Appendix D

Noise Assessment

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July 24, 2012

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VIA E-Mail: lparks@davidjpowers.com

SUBJECT: Diridon Station Area Plan Project, San Jose, CA -- Noise Assessment

Dear Lori:

This letter summarizes the results of the traffic noise calculations and impact assessment completed by our firm for the Diridon Station Area Plan (DSAP) project in San Jose. Our analysis compared traffic conditions expected as a result of the project (Maximum Development Levels under the DSAP Land Use Plan) to existing conditions to quantify project generated traffic noise increases. A second comparison was made between long-term growth forecast under the DSAP to long-term growth under the *San José Downtown Strategy 2000* ("Strategy 2000") as part of the cumulative analysis. The report also includes a brief discussion of the potential for new buildings constructed as part of the DSAP to increase stadium noise levels at residential neighborhoods in the vicinity of the stadium due to reflection.

We have reviewed the traffic data[1] that you provided and our findings are as follows:

1) The DSAP project would substantially increase traffic noise levels (i.e., 3 dBA DNL or more) above existing conditions at sensitive receptors along segments of Autumn Street, Julian Street, The Alameda, Santa Clara Street, San Fernando Street, San Carlos Street, and Park Avenue. Traffic noise increases expected along the remaining roadway segments within the study limits are calculated to be 2 dBA DNL or less.

[1] Diridon Master Plan Volumes, Hexagon Transportation Consultants, Inc., March 26, 2012.

2) The proposed project would not result in a measurable increase (i.e., 1 dBA DNL or less) to traffic noise levels as compared to the traffic noise levels expected as a result of long-term growth forecast under the Strategy 2000. Noise increases attributable to the DSAP project would not be considered "cumulatively considerable".

Existing Plus DSAP Project Conditions

Traffic data provided by Hexagon Transportation Consultants, Inc. was reviewed to calculate traffic noise level increases expected as a result of the DSAP project along roadways within the plan area's study limits. These data included turning movement counts at 104 intersections for existing conditions and projections for existing plus project traffic conditions. Link volumes under the existing plus project scenario were compared to existing link volumes to calculate the noise increase attributable to the project. This analysis assumed that traffic noise increases calculated based on the comparison of PM peak hour traffic data would equal the noise increase expected on a daily average basis (DNL).

Figure 1 is a map of the study area showing Existing Plus DSAP project traffic noise increases greater than 2 dBA DNL. Traffic noise increases expected to equal 2 dBA DNL are highlighted in yellow. Traffic noise level increases expected to equal or exceed 3 dBA DNL are indicated on the map in red. Noise increases of 3 dBA DNL or greater are considered substantial, and would result in a substantial permanent noise increase at noise-sensitive land uses bordering the roadway segment. Table 1 summarizes the roadway segments where traffic noise levels resulting from the DSAP would be substantially increased.

TABLE 1 Roadway Segments Experiencing a Substantial DSAP Traffic Noise Increase

Roadway	Segment	DSAP Noise Increase above Existing Conditions (dBA, DNL)
Autumn Street[1]	Coleman Avenue to Julian Street	7-10
	Julian Street to Santa Clara Street	7-10
	The Alameda to San Fernando Street	10
	San Fernando Street to Park Avenue	9
Julian Street	Stockton Avenue to Autumn Street	4
	Autumn Street to Guadalupe River Trail	4
The Alameda	Montgomery Street to Autumn Street	3
Santa Clara Street	Autumn Street to Delmas Avenue	3
San Fernando Street	Cahill Street to Montgomery Street	6
	Montgomery Street to Autumn Street	5
San Carlos Street	Almaden Boulevard to Market Street	3
Park Avenue	I-880 to Hedding Street	3

1. Assumes Autumn Street Extension Project.

The remaining roadway segments within the study area limits would experience noise increases of 0 to 1 dBA DNL. Traffic noise increases ranging from 0 to 2 dBA DNL are not considered substantial.

Mitigation Measures:

Noise reduction methods to be considered as part of the DSAP project include:

- Paving affected roadway segments with "quieter" pavement types such as Open-Grade Rubberized Asphaltic Concrete would reduce noise levels by 2 to 3 dBA depending on the existing pavement type, traffic speed, traffic volumes, and other factors.

- New or larger noise barriers could be constructed to shield sensitive outdoor use areas adjoining affected roadway segments. The final design of such barriers, including an assessment of their feasibility and reasonableness, should be completed on a case-by-case basis.

- Sound insulation treatments to affected buildings, such as sound rated windows and doors, could be provided to reduce noise levels in interior spaces.

- Installing traffic calming measures to slow traffic could provide qualitative improvement by smoothing out the rise and fall in noise levels caused by speeding vehicles.

Significance After Mitigation:

Case studies have shown that the replacement of dense grade asphalt (standard type) with open-grade or rubberized asphalt can reduce traffic noise levels along residential-type streets by 2 to 3 dBA. A possible noise reduction of 2 dBA would be expected using conservative engineering assumptions. To be a permanent mitigation, subsequent repaving would also have to be “quieter” pavements.

Alternatively, new or larger noise barriers could be constructed to provide acoustical shielding at affected outdoor use areas, and sound insulation could be installed to control noise levels in interior spaces to acceptable levels. Typically, increasing the height of an existing barrier results in about 1 dBA of attenuation per 1 foot of additional barrier height. The design of such noise barriers would require additional analysis. Treatments to the home may include the replacement of existing windows and doors with sound-rated windows and doors and the provision of a suitable form of forced-air mechanical ventilation to allow the occupants the option of controlling noise to by closing the windows. The specific treatments for each affected residential unit would also be identified on a case-by-case basis.

Finally, traffic calming could be implemented to reduce the noise of vehicles. Each 5 mph reduction in average speed provides approximately 1 dBA of noise reduction on an average basis (L_{eq}/DNL). Traffic calming measures that regulate speed improve the noise environment by smoothing out noise levels.

Each of these mitigation measures involves other non-acoustical considerations. Other engineering issues may dictate continued use of dense grade asphalt. Noise barriers and sound insulation treatments must be done on private property necessitating agreements with each

property owner. Therefore, it may not be reasonable or feasible to reduce project generated traffic noise at all affected receivers. The impact would be considered *significant and unavoidable*.

Strategy 2000 Plus DSAP Project Conditions

As part of the cumulative traffic analysis, a second comparison was made between the long-term growth forecast under the DSAP to the long-term growth forecast under the Strategy 2000. Cumulative traffic volume data for the two long-term growth forecast scenarios were compared to existing traffic volume data to determine if the cumulative projects would result in noise levels that are substantially increased over existing conditions.

The project would result in a significant cumulative traffic noise impact if noise levels at existing sensitive receivers would be substantially increased (i.e., 3 dBA DNL above existing traffic noise levels where noise levels would exceed 60 dBA DNL) and if the Project would make a "cumulatively considerable" contribution to the overall traffic noise level increase. A "cumulatively considerable" contribution would be defined as an increase of 1 dBA DNL or more attributable solely to the proposed project.

Table 2 summarizes the roadway segments where long-term traffic noise levels are projected to substantially increase. The comparison of the two future traffic scenarios revealed that traffic noise levels under these two conditions would be within plus or minus 1 dBA DNL of one another. The DSAP project would not yield traffic noise levels that would be measurably increased above the traffic noise levels forecast under the Strategy 2000. No roadway segments were identified where noise levels would be substantially increased (3 dBA DNL or more) and where the DSAP project would contribute at least 1 dBA DNL to the substantial cumulative noise increase. The largest relative traffic noise increase attributable to the project is 0.9 dBA along The Alameda between Montgomery Street and Autumn Street. There are no noise-sensitive receptors along this segment. The remaining increases attributable to the DSAP project are 0.5 dBA or less. Cumulative traffic noise increases attributable to the project would not be "cumulatively considerable". This is a less-than-significant impact.

TABLE 2 Cumulatively Considerable Traffic Noise Increase Attributable to DSAP

Roadway	Segment	Strategy 2000 Plus DSAP Noise Increase above Existing Conditions (dBA, DNL)	Noise Increase attributable to DSAP (dBA, DNL)	Cumulatively Considerable?
Autumn Street[1]	Coleman Avenue to Julian Street	7-10	0.3	No
	Julian Street to Santa Clara Street	7-10	-0.1	No
	The Alameda to San Fernando Street	11	0.3	No
	San Fernando Street	10	0.0	No

Roadway	Segment	Strategy 2000 Plus DSAP Noise Increase above Existing Conditions (dBA, DNL)	Noise Increase attributable to DSAP (dBA, DNL)	Cumulatively Considerable?
	to Park Avenue			
Julian Street	Stockton Avenue to Autumn Street	5	0.5	No
	Autumn Street to Guadalupe River Trail	4	0.0	No
	SR 87 to Market Street	3	0.0	No
	Market Street to First Street	3	0.0	No
The Alameda	Montgomery Street to Autumn Street	3	0.9	No
Santa Clara Street	Autumn Street to Delmas Avenue	3	0.9	No
	Market Street to First Street	3	0.1	No
	First Street to Third Street	3	0.1	No
San Fernando Street	Cahill Street to Montgomery Street	5	-0.3	No
	Montgomery Street to Autumn Street	5	-0.2	No
	Autumn Street to Delmas Avenue	3	-0.4	No
	Delmas Avenue to SR 87	3	-0.4	No
San Carlos Street	Race Street to Sunol Street	3	-0.1	No
	Sunol Street to Bird Avenue	3	0.1	No
	Bird Avenue to Delmas Avenue	3	0.1	No
	Delmas Avenue to SR 87	3	0.0	No
	Almaden Boulevard to Market Street	3	0.0	No
	Market Street to First Street	4	0.0	No
Park Avenue	I-880 to Hedding	4	0.1	No

Roadway	Segment	Strategy 2000 Plus DSAP Noise Increase above Existing Conditions (dBA, DNL)	Noise Increase attributable to DSAP (dBA, DNL)	Cumulatively Considerable?
	Street			
	Hedding Street to Naglee Avenue	3	0.1	No
	Meridian Avenue to Race Street	3	-0.1	No
	Race Street to Lincoln Avenue	3	-0.1	No
Bird Avenue	San Carlos Street to Auzerais Street	3	0.1	No
Delmas Avenue	San Carlos Street to Auzerais Avenue	3	0.0	No
Auzerais Avenue	Bird Avenue to Delmas Avenue	3	-0.4	No
Almaden Boulevard	Park Avenue to San Carlos Street	3	-0.1	No
	San Carlos Street to I-280	3	-0.1	No
Race Street	San Fernando Street to Park Avenue	3	-0.1	No
	Park Avenue to San Carlos Street	3	-0.1	No
Sunol Street	Park Avenue to San Carlos Street	3	-0.1	No
	San Carlos Street to Auzerais Avenue	3	-0.1	No
Coleman Avenue	West of Autumn Street	4	0.2	No
	East of Autumn Street	3	0.1	No

1. Assumes Autumn Street Extension Project.

Reflected Stadium Noise from DSAP Buildings

Existing residential land uses located west of the proposed stadium have voiced concerns regarding the possibility that stadium noise would be reflected off new buildings envisioned as part of the DSAP. The DSAP envisions 8-9 story commercial buildings north of the stadium and adjacent to the ballpark. The stadium is designed in such a way that noise will primarily propagate from the stadium toward the northeast. The primary reflected path from the DSAP buildings north of the stadium would be to the southeast. Even a "perfect reflection" of the noise would only result in a 3 dBA increase in noise levels as compared to the noise levels emanating

directly from the noise source. In reality, however, the noise increase resulting from reflections would be minor when considering the percentage of acoustical energy actually reflected directly toward a receptor, and the attenuation that would result due to the additional distance that a sound must travel from the noise source to the reflecting surface and back to the receptor. In consideration of these factors and the ambient noise environment in the DSAP vicinity, minor reflections may occur off the proposed DSAP buildings during events at the baseball stadium, and these noises could be audible at nearby neighborhoods. Future development allowed under the DSAP would not result in substantially greater noise levels due to reflections, and would not cause a significant increase in noise at nearby residential uses on an hourly average or daily average basis.

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This completes our assessment. Please feel free to contact us should you have any questions.

Sincerely,

Michael S. Thill
Senior Consultant
Illingworth & Rodkin, Inc.

(12-032)

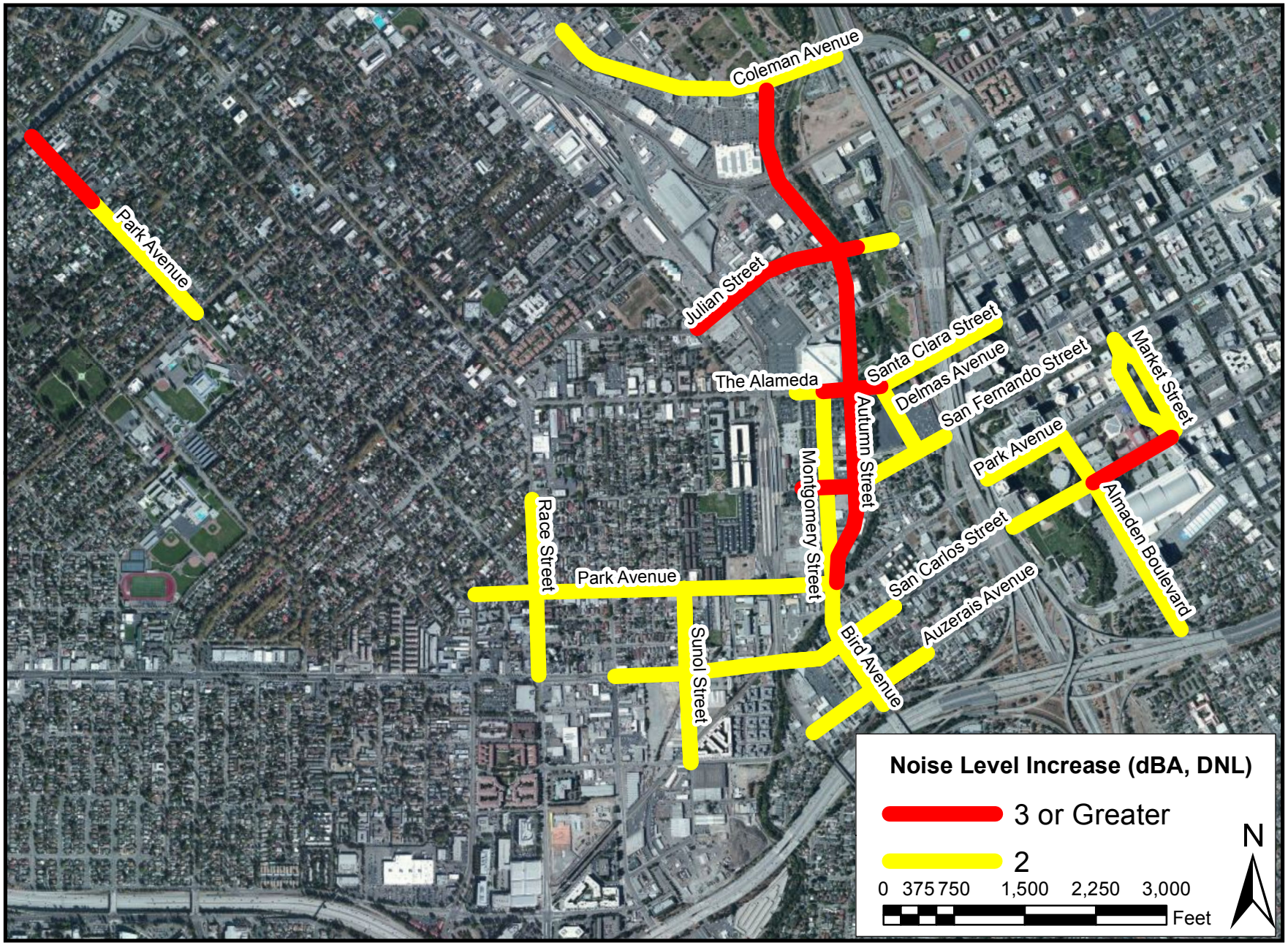

FIGURE 1

Existing Plus DSAP Project Traffic Noise Increases (dBA, DNL)