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May 15, 2015

Dan Silver, Executive Director
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8424 Santa Monica Blvd., Suite A 592
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Subject: Comments on the Otay Ranch Resort Village DEIR

Dan,

Thank you for allowing me to provide scientific comments on the DEIR for the Otay Ranch Resort Village. After careful review of the DEIR, I conclude that the DEIR neither adequately discloses impacts nor provides adequate mitigation and protection for the federally endangered Quino Checkerspot Butterfly (*Euphydryas editha quino*), or QCB. Effects on the butterfly have not been reduced to a point that is 'less than significant.'

My conclusions are based on the following facts:

- Surveys were conducted in years where annual rainfall was less than average making the potential for adult observations likely low. 1999 and 2008 were 60% and 75% of annual rainfall and were the best of the 4 years of surveys. Rainfall for 2005 exceeded 200% of annual rainfall and surveys were not conducted.
- Even with the survey years performed, 'occupied' QCB habitat would cover at least 98% of the project site. This is based on the FWS position that QCB occupied habitat is within a 1km circle of each sighting. The fact that this level of occupancy was present even in low rainfall years demonstrates how important this site is.
- The DEIR did not fully address Otay Mountain as the single critical "core population" of coastal QCB within San Diego County. In biological terms, a core population is one sufficiently intact and robust so as to support and repopulate other populations on a regional scale that are more susceptible to adverse environmental, or "stochastic," changes such as climate. Since Otay Mountain is the core population within San Diego County, continued development within this core population will likely disrupt any dispersal to suitable habitat for Quino in accordance with Metapopulation Dynamics (See USFWS 2002 Quino Checkerspot Butterfly Recovery Plan). A Metapopulation in the context of habitat patch dynamics is a population of populations in which distinct subpopulations occupy spatially separated patches of habitat.¹ The habitat patches exist within a

¹ Hanski, I. 1999. Metapopulation Ecology. Oxford University Press, Oxford, England. 313 pp.

O-8-4 Cont.	<p>matrix of unsuitable space but organism movement among patches does occur and interaction among the subpopulations maintains the Metapopulation. Habitat Patches generally are areas in which the QCB utilizes for resting (which can include night-time roosts and avoiding inclement weather such as rain, drizzle, fog and high winds or thermoregulating), nectaring, and depositing eggs. 'Stepping-stone' habitat patches would include low growing vegetation with open bare ground and nectar sources. These are used as dispersal corridors so they can settle into areas with larval host plants, rock out-crops, hills, low growing vegetation, bare ground and nectar sources. 'Optimum' habitat patches would be where the QCB's full life cycle could occur.</p>
O-8-5	<ul style="list-style-type: none"> • The DEIR did not address the diapause (overwinter) status of QCB. This is significant because the future generations of adult QCB come from the diapausing larvae. Since QCB diapause as a 3rd or 4th instar (molt) larvae within all known host plant patches, any impacts to the larvae will have significant impacts to the future generations of adults.
O-8-6	<ul style="list-style-type: none"> • The largest concentration of such crucial diapause larvae would be within habitat patches of host plants. The DEIR Figure 2.3-11 notes 4 significant polygons of host plant patches of which 3 are within the development footprint and the 4th is adjacent to the development footprint. Since those 4 polygons are more likely to contain the largest concentration of diapausing larvae, it is likely that the impact to QCB is at least 75% rather than 16%. This significant impact was not disclosed.
O-8-7	<ul style="list-style-type: none"> • The 4th polygon is adjacent to the development footprint, making it likely that the Argentine ants ubiquitous to development will likely expand to the preserve areas adjacent to the footprint, causing the 4th host plant polygon to be in jeopardy of loss of larvae to predation.² This significant impact was also not addressed within the DEIR.
O-8-8	<ul style="list-style-type: none"> • The Edge Effects analysis did not address diapausing QCB larvae. Because edge effects are documented to cause Quino extirpations within 1km of development,³ then the 4th polygon will be impacted and therefore impacts to future generation of adults would be as much as 85-90% not 16%. This is highly significant, with potentially catastrophic implications for the Otoy Mountain population's viability.
O-8-9	<ul style="list-style-type: none"> • The impacts of California's drought to QCB diapausing larvae were not adequately disclosed. Female Quino can lay up to 150 eggs per clutch. Eggs hatch in the same year they are laid. Caterpillars begin feeding on host plants and must make it to 3rd or 4th instar (molts) growth before entering into diapause. One of the butterfly's survival strategies is that not all diapause larvae come out of diapause the following year. Or, some may come out, feed on host

² Suarez, A.V., D.T. Bolger and T.J. Case. 1998. Effects of Fragmentation and invasion on native ant communities in coastal southern California. Ecology 79(6): 2041-2056. Argentine ants range at least 650 feet outside of development areas.

³ Preston et al, "Changing distribution patterns of an endangered butterfly: Linking local extinction patterns and variable habitat relationships." Biological Conservation 152 (2012) 280-290.

O-8-9
Cont.

plants to replenish their fat reserves and re-enter diapause for future years. With the current California drought (2 years within the last 15 years were at or above annual rainfall for the region), diapause QCB can extend their diapause for multiple years, sometimes as long as 4 to 5 years. Therefore, any impacts to known host plant patches have the potential to have significant impacts to QCB for multiple years. The DEIR has not addressed this.

O-8-10

In summary, once impacts are fully considered, the effects on QCB from the proposed *extent* of development remain highly significant and are not mitigated by the remaining habitat or management measures. Major reduction in the extent of development, with particular attention to the host plant patches that shelter larvae in diapause, and minimization of fragmentation, is necessary to even approach the level of an insignificant impact.

O-8-11

Compounding this is the failure of the DEIR to analyze the implications of cumulative habitat loss, such as in adjacent Proctor Valley. No analysis is provided as to the effects of the *combined* habitat loss. The document simply states, in a circular manner, that the presumption that each project will mitigate on an individual basis. There is no analysis of the *incremental and additive* effects in terms of the core population and the regional Metapopulation.

O-8-12

Michael Klein's qualifications as a QCB expert:

- Has professionally studied San Diego butterflies for nearly 19 years.
- Professionally has been USFWS permitted for QCB since 1997 (he was one of the first 25 permitted to conduct presence/absence surveys). This equates to 18 plus years.
- Is one of a small handful that also has a QCB larval permit, which is directed by FWS if the need is required.
- When the FWS had monitored QCB sites prior to 2014, was the primary monitor of QCB sites on Otay Mountain and Dulzura.
- Accompanied FWS personnel annually to an important monitored site on the backside of Tecate Peak along the US Mexican border.
- Has taught Quino identification, biology and ecology at the Sensitive Butterflies of San Diego County Workshop since 2000.
- Has trained in excess of 100 biologists in southern California for preparation of the USFWS QCB test. To date all have passed their FWS test, except one, giving them a greater than 99% pass rate for identification of QCB.
- Has observed a minimum of 200 adult Quino and 300+ larvae in various instars as well as egg clusters on Otay Mountain.
- Is well known and respected in southern California within the environmental consulting industry, and by Federal, State, County and City jurisdictions and public utilities.

Please let me know if you require additional information or assistance with this project. I can be reached by phone at 619.347.3244 or email at michael@klein-edwards.com.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael W. Klein Sr.", with a stylized, cursive script.

Michael W. Klein Sr.
Klein-Edwards Professional Services