

RESPONSE TO SIERRA CLUB ORAL COMMENTS (FEB. 11, 2009 HEARING)

At the February 11, 2009 hearing before the San Diego Regional Quality Control Board, Mr. Ed Kimura provided oral comments on behalf of the San Diego Chapter of the Sierra Club (the “Sierra Club Oral Comments”). The following provides a specific response to each of the issues raised by the Sierra Club Comments.

Sierra Club Oral Comment No. 1: *“The Marine Life Mitigation Plan fails to comply with the conditions of the resolution”*

Response to Sierra Club Oral Comment No. 1: The MLMP fully complies with the conditions within Resolution R9-2008-0039 (the April Resolution), Order No. R9-2006-0065 (2006 Permit), and Water Code Section 13142.5(b). The following highlights the key aspects of the MLMP’s compliance:

The MLMP includes a specific proposal for mitigation impingement and entrainment as required by Section VI.C.2(e) of Order No. R9-2006-0065. Under the terms of the MLMP, Poseidon shall create or restore up to 55.4 acres of estuarine wetlands at up to two restoration sites. Consistent with the April Resolution, Poseidon submitted eleven specific mitigation sites determined during the interagency process and submitted a specific proposal for mitigation at these identified sites. The final restoration site(s) will be selected according to strict minimum standards and objectives specifically identified in Sections 3.1 and 3.2 of the MLMP, respectively, and final selection will be subject to review by the Regional Board and Coastal Commission.

Moreover, the success of the selected restoration site(s) will be evaluated according to specifically enumerated performance standards and criteria. For instance, within five years of the start of construction, the mitigation wetlands must match habitat values within a 95% confidence level for four undisturbed wetlands identified in the MLMP. These habitat values are specifically identified in the MLMP, and they relate to biological communities (e.g., densities of fish, macroinvertebrates and birds), vegetation, *Spartina* canopy architecture, plant reproductive success, food chain support, and exotic species.

For additional discussion of how the MLMP complies with the April Resolution and the 2006 Permit and will minimize intake and mortality by mitigating impingement and entrainment, please see Poseidon’s 1/26/09 public comment letter, the Minimization Plan, and Poseidon’s April 2, 2009 public comment letter.

Sierra Club Oral Comment No. 2: *“I also believe that the design of the MLMP is flawed because it fails to apply an ecosystem-based approach. .”*

Response to Sierra Club Oral Comment No. 2: Mr. Kimura is not correct that the scaling procedure “fails to apply the ecosystems-based approach”. In fact, the scaling as conducted under the MLMP is fully based on an ecosystems foundation. Poseidon is only claiming credit to offset the number of fish lost from particular species. This means that all the other services other than the production generating the replacement individuals of the particular fish species at

issue accrue to the ecosystem at large. Mr. Kimura has misunderstood what is essentially a conservatism in the scaling process—we only claim the particular fish replacement, not all the other beneficial services—as indicating somehow that those benefits do not accrue. In fact, this issue is more than adequately addressed in the MLMP through the Site Selection Minimum Standards, Objectives and Post construction Monitoring Standards.

Further, Mr. Kimura attempts to obfuscate what is in fact a robust scaling procedure by claiming that it is not sufficiently “complex” to comport with the “complexity” of the actual aquatic ecosystem. However, it is the very simplicity of the scaling procedure, which is highly conservative and is highly unlikely to underestimate the required offset, that makes it compelling. Due to its simplicity, it is an overestimate of the required offset. And the unclaimed, quantitative and real benefits that flow from the restoration provide the power to document that the scaling is robust.

There are no generally agreed-upon or even generally-acknowledged “definitions” that would allow definition of an offset based on quantified multiple-services flows to be differentiated from one quantified by single or few services flows (like provision of particular fish species) to be called “ecologically-based” or “ecosystems-based” vs. some other name. Any restoration scaled via ecological services is “ecologically-based” and “ecosystems-based”.

Although Poseidon is not legally required to incorporate ecosystem-based principles into its mitigation plan (see discussion below), the MLMP does, in fact, apply ecosystem-based approaches. According to the MLMP, the final restoration plan must provide “maximum overall ecosystem benefits” to the extent feasible (see MLMP § 3.2). For instance, the restoration site(s) must create maximize upland buffers, enhance, downstream fish values, provide regionally scarce habitat, and enhance the potential for local ecosystem diversity. Moreover, Chapter 6 provides compensatory mitigation in terms of the ecosystems affected (i.e. mudflat/tidal channel, and open water). These enumerated objectives and provisions explicitly incorporate ecosystem-based approaches.

The MLMP constitutes a specific proposal for the creation of up to 55.4 acres of estuarine wetlands. Coastal wetlands, in particular salt marshes, are among the most productive ecosystems in the world. Algae and vascular plants produce energy from sunlight that is then efficiently transferred to higher order consumers. These primary producers are the basis of an elaborate food chain that supports a high diversity of plant and animal taxa ranging from algae and vascular plants to marine and terrestrial invertebrates, fishes, birds and mammals. The mitigation proposed by Poseidon provides an opportunity to recover these functions and values and enhance the region’s biodiversity.

Despite the foregoing, no federal or state law actually requires Poseidon to apply an ecosystem-based approach to this wetlands mitigation project. As an “industrial installation” that will use seawater for “industrial processing,” the Carlsbad Desalination Plant (“CDP”) must “use the best available site, design, technology, and mitigation measures feasible in order to minimize the intake and mortality of all forms of marine life.” California Water Code, § 13142.5(b). By proposing to create or restore up to 55.4 acres of estuarine wetlands that will offset potential

entrainment and impingement, Poseidon seeks to minimize the mortality of marine life, in part, through mitigation in compliance with the California Water Code.

As a final point, it is important to note that an ecosystem approach is not entirely applicable to this case because the affected ecosystem is not wholly removed (as is generally done when evaluating compensatory mitigation for impacts of fill in a CWA Section 401 certification). Rather, specific components of that ecosystem are being altered due to impingement and entrainment. Therefore, the MLMP provides for the appropriate type of mitigation since it seeks to offset the specific effects on the environment.

Sierra Club Oral Comment No. 3: *“Now, a marine ecosystem is a dynamic complex of plants, animals, microbes, and physical environmental features that interact with each other. I have seen no overt evidence that these complex interactions have been addressed in the MLMP.”*

Response to Sierra Club Oral Comment No. 4: Marine and estuarine ecosystems involve dynamic interactions between a variety of plants and animals. Mr. Kimura’s comments appear to misunderstand the nature of the mitigation approach. The MLMP provides for the restoration of up to 55.4 acres of wetland habitat. The purpose for the creation or restoration of habitat is to minimize the losses caused by the CDP entrainment and impingement mortality. Despite the fact that the MLMP focuses on the fish loss due to entrainment and impingement and uses this for scaling purposes, the creation or restoration of 55.4 acres creates ecosystem services with complex interactions. Because the complexity that Mr. Kimura admires and appreciates can only be created through natural processes, it is not possible to either identify or engineer a perfect numerical matching for each characteristic of the wetland function being replaced by the function of the new wetlands. We must necessarily rely on the general working principle that habitat of like kind in like place will provide ecosystem services closely similar to the mitigation habitat associated with Poseidon's entrainment and the impingement losses. There is no scientific basis to think otherwise. Furthermore, as described earlier, this assumption will be verified by the conditions of the MLMP monitoring program described below.

Sierra Club Oral Comment No. 5: *“Let me cite two examples where this mitigation plan -- excuse me, fails to apply the ecosystems-based approach. One example is a vital role of the benthic community in the Marine ecosystem. No sediment quality data or benthic monitoring data for initial or within the Agua Hedionda Lagoon have been presented, or from local sites that are not impacted by the once-through cooling plant. These data are essential in selecting a restoration site..”*

Response to Sierra Club Oral Comment No. 5: Sediment quality data and benthic monitoring data are implicitly addressed by the MLMP. Rigorous biological performance standards and monitoring provisions contained in the MLMP ensure that the mitigation wetlands must satisfy a number of biodiversity benchmarks. If the mitigation wetlands are to function according to these benchmarks, they will necessarily contain quality sediment with minimal contaminant concentrations and toxicities capable of sustaining a sufficient richness of benthic macroinvertebrate and vegetative species. If the quality of the sediment were to fall below appropriate levels, the sediment would no longer support vegetation and animal communities to the degree required by the biological performance standards. Any such deterioration would be observed by the monitoring program and remediation would be implemented to ensure

compliance with the terms of the MLMP. Even though sediment quality is implicitly covered by the MLMP, there is no evidence of real concerns associated with sediment quality in the Agua Hedionda Lagoon.

Sierra Club Oral Comment No. 6: *“And another important factor is the connectivity that exists between and among the ecosystems provided by currents transporting larvae from one part of the ecosystem to another. Understanding this is a very complex connection is particularly important to select a restoration site that's productive and successfully offsets the entrainment losses caused by the desalinization project.”*

Response to Sierra Club Oral Comment No. 6: Natural bays and estuaries in California function in the classical sense of serving as spawning and nursery areas for coastal fishes (Michael Horn. 1980. Diversity and Ecological roles of noncommercial fishes in California marine habitats. CalCOFI rep. Vol. XXI, 1980.). These systems support a unique fish assemblage composed of low trophic level species (Horn 1980; Allen 1982). Many of these species are truly estuarine dependent, living their entire life cycles within the estuary. Based on larval surveys, the most abundant bay-estuarine fish are gobies (Horn 1980). Gobies attach their eggs to the walls of the burrows in which they live. Their eggs are not pelagic and are not transported from one wetland to another via ocean currents. The larvae hatch, metamorphose and mature within the estuary. Tidal translocation of goby larvae to the near-shore environment has been postulated as one of the primary sources of mortality for this species (Brothers 1975). Those transported out of the estuary do not survive. Thus, there is no connectivity between disparate wetland systems within the region with regards to eggs or larvae of the dominant estuarine fish taxa. Connectivity between a restored estuarine wetland and an existing wetland is crucial for successful colonization by estuarine dependent species. Such connectivity is assured through the requirement that Poseidon's mitigation site be located at an existing estuarine wetland.

The MLMP's rigorous physical and biological performance standards will measure the success of the proposed wetlands in relation to other reference sites, “which shall be relatively undisturbed, natural tidal wetlands in the southern California Bight.” In the event that the mitigation site's location does not allow for sufficient larval dispersion or population connectivity, the wetlands would not conform with these other reference sites. This would require Poseidon to conduct remediation in order to bring the wetlands in compliance with the terms of the MLMP.

Sierra Club Oral Comment No. 7: *“The MLMP proposes to select a restoration site located somewhere within the Southern California Bight. This is a coastal region covering over 450 kilometers from the Mexican border to Point Conception. It apparently assumes an essential requirement for the site, that the members of the larval pool from the Carlsbad site have been dispersed over time throughout this region.”*

Response to Sierra Club Oral Comment No. 7: The MLMP establishes a rigorous process to ensure the mitigation wetlands are sited in the best possible feasible location in proximity to the Agua Hedionda Lagoon. Section 3.2 of the MLMP provides that, to the extent feasible, Poseidon must select “site(s) in proximity to the Carlsbad desalination facility.” Moreover, the

amended Minimization Plan provides that “[s]ites located within the boundaries of the Regional Water Quality Control Board, San Diego Region, shall be considered priority sites. If Poseidon proposes one or more mitigation sites outside of these boundaries, it first shall demonstrate to the Board that the corresponding mitigation could not feasibly be implemented within the boundaries, such as when the criteria established in Section 3.0 of the MLMP [providing site criteria] are not satisfied.” See Minimization Plan, Section 6.6 (see chart). March 9, 2009. As stated earlier, the selection of the restoration site will be reviewed and approved by an interagency team of scientists. The fact that the selected site may not be located directly in Agua Hedionda Lagoon does not undermine the ecological value of the mitigation site.

Sierra Club Oral Comment No. 8: *“Now, this assumption is highly questionable, based on a very scientific important paper that just came out in January of this -- this year, of the Annual Review of Marine Science, authored by University of Miami scientists, Cowen and Sponaugle, entitled, "Larval Dispersion and Marine Population Connectivity." The paper provides a current overview -- an overview of the current scientific knowledge of this subject. The authors state that a full understanding of the population connectivity has important applications for management and conservation.*

Response to Sierra Club Oral Comment No. 8: Commenter has not introduced the referenced paper into the administrative record. Therefore, its relevancy and/or validity are not subject to verification or evaluation.

Sierra Club Oral Comment No. 9: *One important piece of information in the paper is that it dispels the notion that local larval marine populations can be formed from all potential sources and mixed together into a single pool over hundreds to thousands of kilometers.*

Response to Sierra Club Oral Comment No. 9: The commenter’s point with respect to the populations of the most commonly entrained lagoon species (i.e., gobies and blennies) does not appear relevant. Gobies and blennies are pervasive in and around the bays and inlets along California’s coastline. This means that gobies and blennies will rapidly inhabit virtually any area where coastal estuarine habitat is created or restored. At least with respect to these species, there exists no “single pool over hundreds to thousands of kilometers.”

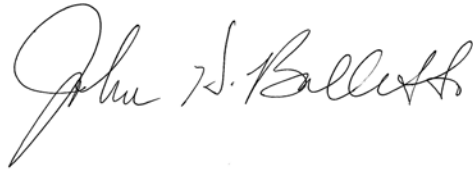
Sierra Club Oral Comment No. 10: *The authors note that there is now ample evidence that the dispersion distances can vary from just tens to hundreds of kilometers.*

Response to Sierra Club Oral Comment No. 10: See Response No. 9.

The Empirical Transport Model calculates the dispersion distance of entrained larvae, which can be up to tens of kilometers depending on the speed of ocean currents. In this context, the transport of entrained Agua Hedionda Lagoon fish larvae is discussed thoroughly in the final EPS Impingement Mortality and Entrainment Characterization Study for each of the commonly entrained lagoon species (i.e., gobies, blennies, garibaldi). The model does not consider the transport of juvenile and adult life stages, since these life stages are not at risk of entrainment.

Sierra Club Oral Comment No. 11: *So it's really clear to me that the MLMP does not apply to integrated ecosystems-based approach in assessing and mitigating the impacts of the desalinization project, and therefore it's fundamentally flawed.*

Response to Sierra Club Oral Comment No. 11: See Response to Comment No. 2.

A handwritten signature in black ink, reading "John H. Balletto". The signature is written in a cursive style with a large initial "J" and a long, sweeping underline.

John H. Balletto
Principal Scientist/Vice President
ARCADIS U.S., Inc.

April 8, 2009

Comments of Ed Kimura at February 11, 2009 hearing

Mr. Chairman, Members of the Board, my name is Ed Kimura. I'm here speaking on behalf of the Sierra Club, San Diego Chapter. I concur with the staff assessment that the Marine Life Mitigation Plan fails to comply with the conditions of the resolution. I also believe that the design of the MLMP is flawed because it fails to apply an ecosystem-based approach. Now, a marine ecosystem is a dynamic complex of plants, animals, microbes, and physical environmental features that interact with each other. I have seen no overt evidence that these complex interactions have been addressed in the MLMP. Let me cite two examples where this mitigation plan -- excuse me, fails to apply the ecosystems-based approach. One example is a vital role of the benthic community in the Marine ecosystem. No sediment quality data or benthic monitoring data for initial or within the Agua Hedionda Lagoon have been presented, or from local sites that are not impacted by the once-through cooling plant. These data are essential in selecting a restoration site. And another important factor is the connectivity that exists between and among the ecosystems provided by currents transporting larvae from one part of the ecosystem to another. Understanding this is a very complex connection is particularly important to select a restoration site that's productive and successfully offsets the entrainment losses caused by the desalinization project. The MLMP proposes to select a restoration site located somewhere within the Southern California Bight. This is a coastal region covering over 450 kilometers from the Mexican border to Point Conception. It apparently assumes an essential requirement for the site, that the members of the larval pool from the Carlsbad site have been dispersed over time throughout this region. Now, this assumption is highly questionable, based on a very scientific important paper that just came out in January of this -- this year, of the Annual Review of Marine Science, authored by University of Miami scientists, Cowen and Sponaugle, entitled, "Larval Dispersion and Marine Population Connectivity." The paper provides a current overview -- an overview of the current scientific knowledge of this subject. The authors state that a full understanding of the population connectivity has important applications for management and conservation. One important piece of information in the paper is that it dispels the notion that local larval marine populations can be formed from all potential sources and mixed together into a single pool over hundreds to thousands of kilometers. The authors note that there is now ample evidence that the dispersion distances can vary from just tens to hundreds of kilometers. So it's really clear to me that the MLMP does not apply to integrated ecosystems-based approach in assessing and mitigating the impacts of the desalinization project, and therefore it's fundamentally flawed.

We urge you to support the staff recommendation.

Thank you.