ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality
1 Willowbrook Court, Suite 120
Petaluma, California 94954
Tel: 707-794-0400 *Fax: 707-794-0405*
www.illingworthrodkin.com *illro@illingworthrodkin.com*

February 27, 2015

Akoni Danielsen
Principal Project Manager
David J. Powers & Associates, Inc.
1871 The Alameda, Suite 200
San Jose, CA 95126

SUBJECT: Southeast Quad Ball Fields – Noise Assessment

Dear Akoni:

This letter presents the results of the noise assessment completed for the proposed Southeast Quad Ball Fields project in the City of Morgan Hill, California. The project proposes to construct a total of six baseball and softball fields along with supporting facilities and surface parking on a 22.6 acre site. The report includes a description of the applicable regulatory criteria, documentation of the existing ambient noise environment at the site and at nearby noise sensitive areas, and an assessment of future noise levels generated by the baseball fields complex with respect to the City of Morgan Hill General Plan and Municipal Code. A brief description of the fundamentals of environmental noise is included in Appendix A.

It is our understanding that a program EIR was recently certified for a specific plan covering the project site and the EIR identified the need to evaluate noise attributable to project operations at nearby receptors. The following mitigation measure is addressed:

MM NOI-1a: SEQ Area. As part of the Conditional Use Permit or Design Permit Application (whichever comes first), the City of Morgan Hill shall require applicants proposing to develop new uses within the SEQ Area to submit a noise impact analysis that analyzes each project's potential onsite stationary and other noise sources noise impacts to nearby sensitive receptors at the time of entitlement for each project. The noise impact analysis shall demonstrate through the incorporation of mitigation, if required, that the proposed onsite stationary and other noise sources would not exceed the City's noise standards. All mitigations identified in the noise impact analysis shall be incorporated into the permit as conditions of the project.

Regulatory Criteria

City of Morgan Hill General Plan. The Public Health and Safety Element of the General Plan sets forth noise goals and policies to protect citizens from harmful and annoying effects of

excessive noise. Policies established in the Noise Element of the General Plan that are applicable to the proposed project include:

7b. The impact of a proposed development project on existing land uses should be evaluated in terms of the potential for adverse community response based on significant increase in existing noise levels, regardless of compatibility guidelines.

7e. Noise level increases resulting from traffic associated with new projects shall be considered significant if: a) the noise level increase is 5 dBA L_{dn} or greater, with a future noise level of less than 60 dBA L_{dn}, or b) the noise level increase is 3 dBA L_{dn} or greater, with a future noise level of 60 dBA L_{dn} or greater.

7f. Noise levels produced by stationary noise sources associated with new projects shall be considered significant if they substantially exceed ambient noise levels.

7g. Noise levels produced by other noise sources (such as ballfields) shall be considered significant if an acoustical study demonstrates they would substantially exceed ambient noise levels.

City of Morgan Hill Zoning Code. Chapter 18.48, Section 18.48.075 of the Zoning Code established noise level limits that are enforced at the property line. "At the lot line of all uses specified in Section 18.48.010, the maximum sound generated by any use shall not exceed seventy to seventy-five dB(A) when adjacent uses are industrial or wholesale uses. When adjacent to offices, retail, or sensitive industries, the sound level shall be limited to sixty-five to seventy dB(A). When uses are adjacent or contiguous to residential, park, or institutional uses, the maximum sound level shall not exceed sixty dB(A). Excluded from these standards are occasional sounds generated by the movement of railroad equipment, temporary construction activities, or warning devices."

Existing Noise Environment

The project is proposed south of Tennant Avenue, west of Murphy Avenue and east of U.S. Highway 101 (U.S. 101), in the City of Morgan Hill. The existing site is undeveloped agricultural land. The existing noise environment at the site results primarily from traffic on U.S. 101 and Tennant Avenue.

A noise monitoring survey was conducted by Illingworth & Rodkin, Inc. (I&R) on the afternoon of February 10, 2015 to document existing noise conditions at the noise sensitive land uses adjacent to the site. The noise monitoring survey included three short-term noise measurements (ST-1 through ST-3), as shown in Figure 1. Short-term noise measurement ST-1 was made at a vacant residential property located at the corner of Tennant Avenue and Murphy Avenue. The average noise level measured at site ST-1 was 59 dBA L_{eq}. ST-2 was located adjacent to what also appeared to be a vacant residence along Fisher Avenue. The ten-minute average noise level at this location was 59 dBA L_{eq}. ST-3 was adjacent to a single family residence located at 1175 Fisher Avenue. The average noise level measured at ST-3 was 58 dBA L_{eq}. Noise levels

measured at each of the sites resulted primarily from vehicular traffic along U.S. 101 or Tennant Avenue. The measured data were then compared to long-term noise level data measured by Illingworth & Rodkin, Inc. along U.S. 101 in March of 2012[1] to estimate the day-night average noise level (L_{dn}) at each short-term measurement site. Table 3 summarizes the results of these measurements.

TABLE 3 Summary of Short-Term Noise Measurement Data

Noise Measurement Location	L_{max}	$L_{(1)}$	$L_{(10)}$	$L_{(50)}$	$L_{(90)}$	L_{eq}	L_{dn}
ST-1: ~ 100 feet from the center of Tennant Avenue. (2/10/2015, 12:20 PM - 12:30 PM)	69	66	61	58	56	59	63
ST-2: ~ 1,100 feet from the center of U.S. 101. (2/10/2015, 12:40 PM - 12:50 PM)	63	62	60	59	58	59	63
ST-3: Located at 1175 Fisher Avenue. (2/10/2015, 1:00 PM - 1:10 PM)	64	62	60	58	56	58	62

Note: L_{dn} at the short-term site approximated by correlating the noise data to noise data collected at the long-term site during a corresponding time period, assuming that the daily trend in noise levels on a day to day basis is equal.

Figure 1: Noise Measurement Locations

[1] Final Noise Study Report, US 101 Express Lanes Project, Illingworth & Rodkin, Inc. May 2013.

Future Noise Environment

Baseball/Softball Fields

The City of Morgan Hill limits noise from non-transportation related sources to 60 dBA at the property line of residences. The Zoning Code does not define the acoustical time descriptor such as L_{eq} (the average noise level) or L_{max} (the maximum instantaneous noise level) that is associated with the above limit. A conservative interpretation of the Zoning Code would identify the L_{max} as the noise limit at nearby residential property lines. However, this analysis will use both 60 dBA L_{max} and 60 dBA L_{eq} as significance criteria for evaluating intermittent events associated with the operation of the baseball field project.

The proposed project would construct a total of six ball fields, four of which would be suitable for softball and baseball, and two of which would be large enough for teen baseball as well as youth softball and baseball. Other project amenities would include batting cages, bleachers, drinking fountains, restrooms, and a concession stand. The fields would be lighted and the anticipated schedule of use would be from 8:00 AM to 10:00 PM.

I&R has made measurements of the noise generated by baseball games at several locations throughout the bay area. Little League baseball games typically generate "worst case" noise levels of about 57 dBA L_{eq} at a distance of 100 feet from the center of the infield. Maximum noise levels of about 65 dBA L_{max} typically result from baseballs being hit and shouting from players and spectators. Noise levels generated by softball games would be anticipated to be lower than baseball games.

A public address system may be installed at the ball fields. These are typically small Public Address (PA) systems used to announce the players who are at bat. Speakers are typically mounted on the scorer's booth behind home plate. The systems are designed to cover a small spectator bleacher area located on both base lines immediately adjacent to the scorer's booth located behind home plate. The specific PA equipment has not yet been chosen.

There are two single-family residences that border the project site to the east and southeast. The nearest residence is located about 650 feet southeast of the proposed baseball fields dugouts, along Fisher Avenue. Another vacant residence is located at the corner of Tennant Avenue and Murphy Avenue, approximately 1,000 feet north of the proposed fields. Noise levels from sporting events typically drop off at a rate of about 6 dB per doubling of distance between the noise source and receptor.

Assuming a standard attenuation rate of 6 dBA per doubling of distance, the noise resulting from activities at all the proposed ball fields would generate a noise level of about 43 to 45 dBA L_{eq} at the nearest sensitive receptors. Maximum noise levels at these receptors would range from approximately 51 to 53 dBA L_{max}.

The City of Morgan Hill limits exterior noise from these sources to 60 dBA L_{eq} or 60 dBA L_{max} at residential receivers. Existing hourly average noise levels at adjacent residences range from

about 55 to 60 dBA L_{eq} during the daytime and evening noise levels (up to 10:00 PM) range from about 53 to 58 dBA L_{eq}. Existing maximum noise levels at adjacent residences range from about 63 to 69 dBA L_{max} during daytime and evening hours. The noise levels generated by the baseball fields would be well below existing ambient noise levels measured at nearby residences resulting from local traffic and would not measurably increase the 24-hour average noise level (L_{dn}) at these residences. As described above, the noise levels generated by the activities at the baseball fields would be below the regulatory threshold at the nearest residential property lines, thus meeting the residential Zoning Code noise limits established by the City of Morgan Hill.

Parking Lot Activities

Parking areas will be located along the northern, eastern, and southern property lines of the project site. Noise associated with the use of the parking lots would include vehicular circulation, loud engines, door slams, and human voices. The maximum noise level of a passing car at 15 mph typically ranges from 45 dBA to 55 dBA L_{max} at a distance of 100 feet. The noise generated during an engine start is similar. Door slams cause slightly lower noise levels. The noise of car stereos is variable, potentially disturbing, and unnecessary. The hourly average noise levels resulting from all of these noise-generating activities in a busy parking lot typically ranges from 40 dBA to 50 dBA L_{eq} at a distance of 100 feet from the parking area. Noise levels decrease at a rate of 6 dB per doubling of distance. Based on the ambient survey, typical ambient noise levels at the residences are in the 55 to 60 dBA range during the daytime. In the evening, ambient levels are lower, ranging from 53 to 58 dBA. Noise levels resulting from parking activities at the nearest residences located along Fisher Avenue would range from 34 to 44 dBA L_{eq} and maximum noise levels would range from about 39 to 49 dBA L_{max}. Noise levels associated with normal parking lot activities would typically be within the range of ambient traffic noise levels and would be below the residential Zoning Code limits established by the City.

Project Generated Traffic Noise

Per the City of Morgan Hill General Plan, a substantial increase would occur if: a) the noise level increase is 5 dBA L_{dn} or greater, with a future noise level of less than 60 dBA L_{dn}, or b) the noise level increase is 3 dBA L_{dn} or greater, with a future noise level of 60 dBA L_{dn} or greater. The noise environment at the nearest residences exceeds 60 dBA L_{dn}; therefore, a substantial noise increase would be identified where the project would result in a permanent noise level increase of 3 dBA L_{dn} or more.

Traffic data provided by *Hatch Mott MacDonald* was reviewed to calculate potential project-related traffic noise level increases along roadways serving the site. These data included turning movement counts at 4 intersections for existing conditions and projections for existing plus project conditions. Roadway link volumes were calculated based on the turning movement data and compared to existing conditions in order to calculate the anticipated noise level increase under each scenario, and the project's relative contribution under each scenario. Based on this comparison, traffic noise levels along roadways serving the project site anticipated to increase by about 1 dBA L_{dn} as a result of the project. The project would not result in a substantial increase

in noise at sensitive receivers in the vicinity of the site.

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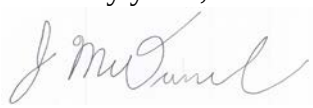
This concludes the acoustical study for the Morgan Hill Baseball Fields Complex Project in Morgan Hill, California. If you have any questions, or if we can be of further assistance, please do not hesitate to call or email.

Sincerely yours,



Jared M. McDaniel
Illingworth & Rodkin, Inc.

(15-024)

Appendix 1: Fundamentals of Environmental Noise

Noise is defined as unwanted sound. Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. Sound levels are usually measured and expressed in decibels (dB) with 0 dB corresponding roughly to the threshold of hearing. Decibels and other technical terms are defined in Table 4.

Most of the sounds that we hear in the environment do not consist of a single frequency, but rather a broad band of frequencies, with each frequency differing in sound level. The intensities of each frequency add together to generate a sound. The method commonly used to quantify environmental sounds consists of evaluating all of the frequencies of a sound in accordance with a weighting that reflects the facts that human hearing is less sensitive at low frequencies and extreme high frequencies than in the frequency mid-range. This is called "A" weighting, and the decibel level so measured is called the A-weighted sound level (dBA). In practice, the level of a sound source is conveniently measured using a sound level meter that includes an electrical filter corresponding to the A-weighting curve. Typical A-weighted levels measured in the environment and in industry are shown in Table 5 for different types of noise.

Although the A-weighted noise level may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously. Most environmental noise includes a conglomeration of noise from distant sources that create a relatively steady background noise in which no particular source is identifiable. To describe the time-varying character of environmental noise, the statistical noise descriptors, L_{01}, L_{10}, L_{50}, and L_{90}, are commonly used. They are the A-weighted noise levels equaled or exceeded during 1%, 10%, 50%, and 90% of a stated time period. A single number descriptor called the L_{eq} is also widely used. The L_{eq} is the average A-weighted noise level during a stated period of time.

In determining the daily level of environmental noise, it is important to account for the difference in response of people to daytime and nighttime noises. During the nighttime, exterior background noises are generally lower than the daytime levels. However, most household noise also decreases at night and exterior noise becomes very noticeable. Further, most people sleep at night and are very sensitive to noise intrusion. To account for human sensitivity to nighttime noise levels, a descriptor, L_{dn} (day/night average sound level), was developed. The L_{dn} divides the 24-hour day into the daytime of 7:00 AM to 10:00 PM and the nighttime of 10:00 PM to 7:00 AM. The nighttime noise level is weighted 10 dB higher than the daytime noise level. The Community Noise Equivalent Level (CNEL) is another 24-hour average, which includes both an evening and nighttime weighting.

Table 4 Definitions of Acoustical Terms Used in this Report

Term	Definitions
Decibel, dB	A unit describing, the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20 micro Pascals.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro Pascals (or 20 micro Newtons per square meter), where 1 Pascal is the pressure resulting from a force of 1 Newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micro Pascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and Ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, L_{eq}	The average A-weighted noise level during the measurement period.
L_{max}, L_{min}	The maximum and minimum A-weighted noise level during the measurement period.
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Day/Night Noise Level, L_{dn} or DNL	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 pm and 7:00 am.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 pm to 10:00 pm and after addition of 10 decibels to sound levels measured in the night between 10:00 pm and 7:00 am.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Source: Handbook of Acoustical Measurements and Noise Control, Harris, 1998.

Table 5 Typical Noise Levels in the Environment

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110 dBA	Rock band
Jet fly-over at 1,000 feet		
	100 dBA	
Gas lawn mower at 3 feet		
	90 dBA	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	80 dBA	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawn mower, 100 feet	70 dBA	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	60 dBA	
		Large business office
Quiet urban daytime	50 dBA	Dishwasher in next room
Quiet urban nighttime	40 dBA	Theater, large conference room
Quiet suburban nighttime	30 dBA	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	20 dBA	
		Broadcast/recording studio
	10 dBA	
	0 dBA	

Source: Technical Noise Supplement (TeNS), Caltrans, November 2009.