MEMORANDUM

May 2, 2018

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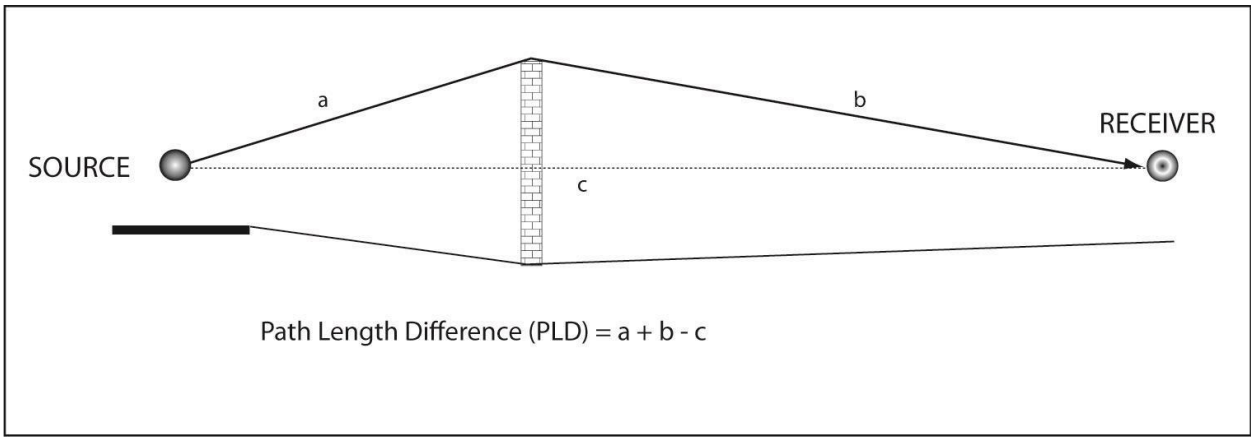
In response to a question posed during the Draft EIR's public comment period, this memorandum provides a further explanation of information relative to noise reductions anticipated with installation of six-foot high radiant heat walls adjacent to the wildlife corridor within the West Alton Parcel Development Project.

Noise from Project Site Sources Adjacent to the Wildlife Corridor

As discussed in Section 4.11 of the Draft EIR, a large object in the path between a noise source and a receiver can significantly attenuate noise levels at that receiver location. The amount of attenuation provided by this "shielding" depends on the size of the object and the frequencies of the noise levels. To maximize the effectiveness of the noise barrier, it must be high enough and long enough to block the view from the receiver to a road or to the noise source. Effective noise barriers can reduce outdoor noise levels at the receptor by up to 15 decibels (dB). However, reduction is achieved even if the line of sight is only partially blocked. According to the Caltrans *Technical Noise Supplement to the Traffic Noise Analysis Protocol* (Caltrans 2013), a barrier can be effective even when it does not completely block the line of sight between the noise source and the receiver. If the top of the barrier is just high enough to graze the direct noise path, or line of sight between the source and receiver, a noise barrier provides about 5 A-weighted decibels (dBA) of attenuation.

The installation of 6-foot tall radiant heat barriers would reduce the noise by anywhere from 5 dB to 10 dB, which would more than offset the vehicle-generated noise on the Wildlife Movement Corridor from internal driveways and Project operations. Traffic noise levels at the wildlife corridor from internal roads adjacent to the wildlife corridor are estimated to be a maximum of 50 dBA CNEL. The noise reduction of a barrier is directly related to the increase in path length for the sound to travel, that is, the path for the sound to travel from the source to the top of the barrier and then from the top of the barrier to the receptor is longer than the path directly from the source to the receiver when there is no barrier. This is graphically depicted in the figure below (i.e., a+b over the barrier is longer than path c).



Source: Caltrans 2013 (Figure 5-3, Path Length Difference)

By way of example, a six-foot-high wall adjacent to a freeway would reduce traffic noise by at least 5 dBA (Caltrans 2013). Barrier noise reduction for the radiant heat barrier would be greater than the 5 dBA of the Caltrans example for the following reasons:

(1) The Caltrans freeway calculation includes 10 percent heavy trucks and the internal project roadways would have few, if any, heavy trucks. Heavy trucks have sources of noise up to 11 feet above the roadway. Thus, for the project, the average noise source height would be lower than for the Caltrans calculation and the path from the source to the top of the wall would be longer, resulting in greater noise reduction than 5 dBA.

(2) The Caltrans calculation assumes a receiver height of five feet above the ground, which is the typical assumption for human receptors. Wildlife receptors are much less than five feet tall. Thus, the path from the top of the wall to the receptor would be longer in the project case than in the Caltrans calculation, resulting in greater noise reduction than 5 dBA.

The Caltrans *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, states the most effective location of noise barriers along roadway on fills is on top of the embankment. The radiant heat wall would function in this manner. The center of the Wildlife Movement Corridor is depressed in relationship to the internal Project driveway locations. As required by the *Fire Behavior Analysis Report,* the radiant heat barrier would be constructed at the edge of Fuel Modification Zone B between the structures and the native vegetation. As identified in Section 3, Project Description, of the Draft EIR, the walls are planned along the northeastern/eastern boundary of Planning Area 1 interfacing with the Reserve and along the southern boundary of Planning Area 1 interfacing with the Wildlife Movement Corridor. Additionally, radiant heat walls are proposed along the northern boundary of Planning Area 2 interfacing with the Wildlife Movement Corridor. Therefore, the required placement of the radiant heat walls is also the optimal location to minimize roadway noise from internal to the Project.

Noise from Traffic on Irvine Boulevard and Alton Parkway to the Wildlife Corridor

Receptors near the Irvine Boulevard and Alton Parkway ends of the wildlife corridor are currently directly exposed to traffic noise from these major roadways. Without barriers, the exposure is 180 degrees, that is, looking outward, 90 degrees to the left and 90 degrees to the right. When the proposed radiant heat walls are in place, the exposure angle is reduced for all

receptor except those at the termini of the barriers (i.e., for this Project that would be the terminus of the Wildlife Movement Corridor adjacent to Irvine Boulevard). The reduced exposure angle results in reduced traffic noise.

Approximations

It should be noted that noise reductions resulting from the installation of the radiant heat walls will vary from the examples discussed above because of variations in existing and future topography. For example, because the elevation of the wildlife corridor is lower than the base of the radiant heat wall, the noise path lengths will be longer and noise attenuation will be greater.

Reference

California Department of Transportation (Caltrans). 2013 (September) *Technical Noise Supplement to the Traffic Noise Analysis Protocol.* Sacramento, CA: Caltrans. http://www.dot.ca.gov/env/noise/docs/tens-sep2013.pdf.