NOISE IMPACT ANALYSIS

MARTY RUSSO YOUTH ATHLETIC PARK NOISE STUDY

CITY OF MISSION VIEJO, CALIFORNIA

Prepared by:

Giroux & Associates

Prepared for:

Phil Martin & Associates
Attn: Phil Martin
1809 E. Dyer Road, Suite 301
Santa Ana, CA 92705

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Noise Measurements

A noise monitoring program was conducted in Mission Viejo at the Marty Russo Youth Athletic Park on December 15, 2021, to determine the likely noise impact from the installation of generators to power currently unlighted athletic fields. The measurements focused on the closest residence on St. Kitts nearest to the proposed lighted areas. Monitoring was performed prior to the start-up of four generators as a back-ground level, and with all four running at normal power output. One generator was individually tested at a fixed circumference in four quadrants to determine if there is any sound level asymmetry depending upon orientation of the unit. Measurements were made from 6:00 to 7:00 p.m. with the assistance and cooperation of two city staff members. Two digital sound level meters that were calibrated just before deployment were used for this test. Results were compared to the City of Mission Viejo standards for residential uses. The applicable ordinance standards are 60 dB from 7:00 a.m.to 10:00 p.m. and drop to 59 dB during nocturnal quiet hours.

The measured background noise level was 40 dB from distant roadway traffic on Olympiad Road and minor residential activities. With all four generators running, the rear yard noise at the presumably loudest off-site receiver location was 50 dB compared to the 60 dB allowable daytime and evening level. Operation of all generators after 10:00 p.m. would equal the nocturnal ordinance threshold and is therefore not recommended because anomalous weather conditions or youth recreation could cause a slight violation of the ordinance. By way of reference, the 10 dB increase created by the operation of the generators is perceived by the human ear as a doubling of apparent loudness. The operation of the generators was clearly audible at the closest home. Termination of their operation during non-use periods is recommended if feasible to create partial acoustic relief.

The noise field around an individual running unit was not completely concentric. At 25 feet from the center of the unit, the measured steady state level was as follows: ("Front" is the tow-bar end of the trailer)

Front = 75 dB, Rear = 73 dB, Right Side = 70 dB, Left Side = 70 dB

There appears to be a slight acoustical advantage to not pointing the head or rear of the generator toward the closest homes. At this home, the occupant believes that the terrain is such as to funnel park activity noise and create a higher level than would occur under flat terrain. To test this supposition, theoretical distance attenuation between the near field level of 70-76 dB and the source receiver distance of 400 feet to St. Kitts should be 24 dB under direct line of sight conditions. The rear yard reading of 50 dB is wholly consistent with what would be predicted by propagation theory.

Field lighting may slightly increase vehicle traffic on Olympiad which currently carries nearly 11,000 vehicles per day. The addition of perhaps 100 cars per day would increase roadway by 0.4 dB. Such a change in undetectable by human hearing.

Conclusion and Recommendations

- Operation of generator lighting will not cause the ambient level at the closest home to exceed the City of Mission Viejo residential noise standard before 10:00 p.m.
- Generator operation should not occur past 10:00 p.m. Generator orientation should direct the facing sides of the unit toward the closest homes and minimize facing the front or rear toward these homes.
- Generators should be turned off at the conclusion of any active use.
- Traffic noise impacts will be minimal considering existing background levels.
- There is no clear evidence of terrain-enhanced noise propagation based on the positive agreement between the theoretical level with no extra propagation versus the measured value at the noisiest back yard residence.