June 12, 2006

Mr. Jonathan Bishop
Executive Officer
Regional Water Quality Control Board
Los Angeles Region
320 W. 4th Street, Suite 200
Los Angeles, CA 90012

Dear Mr. Bishop

Subject: Response to Regional Board Comment Letter (April 3, 2006) on the Phase II 316(b) Proposals for Information Collection Scattergood, Haynes, and Harbor Generating Stations

The Los Angeles Department of Water and Power (LADWP) is submitting this letter in response to the Los Angeles Regional Water Quality Control Board's (Regional Board) comment letter dated April 3, 2006 regarding LADWP's Proposal for Information Collection (PIC) documents for Scattergood (SGS), Haynes (HnGS), and Harbor (HGS) Generating Stations. The PIC documents were submitted to the Regional Board on October 14, 2005 and a meeting to discuss the PIC documents was held at the Regional Board's office on January 12, 2006. The following response letter takes into consideration the written comments received on April 3, 2006.

The Regional Board's comments can be grouped into six general topics:

1. 316(b) Phase II compliance approach
2. Use of restoration in 316(b) Phase II compliance
3. Credits to be applied toward 316(b) compliance
4. Evaluation of technologies and operational measures
5. Summarization of physical and biological information
6. Proposed new studies

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1. 316(b) Phase II Compliance Approach

a. Rule's use of Performance Standards as a range (ref. Section 2.0 – SGS, HnGS, HGS, respectively):

As the Regional Board's comment letter points out, USEPA expressed the performance standards as ranges rather than as a benchmark value because of the uncertainty in predicting the efficacy of any one technology due to site specific factors that could influence the feasibility, effectiveness and/or cost of the fish protection technologies and operational measures discussed in the Rule.

LADWP, consistent with the Rule, plans to fully evaluate the use of technologies and operational measures to identify the most cost effective compliance alternative(s) and option(s) in order to demonstrate the potential to meet the 80 to 95 percent impingement mortality reduction, and the 60 to 90 percent entrainment reduction standards without resulting in significantly greater costs than the costs considered by EPA. EPA acknowledges (FR 41600) that the lower end of the range has been established as the percent reduction that EPA expects all facilities could eventually achieve if they were to implement and optimize available design and construction technologies and operational measures. EPA also states, that the higher end of the range can and has been achieved by facilities depending upon the in situ conditions. The discussion further states that EPA expects that facilities will select the most cost effective technologies or operational measures in the range to achieve the performance level within the stated range based on the in situ conditions of the site.

Should there be several technologies that would meet the performance standards, and they are not significantly greater than either EPA's Appendix A costs or the economic environmental benefit, LADWP intends to choose the technology that is the most cost effective to comply. However, if LADWP complies using Compliance Alternative 5 (site-specific technology, FR 41690, col. 3), then, consistent with the Rule, LADWP will choose the technology which comes closest to the applicable performance standards without being significantly greater, using EPA's cost-cost and/or cost-benefit tests.

b. Summary of Past or Ongoing Consultation with Agencies, (ref. Section 6):

The Regional Board commented that it was unclear as to the basis of LADWP's statement that the federal and state fish and wildlife agencies would not be interested in stocking the commonly affected species such as forage species to compensate for the losses.

The Regional Board is correct that LADWP did not provide a technical rationale to support its statement, nor has LADWP yet met with the applicable fish and wildlife agencies. However, historically, the most abundant fish species in entrainment and impingement samples at southern California's coastal generating stations have been

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forage species such as gobies, northern anchovy, and combtooth blennies. Forage species have not historically been the subject of large-scale hatching/stocking efforts, probably due to their relatively low commercial value (anchovies excluded) and their small size. Other fishes, such as croakers and sea basses, have been successfully raised and stocked. While fish stocking has been found to be an effective fishery management tool, there are both advantages and disadvantages. Major advantages are the ability to target specific species to increase their abundance. Stocking is especially useful when this is done in conjunction with other fishery management programs that address the limiting factors preventing natural recovery of stocked species. One of the major disadvantages of stocking is the concern over impacts to the population's gene pool. In essence, large numbers of fish come from a relatively small number of adults. As a result, stocking of species with healthy fish populations (i.e., populations that are not considered in need of special fish management efforts) is currently not considered to be a sound fish management policy due to the potential to reduce the genetic variability in the gene pool.

LADWP does believe that the federal and state fish and wildlife agencies should make the decision regarding stocking species in California, and therefore, LADWP intends on consulting with these agencies and will amend the PIC documents accordingly, if needed.

2. **Use of Restoration in 316(b) Phase II Compliance,** (ref. Sections 4.3 and 4.2 – SGS, HnGS, HGS, respectively)

The Regional Board commented several times that LADWP needs to evaluate the use of design and construction technologies and operational measures before determining that restoration is an appropriate option and, LADWP's statement regarding the use of restoration as a preferred method needs to be justified.

LADWP fully intends on evaluating the use of technologies and/or operational measures. LADWP recognizes that it will be required to demonstrate that use of restoration measures are either more feasible, cost effective or environmentally beneficial than use of technologies or operational measures prior to use. LADWP's statement in the PIC documents for all three generating stations reflected the relative uncertainty of environmental benefits associated with many restoration measures as compared to the uncertainty of any benefit associated with technology and/or operational measures and the relative high costs associated with entrainment reduction technologies. Nevertheless, as stated earlier, LADWP plans to fully evaluate a variety of available technologies and operational measures for compliance, as well as any final decision on compliance alternatives and options, using the results of the new entrainment data that are currently being collected. This information and analysis will be detailed in the Comprehensive Design Study (CDS).

3. Credits to be Applied Toward 316(b) Compliance

a. Taking Credit for Existing Use of Fish Protection Technology and Operational Measures (HGS), Taking Credit for Existing Design Modifications Providing a Fish Protection Benefit (HnGS), (ref. Sections 4.1.2 and 4.1 – HnGS, HGS, respectively):

The Regional Board requested LADWP to provide additional documentation to support the intent for Impingement Mortality (IM) and Entrainment (E) credits.

LADWP will provide documentation showing its original intent for the IM&E credits at HGS by supplying data on Units 10 -14 capacity utilization, as well as the order in which units are put into service first when demand for power from HGS increases (primacy designations). LADWP will also provide evidence of its stated intention for IM&E credits at HnGS as it pertains to flow reductions and the generating units' primacy designations. This information will be included in the CDS.

b. Taking Credit for Existing Use of Fish Protection Technology and Operation Measures (ref. Section 4.1, second paragraph - HGS):

The Regional Board requests additional information on the source water used by the HGS Units 10 – 14 closed cycle cooling system.

LADWP will provide this information in the CDS.

4. Evaluation of Technology and Operational Measures

a. Fine-Mesh Ristroph Traveling Water Screens (ref. Sections 4.3.1-HnGS and 4.3.2-SGS, HGS):

The Regional Board has requested that LADWP discuss any variations in the design and/or operation of screens that will be evaluated based upon the facility's site specific conditions (e.g. the frequency of screen rotation, different spray wash pressures, and Ristroph bucket, number, spacing, and construction materials, etc.).

LADWP is still in the process of preparing a plan for evaluating fine mesh screen technology. LADWP plans on considering a number of options to investigate this alternative. These options may include: participating in evaluations to be done by the Electric Power Research Institute (EPRI); coordinating with other facilities to perform an in situ pilot study; using results from other facilities with similar species that have performed tests on this technology; and possibly performing an independent study at a LADWP facility.

LADWP plans on fully evaluating different variations of screen design and/or operation. The outline of the study developed by LADWP will be submitted to the Regional Board

for review and comment before the study commences. The PIC will be amended to include the study design. The results of any pilot study will be discussed for each facility in the CDS.

The Regional Board also requested additional discussion as to the viability standards used to determine an overall survival rate for entrainable organisms impinged on the screens and returned to the waterbody.

LADWP is currently in the process of developing a technically sound approach for assessing the performance of fine mesh traveling screens for Southern California species. Some of the key issues that LADWP believes need to be addressed to accomplish this include:

- quantification of initial survival rates on the screens,
- accounting for entrainable organisms that are dead on arrival (i.e. required for verification monitoring if this technology was installed),
- biofouling issues on the screens and in the fish return system,
- locations where fish might be returned for Harbor, Haynes, and Scattergood to assess the impact of transport times, and
- latent mortality after return to the source waterbody.

A key factor in the study design will also include design and construction of a test device or devices to conduct the study(ies). Initial steps that are being pursued include researching information on currently installed fine mesh screen systems, biofouling literature, and evaluating alternative pilot study designs.

It is LADWP's intent, once the initial information gathering and review is complete, to prepare a detailed study design. The study design will be submitted to the Regional Board for review and comment as a PIC amendment prior to initiating the study. The study design will include specification of parameters and any standards to determine the viability of entrained fish and shellfish that are collected on the test screens and returned to the source waterbody.

b. Use of Pilot Studies, (ref. Sections 4.3.3, 4.3.5, 4.3.2 – SGS, HnGS, HGS, respectively):

The Regional Board stated that it is not clear what role the pilot studies are intended to play in an overall compliance strategy. In addition, the Regional Board requested additional information regarding pilot studies and the technology and/or operational measures to be evaluated.

As previously noted, the CDS will fully discuss all technology and operational measures considered. However, since many of the technologies are very expensive to install on a full scale without knowing their benefits and effectiveness, LADWP will be performing

pilot studies on certain technologies that are considered to have the greatest potential for meeting the performance standards. This will allow LADWP to study the effectiveness of the technology without wasting large sums of rate payer money. LADWP will provide to the Regional Board, as noted above, detailed information on the pilot studies. This will constitute a stand alone document that will be an appendix to the PIC document.

c. Technology and/or Operational Measures Not Discussed, (ref. Section 4.4, second paragraph – SGS, HnGS, HGS, respectively):

The Regional Board requested that LADWP provide a discussion on the following technologies: closed cycle cooling, either in whole or in part, and variable speed drive (VSD) pumps.

LADWP agrees to evaluate closed cycle cooling and VSD pumps. Cost estimates will be provided for closed-cycle cooling on an intake or per unit basis for each of LADWP's facilities. In addition, capital costs, operation and maintenance (O&M) costs for closed cycle cooling, feasibility in terms of space constraints, and net environmental benefits will also be evaluated. The feasibility of VSD pumps to reduce entrainment will be dependent on the species composition and abundance of entrainable organisms throughout the year. Data for evaluating VSD pumps will not be available until the 2006 entrainment study has been completed. In addition, EPA is currently in the process of developing guidance for the calculation baseline relative to use of design versus actual flow. When this guidance is available it will be incorporated into our analysis.

LADWP will provide a discussion on the closed cycle cooling and VSD pumps in the CDS as required by the Rule.

d. Reduce Maximum Through Screen Velocity to Less Than 0.5 fps for HGS, (ref. Section 4.3.1 – HGS):

The Regional Board supported LADWP's evaluation of the operational measure to add additional screens to HGS's intake structure in order to reduce the maximum through screen design velocity to less than 0.5 fps. However, the Regional Board requested that additional data be submitted documenting the range of through screen velocities observed under extreme conditions (e.g., low and high tides, high debris events) in order to ensure the desired velocities can be maintained.

It is important to note that for use of Compliance Alternative 1 the Rule is based on the maximum through screen design velocity as opposed to measured velocity under variable source waterbody conditions. The design velocity is generally specified in the original design drawings for the facility for average and mean low water (i.e. mean low tide) level. LADWP does not believe that the Rule contemplated designing for "extreme" conditions relative to this criteria. Rather average worst case conditions should be used

for compliance. LADWP also recognizes that debris and/or macrofouling can affect design and must be considered when evaluating use of options such as fixed panel screens, barrier nets, etc. to reduce velocity. Such factors would be incorporated into any proposal to install an impingement only Compliance Alternative 1 technology.

5. Summarization of Physical and Biological Information

a. Historical Physical and Biological Studies, (ref. Appendix A, Section 2.0 – SGS, HnGS, HGS):

The Regional Board stated that the QA/QC information, and an indication of the relevance of historic data to current conditions, should be included in the CDS if these data are to be used.

The Rule requires that if historical data are to be used, it must be demonstrated that the historical data is representative of current conditions and that the appropriate QA/QC procedures were followed. The relevance of historical results to current conditions cannot be determined until the current data are collected. The current data are presently being collected. If LADWP chooses to use historical data, the demonstration of representativeness, along with the relevant QA/QC, will be submitted as part of LADWP's CDS.

6. Proposed New Studies (ref. Appendix A Section 3.0 – SGS, HnGS, HGS)

a. New Biological Studies, (ref. Item #1 – SGS, HnGS, HGS):

The Regional Board stated there is no rationale provided for conducting impingement sampling for a situation that is not a normal operating condition as proposed in the study design. The study design proposes to hold the traveling screen stationary for 5.5 hours and allowing them to collect fish before rotating them and collecting the impingement sample.

The impingement mortality sampling methodologies described in the SGS, HnGS, and HGS IM&E Sampling Plans propose to rotate the traveling screens once every six hours over a 24-hour period. Normal operation sampling conducted for NPDES compliance at these facilities has historically consisted of sampling only once every 24 hours to determine a daily impingement rate. The 316(b) Phase II Final Regulations (§125.95(b)(3)(ii)) specifically require a characterization of the "*diel variations in impingement mortality and entrainment...*". Therefore, operation of the traveling screens at approximate six-hour intervals was proposed to provide information on the diel variation in impingement rates.

b. New Biological Studies, (ref. Item #2 – SGS, HnGS, HGS):

The Regional Board reported that it is unclear how LADWP's definition of shellfish will satisfy the requirements of the rule.

It is LADWP's belief that the intent of the 316(b) Rule was not to include all shellfish and left the definition open for interpretation. LADWP established a working definition using criteria applied in past 316(b) studies which focused on commercially and recreationally important species. The definition of "shellfish", if broadly applied, would include all crustaceans and mollusks including small planktonic forms. This is clearly not the intent of the Phase II regulations since it contains language that differentiates between "zooplankton" and "larval forms of shellfish". A more realistic definition would include commercially and recreationally important forms such as crabs, lobster, and shrimp. There is broad latitude in the Rule for using multiple species or representative species (RS) in determining compliance. We believe that using a definition of shellfish that includes commercially and recreationally important forms covers a large variety of organisms and is a reasonable compromise. In addition, LADWP has agreed to expand the entrainment processing to include the megalops larval stages of all species of crabs so that smaller, forage species representative of the variety of habitats found in the source waters in the vicinity of the plant are included in the assessments. The species processed during impingement sampling already includes all crabs, lobster, shrimp, squid, and octopus, regardless of their commercial or recreational value.

LADWP will amend the PIC to expand the entrainment processing to include the megalops larval stages of all species of crabs as agreed upon with the Regional Board.

c. New Biological Studies, (ref. Item #2, second paragraph – SGS, HnGS, HGS):

The Regional Board noted that the proposed IM&E study plan states, that "shellfishes and other macroinvertebrates will be identified to species and their presence recorded, but they are not measured or enumerated". The Regional Board reported that it is unclear whether or not the IM&E study plan, as it pertains to not counting the number of individuals in a sample, satisfies the requirements set forth by the 316(b) Phase II Rule.

At the January 12, 2006 Regional Board meeting, there was agreement that the target organisms identified in the plans for the impingement mortality sampling were acceptable and that the entrainment identification would be expanded to include fish eggs and all species of crab.

The impingement sampling plan calls for identifying, counting, weighing and measuring all fishes, crabs, lobsters, shrimp, squid and octopus. This covers all of the impingeable 'shellfish' that are recreationally or commercially important and a large number of species that are not fishery species. Most of the other 'shellfish' that might be found in impingement samples are barnacles, mussels, and other small invertebrates that clearly

are sloughed off from the intake conduit walls since they are not free-swimming forms. Their presence in the samples will be recorded as required under the Rule.

With regard to the entrainment efforts, the 316(b) Rule requires (FR 41635 – 41636, cols. 3 and 1, respectively) the IM&E Characterization Study to include:

1. Taxonomic identifications of all life stages of fish, shellfish, and any species protected under Federal, State, or Tribal Law (including threatened or endangered species) that are in the vicinity of the cooling water intake structure(s) and are susceptible to impingement and entrainment;

2. A characterization of all life stages of fish, shellfish, and any species protected under Federal, State, or Tribal Law (including threatened or endangered species) identified in the taxonomic identification noted above, including a description of the abundance and temporal and spatial characteristics of the cooling water intake structure(s), based on sufficient data to characterize annual, seasonal, and diel variations in impingement mortality and entrainment (e.g. related to climate and weather differences, spawning, feeding and water column migration); and

3. Documentation of the current impingement mortality and entrainment of all life stages of fish, shellfish, and any species protected under Federal, State or Tribal Law (including threatened or endangered species) identified above and an estimate of impingement mortality and entrainment to be used as the calculation baseline.

The Rule language goes on to state "The documentation may include historical data that are representative of the current operations of your facility and of biological conditions at the site. The information must be provided in sufficient detail to support development of the other elements of the Comprehensive Demonstration Study." The next sentence in Column 1 of page 41636 states: "Thus while the taxonomic identification in item 1 will need to be fairly comprehensive, the quantitative data required in items 2 and 3 may be more focused on species of concern, and/or species for which data are available."

The implication of this language is:

1. Item 1 only asks for taxonomic identifications and no quantification. This means that while all fishes (including eggs) and shellfishes need to be identified from entrainment and impingement samples there is no requirement to quantify all individuals. Quantification is only required for species of concern or for which data are available. This supports the current PIC approach of focusing the quantitative data collection on fishes and a subset of shellfish species in terms of providing quantitative data.

2. There is further flexibility provided by the statement "provided in sufficient detail to support development of the other elements of the Comprehensive Demonstration Study." If the CDS is based on a given technology, restoration or site-specific standards, the level of detail in terms of the quantification of the baseline can be tailored to the compliance alternative selected and does not of necessity have to address all species and life stages. Logically it can be based on dominant species and/or commercially or recreationally important species which have been the basis for our selection of RS.

Lastly, all samples will be preserved and stored.

In summary, LADWP will amend the PIC to reflect the agreement that the entrainment identification will be expanded to include fish eggs and all species of crabs.

d. New Biological Studies, (ref. Item #3 – SGS, HnGS, HGS):

The Regional Board stated that for an "extreme event", a longer sample period than one or two additional days should be used to adequately characterize actual impingement rates.

LADWP's sampling plan for all three generating stations proposes to potentially sample one to two additional days after an "extreme event" has occurred. LADWP believes this will be sufficient to quantify and characterize impingement as required by the 316(b) Phase II Rule. Based on LADWP's past studies, a large influx of fish/shellfish is unusual but can happen. Should these events occur, they will be documented and all impingement results will be included in the impingement analysis.

e. New Biological Studies, (ref. Item #4 – SGS):

The Regional Board stated it was unclear how the reverse flow study will be performed such that the observed impingement rates could be related to base-line conditions. They further stated their belief that the reverse flow study is not a valid test of the effectiveness of the velocity cap technology or operational design.

The Rule specifically allows the calculation baseline to "be estimated using: historical impingement mortality and entrainment data from your facility or another facility with comparable design, operational, and environmental conditions..." To that end, the effectiveness of submerged offshore intakes as an existing IM reduction technology has been historically documented at other facilities in close proximity to SGS. LADWP also has historical information from the mid 1970's documenting the effectiveness of the velocity cap. While LADWP could have relied solely on its historical data, and that of other facilities, it opted to perform a site-specific reverse flow study.

At SGS, there is one cooling water intake structure (CWIS) that serves all three units. The CWIS includes a single offshore intake pipe with a velocity cap and is located

approximately 1,600 feet offshore. The discharge pipe is located 1,200 feet offshore adjacent to and parallel to the intake pipe. To determine the effectiveness of the velocity cap, impingement will be quantified during normal flow using the existing intake and then quantified during reverse flow using the existing discharge. Since the discharge structure is similar in design to the intake, but lacks a velocity cap, this will provide an estimation of the benefit of the velocity cap. There is very little separation between the intake and discharge pipes and therefore it is LADWP's belief that the habitat types are identical for both the intake and discharge locations. Should a distinction become evident, the analysis will be limited to those species entrained/impinged at both locations.

Consistent with the Phase II regulations, LADWP will also supplement the analysis with site-specific results from other utilities with similar intake and discharge pipe configurations.

Prior to LADWP performing the reverse flow study, a scope of work will be prepared for the Regional Board's review and comment. All new studies will be submitted as amendments to the PIC.

f. New Biological Studies, (ref. Items #5 and 4 – SGS, HnGS, respectively):

The Regional Board requested more detail on the methods to be used to quantify impingement during and following a heat treatment.

LADWP will follow the same protocol for impingement sampling during heat treatments in the 316(b) IM&E study as is applied for a typical heat treatment required under the existing NPDES permits for the facilites. A description of the heat treatment process can be found in the IM&E Sampling Plans for both Scattergood and Haynes. Impingement sampling during heat treatments has been required by the Regional Board in the NPDES permits for each facility since the 1970's.

The typical heat treatment protocol is as follows:

Immediately prior to a heat treatment, the traveling screens are rotated and rinsed of any material that may have accumulated during normal operations. This material is then discarded. By movement of butterfly valves or stop-logs within the cooling water intake system, heated discharge water is redirected through the cooling water system such that fouling organisms, invertebrates, and fishes in the vicinity succumb to the heated water. Ordinarily the target temperature is 40.5°C (105°F), which is maintained for a period of at least one hour. The time it takes to reach this temperature within the cooling water system is affected by several factors, including ambient intake temperature and the ability of the station to increase discharge temperature.

During this process, the traveling screens are continuously rotated and all organisms that succumb to the heated water are impinged. The traveling screens continue rotating until the heat treatment is complete and the temperature within the cooling water system returns to normal. The organisms (fishes and macroinvertebrates) are then identified to the lowest practical taxonomic level and enumerated. Up to 200 individuals of each fish species are individually measured to the nearest millimeter; up to 30 individuals of each shellfish taxa are also measured. Individual weights are recorded for up to 30 individuals of each taxa, and when there are more than 30 individuals, the remaining are batch-weighed.

LADWP will amend the PIC documents to include the detailed method stated above.

g. New Biological Studies, (ref. Items #6, 5, 4 – SGS, HnGS, HGS, respectively):

The Regional Board questioned the use of the trigger, "species exceeding 30" (i.e., 30 individuals), as the determinant for performing sub-sampling. The Regional Board believes this number should be higher.

LADWP has not proposed to sub-sample when the abundance of a particular species is 30 individuals or higher. The number 30 only refers to the number that is processed individually, after 30, the individuals are not weighed individually but in batch. To clarify further, when there are less than 30 individuals of a given species, each of the individuals is weighed and measured. When there are greater than 30 individuals, the length of up to 200 individuals is recorded, but only 30 are individually weighed. Sub-sampling will only occur in the event of larger influxes of fishes/shellfishes and/or debris, and will be determined using best professional judgement (BPJ) based on the volume of the sample. This is consistent with the long standing, and Regional Board approved, practices employed during heat treatments.

LADWP will amend the PIC to clarify this section.

h. New Biological Studies, (ref. Items #7, 6, 5 – SGS, HnGS, HGS, respectively):

The Regional Board indicated that it believed "QC should be conducted each time sampling occurs at program commencement and then, if the procedures and samples pass inspections regularly, QC monitoring can decline incrementally to the minimum frequency of quarterly".

The Quality Assurance/Quality Control (QA/QC) procedures for the IM sampling are described in the SGS, HnGS, and HGS PICs. While the PICs describe the quarterly QA/QC sampling to be performed, there are more aspects of the program that occur on a continual basis that were not described and have been included below:

Impingement

- Field leaders are experienced with impingement of southern California fishes and shellfishes;
- All impingement personnel review written procedures prior to field sampling;
- All impingement personnel review a specialized field taxonomic guide of the species most commonly impinged. The guide highlights the distinguishing characteristics of the commonly impinged species;
- All field data are verified after completion of each survey;
- Voucher specimens are returned to the laboratory for confirmation of identity;
- All field data are double-entered into a Microsoft (MS) Access database. The two sets of entered data are checked against one another for data entry errors;
- Errors are corrected and data re-checked as required.

Entrainment

- All entrainment personnel review written procedures prior to field sampling;
- At each entrainment/source water station, samples are voided and recollected if any of the following occur: (1) potential flowmeter malfunction, (2) damaged/torn nets, (3) large amounts of sediment in the codends, (4) any other gear failure, (5) any situation that prevents reliable collection of data, or (6) any situation that jeopardizes the safety of sampling personnel;
- Flowmeters are calibrated quarterly;
- Flowmeter readings are checked in the field to ensure both bongo nets are filtering similar volumes of water;
- Nets are inspected and repaired as necessary prior to each survey;
- Samples are transferred to containers with both internal and external labels.

The QA/QC program for sample processing as described in detail in the PICs for each facility is a rigorous program. Experienced field personnel are performing the IM&E sampling and laboratory analysis. LADWP believes that the QA/QC program in place is more than adequate to ensure high quality data.

i. New Biological Studies, (ref. Items #8, 7, 6 – SGS, HnGS, HGS, respectively):

The Regional Board stated their concern that the macroinvertebrates will be identified, but not counted, according to LADWP's impingement study plan.

For clarification, LADWP plans on identifying and counting the impingement samples for shellfish and all fish. All other macroinvertebrates will be identified but not enumerated. (See IM&E Sampling Plan, Section 3.1.1, paragraph 5). As reported above in comment "6c", taxonomic identification, characterization, and documentation are all required by the 316(b) Rule; however, there is not a requirement to quantify all individuals.

j. New Biological Studies, (ref. Items #9, 8, 7 – SGS, HnGS, HGS, respectively):

The Regional Board stated that LADWP's entrainment and source water sampling plan does not propose to sample larvae of shellfish, and there is not a discussion of why the techniques and methods planned will not sample larval shellfish. Sampling of all life stages is required under the Rule.

LADWP has proposed in the entrainment and source water sampling plan to identify and count all fish larvae and eggs, the megalops stages of all crabs, the phyllosome stage of spiny lobster, and squid larvae. These are the groups that can be quantified accurately from the samples. As noted above in our response to 6c., there is latitude in the Rule for focusing on the set of species that can be accurately quantified and that will provide the necessary detail to support development of the other elements of the CDS. The Rule allows for negotiating an acceptable compromise between the regulating agency and the discharger. During the PIC presentation at the January 12, 2006 Regional Board meeting, there was a consensus that LADWP will expand the processing to include all crab megalops larvae that are representative of different habitats in the areas around the power plants. It is also important to remember that all of the entrainment and source water samples are preserved and further processing can be done at a later date, if necessary.

k. New Biological Studies, (ref. Items #10, 9, 8 –SGS, HnGS, HGS, respectively):

The Regional Board requested that ecological losses and benefits also be evaluated in the cost-benefit analyses.

LADWP recognizes that should it pursue use of the Cost-Benefit Test under Compliance Alternative 5, in addition to providing the valuation estimates, it will be required to provide, "A description of the methodology(ies) used to value commercial, recreational, and ecological benefits (including any non-use benefits, if applicable)." LADWP is engaged in additional planning regarding the assumptions, uncertainties and options for developing the benefit valuation estimate for all three facilities. This will ensure that a technically sound approach is available to "fully value" the benefits as required by the Rule should this compliance option be used.

If LADWP chooses to use Compliance Alternative 5, all methodologies described above will be detailed in the CDS.

l. New Biological Studies, (ref. Items #11,10, 9 – SGS, HnGS, HGS, respectively):

The Regional Board requested that LADWP provide more information on why entrainment sampling can not be done inside the unit.

In LADWP's 316(b) study for HnGS submitted in 1981, it was demonstrated that substantial cropping of fish larvae (75 to 91%) occurred in the intake canal as a result of predation by biofouling organisms that colonized the intake conduits and from fish in the canal. Therefore sampling at or in front of the screens would likely underestimate actual entrainment. Similar cropping by biofouling organisms was demonstrated at SGS (as high as 100% depending on the species) and HGS (as high as 90% depending on the species).

Sampling inside the CWIS will also usually require using pumps. It takes a considerable amount of time to collect an adequate sample volume using a pump. During this time period, predation can occur within the piping apparatus and within the collected sample. Damage can also occur to organisms as a result of the pumping, making identification difficult. As a result of these issues, and the problems with cropping inside the CWIS, most entrainment studies at coastal power plants in California have used plankton nets for sample collection. The nets can sample a larger volume of seawater in a relatively short amount of time, relative to a pump, with less potential damage to the organisms. Plankton nets are also the standard sampling approach used by CalCOFI and others for studying ichthyoplankton, providing the potential for comparisons with results from other studies.

m. New Biological Studies, (ref. Items #12, 11, 10 – SGS, HnGS, HGS, respectively):

The Regional Board stated that the IM&E studies should include enumeration and identification of all collected fish eggs to the lowest practical taxonomic level.

LADWP's consultants have met with taxonomists at the National Marine Fishery Service to identify entrained eggs from LADWP's facilities. At this meeting LADWP consultants obtained information on the current state of fish egg taxonomy. It was found that more species of fish eggs can be identified than was specified at the January 12, 2006 Regional Board meeting; however, the eggs for many fishes still can not be identified to the species level. Although LADWP has agreed to identify and count fish eggs from entrainment samples to the extent possible, we do want to point out that the 316(b) Rule only asks for taxonomic identifications and no quantification. Quantification is only required for species of concern or for which data are available. Since all eggs cannot be identified to species (even if you were to collect them quantitatively), they can't be used in a quantitative manner and this would put them in the category of data not available at the species level.

As we have pointed out in the IM&E Study Plans included with the PICs for each facility, quantifying eggs is not necessary to determine the effects of entrainment or even to provide estimates of actual egg entrainment. For species with adequate life history information, modeling techniques can be used on a species-specific basis to estimate egg entrainment from the numbers of larvae. For any of the species with planktonic egg stages subject to entrainment, the empirical transport model (ETM) can be adjusted to account for the period of time that eggs are subject to entrainment. These techniques provide a much better approach to accounting for egg entrainment than trying to determine the number of eggs to add to the entrainment totals for a species, while accounting for taxonomic uncertainty and sampling error.

The PIC will be amended to include this information.

n. Analytical Methods (ref. Appendix A, Section 4.0 – SGS, HnGS, HGS):

The Regional Board stated that it is essential for all IM&E sampling to enumerate and identify all taxa regardless of abundance or commercial/recreational importance.

This comment does not appear to be about analytical methods, but rather is addressing sampling and identification, which was previously addressed in LADWP's responses 6c, 6i, 6j, and 6m. In regards to the target taxa for use in the modeling, LADWP agrees that the Regional Board and other resource agencies will need to be contacted for their approval.

These responses to the Regional Board's comments either constitute changes which have been made to the PIC, commitments to address the issues within the CDS, or commitments to provide more detailed study plans for selected components when their timing for further study has arisen. LADWP looks forward to working with the Regional Board in implementing the 316(b) Phase II Rule. If you have any questions or require additional information, please feel free to contact Ms. Susan Damron at 213-367-0279 or Ms. Katherine Rubin at 213-367-0436.

Sincerely,

Susan M. Damron
Manager of Wastewater Quality Compliance

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Mr. Tony Rizk – LARWQCB
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Mr. Dave Bailey – EPRI Solutions
Mr. Shane Beck – MBC, Inc.
Mr. John Steinbeck – Tenera, Inc.,
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