean Water Act §316(b) regulations allow for the use of historical data to estimate a baseline, but require the PIC to show "the extent to which the data represent current conditions."[19] If AGS chooses to pursue use of this data in baseline calculations for future impingement sampling, it must demonstrate how the historical impingement data is representative of current conditions. At present, AGS's PIC fails to provide this demonstration.

Additionally, historic impingement sampling at many coastal power plants is inadequate.[20] Before approving use of this historical data, the Regional Board should require AGS to analyze and illustrate the relevance of this historical data to present conditions. We again concur with Regional Board staff that the changes in environmental conditions over time, also known as "shifting baselines," skew the accuracy of historical data. Consequently, these historical studies should not be used as a baseline for current analyses.

As stated above, we recommend that the impingement study extends longer than one year to reduce the variability and uncertainty of impingement data. The PIC proposes to estimate the seasonality of impinged organisms at AGS[21]; however it is difficult to determine seasonality in one year. A multiyear study is needed to examine seasonal trends at a particular site to reduce uncertainty by showing trends through time, allowing for comparison between years, and allowing for determination of any outliers in the data.

7. The proposed use of the site-specific alternative to BTA disregards comprehensive economic analysis

In the PIC, AGS expresses a preference for using the site-specific alternative to BTA to meet the required performance standards under Clean Water Act §316(b).[22] As stated above, the PIC is supposed to be an information-gathering tool and this determination is premature. We agree with statements made by the Regional Board staff at the December 21st meeting asserting that initial studies to evaluate all possible alternatives are necessary before preferred options are chosen.

Sampling Plan, El Segundo Power, LLC; El Segundo Generating Station, NPDES Permit No. CA001147, CI-4667, p. 5.

[19] Clean Water Act 316(b); 40 C.F.R. § 125.95(b)(1)(ii).

[20] California Energy Commission (2005) Issues and Environmental Impacts Associated with Once-Through Cooling at California's Coastal Power Plants: Staff Report. Appendix A: An Assessment of the Studies Used to Detect Impacts to Marine Environments by California's Coastal Power Plants Using Once-Through Cooling, p. 4.

[21] Tenera Environmental and MBC *Applied Environmental Science* (September 28, 2005) Summary of Existing Physical and Biological Information and Impingement Mortality and Entrainment Characterization Study Sampling Plan, p. 12.

[22] EPRI Solutions (August 2005) 316(b) Proposal for Information Collection for AES's Alamitos Generating Station, p. 19.

After the initial studies are performed, if AGS chooses to pursue the cost-cost or cost-benefit approach and if this approach is permissible under California state policy, the Regional Board must ensure that a rigorous and comprehensive cost-benefit analysis is conducted. AGS should be required to demonstrate and document why they believe that costs of using BTA to achieve reductions in impingement and entrainment are too high in the context of power plant economics. Such an analysis must include direct and indirect non-market and market values for both industry and the environment. Any consumptive use valuation should examine all of the associated costs, including travel, bait, tackle, boat, gas, lodging, and others. Furthermore, non-market values cannot be ignored in the environmental economic analysis. Only a small fraction of species within the sea have direct market value, but almost all species present within close vicinity of intake pipes will be impacted, directly or indirectly, by once-through cooling. AGS states that evaluation of non-use benefits is not necessary based on the current federal regulations;[23] however, this statement is inaccurate. The EPA demonstrates the importance of including non-use values in plant-related economic analyses in Clean Water Act 316(b) Supplemental Chapter D1 by providing methods to include non-use benefits quantitatively in the cost-benefit analysis.[24] Non-use values cannot be overlooked in any economic analyses conducted by AGS and all valuation must be calculated in a reasonable manner.

8. A comprehensive set of models, including the most current Habitat Production Foregone method should be used to evaluate the environmental impacts of impingement and entrainment

We recommend using a comprehensive set of models to provide thorough assessment of impingement and entrainment impacts. The PIC proposes to use a variety of methods to assess the effects of the cooling water intake system on impinged and entrained species, including Adult Equivalent Loss (AEL), Fecundity Hindcasting (FH) and Empirical Transport Modeling (ETM). Although these models are informative, they only provide species-specific impact assessments. We recommend the Regional Board require the use of Habitat Production Foregone (HPF) in addition to the other models to determine the impacts of impingement and entrainment. The most recent and thorough impingement and entrainment analyses for coastal power plants, including those conducted at Huntington Beach Generating Station, use the HPF method.

HPF is the most current model for assessing the environmental impacts of CWIS. It is likely the best available approach for quantifying the overall ecosystem impacts based on a common metric - the area of habitat lost due to CWIS[25]. Furthermore, HPF is more comprehensive than the other demographic approaches because it considers impingement and entrainment losses on an ecosystem level rather than an individual scale by identifying the amount of habitat needed to produce organisms that are ecologically equivalent to those that are lost. In addition, HPF is useful for assessing cumulative

[23] EPRI Solutions (August 2005) Appendix C: Proposed Method for Evaluation of Environmental Benefits, p. 7.
[24] US E.P.A. (2004) Clean Water Act §316(b) Phase II Final Rule Technical Support Documents: Part D: National Benefit-Cost Analysis. D1: Comparison of National Costs and Benefits, p. 3.
[25] Strange et al (2004). The Habitat-Based Replacement Cost Method for Assessing Monetary Damages for -Fish Resource Injuries. *Fisheries* 29(4), pp. 17-24.

impacts. At present, AGS does not justify why it is not using HPF. The Regional Board should require AGS to use either the HPF method to quantify their environmental impacts, or to provide credible justification as to why they are not using this advanced methodology.

To conduct HPF modeling, source water sampling is essential. Because source water sampling is used to scale mitigation, the PIC states that AGS will discontinue source water sampling if the courts reject restoration as a Clean Water Act §316(b) compliance alternative.[26] Regardless of the court decision, source water sampling should not be eliminated from the proposed study. Source water sampling is necessary to fully understand the ecosystem impacts of entrainment and impingement through HPF modeling and assess cumulative impacts. By proposing to eliminate source water sampling from future studies, AGS is taking a step backward in understanding their facilities' environmental impacts.

9. AES fails to detail natural resource impacts and fails to acknowledge consultation with agencies

Federal and state statutes concerning impacts from cooling water intake systems make no distinction as to the size of organisms impacted by power plants. The Southwest Regional Office of the National Marine Fisheries Service has documented impacts to marine mammals and other large organisms from plants along the southern California coast. However, these impacts are given short shrift in the AES PICs. As discussed above, the take of marine mammals and sea turtles has been documented at AES facilities from 1998-2004. We urge the Regional Board to request data concerning all impacts to natural resources, including concerning the take of marine mammals, sea turtles, and other larger organisms. Such data must inform the Regional Board's implementation of applicable laws.

Pursuant to this concern for impacts to *all* organisms, the Phase II regulation requires the PIC to summarize "past or ongoing consultations with appropriate Federal, State, and Tribal fish and wildlife agencies that are relevant to this Study, and a copy of written comments received as a result of such consultations."[27] AES states that it has had no consultations with pertinent agencies in relation to its environmental impacts.[28] Regardless of whether AES has "consulted" with appropriate agencies, the Regional Board must request data detailing natural resources impacted by the facilities.

Conclusion

Thank you for the opportunity to meet with Regional Board staff to discuss Region 4 power plant PICs and comment on the impending impingement and entrainment characterization studies. As described in detail above, we strongly urge the Regional

[26] Tenera Environmental and MBC *Applied Environmental Science* (September 28, 2005) Summary of Existing Physical and Biological Information and Impingement Mortality and Entrainment Characterization Study Sampling Plan, p. 15.
[27] 40 C.F.R. § 125.95(b)(1)(iii)
[28] EPRI Solutions (September 2005) 316(b) Proposal for Information Collection for AES's Alamitos Generating Station, p. 28.

Board to require AGS to revise its PIC and provide a more thorough and accurate study outline. The PIC is designed to be an informational gathering tool, and thus, AGS must comprehensively assess all alternative technologies and compliance options. Without doing so, the PIC is incomplete. We also encourage the Regional Board to follow the upcoming study closely to see that the methods, results, and quality control program receive adequate peer and independent review, ensuring the most unbiased analysis possible. This and the many other PICs that come before the Regional Board form a critical blueprint for understanding the gross impacts of coastal power plants in the Los Angeles region. Please contact us if you have any questions regarding our comments.

Sincerely,

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Tom Ford
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