



California Regional Water Quality Control Board

Los Angeles Region



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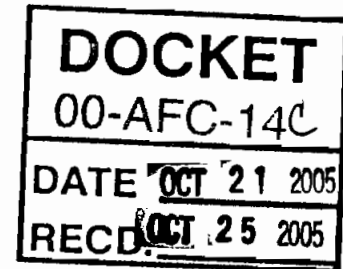
Alan C. Lloyd, Ph.D.
Agency Secretary

320 W. 4th Street, Suite 200, Los Angeles, California 90013
Phone (213) 576-6600 FAX (213) 576-6640 - Internet Address: <http://www.waterboards.ca.gov/losangeles>

Arnold Schwarzenegger
Governor

October 21, 2005

Mr. Gregory J. Hughes
Regional Plant Manager
El Segundo Power, LLC
301 Vista Del Mar
El Segundo, CA 90245



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. CA0001147, CI-4667

Dear: Mr. Hughes:

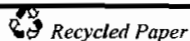
Reference is made to the Phase II 316(b) Proposal for Information Collection (PIC) and Impingement Mortality and Entrainment (IM&E) Characterization Study Sampling Plan (Sampling Plan) submitted August 1, 2005, which were prepared by your consultants, Shaw Environmental & Infrastructure, Inc., MBC Applied Environmental Sciences, and Tenera Environmental.

On September 8, 2005, Regional Board staff and U. S. EPA's consultant, TetraTech, met with your staff and consultants and discussed our preliminary concerns with the subject documents. We have completed our review for the PIC and IM&E Sampling Plan. The following are our comments:

General Comments

1. While the regulation does discuss the possibility of trading as a potential option for meeting performance standards under the Phase II Rule, limited guidance is available from U.S. EPA as to implementing such an option. Future consultation with U.S. EPA will be necessary before El Segundo Generating Station (ESGS) can pursue trading as a component of an overall compliance strategy. Trading under the Phase II Rule is also dependent on the adoption of a watershed-based permitting approach. At this time, neither the State Board nor Regional Board has adopted or proposed such a strategy for Santa Monica Bay.
2. In the final regulation, U.S. EPA estimated the compliance costs for ESGS to be zero. Additional consultation with U.S. EPA will be necessary in order to proceed with cost/cost and/or cost/benefit tests.
3. Please provide specific information for our evaluation as to the contractors, laboratories, and/or in-house staff that will be used for conducting sampling events.
4. It is our recommendation that ESGS conducts hydrologic modeling to identify the CWIS hydrologic Radius of Influence (ROI) in the Santa Monica Bay. Subsequently, ESGS should

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conduct an evaluation of IM&E impacts within the ROI, including any cumulative impacts from other CWIS, e.g., Los Angeles Department Water of Power's Scattergood Generating Station, or other industrial dischargers within the ROI.

5. Please explore and evaluate the feasibility of using other source water, such as reclaimed water from wastewater treatment plants, for once through cooling water, and provide an analysis for our evaluation.

Specific Comments

1. Section 2.5 Calculation Baseline and Section 5.1.1 Velocity Cap Inlet:

ESGS quotes the U.S. EPA Technical Development Document (TDD) for the Phase II Rule as follows: "At the Huntington Beach and El Segundo Stations in California, velocity caps have been found to provide 80 to 90 % reductions in fish entrapment." The PIC goes on to state (in Section 2.5) that the El Segundo Generating Station is in "full compliance" with the applicable standards for impingement mortality. While the TDD does take note of the effectiveness of velocity caps at several west coast facilities, this does not constitute a formal compliance determination for any particular facility. Any assessment of whether or not performance standards are being met must account for more recent facility-specific data measured it against a baseline configuration.

Although velocity caps function by preventing the entrainment of organisms through the intake conduit, they are typically thought of as an impingement reduction technology. Entrainable organisms, as discussed in the Phase II Rule, are those that are small in size (eggs, larvae) with limited or no mobility. The PIC notes that the evaluation of the velocity cap will be used to determine credit toward meeting entrainment performance standards in addition to impingement mortality standards. The PIC should clearly state that the evaluation of velocity caps will be related to a reduction in impingement only when compared to a baseline configuration. Entrainment benefits may result from the deep offshore location of the intake pipe.

The intake location should be addressed as a separate "technology" or "operational measure" since the benefits of a deep offshore intake pipe may contribute substantially to a reduction in both impingement mortality and entrainment. During our September 8, 2005, meeting, ESGS agreed to evaluate intake location separately.

2. Section 3.0 Historical Studies:

The studies and data presented by ESGS, together with additional impingement and entrainment monitoring data, will be used to determine a baseline calculation against which compliance determinations will be made. The historical impingement and entrainment data are substantial, but also show a high degree of variability in both the number and species collected during different monitoring events. ESGS will need to demonstrate how the data can be correlated and standardized to support any baseline characterization and be shown to be representative of current conditions. ESGS must also be able to show that historical data were collected and

analyzed under acceptable quality assurance/quality control measures. Given the age of some data discussed in the PIC (Weight, 1958), this may not be feasible. At this time, we did not review the studies in depth pending the upcoming release of guidelines for baseline calculations.

We will continue to work with the State Board as guidelines are proposed and adopted. At such time, relevant studies will be reviewed for thoroughness and applicability.

3. Section 5 Intake Technology Evaluation:

Please expand the evaluation of all alternative technologies that are not included in the PIC including, but not limited to, dry cooling, closed cycle cooling, and hybrid cooling. A more detail information for each technology shall be analyzed in terms of feasibility, assessment of environmental impacts, cost analysis as well as implementation schedule.

4. Section 5.1.4 Aquatic Filter Barrier:

The Gunderboom is a relatively new technology that consists of a water permeable barrier typically installed in a curtain-like configuration around the intake structure. The barrier is moored to the sea floor with anchors while floating booms keep the system vertical in the water. Gunderbooms prevent the impingement and entrainment of almost all organisms due to the small through-barrier openings. The most successful large-scale deployments of Gunderbooms have been in river environments with surface on-shore or near-shore intake structures. ESGS has two intake structures submerged at a significant depth several thousand feet from shore. To date, Gunderbooms have not been deployed in an open ocean environment with any success. In order to be effective, the Gunderboom must be of sufficient size to accommodate the needed volume of water. ESGS would require a Gunderboom of anywhere from 40,000 to 75,000 square feet based on conservative design estimates. Given the similarity to barrier nets in terms of maintenance and deployment, the use of such a system in the open ocean may be impractical and potentially hazardous to navigation.

During our September 8, 2005, meeting, ESGS noted that the evaluation of Gunderboom technology is required as part of negotiations with CEC during the ESPR project. The PIC should clearly state this direction. In addition, any pilot studies conducted in concert with the manufacturer or attempts at untraditional or innovative deployment configurations (e.g., submerged dome) should be clearly discussed in the PIC so as to differentiate the evaluation from typical Gunderboom deployment scenarios.

5. Section 5.2.1 Fine-Mesh Traveling Screens:

We disagree that maintenance of an approach velocity of 0.5 ft/s is necessary for fine mesh screens to function as intended. Survival of organisms on the screen face is variable depending on the species and life stages of greatest concern. However, we believe fine mesh screens are not a feasible option for ESGS. Given the nature of the intake structure where the screens would be placed (on shore in a confined area with no outflow access to the surrounding ocean), fine mesh screens would not effectively reduce entrainment through the cooling system; any entrainable organisms captured by the screens could not be removed from the vicinity of the intake structure.

In order to be effective, the screens would have to be placed at the entrance to the cooling system (offshore structures), which is infeasible.

6. Section 6.0 Operations Evaluation:

Reductions in cooling water volume can be effective methods for reducing impingement mortality and entrainment. As noted in the PIC, effectiveness can vary depending on coordination with migratory or spawning patterns in the vicinity of the intake. Due to the variability of power generation requirements, any evaluation of reduced flow alternatives should concentrate on the most conservative estimates of when flow can be reduced and for how long. Flow reduction estimates at other facilities that have adopted similar measures (Pittsburg PP) have not always met initial projections.

During the September 8th meeting, ESGS noted that achievability will be evaluated with an emphasis on likely plant operations and species abundance at critical times of the year.

7. Section 7.3 Project Restoration Evaluation Criteria:

The restoration options presented in the PIC are necessarily broad at this stage of the Phase II compliance process. We believe it necessary, however, to emphasize the importance of some criteria and potential projects over others. Certain suggested projects (e.g., restoration of historic creek flows, eradication of non-native plant species, sedimentation reduction, etc.) are somewhat vague in their direct correlation to restoration of species affected by impingement and/or entrainment. The highest priority should be placed on those projects where direct restoration effects are the most demonstrable in a reasonable time period. Despite sophisticated prediction models and methods, projects that rely on 20-, 30-, or 50-year time periods to accrue acceptable benefits are susceptible to many independent variables that may reduce or alter expected results. Such projects should be viewed skeptically.

During the September 8th meeting, ESGS noted that a greater emphasis will be placed on projects that are more directly related to actual losses resulting from the operation of the ESGS cooling water intake structures and can be measured or expected to produce measurable results in a reasonable time frame.

ESGS notes that projects will be selected "...to maximize ecological benefits to the Bay or adjacent offshore areas within the Southern California Bight." Restoration projects should focus on Santa Monica Bay and the species impacted by the operation of the intake structure. Including the Southern California Bight as an option is unnecessarily expansive.

8. Section 9.0 Impingement Mortality and Entrainment Sampling:

This Section indicates that the IM&E sampling program will include taxonomic identification of all life stages collected in the vicinity of the CWIS that are susceptible to IM&E. Further, it states that all life stages of target taxa will be characterized in the vicinity of the CWIS and the current level of impingement/entrainment will be documented. However, it appears that eggs

will not be counted or identified as part of this study. It is understood that taxonomic identification of eggs is difficult (and may be impossible depending on the species and condition of the eggs after entrainment or collection). The egg represents a critical life stage, the presence and abundance of which may not be accurately represented based on larval, juvenile, and adult presence. Tetra Tech believes that the study should document (i.e., enumerate) the presence of eggs in entrainment samples and consider them in the evaluation of potential IM&E effects.

During our September 8, 2005, meeting, ESGS indicated they were not inclined to perform the analyses as it would conceivably require additional resources without producing sufficient usable data. ESGS noted that the models to be used based on larval presence would sufficiently model the risk to eggs. Additional language will be added to the PIC to support the decision to exclude eggs from analyses.

The organisms targeted for analysis in the IM&E studies have not been selected. The study plan indicates that decisions regarding selection of target species will depend upon the abundance of each collected species and may include other less abundant commercially or recreationally important species. Given the large body of knowledge of the species occurring in the vicinity of the ESGS intake structures, potential target species should be identified in the study plan (e.g., lists of species of concern, local commercial species, and common recreational species). Further, quantitative criteria should be provided for determining which additional species are to be included in IM&E analyses if such additional analyses are to be initiated based on observed abundances. It should also be noted that governing regulatory agencies should be consulted during the target species selection process.

The processing of samples in the PIC puts emphasis on Cancer crab larvae as opposed to other types of crabs. More description of why such emphasis is appropriate should be included in the PIC. It is somewhat unclear as to which target taxa are to be included and what proportion of samples will be identified. During the September 8th meeting, ESGS stated that all taxa will be identified and additional information will be included in the PIC as to how target species selections will be made

Given the current lack of entrainment information in the vicinity of ESGS and the variable nature of natural populations, continuing entrainment sampling should be conducted for more than a single year. A longer-term study could be designed using the results from the first year of sampling to identify critical index periods, which may allow a reduced sampling season in subsequent years.

During our September 8, 2005, meeting, ESGS noted that an extended study was impossible given the requirements of the permitting cycle.

9. Attachment C Impingement Mortality and Entrainment Characterization Study Sampling Plan:

At present, the Regional Board staff agree that monthly 24-hour sampling events are sufficient to characterize and quantify the aquatic communities subject to impingement and entrainment impacts at ESGS. However, sampling frequency will be increased if the scheduled monitoring is

not providing an adequate assessment of eggs, larvae, juveniles and adults. After reviewing entrainment and impingement data each quarter, the Regional Board staff may revisit the sampling frequency based on relevant information including, but not limited to, the following: presence of unexpected, threatened or endangered species in significant numbers; absence of expected species or uncommonly low representations thereof; or the timing of known spawning/migratory events of important species to capture peak densities.

Modification of sampling frequency as discussed above is separate from the "extreme events" noted by ESGS. Section 3.1 states that if an "extreme event" occurs during impingement sampling which results in a large number of fish being collected, sampling may continue for an additional day or two in order to obtain a more representative sample. More detail is needed in this section. Specifically, an "extreme event" should be defined, and justification given for continuing sampling to lower the mean observed catch per unit time.

The quality control program presented in Section 3.2 of the Sampling Plan is inadequately described. More detail should be provided as to the processes of checking the sorted debris and the proposed criteria for acceptable sorting error. In addition, specific quality control protocols between primary and subcontractors, as well as laboratories should be outlined. Further, the number of samples re-sorted for quality control should be provided in the Sampling Plan.

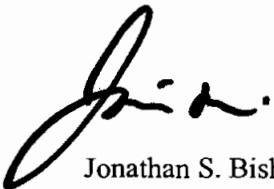
During our September 8, 2005, meeting, ESGS agreed to include a more detailed description of the quality control program as to the processes of checking sorted debris, criteria for acceptable sorting error, and the number of samples re-sorted for quality control.

Section 4.3 states that, "If any of the proposed target invertebrate taxa are in very high abundances in the samples we will process only one of the paired nets from the bongo frame..." The term "very high abundances" must be defined quantitatively in the Sampling Plan, or at a minimum, reviewing agency personnel should approve these processing decisions. Also, it is unclear whether or not the other sample/net will be sorted for invertebrates if sorting for one particularly abundant taxon is suspended. More detail should be provided in this section.

During our September 8, 2005, meeting, ESGS agreed to add more detail that will adequately describe the methods to be followed.

If you have any questions, please contact David Hung at 213/576-6664 or Dr. Tony Rizk at 213/576-6756.

Sincerely,



Jonathan S. Bishop
Executive Officer

California Environmental Protection Agency



Mr. Gregory J. Hughes
El Segundo Power, LLC

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October 21, 2005

Cc: U. S. Environmental Protection Agency, Region 9, Permit Branch (WTR-5)
Ms. Nancy Yoshikawa, U. S. Environmental Protection Agency, Region 9
Ms. Robyn Stuber, U. S. Environmental Protection Agency, Region 9
U.S. Army Corps of Engineers
Mr. Bib Hoffman, NOAA National Marine Fisheries Service
Department of Interior, U. S. Fish and Wildlife Service
Mr. Michael Lauffer, State Water Resources Control Board, Office of Chief Counsel
Mr. Jim Maughan, State Water Resources Control Board, Division of Water Quality
Mr. Dominic Gregorio, State Water Resources Control Board, Division of Water Quality
Mr. Marc S. Pryor, California Energy Commission
Mr. Rick York, California Energy Commission
Mr. Tom Luster, California Coastal Commission
Mr. William Paznokas, California Department of Fish & Game, Region 5
Mr. Guangyu Wang, Santa Monica Bay Restoration Commission
Department of Health Services, Sanitary Engineering Section
California State Parks and Recreation
South Coast Air Quality Management District
Water Replenishment District of Southern California
Los Angeles County, Department of Public Works, Waste Management Division
Los Angeles County, Department of Health Services
Mr. Mark Gold, Heal the Bay
Ms. Heather L. Hoecherl, Heal the Bay
Mr. Dana Palmer, Santa Monica Baykeeper
Mr. David Beckman, Natural Resources Defense Council
Mr. Daniel Cooper, Lawyers for Clean Water
Environment Now
Mr. Tim Hemig, El Segundo Power LLC
Ms. Susan Damron, Los Angeles, Department of Water and Power
Mr. Steve Maghy, AES Southland LLC
Ms. Julie Babcock, Reliant Energy
Mr. Tim Havey, TetraTech
Mr. Shane Beck, MBC Applied Environmental Sciences
Mr. Scott Seipel, Shaw Environmental & Infrastructure, Inc.
Mr. John Steinbeck, Tenera Environmental

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