25 January 2017

TO: Mr. Michael Watson, Coastal Analyst

FROM: Michael L. Morrison, Ph.D.

Subject: Comments on the Habitat Protection Plan for the Monterey Bay Shores Resort Project

This letter contains my comments on the Habitat Protection Plan (HPP), updated version of 24 August 2016, for the Monterey Bay Shores Resort Project (hereafter, the Project). I am submitting these comments on behalf of the Sierra Club and the Center for Biological Diversity. My comments focus on the Project as it will impact the western snowy plover (*Charadrius nivosus nivosus*). To develop my comments I thoroughly reviewed the HPP and associated appendices, reviewed the relevant scientific literature on the western snowy plover, and relied on the experience I have gained during my nearly 40 years of work in avian ecology and wildlife management.

I am currently employed as a fulltime, full professor in the Department of Wildlife and Fisheries Sciences at Texas A&M University since 2005; I hold the Caesar Kleberg Chair in Wildlife Ecology and Conservation. Prior to my position at Texas A&M I held faculty positions at the University of California, Berkeley where I was a tenured associate professor; and was an adjunct faculty member at California State University, Sacramento; and the University of Arizona. I have worked and continue to work extensively in California, including previous work in coastal and estuarine ecosystems. I am an avian ecologist by training and experience, and currently teach courses in undergraduate ornithology and wildlife restoration, and a graduate course in wildlife study design. In addition, I am lead author on textbooks on wildlife-habitat relationships, wildlife restoration, and wildlife study design. Additionally, I am lead editor on an ornithology textbook to be published by Johns Hopkins University Press. As a result, I have extensive knowledge of those topics, all of which apply to the proposed Project and HPP.

Biological Goals/Standards

Section 4.1 (p. 4-2) of the HPP lists as a biological goal and standard:

> Avoid, if feasible, or, if not, minimize significant damage or degradation to western snowy plover critical habitat so that any such habitat impact does not rise to the level of "significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering." 50 C.F.R. § 17.3.

Attaining this goal will not be possible based on the size of the proposed project, and the subsequent amount and intensity of human activity. Simply put, there is nothing that can be done to eliminate or even develop meaningful on-site mitigation in the Project area for snowy plovers. I base my conclusions on the following critical facts:

- Snowy plovers react to human disturbance, even when the source of disturbance is a considerable distance away. Studies have shown that snowy plovers require a buffer zone free of human disturbance that extends at least 100 m from the nest site (Robinson 2007, Muir and Cowell 2010, Trulio et al. 2012).[1]
- Lafferty (2001) found that plovers did not acclimate to, or successfully find refuge from, human and human-related disturbance; feeding rates also declined with increased human activity. The Project site is not large enough to install effective "nest protection zones" for snowy plovers.

Another goal stated in Section 4.1 is to "Restore and enhance western snowy plover critical habitat so that [it] provides enhanced characteristics and features designed to be attractive to plovers for breeding and nesting." Nothing described in the HPP provides evidence that this goal could be attained. Specifically, the HPP does not contain any actual restoration and enhancement measures aside from weed removal (primarily in Management Areas 2 and 3). Simply removing some weedy vegetation does not replace the plover habitat lost due to construction, along with functionally eliminating remaining habitat by encouraging additional human activity and dogs. For snowy plover, the negatives of humans will substantially outweigh the benefits of weed removal. As noted above, even avoiding significant damage cannot be achieved; hence it would not be possible to actually enhance features for the plovers.

Another goal (p. 4-2) of the HPP is to "Provide and manage nesting, brooding and foraging habitat for the western snowy plover in the coastal strand and foredune/secondary dune areas of the project site." Based on the sensitivity of the plover to human disturbance, it is simply not possible for habitat of any value to the plovers to be maintained. According to nesting surveys conducted by Point Blue Conservation Science, snowy plovers use much of the Project area, including nesting in the foredune/secondary dune.[2] Because there were up to 9 likely nesting attempts at the Project site in 2015[3] and 2016[4], it is clear that a substantial number of plovers currently use the area and "take" (as defined by the USFWS) cannot be avoided. Thus, the ultimate goal of the HPP, stated as (p. 4-2): "Contribute to regional recovery efforts for the western snowy plover in the Monterey Bay area" is simply unattainable if the Project is allowed to move forward.

[1] Robinson, C.W. 2008. Western snowy plover use of managed salt ponds at Eden Landing, Hayward, CA. Master's Theses, Paper 3494. San Jose state University, California. *See also* Muir, J.J., and M.A. Colwell. 2010. Snowy plovers select open habitats for courtship scrapes and Nests. Condor 112:507-510. *See also* Trulio, L.A., C. Robinson-Nilsen, J. Sokale, and K.D. Lafferty. 2012. Report on nesting snowy plover response to new trail use in the South Bay Salt Pond Restoration Project. Available at: <http://www.southbayrestoration.org/documents/technical/Final%20Plover%20Report%20RLF_31Jan12.pdf>.

[2] Point Blue Conservation Science. 2014 Apr 1. Letter to the California Coastal Commission regarding Agenda Item 10a; Application A-3-SNC-98-114.

[3] Point Blue Conservation Science. 2016 Jan. Nesting of the Snowy Plover in the Monterey Bay Area, California in 2015. Table 2 and Appendix 12.

[4] Watson, M., California Coastal Commission, 2016 Dec 16. Letter to E. Ghandour, SNG regarding Coastal Development Permit (CDP) A-3-SNC-98-114 (Monterey Bay Shores Resort) Special Condition 15 Compliance Status. p. 2.

Management Areas

The HPP divides the Project site into multiple "habitat management areas" that are depicted in Figure 6. According to this map, two "Likely Approximate Location of Nesting Exclusion Zone" are indicated within the 4.03 acre "Management Area 1, Beach and Strand. Adjacent to Management Area 1 is Management Area 2, Foredune/Secondary Dune of 6.86 acres. Human access to Management Area 2 will be developed including (p. 4-4) "three vertical beach accessways, a public vista point, and two private resort vista points." Thus, plovers will be confined to two management areas that will have substantial human visitation, including specific enhancement of human visitation through the addition of accessways and vista points. Based on the known intolerance of plovers to human activity within a mean distance of 80 m (262 feet), and the known distribution of plovers across the Project site, no locations within Management Areas 1 or 2 will allow for occupancy, let alone successful nesting, by plovers. This conclusion is clear when examining the scale of the Project map (Figure 6) and the nesting distribution found by Point Blue.

Biological Objectives and Standards for Management Areas

Management Area 1 (Sec. 4.3.1; p. 4-8) calls for the approved biologist to conduct an unspecified number of surveys during the potential nesting season of the plover; and to establish "exclosures" to provide for potential nesting. This plan is fatally flawed with regard to allowing for plover nesting for multiple reasons:

- The HPP does not recognize the extent of nesting documented by Point Blue recently in the Project area. Thus two exclosures, even if they were theoretically viable, would be insufficient based on plover occupancy of the area.
- The HPP does not specify the size of the exclosures and how they will be protected from human disturbance. As reviewed above, plovers require a buffer of at least 100 m (328 feet) around each nest.
- The HPP states that the exclosures will be "…balanced with public lateral access requirements…" Given that the Project will by design increase the amount of human activity in the foredune/secondary dune (Management Area 2), combined with the narrow extent of the beach and strand, it is inevitable that the Project substantially increase the intensity and duration of disturbance on any plovers attempting to use the Project area for any purpose.
- Without any supporting evidence, the HPP calls for establishment (p. 4-9) of a 50-foot minimum buffer from the nest, providing it still allows public access above the mean high tide line. As reviewed above, a 50-foot buffer is known to be far less than that required to avoid disturbing nesting plovers. Based on the dimensions of the Project area (Figure 6), and as summarized above, the recommended (Muir and Cowell 2010) buffer of 100 m (328 feet) would extend from the mean high water line, across Management Area 1 and into Management Area 2.
- Plover surveys and management actions included in the HPP for Management Area 2 (p. 4-9) largely mirror those for Management Area 1, and are likewise insufficient to allow for plover occupancy. The establishment of walkways across the foredune/secondary

dune area, including nighttime travel and required lighting, will create an uninhabitable zone for the plovers.

Two Seasonal Nesting Protection Zones

The goal of the nesting protection zones (p. 4-20) is to: "…protect known nesting habitat and prevent disturbance that may discourage plovers attempting to nest there." As outlined above, the nesting protection zones proposed in the HPP are unsuitable because plovers require substantially larger areas that are free from disturbance for nesting. No amount of signage or fencing can negate the biological reality that has been shown in the literature on snowy plovers specifically and other shorebirds in general.

The HPP did not include pertinent scientific literature on disturbance and the western snowy plover. As a result, the HPP lacks scientific rigor, and the management prescriptions and conclusions therein have no scientific foundation. In addition, the failure to include pertinent scientific literature raises serious questions concerning the qualifications of the individuals who developed the HPP.

An experimental study of disturbance on nesting and wintering snowy plovers in Santa Barbara (Coal Oil Point Reserve; COPR) showed that, when the public was restricted to walking along the wet sand and out of the adjacent (dry) nesting areas, bird abundance increased across the 400 m (1312 foot) roped zone.[5] Thus the protected area at COPR provided a large area of habitat with little human disturbance. In contrast, the proposed areas of protection at the Project site would be small and they would be surrounded on all sides by human disturbance. The COPR Management Plan is a model for what can work to enhance occupancy and successful breeding by snowy plovers. The HPP falls far short of the lessons learned at COPR. Thus, plovers can exist and successfully breed in proximity of humans, but must have much larger buffers than those proposed in the HPP. Basically the HPP is trying to justify forcing a development into plover occupied habitat without sufficient space for doing so. Studies such as the one conducted at COPR show that the HPP is insufficient to avoid substantial if not complete take of plovers occupying the Project area.

Muir and Colwell (2010) also studied the response of incubating plovers to an observer approaching the nests.[6] They showed that plovers ceased incubation and left nests when an observer approached within a mean distance of 80 ± 33 meters, which led Muir and Colwell to conclude that fencing erected to minimize human disturbance should be placed such that people cannot approach closer than 100 meters (328 feet). Thus, based on current, relevant literature—none of which was reviewed in the HPP—any nesting protection zone must be at least 2.5 acres to prevent human disturbance to incubating plovers. The Project layout would not, however, accommodate establishment of 2.5-acre nesting protection zones that are ≥100 meters away from the resort pathways. Because Management Area 1 is only 4.03 acres in total size (Figure 6), it is

[5] Lafferty, K.D., D. Goodman, and C.P. Sandoval. 2006. Restoration of breeding by snowy plovers following protection from disturbance. Biodiversity and Conservation 15:2217–2230.
[6] Muir, J.J., and M.A. Colwell. 2010. Snowy plovers select open habitats for courtship scrapes and Nests. Condor 112:507-510.

not possible to establish two nesting protection zones of adequate size in Management Area 1, especially while also allowing humans lateral and medial access to the beach.

A study of snowy plovers in the San Francisco Bay found that the mean distance plovers flushed from nests when approached by people was about 175 m (~575 feet).[7] This study also found that plover nesting abundance was enhanced by avoiding human use of trails near nesting habitat.

Part of the proposed nest protection involves what the HPP terms "symbolic" fencing (see Predator Management Plan [PMP], p. 5). This "symbolic" fencing is described as consisting of "…a strand or two of rope or wire strung through stakes with eyelets to mark the sensitive zone. The zone will include signs to explain why it is closed off to visitors." According to actual research conducted at the COPR, docents needed to be present all day, 7 days a week to prevent public access into the exclusion zones.[8] In contrast, the HPP does not incorporate full-time docents or any other measures that would ensure compliance with the protection zones and posted regulations. Moreover, the HPP does not explain how often the (single) biologist would be on site or how the biologist would enforce noncompliance. Studies have shown that voluntary compliance with snowy plover protection measures is low.[9] Thus the HPP is hopelessly vague on the type of exclosures to be used ("actual" or "symbolic"), does not review the directly relevant scientific literature and other reports, and completely fails to describe how exactly any exclosure would be maintained.

Adaptive Management Measures

The HPP claims to establish an "adaptive management approach" (p. 4-22) if the approved biologist determines that elements of the HPP are harmful or ineffective to the biological goals of the plan. Specifically, the HPP states that: "This adaptive management approach is intended to allow for the identification and correction of problems as they arise." This "plan" is completely unacceptable for several fundamental reasons:

- Adaptive management is not a synonym for "trial and error", the latter of which is being proposed in the HPP. No criteria are provided for identifying what a "problem" might entail, or when and how those problems—if identified—could be rectified.
- The U.S. Department of the Interior defines adaptive management as "a decision process that promotes flexible decision making that can be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood."[10]
- Adaptive management is a specific type of planning that requires that potential outcomes over specific timeframes are identified, and potential solutions for failure to achieve the desired outcome are identified before project implementation. Many likely outcomes can

[7] Robinson, C.W. 2008. Western snowy plover use of managed salt ponds at Eden Landing, Hayward, CA. Master's Theses, Paper 3494. San Jose state University, California.
[8] Lafferty, K.D., D. Goodman, and C.P. Sandoval. 2006. Restoration of breeding by snowy plovers following protection from disturbance. Biodiversity and Conservation 15:2217–2230.
[9] Lafferty K.D. 2001. Human disturbance to wintering western snowy plovers at a southern California beach. Biological Conservation 10:1-14.
[10] United States Fish and Wildlife Service. 2007. Recovery Plan for the Pacific Coast Population of the Western Snowy Plover *(Charadrius alexandrinus nivosus).* Sacramento, California. xiv + 751.

be anticipated, such as the proposed 50-foot buffer around a nest being insufficient or nighttime access through Management Zone 2.

- A proper adaptive management plan must identify likely scenarios, and if potential solutions cannot be identified, then substantial changes in the development plan would be indicated. As currently developed the HPP is insufficient to instill any confidence that the biological goals can be attained. Thus, the "adaptive management" approach described in the HPP does not conform to the accepted definition of adaptive management, and it completely fails to include a framework for achieving a better understanding of management actions.

Predator Management Plan

The stated goal (Appendix M, p. 1) of the Predator Management Plan (PMP) is "…to protect the federally listed western snowy plover…from predators supported by or originating from the resort site." This goal statement alone indicates that the Project managers anticipate attracting additional predators to the Project area after construction. Specifically, an increase in ravens is anticipated (p. 1). Similar to the inappropriately named and designed "adaptive management plan" in the HPP, the PMP clearly states that any predator management will be determined after a problem is observed. Thus, we have no way of knowing how a problem will be identified, or if any proposed solution will even be approved by the relevant agencies (e.g., California Department of Fish and Wildlife, USFWS).

The PMP acknowledges that multiple species could be responsible for predation of plovers and their nests, yet provides no specific plans on how predator management might be implemented. Rather, a vague statement is provided (p. 3) that indicates: "If lethal management of predators is determined to be unavoidable by the approved biologist monitoring the site and is consistent with local and regional predator removal efforts, revisions to this PMP may occur through the adaptive management process discussed below." Without a specific plan on how predator management will (or feasibly could) be implemented, the California Coastal Commission has no basis for inferring the PMP would be effective in managing predators that are attracted to the resort.

Predator monitoring is proposed, yet nothing is provided on how that monitoring will occur (p. 4): "The approved biologist will monitor the site for predation, identify predators that are impacting the plover, and record any avian or mammalian predator behavior as a basis for determining the appropriate control measure." This statement is far too vague to be considered a reliable approach to predator management. No indication of the time and effort that would need to be implemented is provided for various potential scenarios. Identification of nest predators is extremely difficult and subject to much error unless the proper methods are used. Noting that eggs are missing or broken prior to the anticipated time of hatching, which is all that can usually be observed through casual visits, will not identify the predator involved (which could include humans). There is a plethora of literature on nest predators, including methods of determining nest predators, none of which is reviewed in the HPP or PMP.[11]

[11] Chalfoun, A.D., F.R. Thompson III, and M.J. Ratnaswamy. 2002. Nest predators and fragmentation: a review and meta-analysis. Conservation Biology 16:306-318.

In the Monterey Bay, California, Neuman et al. (2004) studied the effects of predator management and exclosures on snowy plover nest success and adult mortality.[12] Their results showed that exclosures could be useful for increasing hatching success, but that widespread use of exclosures may increase adult mortality and contribute to a decline in breeding numbers. Thus, predator management is complicated and has many unintended consequences if not well planned. Unfortunately, the HPP and PMP provide no critical review of the various options and potential outcomes of predator management. Additionally, given the extremely small size of the nest protection zones proposed in the HPP, there is absolutely no reason to think, based on the available scientific literature, that predator management could ever overcome the failings of the small exclosures and nearby human disturbances allowed by the HPP.

The HPP does not provide any specific plans on how direct predator control would be implemented (p. 5). The PMP indicates that trapping, or hazing using noise makers and lasers could be used if avian predators are identified as a "problem on the site." As reviewed above, identifying the specific predator causing plover fatalities is difficult and takes a specific plan of action, none of which is developed in the HPP. We are left with a vague notion that something will be done. Whereas, the scientific literature is clear that identifying specific predators, and then doing something constructive to address a predation issue, is complicated, any competent predator management plan must contain a specific plan of action. The current PMP is hopelessly vague in this regard.

The PMP states (p. 7) that "Specific quantitative success criteria for predator monitoring and control cannot be defined because the types and numbers of predators may vary widely from year to year." This statement confirms that the HPP includes no plan for a priori monitoring of predator activity at the Project site. As such, it will be impossible to anticipate what actions might be needed. For example, are there ravens present; and if so, how many and where do they occur? Are feral cats an issue? Is there falcon hunting in the area? Here again we see that the HPP in general, and specifically the PMP, is hopelessly vague and will function in a "wait and see" mode. Additionally, there will be only one employee to implement all monitoring, direct (exclosures) and indirect (preventing public from crossing barriers) protection measures, predator management, and so forth. Although I have extensive experience in wildlife management, it only takes common sense to know that one employee could conduct just a small fraction of all of the required activities listed in the HPP, let alone devote the effort required for effective predator management. But again, because development of the Project will cause plovers to abandon the area, there actually could be little for any number of employees to do regarding snowy plover management.

Conclusion

The HPP, and associated PMP, are hopelessly vague with regard to all aspects of plover management. I cannot know the reason why the relevant scientific literature was not incorporated in the Project documents. However, had the literature been fully reviewed and fairly incorporated into the plans, it would have been abundantly evident that HPP and PMP will completely fail to

[12] Neuman, K.K., G.W. Page, L.E. Stenzel, J.C. Warriner, and J.S. Warriner. 2004. Effect of mammalian predator management on snowy plover breeding success. Waterbirds 27(3):257-263.

reach the goal of retaining plovers in the Project area. There is no doubt that "take" of the western snowy plover will occur associated with implementation and operation of the Project.