Memo

Date: Tuesday, October 31, 2017

Project: Twin Ports Interchange Noise Study

To: Roberta Dwyer

From: Tim Casey

Subject: Outdoor noise measurement results

HDR Engineering, Inc. (HDR) measured existing noise levels in the study area at four residential locations that are representative of noise-sensitive land uses in their immediate surroundings. To gain a more complete understanding of how environmental noise levels vary in both peak and non-peak traffic hours, HDR measured existing noise outdoors for a continuous 24-hour period at all four locations. HDR also performed short-term noise measurements at two additional locations for traffic noise model validation purposes. The measurements began on October 12, 2016 and ended on October 13, 2016. The following graphs show the hourly results of those 24-hour noise measurements. The short-term model validation results have not been processed yet, because the noise modeling task has not yet begun. This memo does not offer any interpretation of the data; rather it simply demonstrates the performance and completion of these 24-hour noise measurements.

HDR performed the measurements at locations shown in Table 1.

Table 1 – Measurement Locations

Measurement Location ID	Address in Duluth, MN
ML-1	122 N 19th Ave W
ML-2	2011 W 2nd St
ML-3	2119 W 2nd St
ML-4	2212 W 2nd St
ML-A	314 N 19th Ave W
ML-B	2212 W 2nd St

Figure 1 - Noise Measurement Results at ML1

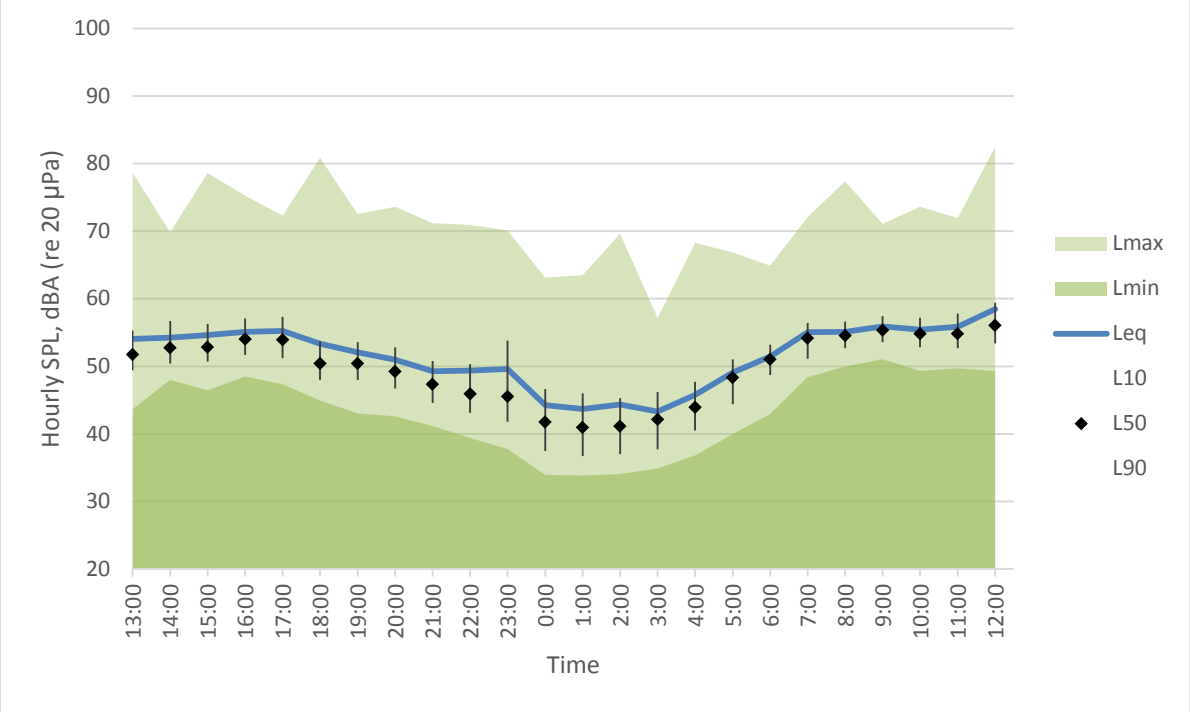


Figure 2 - Noise Measurement Results at ML2

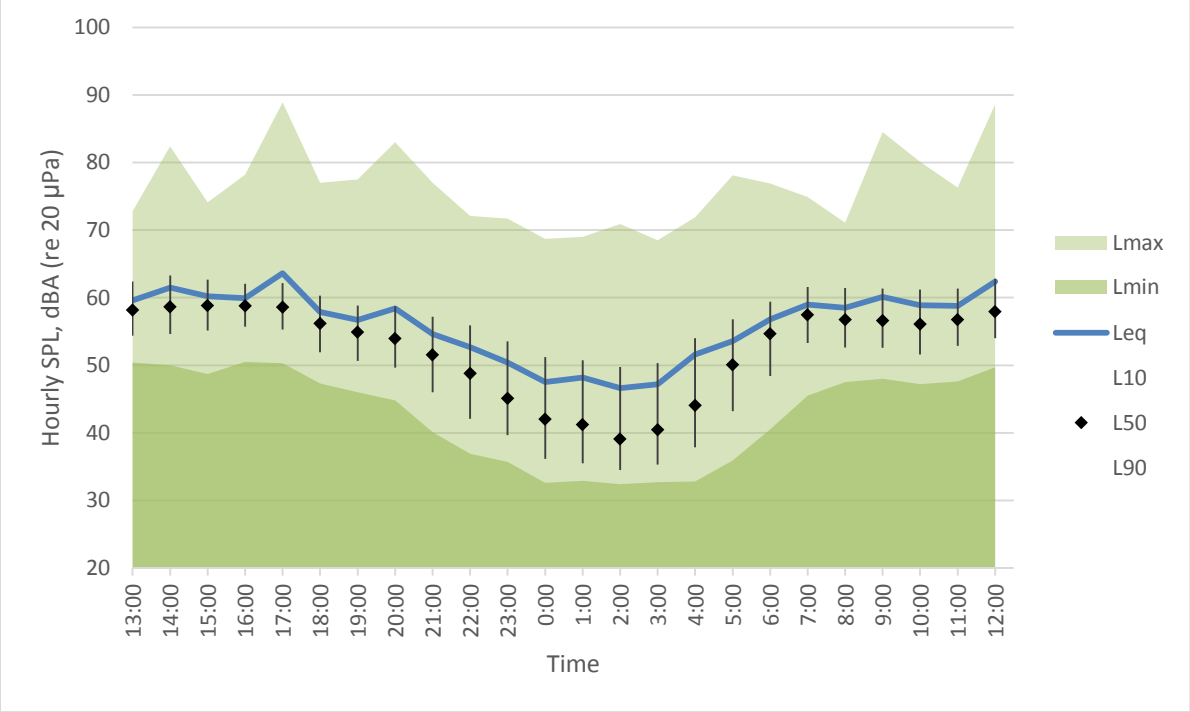


Figure 3 - Noise Measurement Results at ML3

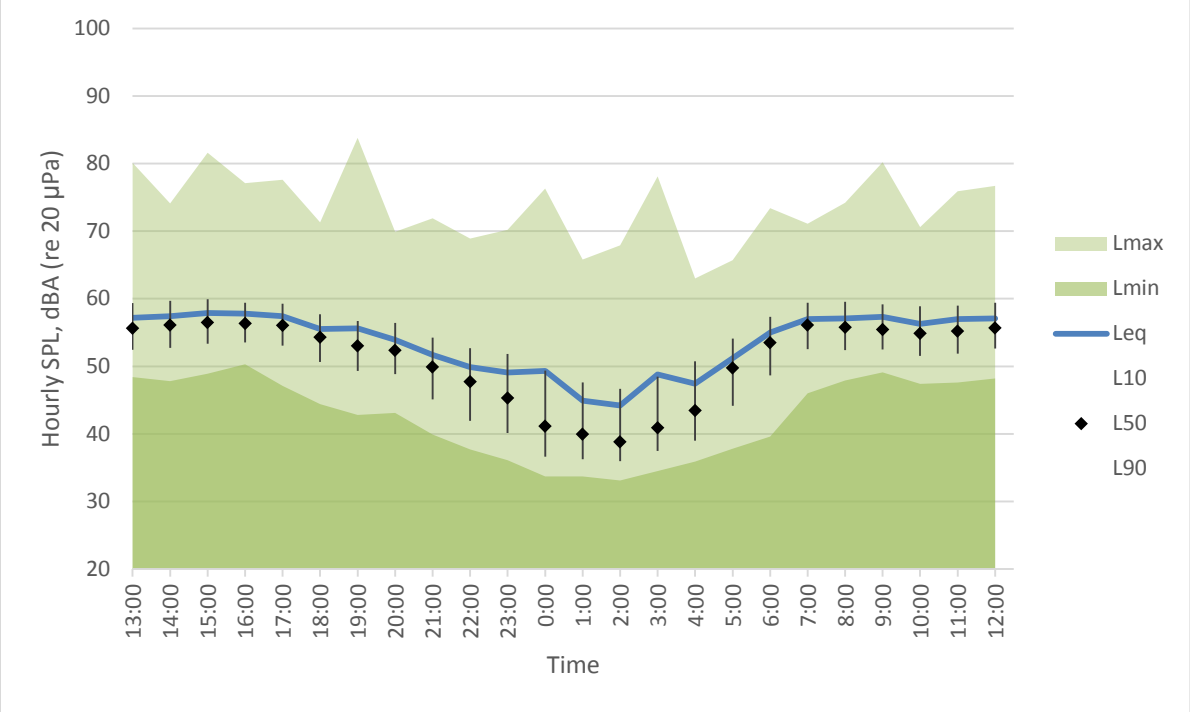


Figure 4 - Noise Measurement Results at ML4

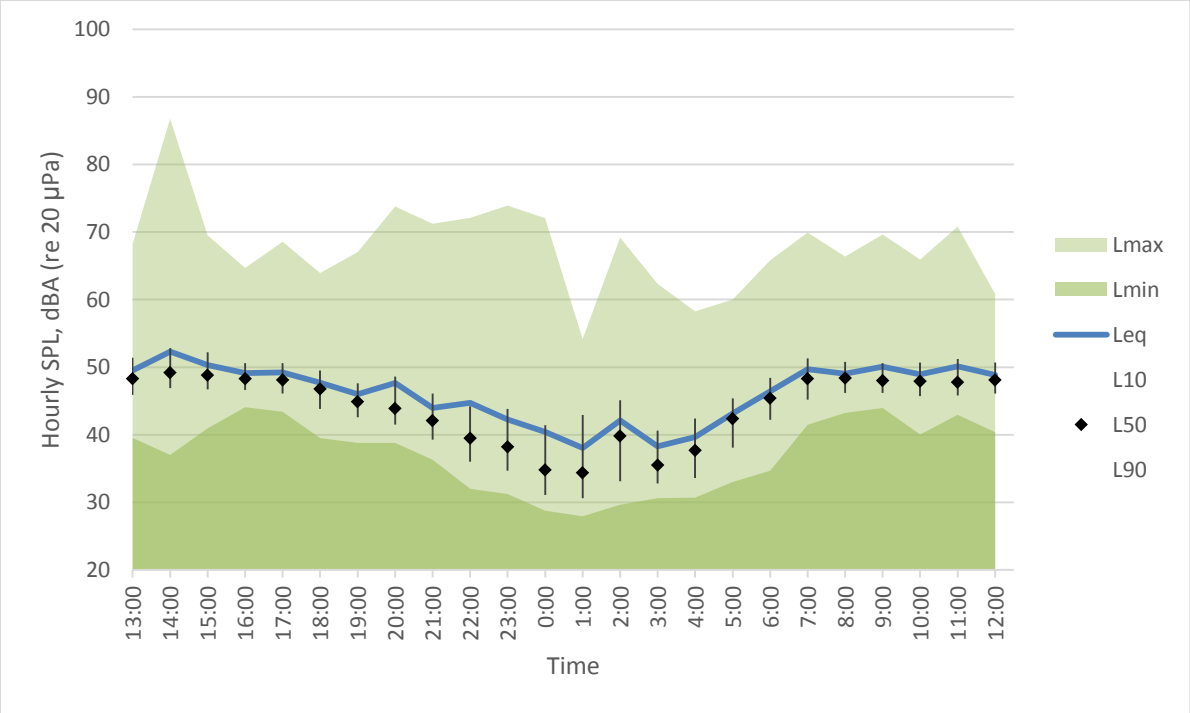


Figure 5 - Noise Measurement Summary (Ldn)

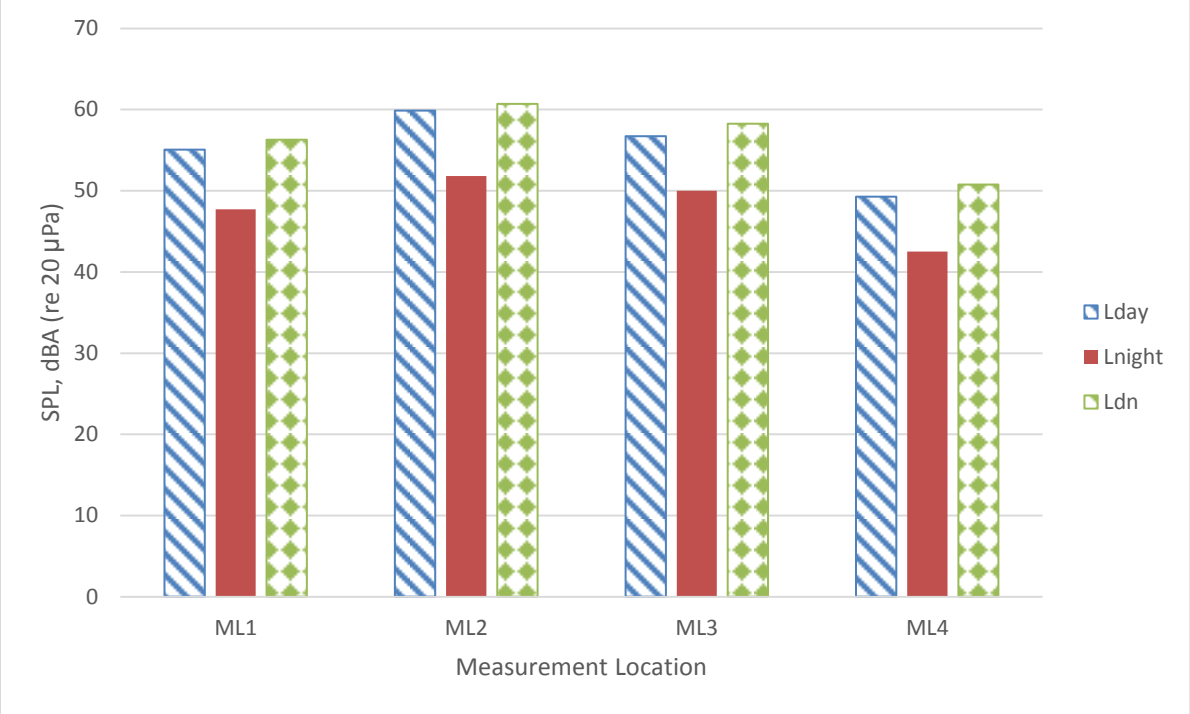
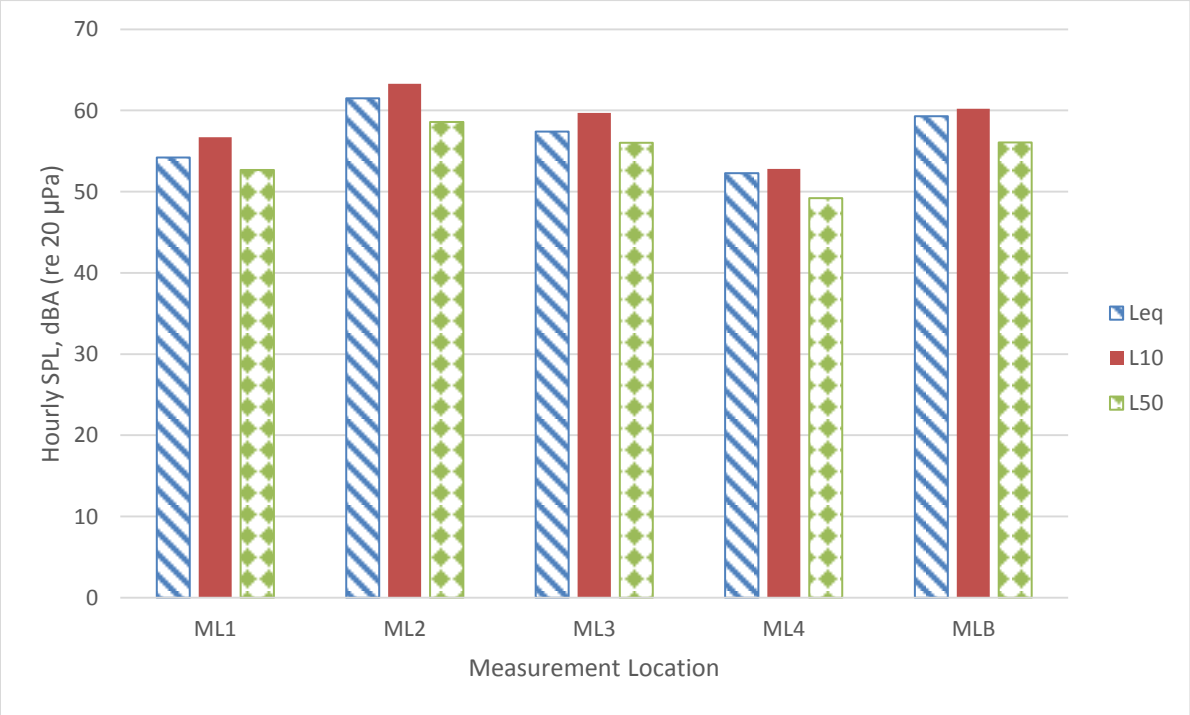


Figure 6 - Noise Measurement Comparison during 14:00 Hour



The following figure is a map that shows the measurement locations.


LEGEND
StudyArea
Measurement Location
24-hour
Short-term
0
Feet
500
MLA
ML1
ML2
ML3
MLB
ML4
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community