California Regional Water Quality Control Board

Los Angeles Region

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March 3, 2006

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COMMENTS TO PHASE II 316(B) PROPOSAL FOR INFORMATION COLLECTION AND IMPINGEMENT MORTALITY AND ENTRAINMENT CHARACTERIZATION STUDY SAMPLING PLAN FOR RELIANT ENERGY MANDALAY GENERATING STATION, OXNARD, CA, NPDES PERMIT NO. CA0000180, CI-2093

Dear Mr. Lawhn:

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 for Reliant Energy (Reliant) for its Mandalay Generating Station (Mandalay), dated October 14, 2005, and prepared by ENSR International.

The California Water Quality Control Board, Los Angeles Region (Regional Board) staff reviewed your proposal with respect to the requirements of the 316(b) Phase II rule as published on July 9, 2004 (69 FR 41576) and incorporated into the CFR at Parts 9, 122, 123, 124, and 125.

On January 23, 2006, Regional Board staff and the United States Environmental Protection Agency (USEPA) consultant, Tetra Tech, 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

Overall, this report was not well organized, difficult to read, contained numerous irrelevant or redundant passages and too little information on studies to be conducted to satisfy the requirements of the Impingement Mortality and Entrainment (IM&E) Characterization Study and the Comprehensive Demonstration Study (CDS).

Extensive revision and revised submittal is required.

This report contains numerous assumptions and assertions that remain unsupported by data or documentation. For example, in section 3.2.3.1, Reliant asserts that although no studies have been conducted to characterize the biota of the Channel Islands Harbor "we have assumed that it would be dominated by species characteristic of local harbors rather than providing habitat for nearshore species". While this statement may be accurate, no data or substantive discussion is included to support it. Similar examples occur throughout the PIC.

The PIC presents conflicting or contradictory information at several points. For example, the location of the cooling water intake structure (CWIS) is described as the end of the Edison Canal in several places in the PIC (among them, Table 3-1 on page 3-3). However, other places in the PIC identify the entire Edison Canal and Channel Islands Harbor as part of the CWIS (e.g., Section 4.3.2). While not all the noted inconsistencies are critical, the misidentification of the location and scale of the CWIS certainly is critical as it will relate to the definition and delineation of the source water and characterization of affected species.

Too little information is provided to evaluate the suitability of the proposed new studies or historic studies to satisfy the requirements of the CDS. For all new or historic data to be used in the CDS, sufficient information on the specific sample methods, quality assurance/quality control (QA/QC) protocols, and relevance to the Mandalay CWIS and area under the influence of the CWIS must be provided. Simply stating that information is of sufficient quality or relevance does not satisfy the requirement to use scientifically valid information.

Reliant proposes to sample for one year for IM&E at the CWIS, but not in the source waterbody. This proposed sampling plan is inconsistent with:

(i) sampling plans proposed by the other power coastal power plants in the Los Angeles Region, and

(ii) historical sampling performed by Reliant as part of its NPDES permit compliance requirements.

SPECIFIC COMMENTS

Executive Summary

Page ES-2: Reliant states that "the Mandalay Station has two CWIS regulated by the Phase II Rule." Later in the PIC, in its discussion relating to the consideration of the Pacific Ocean as the source water, Reliant refers to the Edison Canal and Channel Islands Harbor as a man-made portion of the CWIS. The relationship of the canal and harbor to the CWIS require additional discussion. If, however, the canal and harbor are considered integral to the CWIS, Reliant cannot claim two separate structures but rather a single CWIS.

The distinction between the canal, harbor and Pacific Ocean is an important consideration relating to the definition of the source water. Reliant repeatedly assumes the Pacific Ocean to be the source water for comparison to baseline impingement and entrainment rates. It is

unclear from the discussion in the PIC whether this is a valid comparison. As Reliant notes, the aquatic environments in the harbor and ocean are substantially different. Considering the mouth of the harbor to be the beginning of the CWIS may result in an inappropriate comparison and calculation of the baseline rates of impingement and entrainment. Regional Board staff forwarded this question to USEPA and is awaiting further guidance.

Reliant appears to have made premature assumptions regarding the effectiveness of various technologies at Mandalay Station. On page ES-3, Reliant states "As noted, this PIC ...concludes that most [technologies] are not likely to be feasible or effective at significantly reducing impingement mortality and entrainment." The purpose of the PIC is not to reach conclusions about the effectiveness or feasibility of different compliance strategies, but rather present options for further consideration. Statements such as these appear throughout the PIC.

Page ES-3: Reliant presents factors that may contribute to the use of the Phase II rule's Compliance Alternative 2, which allows a facility to demonstrate it is already compliant with the performance standards. Reliant presents the location of the intake structure and reduction in flow as factors that may contribute to a reduction in impingement and entrainment over the baseline calculation. While this may be true, neither factor, either alone or in combination, will achieve the performance standards, even with the generous estimates provided in the PIC. Compliance Alternative 2 is reserved for those facilities that can achieve compliance based on existing operations. Compliance Alternative 3 allows a facility to take credits, if any, against the baseline for any existing measures.

Page ES-3: Reliant posits that technologies are likely to have limited applicability at Mandalay due to cost factors. Again, this presumption is entirely premature as no formal studies have been conducted.

Page ES-4: Reliant states that "while discretionary, restoration also offers the flexibility to address watershed priorities for critical species that are impacted by other factors." It should be noted that restoration is not discretionary, but rather remains an option for a compliance strategy provided other options are weighed first. At 69 FR 41609, USEPA notes:

> Facilities that propose to use restoration measures must demonstrate to the [Regional Board] that they evaluated the use of design and construction technologies and operational measures and determined that the use of restoration measures is appropriate because meeting the applicable performance standards or requirements through the use of other technologies is less feasible, less cost-effective, or less environmentally desirable.

In addition, the consideration of the benefits of restoration, if any, must be directly related to the impacts associated with the operation of the CWIS and not to impacts from other sources. Such benefits are not available for consideration under the rule.

Section 1: Introduction

Page 1-1: Reliant states that the facility uses cooling water from the Pacific Ocean. Again, clarification as to what constitutes the source water is necessary.

Page 1-2: The PIC states that in assessing compliance, the Rule allows for flexibility including "The ability to discount 'unavoidable, episodic impingement or entrainment events' in the assessment of performance". In discussing other means of determining attainment of performance standards, the Phase II Rule states that

> The question whether a facility should be considered in compliance even during occurrences of unavoidable episodic impingement and entrainment events is left to the Director. At the Director's discretion, facilities that are generally in compliance, but that experience an unusual peak of impingement mortality and/or entrainment, may be considered to still be in compliance on the basis of past good performance. Moreover, the inclusion of a compliance determination alternative based on a Technology Installation and Operations Plan in the final Rule also addresses these episodic issues." (FR page 41619)

This ability should not be assumed to apply to Mandalay Generating Station at this time.

Page 1-5: Reliant indicates that there are two deviations from baseline configuration that mitigate IM&E at Mandalay. The first is that CWIS are located at the end of a canal/harbor complex that is 3.8 miles long. The PIC states that this is likely to reduce IM&E. In order to claim a reduction in either impingement mortality or entrainment relative to calculation baseline based solely on the location of the CWIS, the CDS will have to contain scientifically valid estimates of such reductions.

The second is the claim that the Unit 3 combustion system, which uses no cooling water from the intake systems, confers a flow reduction of 24% from the baseline. This reduction can then be applied to the performance standards for both IM&E. Regional Board is unclear whether such reductions are available to the Discharger under Phase II. US EPA has been asked to provide further guidance.

Flow reductions associated with closed-cycle cooling systems are available under the Phase II rule, but no guidance is provided as to how to calculate the appropriate reduction. The flow reduction presented by Reliant is based on a flow-to-megawatt ratio based on the operations of the once-through steam-fired units. Regional Board has asked for additional guidance on how to calculate the reduction for a simple cycle combustion unit that uses very little cooling water.

Section 2: Source Water Information

Page 2-2: Reliant states that the CWIS is located "at the end of a 2.5 mile intake canal". If this is the intake structure, it cannot be stated that the Pacific Ocean is the source water. Under this scenario, the source water would be the Edison Canal. This contradicts statements at other places in the PIC that the source water is the Pacific Ocean.

Page 2-2: The zone of hydraulic influence is identified as the Edison Canal and the Channel Islands Harbor. It does not appear that any studies have been done to document the zone of influence; the defined zone appears to be based on assumptions. Further, if the CWIS is defined to include the entire harbor (as is stated in Section 4.3.2) the zone of influence likely extends beyond the mouth of the harbor.

Section 3: Technologies, Operational and Restoration Measures

Reliant restates the claim that credit towards the performance standards may be achieved through the location of the intake structure and the use of the closed cycle cooling system that does not use sea water for cooling. No additional information is presented to bolster the discussion in Section 1.0. As Reliant correctly notes by quoting the Phase II rule, flow or velocity reductions may be used relative to the calculation baseline when *implemented in whole or in part for the purposes of reducing impingement mortality and entrainment.* Regional Board has requested additional guidance from USEPA on the extent of documentation required to demonstrate original intent for impingement mortality and entrainment reductions.

The CWIS is described on page 3-2. This section discusses the CWIS as if it is a single structure, which appears to contradict earlier statements made in the executive summary. Also, this discussion and information presented in Table 3-1 indicates that the single CWIS is located on an embayment at the terminus of the Edison Canal. It is unclear how much, if any of the Edison Canal should be considered as part of the CWIS. This section does not include statements that the CWIS includes the canal and the entire harbor, as is discussed in section 4.3.2. Insufficient information is provided to evaluate the location, extent, or even number of CWISs at Mandalay.

Table 3-1 reiterates the claims of IM&E reduction based on CWIS location and lack of cooling water use at Unit 3. Again, no information is provided to substantiate either claim. The table also refers to both a single and multiple CWISs, further confusing interpretation of the PIC. The table also contains a statement that the "Recent impingement data are completely relevant." It is unclear to which data this statement refers. Because no description has been given of QA/QC protocols or sampling design used to collect these data, statements regarding the relevance of these data are unfounded.

In the discussion presented in Section 3.2.3.1 of the potential reduction of IM&E as a result of the "isolation from the Pacific Ocean" of the CWIS, the PIC makes numerous unfounded assumptions. Although "Reliant did not identify studies on the biota inhabiting Channel Islands Harbor", "We have assumed that it would be dominated by species characteristic of local harbors rather than providing habitat for nearshore species." The PIC goes on to state that, even though no data have been collected "...the biota that developed within the canal/harbor complex developed from the opportunistic colonization of the new submerged substrate". Additionally, "Reliant has assumed that an equilibrium has developed and relatively stable populations of the local biota have become established". There is no data to support these statements beyond the level of simple assumption. The PIC then asserts that the canal and harbor contain "relatively unique biota" and based on "best professional judgment" that location

of the CWIS reduces impingement mortality by 40% and entrainment by 30% relative to calculation baseline. Even though "Reliant acknowledges that this estimate is highly uncertain", it is still used in calculating deviations from baseline to claim IM&E credits. These claims of IM&E reduction relative to Calculation Baseline are not supported by data or even literature citations. Such assertions must be supported by scientifically valid data in the CDS.

The appropriateness of the assumption made in Section 3.2.3.1 that "We have assumed that it [the biota] would be dominated by species characteristic of local harbors rather than providing habitat for nearshore species" is specifically called into question by results of recent impingement sampling discussed on page 4-3. The PIC states that "Small schooling fish typical of coastal waters dominate impingement. Fish typical of harbors and estuaries (e.g., blennies) are notably absent". The CDS requires all life stages of fish and shellfish in the vicinity of the CWIS to be characterized. Based on these discussions, it is not clear that such a characterization will be possible without additional studies.

Table 3-2 again details assumed reductions in IM&E based on location of CWIS on the canal and lack of cooling water use at Unit 3. See above comments.

Page 3-12: Reliant indicates that "There are no site specific data on entrainment, but Reliant expects that, as was found for the Haynes station, there would be more harbor-species ichthyoplantkton due to the presence of these species in Channel Islands Harbor". Previously, the PIC stated that there were no data available with which to characterize the biota of the harbor. Without documentation or supporting data there is no justification for this statement.

In discussing restoration options in Section 3.3.3, Reliant states that "...the dominant species involved in impingement and potentially entrainment at Mandalay are not species of significant commercial or recreational importance. Thus, direct replacement of the most commonly impinged species may not be the most ecologically or commercially/recreationally beneficial approach". The described restoration activities in the PIC are not consistent with the scientific definition of restoration in the Rule. The Rule intends, by use of the word "restoration", that facilities restore the communities they directly impact. Specifically, the final Rule authorizes the use of restoration measures that produce and result in increases of fish and shellfish in the facility's watershed. Examples provided in the Rule include direct stocking, improved habitat or stocking of a functionally similar species, which clearly is intended to protect the watershed's structural and functional integrity. The interpretation of the restoration compliance alternative included in this PIC should be re-evaluated before an actual restoration plan is developed. Additionally, the restoration plan must include "A demonstration to the Director that you have evaluated the use of design and construction technologies and/or operational measures for your facility and an explanation of how you determined that restoration would be more feasible, cost-effective, or environmental desirable...". Any proposed restoration alternative must include such a demonstration.

Regional Board did not review in detail the evaluations of specific technologies presented by Reliant for use at Mandalay Station. Any decision on effectiveness and/or feasibility is premature at this time. Complete and detailed studies are part of the Comprehensive

Demonstration Study, which is submitted after all data collection and analyses have been performed. Presentation of this information in the PIC is inappropriate, as is any discussion of previous decisions regarding Best Technology Available (BTA).

Section 4: Historical Study Review

Section 4.2 contains a discussion of historic impingement and entrainment rates at Mandalay. The second paragraph of this discussion indicates that the historic studies used "standard sampling and analysis techniques that are appropriate for quantifying impingement and entrainment under the Rule". Additionally, this paragraph states that "these data are expected to be useful within the context of the Rule...". Insufficient information is provided to evaluate whether or not the sampling methods and data analysis techniques were appropriate. Further, no discussion of relevance to the area under the influence of the Mandalay CWIS or QA/QC procedures was included. Without such information, it is impossible to evaluate the validity of these statements.

This discussion presents a bulleted list of assertions regarding IM&E rates as well as fish and shellfish communities that are subject to impingement or entrainment by Mandalay. Several of these statements are unclear, unsupported by data or documentation, or contradict statements made in other areas of the PIC. The specific comments on these bulleted points are as follows:

- Reliant asserts that the more recently collected impingement data "fully address the goals of the IMECS as articulated in the Rule". The degree to which the more recently collected impingement data address the goals of the required impingement mortality and entrainment characterization study (IMECS) must be demonstrated in the CDS. However, it is not clear from the information provided in the PIC how these studies fully address the information required in the CDS. Further, it does not appear that entrainment data have ever been collected at Mandalay.

- It is unclear how conditions at the Ormond Beach generating facility relate to those at Mandalay and why conditions at the two facilities are compared in this section.

- Reliant states that recent surveys of fish have been conducted in the vicinity of Mandalay and the most important species in the community are impinged infrequently at Mandalay. This contradicts statements made previously in the PIC that no sampling of fish communities had been conducted in Channel Island Harbor.

- The PIC indicates that "no listed Threatened or Endangered species of other special status species have been affected by impingement". There are no data presented or literature cited to support this assertion.

- The following statement is made as part of this bulleted list: "The two most frequently impinged fish species, the California grunion and shiner perch, are large for the species (i.e., more than a couple grams) indicating that they are adult and young of year." The intent and meaning of this statement are unclear.

- Reliant indicates that the Regional Board concurred with their conclusions in the 1983 316(b) demonstration "that the operation of the CWISs did not result in an Adverse Environmental Impact on the fisheries in the vicinity". No documentation is provided in this PIC of Regional Board's concurrence with this conclusion. If such documentation exists, it should be included in Section 5.0, Agency Consultations.

Table 4-1 indicates that historic data regarding rates of entrainment at Mandalay are available. Further, it appears to indicate that data on the fish and shellfish in the vicinity of the CWIS are also available. Other sections of the PIC indicate that no such data are available for Mandalay (impingement data are available for the CWIS), the canal, or the Channel Island Harbor. Whether or not such data are available should be made clear.

Section 4.3.2 discusses the use of entrainment data from Haynes Generating Station and other sources. In order for entrainment data collected at other generating stations in the early 1980's to be used to characterize conditions at Mandalay in the CDS, it must be demonstrated that the data are representative of current conditions at Mandalay and data were collected using appropriate methods and QA/QC protocols.

The discussion in Section 4.3.2 also includes a statement that the CWIS begins at the mouth of the Channel Islands Harbor, thereby encompassing the entire 1.3 mile harbor and the 2.5 mile Edison Canal. This definition further confuses statements regarding the location and number of CWISs at Mandalay. Further, this definition refutes earlier claims that the intake is located away from the shoreline. Reliant also assumes that "the induced velocity through the harbor is likely to be relatively low (i.e., far less than 0.5 ft/s)". If the harbor is indeed going to be considered part of the CWIS, a much better understanding of the flow and other dynamics must be achieved.

Page 4-9: Reliant again states that "it is likely that the rates of impingement of shoreline species is reduced by the CWIS location relative to the calculation baseline condition. Similarly, more harbor-dwelling organisms might be expected to be impinged". As discussed above, the impingement data presented by this PIC seem to contradict this statement.

Further, Reliant states that "collection of ambient data in order to define the differences between the current CWIS and the calculation baseline is not likely to be productive...Reliant proposes to base the estimate of the Calculation Baseline on the available data (from the literature as well as the site), tangible factors such as flow reduction, and Best Professional Judgment." Lack of ambient data makes it impossible to demonstrate with any certainty what IM&E benefits, if any, are associated with the purported deviations from baseline associated with this CWIS. Such claims of IM&E reductions must be supported by scientifically valid data.

The PIC states on page 4-10 that "Reliant has not collected a substantial amount of physical or water quality data and does not anticipate that these data will be critical to the execution of the CDS". The existing data are not discussed in sufficient detail to determine whether or not the

existing data serve to adequately characterize the source water body, zone of hydraulic influence, or the CWIS.

Section 5: Agency Consultations

Reliant indicates in Section 5.1 that "...we believe that the NPDES agency generally concurred with the conclusion that no Adverse Environmental Impacts were being caused by the CWIS at the plant". No documentation is provided to support this statement. The PIC also states that communications with various agencies "have indicated that there are no state- or federally-listed species in the vicinity of the CWIS and therefore no potential impacts to protected species". Such a statement should be supported by documentation, particularly if the entire harbor is to be considered part of the CWIS.

Section 7: Proposed Sampling Plan

Although the PIC stated that no data are available for use in characterizing the fish and shellfish in the vicinity of the CWIS, Reliant proposes "...not to perform sampling of ambient populations of ichthyoplankton or adults". It is unclear how Reliant will satisfy the requirement that the IM&E Characterization Study includes "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" if no data on ambient populations is to be collected.

In Section 7.2 "Reliant proposes to sample for entrainment at a one month frequency throughout the year". Because there are no entrainment data available and the populations of ichthyoplankton vary greatly both spatially and temporally, weekly or bi-weekly (when the plant is in operation) sampling would be more appropriate. The entrainment samples are also to be collected at sunrise and sunset to evaluate diel variation. Sunrise and sunset are ecologically similar times of the day. A more scientifically valid approach would be to collect samples every six hours over a 24-hour period. Also, it is stated that sub-sampling will be done with a plankton splitter. It is unclear how such sub-sampling will be accomplished or what the criterion for sub-sampling a sample might be. More information on the methods to be followed for both collecting and processing these samples is required in order to evaluate the suitability of this study plan.

In Section 7.3, Reliant indicates that "The Channel Island Harbor is essentially man-made habitat and the community that resides there has developed during the operation of the CWIS. For this reason, impingement mortality and entrainment of harbor-residents should be discounted when considering the Calculation Baseline as well as any impacts of the CWIS". As discussed above, the Phase II Rule does not allow the discounting of impinged or entrained fish or shellfish simply because the source habitat has been altered.

Page 7-3: The PIC indicates that collecting ambient data on fish and shellfish communities is difficult due to expected spatial and temporal variations in the source waters. The Phase II Rule requires characterization of potentially impinged and entrained fish and shellfish. Stating that biological populations vary in time and space is not sufficient reason to forego sampling.

Plans to identify all fish eggs and larvae are mentioned, but shellfish larvae are not. Enumeration and identification of all life stages of all fish and shellfish is required by the Rule.

Appendix B: Review of Pacific Ocean Fisheries.

- The title of this appendix may be too broad to accurately reflect content.
- This appendix includes the bulleted list presented in Section 4.2 and discussed above.
- It is unclear why discussion of Ormond Generating Station is included in this appendix. If there are relevant similarities between the two facilities that make such inclusion appropriate, they are not identified.
- Page B-7, Section 3.0: Reliant indicates that identification of fish and shellfish potentially affected by impingement and entrainment will focus on those species that are likely to dominate impingement and entrainment and will provide special focus on those of commercial or recreational importance. The Rule doesn't specify that this study should focus on the most frequently impinged or entrained or on species of particular commercial or recreational value. The study should include all fish and shellfish.
- The discussion of "Pacific Ocean/Southern California Bight Species Composition" in Section 3.0 relies almost exclusively on information from the literature. Far too few citations are included in this discussion. Additionally, this discussion should focus on species present in the zone of hydrological influence and not the entire region.
- Page B-2: The analysis presented in the first bullet is confusing. It is not clear what data are being evaluated and by what method.
- Page B-10: Section 3.1.1.3 discusses sampling performed by Reliant "offshore of Mandalay". Earlier sections of the PIC indicate that no ambient data were available for the Channel Islands Harbor. The specific locations and dates of the sampling efforts should be discussed. Further, any QA/QC information and demonstration that such data are appropriate for use (e.g., discussion of specific methods) should be included.
- Page B-10: The fact that the species impinged do not completely match those observed "offshore of Mandalay" is not surprising. In order to evaluate the relevance of these data, the methods, sample locations, and QA/QC protocols followed must be discussed.
- Page B-8, Section 3.1: Discusses both ambient physical and biological conditions as well as several fish species in detail that are observed and/or expected to be impinged at Ormond or Mandalay. It is unclear which species are expected at which facility or what similarities may be present between the stations that would make similar fish expected at both. These descriptions contain no discussion of shellfish, nor do they contain sufficient literature citations. Overall, the purpose of these discussions is unclear

as the listed habits of the species are not discussed in relation to potential for impact by operation of the CWISs.

- Section 3.3: This section includes numerous unsupported statements about impact or lack of impact. The PIC should only speak to what has been studied or results from the primary literature that support the claims made here.

- Page B-16, Section 3.4: The PIC discusses threatened and endangered species and asserts that there is only one fish (tidewater goby) and one shellfish (white abalone) that have the potential to occur near the Reliant stations. The PIC states that neither species has the potential to be impinged or entrained at either Ormond or Mandalay. Supporting documentation should be provided for such a statement.

- Discussions of historic data in Section 4.0 contain too few details and citations to evaluate their relevance to Mandalay or the quality of the studies and resultant data. Further, the discussions are not particularly relevant to the goals of the IM&E characterization studies as defined by the Phase II Rule.

- Section 5: Discussion of the studies mentioned in this section does not provide enough information for evaluation of the relevance or quality and therefore can not be evaluated as to their acceptability for use in estimating current IM&E rates for compliance alternatives. There are no sampling details described, no citations, and no QA/QC description. Many statements that may be accurate and well supported by the literature are made in this section as unsupported assumptions. All such statements should be supported with data and/or literature.

- Page B-22, Section 5.2.2.1: Entrainment data presented are from Haynes Generating Station. No description of the similarities between these two CWIS is presented and no data provided to bolster the argument that use of entrainment data from Haynes is appropriate for Mandalay. Also, the PIC includes no description of methods or QA/QC or relevance to current conditions of impingement monitoring data from 1979 – 1980.

- Page B-23, Section 5.2.2.2: The PIC indicates that benthic infauna, fish, and macroinvertebrates in the receiving waters were sampled and described in reports prepared between 2001 and 2004. Although the PIC indicates that these data are to be discussed, no such discussion or presentation of such data occurs. Further, the discussed impingement data scarcely mentions shellfish. It is unclear whether few shellfish were impinged or if their presence was not discussed.

- Page B-27: The PIC includes the statement that "The primary value of this information is to ensure that ichthyoplankton sampling be completed during a full 24-hour cycle rather than simply as a day and night sampling events." This statement contradicts the entrainment sampling plan presented in Section 7.0 of the body of the PIC.

- Page B-28, Section 5.2.3.2: This section states that the location of the CWIS at the end of the Edison Canal is a protective measure and a deviation from baseline. Again, the location of the CWIS is unclear based on the confusing statements made in the PIC. Reliant goes on to state that "..the species composition of impinged fishes at Mandalay differs greatly from the fish species composition found in the nearshore habitat right off Mandalay". This has not been demonstrated and insufficient data have been provided to support this assertion. Also, no data were provided to support the assertion that "...the ichthyoplankton species entrained at Mandalay would be different from those seen offshore of the facility...".

- Page B-28, Section 5.3: Reliant assumes that relative to the initial impingement and entrainment studies conducted at Mandalay in the late 1970's, 1) approach velocities and through screen velocities are the same, 2) intake structures have not undergone retrofits or other changes in operation, and 3) Densities of local fish and invertebrates and their diversity have not changed significantly. Reliant bases the belief that each of these three assumptions is valid upon "available information". However, no data are discussed to support these assumptions. It is critical that each of these assumptions be supported by scientifically valid data if they are to be included in the CDS.

- Page B-29, Section 6.1: In a section titled "Data Quality Assurance/Quality Control" that discusses the QA/QC of the historic data, the PIC states that "MBC has followed standard operating procedures (SOPs) that are well documented and well known". No discussion of these methods or QA/QC protocols is included. A discussion that documents the sufficiency of both the methods and QA/QC will be required in the CDS if these data are to be considered.

- Page B-30, Section 6.2: Reliant asserts that the impingement data are suitable for use for the characterization study "Based on the quality of the impingement data..." no demonstration has been made that these data are of sufficient quality for use in the CDS or IM&E Characterization Study.

- Page B-30, Section 6.3: Reliant plans to review three classes of studies to evaluate the impact of the location of the CWIS on IM&E rates at Mandalay. Without sufficient documentation that any data are relevant temporally and spatially to the area influenced by Mandalay's CWIS, such information is insufficient. Further, adequate QA/QC information must be included to demonstrate the validity of any data used in the CDS.

Appendix D: Sampling Plan

- Page D-1: Again, Reliant states their assumption that historic data are suitable for use in the CDS and characterization study. No data are presented to support this assumption.

- Page D-4, Section D.1.2; Reliant presents an equation used to estimate impingement. No citation is given for this equation and no discussion is included as to the validity of this equation for use in estimating impingement. Such a discussion should be included.

- Page D-6: In reference to impingement rates Reliant states that "Diel and seasonal trends will be evaluated". The impingement sampling protocols call for the screens to be held stable for 24-hours and then rotated. This protocol does not collect data that will allow for evaluation of diel trends.

- Section D.1.4, D.2.1, and D.2.2 contain redundant discussions of why historic IM&E data are appropriate for use. As before, no demonstration is made that such data are appropriate for use.

- Page D-7, Section D.2.3: Reliant states that entrainment sampling will be done 4 times per day, whereas earlier sections stated that samples would be collected twice per day at dawn and dusk. Additionally, the following caveat regarding sampling is included; "If the sampling team believes that a sample may have been affected by an unavoidable, episodic entrainment event, a second day or night sample may be collected within the next 1 to 4 days and analyzed for verification purposes." An unavoidable, episodic event and the criteria for determining whether such an event has occurred must be defined. Currently there are no data on entrainment at this facility with which to put any new samples into perspective. Thus, it is unclear how this protocol will be used.

- Page D-8: The description of the sub-sampling protocols for the entrainment samples is insufficient to determine adequacy. Define "especially abundant".

- Page D-9, Section D.3: The QA/QC section falls well short of an adequate QA/QC program and lacks several critical elements. Field QA/QC procedures need much more detail; QA/QC for taxonomy (i.e., random organisms being checked) is not appropriate. A subset of samples should have all the organisms re-identified by a different taxonomist. There is no discussion of sample sorting QA/QC.

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

Cc: Mailing List

MAILING LIST

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