SUBJECT: WIND ENERGY ZONING ORDINANCE AMENDMENT AND GENERAL PLAN AMENDMENT TO THE MOUNTAIN EMPIRE SUBREGIONAL PLAN (BOULEVARD SUBREGIONAL PLANNING AREA) AND BORREGO SPRINGS COMMUNITY PLAN TO ALLOW WIND ENERGY DEVELOPMENT, POD 10-007 (DISTRICTS: ALL)

Memorandum for the Record

The following memorandum is provided in response to the Stephan C. Volker letter and attachments received on May 13, 2013. The comments included in the letter and attachments do not raise new issues that had not been previously considered nor do they require additional analysis. Brief responses are provided below.

Planning & Development Services (PDS)
PDS staff briefly reviewed the WIA report submitted on May 13, 2012, about the Kumeyaay Wind Facilities. Staff noted that these consultants are not listed on County's list of approved consultants for noise studies. Staff also examined the exhibits submitted by Stephan Volker on low frequency and infrasound effects that related to the proposed Wind Energy Ordinance Amendment.

The WIA study does not provide any documentation/analysis of existing ambient noise levels without the operational noise generated by the Kummeyaay Wind Facilities. As a consequence, the noise or sound contribution of these turbines to the local environmental noise conditions cannot be identified in this analysis of the narrowband spectra between 0 and 40 Hertz. The study also did not provide any documentation of wind or other meteorological factors associated with these measurements. The study's measurement methodology used ground mounted microphones, which is not consistent with American National Standards Institute (ANSI) standards, and does not provide any assessment of how the measurements would differ from measurements following accepted ANSI standards. Staff did not see any direct comparison of these results with the other studies included in the exhibits. Two studies in the exhibits pointed out the importance of controlling the operation of wind turbine farms for this type of noise study, but the WIA study did not do this. Staff also noted that the consultants in the McPherson study (Exhibit 2) are concerned about the need to establish "a threshold of perception" or, more importantly, to develop a dose-response relationship for either infrasound or G-weighted effects for low-frequency sound. This relationship would be a prerequisite for establishing useful standards for addressing infrasound or G-weighted effects in the future and may ultimately require a government sponsored research project that would likely require major financial resources.

In short it indicates that although infrasound was measured in Boulevard, the conclusion that this sound is attributed to the Campo Wind Farm is unsubstantiated. In addition, Exhibit 2 emphasizes the lack of a "dose-response" relationship, which is needed to establish a useful standard.

Health and Human Services Agency (HHSA)

HHSA staff has briefly reviewed the study prepared by Richard Karman and the attached exhibits as well as the cover letter by Stephan Volker.

The study contains single measurements of sound at various locations without reference to ambient weather conditions or other factors that could influence the readings. Although the graphs are labeled

with the comment "blade passage fundamental," none of the recorded sounds can be confidently be attributed to nearby wind turbines. They could be due to a myriad of other sources, including wind alone or nearby human activity. A comparison to commonly accepted IFLN levels would be useful as well as comparisons to infrasound measured in other environments. An Australian study (http://www.epa.sa.gov.au/xstd_files/Noise/Report/infrasound.pdf) attempts to make such comparisons and at a minimum it illustrates that IFLN is ubiquitous in urban and rural environments.

The work by Salt and Matsumoto referred to in the report do not directly pertain to the study results, however they may be useful in establishing what would be considered to be acceptable IFLN limits. They should not be considered in isolation, but rather with the entire body of literature on perception thresholds for ILFN. The inclusion of exhibits with sound measurements at other locations nearby are interesting in that they provide much more detail regarding potential issues in methodology that are not addressed by Karman. Methodology issues can best be addressed by other acoustic measurement experts.

The information provided on May 13, 2013 by Volker and Karman does not affect the HHSA position statement dated July 2012 regarding the possible health effects of wind turbines.