

This section provides a general description of the existing noise sources in the project vicinity, discusses the regulatory setting, and identifies potential noise impacts associated with the proposed project. Project impacts are evaluated relative to applicable noise level criteria and to the existing ambient noise environment. Mitigation measures have been identified for potentially significant noise-related impacts.

Comments were received during the public review period for the Notice of Preparation regarding this topic from the following: Toni Terhaar and Russ Kanz (April 26, 2017), and Toni Terhaar and Russ Kanz (May 4, 2017). Each of the comments related to noise and vibration are addressed within this section, and comments are included within Appendix A.

Information in this section is derived primarily from the following:

- City of Davis General Plan (City of Davis, May 2001, Amended through 2007)
- Noise Analysis for the West Davis Active Adult Community (j.c. brennan & associates, Inc., October 2017).

### 3.11.1 ENVIRONMENTAL SETTING

#### KEY TERMS

<b>Acoustics</b>	The science of sound.
<b>Ambient Noise</b>	The distinctive acoustical characteristics of a given area consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
<b>Attenuation</b>	The reduction of noise.
<b>A-Weighting</b>	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
<b>Decibel or dB</b>	Fundamental unit of sound, defined as ten times the logarithm of the ratio of the sound pressure squared over the reference pressure squared.
<b>CNEL</b>	Community noise equivalent level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours (10 p.m. to 7 a.m.) weighted by a factor of 10 prior to averaging.
<b>Frequency</b>	The measure of the rapidity of alterations of a periodic acoustic signal, expressed in cycles per second (Hertz.)
<b>Impulsive</b>	Sound of short duration, usually less than one second, with an abrupt onset and rapid decay.
<b>L<sub>dn</sub></b>	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
<b>L<sub>eq</sub></b>	Equivalent or energy-averaged sound level.

## 3.11 NOISE AND VIBRATION

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<b>L<sub>max</sub></b>	The highest root-mean-square (RMS) sound level measured over a given period of time.
<b>L<sub>(n)</sub></b>	The sound level exceeded a described percentile over a measurement period. For instance, an hourly L50 is the sound level exceeded 50 percent of the time during the one-hour period.
<b>Loudness</b>	A subjective term for the sensation of the magnitude of sound.
<b>Noise</b>	Unwanted sound.
<b>SEL</b>	Sound exposure levels. A rating, in decibels, of a discrete event, such as an aircraft flyover or train passby, that compresses the total sound energy into a one-second event.

### FUNDAMENTALS OF ACOUSTICS

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Acoustics is the science of sound. Sound may be thought of as mechanical energy of a vibrating object transmitted by pressure waves through a medium to human (or animal) ears. If the pressure variations occur frequently enough (at least 20 times per second), then they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second or Hertz (Hz).

Noise is a subjective reaction to different types of sounds. Noise is typically defined as (airborne) sound that is loud, unpleasant, unexpected or undesired, and may therefore be classified as a more specific group of sounds. Perceptions of sound and noise are highly subjective from person to person.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals), as a point of reference, defined as 0 dB. Other sound pressures are then compared to this reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in levels (dB) correspond closely to human perception of relative loudness.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by A-weighted sound levels. There is a strong correlation between A-weighted sound levels (expressed as dBA) and the way the human ear perceives sound. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels, but are expressed as dB, unless otherwise noted.

The decibel scale is logarithmic, not linear. In other words, two sound levels 10 dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted, an increase of 10 dBA is generally perceived as a doubling in loudness. For example, a 70 dBA sound is half as loud as an 80 dBA sound, and twice as loud as a 60 dBA sound.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level ( $L_{eq}$ ), which corresponds to a steady-state A weighted sound level containing the same total energy as a time varying signal over a given time period (usually one hour). The  $L_{eq}$  is the foundation of the composite noise descriptor,  $L_{dn}$ , and shows very good correlation with community response to noise.

The day/night average level ( $L_{dn}$ ) is based upon the average noise level over a 24-hour day, with a +10 decibel weighing applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because  $L_{dn}$  represents a 24-hour average, it tends to disguise short-term variations in the noise environment. CNEL is similar to  $L_{dn}$ , but includes a +5 dB penalty for evening noise. Table 3.11-1 lists several examples of the noise levels associated with common situations.

**TABLE 3.11-1: TYPICAL NOISE LEVELS**

<i>COMMON OUTDOOR ACTIVITIES</i>	<i>NOISE LEVEL (DBA)</i>	<i>COMMON INDOOR ACTIVITIES</i>
	--110--	Rock Band
Jet Fly-over at 300 m (1,000 ft)	--100--	
Gas Lawn Mower at 1 m (3 ft)	--90--	
Diesel Truck at 15 m (50 ft), at 80 km/hr (50 mph)	--80--	Food Blender at 1 m (3 ft) Garbage Disposal at 1 m (3 ft)
Noisy Urban Area, Daytime Gas Lawn Mower, 30 m (100 ft)	--70--	Vacuum Cleaner at 3 m (10 ft)
Commercial Area Heavy Traffic at 90 m (300 ft)	--60--	Normal Speech at 1 m (3 ft)
Quiet Urban Daytime	--50--	Large Business Office Dishwasher in Next Room
Quiet Urban Nighttime	--40--	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	--30--	Library
Quiet Rural Nighttime	--20--	Bedroom at Night, Concert Hall (Background)
	--10--	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	--0--	Lowest Threshold of Human Hearing

*SOURCE: CALTRANS, TECHNICAL NOISE SUPPLEMENT, TRAFFIC NOISE ANALYSIS PROTOCOL. NOVEMBER 2009.*

## EFFECTS OF NOISE ON PEOPLE

The effects of noise on people can be placed in three categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction;
- Interference with activities such as speech, sleep, and learning; and
- Physiological effects such as hearing loss or sudden startling.

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise or the corresponding reactions of annoyance and

## 3.11 NOISE AND VIBRATION

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dissatisfaction. A wide variation in individual thresholds of annoyance exists and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so-called ambient noise level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it.

With regard to increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived;
- Outside of the laboratory, a 3 dBA change is considered a just-perceivable difference;
- A change in level of at least 5 dBA is required before any noticeable change in human response would be expected; and
- A 10 dBA change is subjectively heard as approximately a doubling in loudness, and can cause an adverse response.

Stationary point sources of noise – including stationary mobile sources such as idling vehicles – attenuate (lessen) at a rate of approximately 6 dB per doubling of distance from the source, depending on environmental conditions (i.e. atmospheric conditions and either vegetative or manufactured noise barriers, etc.). Widely distributed noises, such as a large industrial facility spread over many acres, or a street with moving vehicles, would typically attenuate at a lower rate.

### EXISTING NOISE LEVELS

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To quantify the existing ambient noise environment in the project vicinity, j.c. brennan & associates utilized noise level measurements previously conducted for the former Davis Innovation Center project on the same project site in January 2015. Short-term ambient noise level measurements and continuous (24-hour) noise level measurements were conducted at seven locations on the project site when schools, including the University of California, Davis (UC Davis), were in session. The noise measurement locations are shown in Figure 3.11-1. The noise level measurement survey results are provided in Table 3.11-2. Appendix E shows the complete results of the noise monitoring survey.

j.c. brennan & associates, Inc. conducted continuous hourly ambient noise level measurements for a period of 24-hours on the Davis Innovation Center project site from January 7<sup>th</sup> to January 8<sup>th</sup>, 2015. The noise level measurements were conducted to determine typical background average ( $L_{eq}$ ), median ( $L_{50}$ ) and maximum ( $L_{max}$ ) noise levels, and to determine the effective day/night distribution of roadway traffic for inclusion in the traffic noise prediction methodology. Instrumentation consisted of a Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meter, which was calibrated in the field before and after use with an LDL Model CAL200 acoustical calibrator.

**TABLE 3.11-2: MEASURED AMBIENT NOISE LEVELS**

SITE	DATE	AVERAGE MEASURED HOURLY NOISE LEVELS, DBA						
		$L_{DN}$	DAYTIME			NIGHTTIME		
			$L_{EQ}$	$L_{50}$	$L_{MAX}$	$L_{EQ}$	$L_{50}$	$L_{MAX}$
<i>Continuous 24-hour Noise Measurement Site</i>								
A	January 7-8, 2015	65	63	61	78	57	49	75
B	January 7-8, 2015	68	64	62	76	61	57	73
<i>Short-term Noise Measurement Sites</i>						Notes:		
1	January 8, 2015 – 10:21 a.m.	N/A	50	49	53	SR 113 and CR 99 traffic noise.		
2	January 8, 2015 – 10:37 a.m.	N/A	49	49	53	SR 113 and CR 99 traffic noise.		
3	January 8, 2015 – 10:55 a.m.	N/A	50	49	56	SR 113 is primary noise source.		
4	January 8, 2015 – 11:33 a.m.	N/A	48	47	57	SR 113 is primary noise source. Some parking lot noise audible.		
5	January 8, 2015 – 12:00 p.m.	N/A	60	59	68	SR 113 is primary noise source.		

SOURCE: J.C. BRENNAN & ASSOCIATES, INC. – 2017

Additionally, j.c. brennan & associates, Inc. staff conducted short-term noise level measurements on the Davis Innovation Center project site on Wednesday, January 7<sup>th</sup>, 2015. The noise level measurements were conducted to determine typical background average ( $L_{eq}$ ), median ( $L_{50}$ ) and maximum ( $L_{max}$ ) noise levels during the daytime periods at the project site. Instrumentation consisted of a LDL Model 824 precision integrating sound level meter which was calibrated in the field before use with an LDL CAL-200 acoustical calibrator. Table 3.11-2 shows the results of the short-term noise level measurements. Appendix E contains complete results of the noise monitoring.

Based upon field observations and the data in Table 3.11-2, the existing noise environment is primarily defined by traffic on State Route 113 (SR 113) and traffic on Covell Boulevard.

### Existing Traffic Noise

Existing roadway noise levels were measured by j.c. brennan & associates, Inc. using the Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA RD-77-108). The model is based on Calveno reference noise emission factors for automobiles, medium trucks, and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to receiver, and the acoustical characteristics of the site. The FHWA model was developed to predict hourly  $L_{eq}$  values for free-flowing traffic conditions.

## 3.11 NOISE AND VIBRATION

Traffic volumes for existing conditions on the local street system were obtained from a traffic study conducted by Fehr & Peers for the project site. Truck percentages and vehicle speeds on the local area roadway were estimated from field observations.

Traffic noise levels are predicted at the sensitive receptors located at an estimated distance along each project-area roadway segment. In some locations, sensitive receptors may be located at distances which vary from the assumed calculation distance and may experience shielding from intervening barriers or sound walls. The traffic noise analysis is representative of the majority of sensitive receptors located closest to the project-area roadway segments analyzed.

Land uses adjacent to some of the project-area roadways consist primarily of commercial and retail uses, which are generally not considered sensitive to traffic noise.

Table 3.11-3 shows the existing traffic noise levels in terms of  $L_{dn}$  along each roadway segment. This table also shows the distances to existing traffic noise contours. Appendix E shows the full inputs and results of the FHWA model.

**TABLE 3.11-3: PREDICTED EXISTING TRAFFIC NOISE LEVELS**

ROADWAY	SEGMENT - LOCATION	DISTANCE (FEET)	EXTERIOR NOISE LEVEL, DBA $L_{DN}$	DISTANCE TO NOISE CONTOURS (FEET) EXISTING ( $L_{DN}$ )		
				70 DB	65 DB	60 DB
Anderson Rd	North of Covell Boulevard	100	56	11	25	53
Anderson Rd	South of Covell Boulevard	100	58	16	34	74
Covell Blvd	East of Anderson Road	100	62	28	61	132
Covell Blvd	West of Anderson Road	100	62	30	64	138
Covell Blvd	East of Denali Drive	100	63	36	78	167
Covell Blvd	West of Denali Drive	100	63	32	69	149
Covell Blvd	East of F Street	100	63	35	75	162
Covell Blvd	West of F Street	100	63	32	69	150
Covell Blvd	East of Lake Boulevard	100	62	31	66	142
Covell Blvd	West of Lake Boulevard	100	62	30	64	138
Covell Blvd	East of Sycamore Lane	100	62	30	65	140
Covell Blvd	West of J Street	100	63	35	75	162
F Street	North of Covell Boulevard	100	57	14	30	65
F Street	South of Covell Boulevard	100	57	14	30	64
Lake Blvd	North of Covell Boulevard	100	56	12	26	57
Lake Blvd	South of Covell Boulevard	100	56	12	26	57
Risling Ct	North of Covell Boulevard	100	48	4	8	16
Risling Ct	North of Sutter Hospital Dwy	100	47	3	6	13
Risling Ct	South of Sutter Hospital Dwy	100	48	4	8	16
Sycamore Ln	North of Covell Boulevard	100	55	10	22	47
SR 113	North of CR 31 / Covell Blvd.	180	68	142	307	1,423

NOTES: DISTANCES ARE MEASURED IN FEET FROM THE CENTERLINES OF THE ROADWAYS. TRAFFIC NOISE LEVELS MAY VARY DEPENDING ON ACTUAL SETBACK DISTANCES AND LOCALIZED SHIELDING.

SOURCE: FEHR & PEERS, CALTRANS, AND J.C. BRENNAN & ASSOCIATES, INC., 2017.

### 3.11.2 REGULATORY SETTING

#### STATE

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##### **Governor's Office of Planning and Research (OPR)**

The *State of California General Plan Guidelines* (State of California 1998), published by OPR provides guidance for the acceptability of projects within specific CNEL contours. The guidelines also present adjustment factors that may be used in order to arrive at noise acceptability standards that reflect the noise control goals of the community, the particular community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution.

#### LOCAL

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##### **City of Davis General Plan**

The City of Davis General Plan contains the following goals, policies, and standards that are relevant to noise and vibration:

##### NOISE

**Goal NOISE 1.** Maintain community noise levels that meet health guidelines and allow for a high quality of life.

**Policy NOISE 1.1** Minimize vehicular and stationary noise sources, and noise emanating from temporary activities.

##### **Standards**

- a. The City shall strive to achieve the "normally acceptable" exterior noise levels shown in Table 19 of the General Plan [Table 3.11-4 of this section] and the target interior noise levels in Table 20 of the General Plan [Table 3.11-5 of this section] in future development areas and in currently developed areas.
- b. New development shall generally be allowed only in areas where exterior and interior noise levels consistent with Table 19 of the General Plan [Table 3.11-5 of this section] and Table 20 of the General Plan [Table 3.11-6 of this section] can be achieved.
- c. New development and changes in use shall generally be allowed only if they will not adversely impact attainment within the community of the exterior and interior noise standards shown in Table 19 of the General Plan [Table 3.11-4 of this section] and Table 20 of the General Plan [Table 3.11-5 of this section]. Cumulative and project specific impacts by new development on existing residential land uses shall be mitigated consistent with the standards in Table 19 of the General Plan [Table 3.11-4 of this section] and Table 20 of the General Plan [Table 3.11-5 of this section].

## 3.11 NOISE AND VIBRATION

- d. Required noise mitigation measures for new and existing housing shall be provided with the first stage and prior to completion of new developments or the completion of capacity-enhancing roadway changes wherever noise levels currently exceed or are projected within 5 years to exceed the normally acceptable exterior noise levels in Table 19 of the General Plan [Table 3.11-4 of this section].

**TABLE 3.11-4: STANDARDS FOR EXTERIOR NOISE EXPOSURE (CITY OF DAVIS GENERAL PLAN TABLE 19)**

LAND USE CATEGORY	COMMUNITY NOISE EXPOSURE $L_{DN}$ OR $CNEL$ , DBA			
	NORMALLY ACCEPTABLE	CONDITIONALLY ACCEPTABLE	UNACCEPTABLE	CLEARLY UNACCEPTABLE
Residential	Under 60	60-70*	70-75	Above 75
Transient Lodging – Motels, Hotels	Under 60	65-75	75-80	Above 80
Schools, Libraries, Churches, Hospitals, Nursing Homes	Under 60	60-70	70-80	Above 80
Auditoriums, Concert Halls, Amphitheaters	Under 50	50-70	N/A	Above 70
Sports Arenas, Outdoor Spectator Sports	N/A	Under 75	N/A	Above 75
Playgrounds, Neighborhood Parks	Under 70	N/A	70-75	Above 75
Golf Courses, Riding Stables, Water Recreation, Cemeteries	Under 70	N/A	70-80	Above 80
Office Buildings, Business Commercial and Professional	Under 65	65-75	Above 75	N/A
Industrial, Manufacturing, Utilities, Agriculture	Under 65	70-80	Above 80	N/A

*NORMALLY ACCEPTABLE: SPECIFIED LAND USE IS SATISFACTORY BASED UPON THE ASSUMPTION THAT ANY BUILDINGS INVOLVED ARE OF NORMAL CONVENTIONAL CONSTRUCTION, WITHOUT SPECIAL NOISE INSULATION REQUIREMENTS.*

*CONDITIONALLY ACCEPTABLE: NEW CONSTRUCTION OR DEVELOPMENT SHOULD BE UNDERTAKEN ONLY AFTER A DETAILED ANALYSIS OF THE NOISE REDUCTION REQUIREMENTS IS CONDUCTED, AND NEEDED NOISE ATTENUATION FEATURES ARE INCLUDED IN THE CONSTRUCTION OR DEVELOPMENT.*

*NORMALLY UNACCEPTABLE: NEW CONSTRUCTION OR DEVELOPMENT SHOULD BE DISCOURAGED. IF NEW CONSTRUCTION OR DEVELOPMENT DOES PROCEED, A DETAILED ANALYSIS OF THE NOISE REDUCTION REQUIREMENTS MUST BE CONDUCTED AND NEEDED NOISE ATTENUATION FEATURES SHALL BE INCLUDED IN THE CONSTRUCTION OR DEVELOPMENT.*

*CLEARLY UNACCEPTABLE: NEW CONSTRUCTION OR DEVELOPMENT SHALL NOT BE UNDERTAKEN.*

*NA: NOT APPLICABLE*

*\* THE CITY COUNCIL SHALL HAVE DISCRETION WITHIN THE "CONDITIONALLY ACCEPTABLE" RANGE FOR RESIDENTIAL USE TO ALLOW LEVELS IN OUTDOOR SPACES TO GO UP TO 65 DBA IF COST EFFECTIVE OR AESTHETICALLY ACCEPTABLE MEASURES ARE NOT AVAILABLE TO REDUCE NOISE LEVELS IN OUTDOOR SPACES TO THE "NORMALLY ACCEPTABLE" LEVELS. OUTDOOR SPACES WHICH ARE DESIGNED FOR VISUAL USE ONLY (FOR EXAMPLE, STREETSIDE LANDSCAPING IN AN APARTMENT PROJECT), RATHER THAN OUTDOOR USE SPACE MAY BE CONSIDERED ACCEPTABLE UP TO 70 DBA.*

SOURCE: CITY OF DAVIS, 2010

**TABLE 3.11-5: STANDARDS FOR INTERIOR NOISE LEVELS (CITY OF DAVIS GENERAL PLAN TABLE 20)**

USE	NOISE LEVEL (DBA)
Residences, schools through grade 12, hospitals and churches	45 $L_{dn}$
Offices	55 $L_{eq}$

SOURCE: CITY OF DAVIS, 2010

- Policy NOISE 1.2** Discourage the use of sound walls whenever alternative mitigation measures are feasible, while also facilitating the construction of sound walls where desired by the neighborhood and there is no other way to reduce noise to acceptable exterior levels shown in Table 19 of the General Plan [Table 3.11-4 of this section].

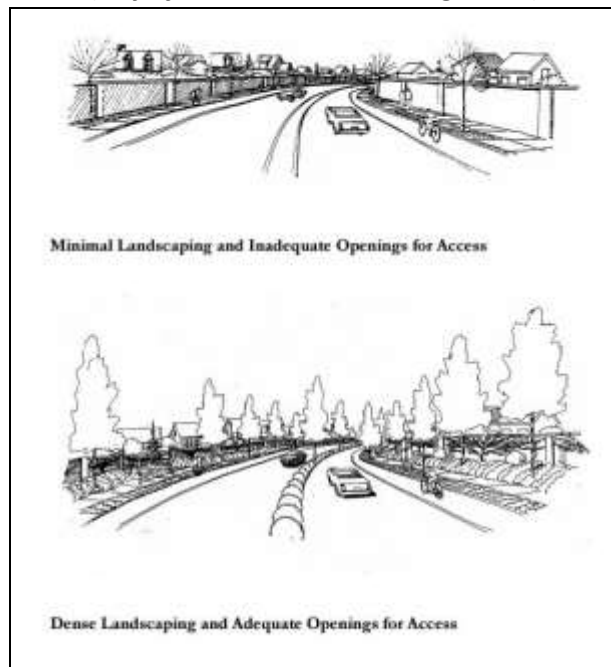


See the separate General Plan policy interpretation document titled "Major Arterial Landscaping, Noise Attenuation Design and Greenstreets".

### Standards

- a. Where sound walls are built, they should include dense landscaping along them to mitigate their visual impact, as illustrated in Figure 38 of the General Plan [shown below].
- b. Where sound walls are built, they should provide adequate openings and visibility from surrounding areas to increase safety and access, as illustrated in Figure 38 of the General Plan [shown below]. Openings should be designed so as to maintain necessary noise attenuation.

**Sound Wall Design Concepts**  
**(City of Davis General Plan Figure 38)**



- c. Review sound walls and other noise mitigations through the design review process.

**GOAL NOISE 2.** Provide for indoor noise environments that are conducive to living and working.

**Policy NOISE 2.1** Take all technically feasible steps to ensure that interior noise levels can be maintained at the levels shown in Table 20 of the General Plan [Table 3.11-5 of this section].

### Standards

- a. New residential development or construction shall include noise attenuation measures necessary to achieve acceptable interior noise levels shown in Table 20 of the General Plan [Table 3.11-5 of this section].
- b. Existing areas that will be subjected to noise levels greater than the acceptable noise levels shown in Table 20 of the General Plan [Table 3.11-5 of this section] as a result of increased traffic on existing city streets (including streets remaining in existing configurations and streets being widened) shall be mitigated to the acceptable levels in Table 20 of the General Plan [Table 3.11-5 of this section]. If traffic increases are caused by specific projects, then the City shall be the lead agency in implementing cumulative noise mitigation projects. Project applicants shall pay their fair share for any mitigation.

### City of Davis Noise Ordinance

Section 24 of the City of Davis City Code establishes a maximum noise level standard of 55 dB during the hours of 7:00 a.m. to 9:00 p.m., and 50 dB during the hours of 9:00 p.m. to 7:00 a.m. The ordinance defines maximum noise level as the “maximum continuous sound level or repetitive peak level produced by a sound source or group of sources. For the purposes of this analysis, J.C. Brennan & Associates, Inc. interpreted this definition to be equivalent to the average noise level descriptor,  $L_{eq}$ . The City Code makes exemptions for certain typical activities which may occur within the city. These exemptions are listed in Article 24.02.040, Special Provisions, and are summarized below:

- a) Normal operation of power tools for non-commercial purposes are typically exempted between the hours of 8 am and 8 pm unless the operation unreasonably disturbs the peace and quiet of any neighborhood.
- b) Construction or landscape operations would be exempt during the hours of 7am to 7 pm Mondays through Fridays and between the hours of 8 am to 8 pm Saturdays and Sundays assuming that the operations are authorized by valid city permit or business license, or carried out by employees or contractors of the city and one of the following conditions apply (conditions summarized, please see section 24.02.040 of the City Code for the full text):
  - 1) No piece of equipment produces a noise level exceeding 83 dBA at 25-feet.
  - 2) The noise level at any point outside the property plane of the project shall not exceed 86 dBA.
  - 3) Requires that impact equipment and tools be fitted with the best available silencing equipment.
  - 4) Limits individual powered blowers to a noise level of 70 dBA at 50-feet.
  - 5) Prohibits more than one blower from simultaneously operating within 100-feet of another blower.

- 6) On single-family residential property, the 70 dBA at 50-foot requirement would not apply to blowers operated on single-family residential property.
- c) The City Code also exempts air conditioners, pool pumps, and similar equipment from the noise regulations, provided that they are in good working order.
- d) Work related to public health and safety is exempt from the noise requirements.
- e) Safety devices are exempt from the noise requirements.
- f) Emergencies are exempt from the noise requirements.

### 3.11.3 IMPACTS AND MITIGATION MEASURES

#### THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the City's General Plan, and professional judgment, a significant impact would occur if the proposed project would result in the following:

- Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels within two miles of a public airport or public use airport; or
- For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

#### NOISE STANDARDS

The noise standards applicable to the project include the relevant portions of the City of Davis General Plan, the City of Davis Noise Ordinance described in the Regulatory Setting section above (Section 3.11.2), and the following standards. Generally, a project may have a significant effect on the environment if it will substantially increase the ambient noise levels for adjoining areas or expose people to severe noise levels. In practice, more specific professional standards have been developed. These standards state that a noise impact may be considered significant if it would generate noise that would conflict with local project criteria or ordinances, or substantially increase noise levels at noise sensitive land uses. The potential increase in traffic noise from the project is a factor in determining significance. Research into the human perception of changes in sound level indicates the following:

## 3.11 NOISE AND VIBRATION

- A 3-dB change is barely perceptible;
- A 5-dB change is clearly perceptible; and
- A 10-dB change is perceived as being twice or half as loud.

A limitation of using a single noise level increase value to evaluate noise impacts is that it fails to account for pre-project-noise conditions. Table 3.11-6 is based upon recommendations made by the Federal Interagency Committee on Noise (FICON) to provide guidance in the assessment of changes in ambient noise levels resulting from aircraft operations. The recommendations are based upon studies that relate aircraft noise levels to the percentage of persons highly annoyed by the noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, it has been accepted that they are applicable to all sources of noise described in terms of cumulative noise exposure metrics such as the  $L_{dn}$ .

**TABLE 3.11-6: SIGNIFICANCE OF CHANGES IN NOISE EXPOSURE**

<i>AMBIENT NOISE LEVEL WITHOUT PROJECT, <math>L_{DN}</math></i>	<i>INCREASE REQUIRED FOR SIGNIFICANT IMPACT</i>
<60 dB	+5.0 dB or more
60-65 dB	+3.0 dB or more
>65 dB	+1.5 dB or more

*SOURCE: FEDERAL INTERAGENCY COMMITTEE ON NOISE (FICON).*

### VIBRATION STANDARDS

Vibration is like noise in that it involves a source, a transmission path, and a receiver. While vibration is related to noise, it differs in that noise is generally considered to be pressure waves transmitted through air, whereas vibration usually consists of the excitation of a structure or surface. As with noise, vibration consists of an amplitude and frequency. A person's perception to the vibration will depend on their individual sensitivity to vibration, as well as the amplitude and frequency of the source and the response of the system which is vibrating.

Vibration can be measured in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration measures in terms of peak particle velocities in inches per second. Standards pertaining to perception as well as damage to structures have been developed for vibration levels defined in terms of peak particle velocities.

The City of Davis does not have specific policies pertaining to vibration levels. However, vibration levels associated with construction activities are discussed in this section.

Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events. Table 3.11-7 indicates that the threshold for damage to structures ranges from 2 to 6 peak particle velocity in inches per second (in/sec p.p.v.). One-half this minimum threshold, or 1 in/sec p.p.v., is considered a safe criterion that would protect against architectural or structural damage. The general threshold at which human annoyance could occur is noted as 0.1 in/sec p.p.v.

**TABLE 3.11-7: EFFECTS OF VIBRATION ON PEOPLE AND BUILDINGS**

<i>P.P.V.</i> <i>MM/SECOND</i>	<i>P.P.V.</i> <i>IN/SECOND</i>	<i>HUMAN REACTION</i>	<i>EFFECT ON BUILDINGS</i>
0.15-0.30	0.006-0.019	Threshold of perception; possibility of intrusion	Vibrations unlikely to cause damage of any type
2.0	0.08	Vibrations readily perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
2.5	0.10	Level at which continuous vibrations begin to annoy people	Virtually no risk of "architectural" damage to normal buildings
5.0	0.20	Vibrations annoying to people in buildings (this agrees with the levels established for people standing on bridges and subjected to relative short periods of vibrations)	Threshold at which there is a risk of "architectural" damage to normal dwelling - houses with plastered walls and ceilings  Special types of finish such as lining of walls, flexible ceiling treatment, etc., would minimize "architectural" damage
10-15	0.4-0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage.

SOURCE: CALTRANS. TRANSPORTATION RELATED EARTHBORNE VIBRATIONS. TAV-02-01-R9601 FEBRUARY 20, 2002.

## IMPACTS AND MITIGATION MEASURES

### **Impact 3.11-1: Operation of the proposed project may generate unacceptable traffic noise levels at existing sensitive receptors (Less than Significant)**

Tables 3.11-8 and 3.11-9 show the increases in traffic noise levels due to the project. Table 3.11-8 shows the increases in traffic noise levels based upon the Existing and Existing Plus Approved Projects Plus Project Conditions, and Table 3.11-9 shows the increases in traffic noise levels based upon the Cumulative No Project and Cumulative Plus Project Conditions. Appendix E shows the full inputs and results of the FHWA model.

Based upon Tables 3.11-8 and 3.11-9, the overall predicted traffic noise levels will not exceed 65.1 dB  $L_{dn}/CNEL$ , which falls within the City of Davis "Conditionally Acceptable" noise level standard of 60 to 70 dB  $L_{dn}/CNEL$ . Furthermore, the predicted increases in traffic noise levels do not exceed the FICON standards for significance of changes in noise exposure in Table 3.11-6. The highest increase in traffic noise levels occurs on Risling Court under the Existing Plus Project condition (+3.8 dB). However, this increase is not considered a significant increase in traffic noise levels. The highest predicted traffic noise levels are predicted along Covell Boulevard under the Cumulative Plus Project condition (65.1 dB). However, this increase is not considered a significant increase in traffic noise levels (+0.2 dB). At no point would the project result in an exceedance of the City of Davis exterior noise level standard. Therefore, this is a *less than significant* impact.

## 3.11 NOISE

**TABLE 3.11-8: PREDICTED EXISTING VS. EXISTING PLUS APPROVED PROJECTS PLUS PROJECT TRAFFIC NOISE LEVELS**

ROADWAY	SEGMENT	DISTANCE (FEET)	EXTERIOR NOISE LEVEL, DBA L <sub>DN</sub>			DISTANCE TO CONTOURS (FEET) EXISTING			DISTANCE TO CONTOURS (FEET) EXISTING PLUS APPROVED PROJECTS PLUS PROJECT		
			EXISTING	EXISTING PLUS APPROVED PROJECTS PLUS PROJECT	CHANGE	70 L <sub>DN</sub>	65 L <sub>DN</sub>	60 L <sub>DN</sub>	70 L <sub>DN</sub>	65 L <sub>DN</sub>	60 L <sub>DN</sub>
Anderson Rd	North of Covell Blvd	100	55.9	55.7	-0.2	11	25	53	11	24	51
Anderson Rd	South of Covell Blvd	100	58.0	58.2	+0.2	16	34	74	16	35	76
Covell Blvd	East of Anderson Rd	100	61.8	62.1	+0.3	28	61	132	30	64	139
Covell Blvd	West of Anderson Rd	100	62.1	62.4	+0.3	30	64	138	31	68	146
Covell Blvd	East of Denali Dr	100	63.3	63.6	+0.3	36	78	167	37	81	174
Covell Blvd	West of Denali Dr	100	62.6	62.8	+0.2	32	69	149	33	72	154
Covell Blvd	East of F St	100	63.2	63.4	+0.2	35	75	162	36	78	169
Covell Blvd	West of F St	100	62.6	63.0	+0.4	32	69	150	34	73	158
Covell Blvd	East of Lake Blvd	100	62.3	62.5	+0.2	31	66	142	32	68	146
Covell Blvd	East of Oak Avenue	100	62.1	62.5	+0.4	30	64	138	31	68	146
Covell Blvd	East of Sycamore Ln	100	62.2	62.5	+0.3	30	65	140	32	68	147
Covell Blvd	West of J St	100	63.2	63.4	+0.2	35	75	162	37	79	169
F St	North of Covell Blvd	100	57.2	57.3	+0.1	14	30	65	14	31	66
F St	South of Covell Blvd	100	57.1	57.5	+0.4	14	30	64	15	32	68
Lake Blvd	North of Covell Blvd	100	56.3	56.3	0	12	26	57	12	26	57
Lake Blvd	South of Covell Blvd	100	56.3	56.5	+0.2	12	26	57	13	27	59
Project Dwy	North of Covell Blvd	100	N/A	47.4	N/A	N/A	N/A	N/A	3	7	14
Risling Ct	North of Covell Blvd	100	48.2	52.1	+0.3	4	8	16	6	14	30
Risling Ct	North of Sutter H. Dwy	100	46.6	49.1	+2.5	3	6	13	4	9	19
Risling Ct	South of Sutter H. Dwy	100	48.2	52.0	+3.8	4	8	16	6	14	29
Sutter H. Dwy	West of Risling Ct	100	N/A	47.9	N/A	N/A	N/A	N/A	3	7	16
Sycamore Ln	North of Covell Blvd	100	55.1	55.5	+0.4	10	22	47	11	23	50

NOTES:

<sup>1</sup> DISTANCES TO TRAFFIC NOISE CONTOURS ARE MEASURED IN FEET FROM THE CENTERLINES OF THE ROADWAYS.

<sup>2</sup> TRAFFIC NOISE LEVELS MAY VARY DEPENDING ON ACTUAL SETBACK DISTANCES AND LOCALIZED SHIELDING.

\* ACCOUNTS FOR SHIELDING DUE TO EXISTING INTERVENING STRUCTURES AT ELEVATED LOCATIONS AND EXISTING SOUND WALL AT GROUND FLOOR LOCATIONS.

SOURCE: CITY OF DAVIS, CALTRANS, AND J.C. BRENNAND & ASSOCIATES, INC., 2017.

## 3.11 NOISE

**TABLE 3.11-9: PREDICTED CUMULATIVE NO PROJECT VS. CUMULATIVE PLUS PROJECT TRAFFIC NOISE LEVELS**

ROADWAY	SEGMENT	DISTANCE (FEET)	EXTERIOR NOISE LEVEL, dBA L <sub>DN</sub>			DISTANCE TO CONTOURS (FEET) CUMULATIVE NO PROJECT			DISTANCE TO CONTOURS (FEET) CUMULATIVE PLUS PROJECT		
			CUMULATIVE NO PROJECT	CUMULATIVE PLUS PROJECT	CHANGE	70 L <sub>DN</sub>	65 L <sub>DN</sub>	60 L <sub>DN</sub>	70 L <sub>DN</sub>	65 L <sub>DN</sub>	60 L <sub>DN</sub>
Anderson Rd	North of Covell Blvd	100	56.4	56.4	0	12	27	57	12	27	57
Anderson Rd	South of Covell Blvd	100	59.7	59.7	0	20	44	95	21	44	96
Covell Blvd	East of Anderson Rd	100	62.8	62.9	+0.1	33	72	155	34	73	157
Covell Blvd	West of Anderson Rd	100	63.3	63.4	+0.1	36	77	165	36	78	169
Covell Blvd	East of Denali Dr	100	64.9	65.1	+0.2	46	99	212	47	101	217
Covell Blvd	West of Denali Dr	100	64.1	64.2	+0.1	40	87	187	41	89	191
Covell Blvd	East of F St	100	64.6	64.6	0	43	93	201	44	94	202
Covell Blvd	West of F St	100	63.9	63.9	0	39	84	182	39	85	183
Covell Blvd	East of Lake Blvd	100	63.8	63.9	+0.1	38	83	178	39	84	182
Covell Blvd	East of Oak Avenue	100	63.2	63.3	+0.1	35	76	164	36	77	166
Covell Blvd	East of Sycamore Ln	100	63.5	63.6	+0.1	37	79	171	38	81	174
Covell Blvd	West of J St	100	64.5	64.6	+0.1	43	93	200	43	93	201
F St	North of Covell Blvd	100	58.0	58.0	0	16	34	73	16	34	73
F St	South of Covell Blvd	100	57.7	57.7	0	15	32	70	15	33	70
Lake Blvd	North of Covell Blvd	100	57.5	57.5	0	15	32	70	15	32	68
Lake Blvd	South of Covell Blvd	100	58.3	58.4	+0.1	17	36	77	17	36	79
Project Dwy	North of Covell Blvd	100	N/A	47.4	N/A	N/A	N/A	N/A	3	7	14
Risling Ct	North of Covell Blvd	100	52.9	54.4	+1.5	7	16	34	9	20	42
Risling Ct	North of Sutter H. Dwy	100	49.2	50.8	+1.6	4	9	19	5	11	24
Risling Ct	South of Sutter H. Dwy	100	52.9	54.3	+1.4	7	16	34	9	19	42
Sutter H. Dwy	West of Risling Ct	100	N/A	47.9	N/A	N/A	N/A	N/A	3	7	16
Sycamore Ln	North of Covell Blvd	100	56.6	56.6	0	13	28	59	13	28	59



**NOTES:**

<sup>1</sup> DISTANCES TO TRAFFIC NOISE CONTOURS ARE MEASURED IN FEET FROM THE CENTERLINES OF THE ROADWAYS.

<sup>2</sup> TRAFFIC NOISE LEVELS MAY VARY DEPENDING ON ACTUAL SETBACK DISTANCES AND LOCALIZED SHIELDING.

\* ACCOUNTS FOR SHIELDING DUE TO EXISTING INTERVENING STRUCTURES AT ELEVATED LOCATIONS AND EXISTING SOUND WALL AT GROUND FLOOR LOCATIONS.

SOURCE: CITY OF DAVIS, CALTRANS, AND J.C. BRENNAND & ASSOCIATES, INC., 2017.

### Impact 3.11-2: Construction of the proposed project may generate unacceptable noise levels at existing sensitive receptors (Less than Significant)

The proposed development, maintenance of roadways during construction, installation of public utilities, and infrastructure improvements associated with the project will require construction activities. These activities include the use of heavy equipment and impact tools. Table 3.11-10 provides a list of the types of equipment which may be associated with construction activities and the associated noise levels.

**TABLE 3.11-10: CONSTRUCTION EQUIPMENT NOISE**

TYPE OF EQUIPMENT	PREDICTED NOISE LEVELS, $L_{MAX}$ DB				DISTANCES TO NOISE CONTOURS (FEET)	
	NOISE LEVEL AT 50'	NOISE LEVEL AT 100'	NOISE LEVEL AT 200'	NOISE LEVEL AT 400'	70 DB $L_{MAX}$ CONTOUR	65 DB $L_{MAX}$ CONTOUR
Backhoe	78	72	66	60	126	223
Compactor	83	77	71	65	223	397
Compressor (air)	78	72	66	60	126	223
Concrete Saw	90	84	78	72	500	889
Dozer	82	76	70	64	199	354
Dump Truck	76	70	64	58	100	177
Excavator	81	75	69	63	177	315
Generator	81	75	69	63	177	315
Jackhammer	89	83	77	71	446	792
Pneumatic Tools	85	79	73	67	281	500

SOURCE: ROADWAY CONSTRUCTION NOISE MODEL USER'S GUIDE. FEDERAL HIGHWAY ADMINISTRATION. FHWA-HEP-05-054. JANUARY 2006. J.C. BRENNAN & ASSOCIATES, INC. 2012.

Activities involved in project construction would typically generate maximum noise levels ranging from 76 to 90 dB at a distance of 50-feet. The nearest sensitive receptor would be located 80-feet to the south across Covell Boulevard from on-site construction activities. At 80-feet, construction related activities are predicted to generate maximum noise levels ranging between 72 to 86 dB  $L_{max}$ .

Construction could result in periods of elevated ambient noise levels and the potential for annoyance. However, the City of Davis Noise Ordinance (Section 24.02.040, Special provisions) establishes allowable hours of operation and noise limits for construction activities as follows:

- (b) Construction and landscape maintenance equipment. Notwithstanding any other provision of this chapter, between the hours of 7:00 a.m. and 7:00 p.m. on Mondays through Fridays, and between the hours of 8:00 a.m. and 8:00 p.m. on Saturdays and Sundays, construction, alteration, repair or maintenance activities which are authorized by valid city permit or business license, or carried out by employees of contractors of the city shall be allowed if they meet at least one of the following noise limitations:
  - (1) No individual piece of equipment shall produce a noise level exceeding eighty-three dBA at a distance of twenty-five feet. If the device is housed within a structure on the

property, the measurement shall be made outside the structure at a distance as close to twenty feet from the equipment as possible.

- (2) The noise level at any point outside of the property plane of the project shall not exceed eighty-six dBA.
- (3) The provisions of subdivisions (1) and (2) of this subsection shall not be applicable to impact tools and equipment; provided, that such impact tools and equipment shall have intake and exhaust mufflers recommended by manufacturers thereof and approved by the director of public works as best accomplishing maximum noise attenuation, and that pavement breakers and jackhammers shall also be equipped with acoustically attenuating shields or shrouds recommended by the manufacturers thereof and approved by the director of public works as best accomplishing maximum noise attenuation. In the absence of manufacturer's recommendations, the director of public works may prescribe such means of accomplishing maximum noise attenuation as he/she may determine to be in the public interest.

Construction projects located more than two hundred feet from existing homes may request a special use permit to begin work at six a.m. on weekdays from June 15th until September 1st. No percussion type tools (such as ramsets or jackhammers) can be used before 7:00 a.m. The permit shall be revoked if any noise complaint is received by the police department.

- (4) No individual powered blower shall produce a noise level exceeding seventy dBA measured at a distance of fifty feet.
- (5) No powered blower shall be operated within one hundred feet radius of another powered blower simultaneously.
- (6) On single-family residential property, the seventy dBA at fifty feet restriction shall not apply if operated for less than ten minutes per occurrence.

Because all construction activities will be subject to the requirements of Section 24.02.040 of the City of Davis Municipal Code with respect to limits on construction noise, this impact would be *less than significant*.

### **Impact 3.11-3: Construction of the proposed project may result in excessive groundborne vibration impacts (Less than Significant)**

The primary vibration-generating activities associated with the proposed project would occur during construction when activities such as grading, utilities placement, and parking lot construction occur. Sensitive receptors which could be impacted by construction related vibrations, especially vibratory compactors/rollers, are located approximately 80-feet or further from the project site. At distances of over 50-feet, construction vibrations are not predicted to exceed acceptable levels. Additionally,

## 3.11 NOISE AND VIBRATION

construction activities would be temporary in nature and would likely occur during normal daytime working hours.

Construction vibration impacts include human annoyance and building structural damage. Human annoyance occurs when construction vibration rises significantly above the threshold of perception. Building damage can take the form of cosmetic or structural. Table 3.11-11 shows the typical vibration levels produced by construction equipment.

**TABLE 3.11-11: VIBRATION LEVELS FOR VARYING CONSTRUCTION EQUIPMENT**

<i>TYPE OF EQUIPMENT</i>	<i>PEAK PARTICLE VELOCITY @ 25 FEET (INCHES/SECOND)</i>	<i>PEAK PARTICLE VELOCITY @ 50 FEET (INCHES/SECOND)</i>	<i>PEAK PARTICLE VELOCITY @ 100 FEET (INCHES/SECOND)</i>
Large Bulldozer	0.089	0.031	0.011
Loaded Trucks	0.076	0.027	0.010
Small Bulldozer	0.003	0.001	0.000
Auger/drill Rigs	0.089	0.031	0.011
Jackhammer	0.035	0.012	0.004
Vibratory Hammer	0.070	0.025	0.009
Vibratory Compactor/roller	0.210	0.074	0.026

*SOURCE: FEDERAL TRANSIT ADMINISTRATION, TRANSIT NOISE AND VIBRATION IMPACT ASSESSMENT GUIDELINES, MAY 2006*

The Table 3.11-11 data indicate that construction vibration levels anticipated for the project are less than the 0.2 in/sec p.p.v. threshold of damage to buildings and less than the 0.1 in/sec threshold of annoyance criteria at distances of 50-feet. Therefore, construction vibrations are not predicted to cause damage to existing buildings or cause annoyance to sensitive receptors. Therefore, this impact would be considered ***less than significant***.

### **Impact 3.11-4: Operation of the proposed project may generate unacceptable noise levels from on-site activities at existing sensitive receptors (Less Than Significant)**

A finalized site plan depicting building elevations and floor plans is not currently available for the project site. Therefore, building façades are estimated at the parcel boundaries shown in Figure 2.0-6 in Section 2.0, Project Description. The on-site noise sources generated by the Activity and Wellness Center area include mechanical equipment, parking lot use, and swimming pool activities. Additional on-site noise sources are associated with activity at the proposed dog exercise area.

#### MECHANICAL EQUIPMENT

The proposed project includes the construction of an Activity and Wellness Center. Current plans for the proposed mixed use facility along Risling Court include a health club, restaurant, meeting rooms, and an outdoor swimming pool. It is expected that the primary noise source associated with these uses will be due to heating, air conditioning, and ventilation (HVAC) equipment. These types of equipment are often

mounted on rooftops, located on the ground, or located within mechanical rooms. The noise sources can take the form of fans, pumps, air compressors, chillers, or cooling towers. Noise levels from these types of equipment can vary significantly and generally range between 45 dB to 70 dB at a distance of 50-feet. Shielding from rooftop parapets substantially reduces noise from these types of equipment. Based upon measurements conducted at various commercial and retail facilities, HVAC mechanical equipment is not expected to generate noise levels exceeding 45 to 50 dB  $L_{eq}$  at distances beyond 50 feet from building façades.

For the purpose of this analysis, it is predicted that HVAC units are located on the rooftop of the Activity and Wellness Center, at a distance of 25 feet from the edge of the building. The rooftop is predicted to have an elevation of 20-feet, with parapets 3-feet in height along the perimeter of the rooftop, for a total height of 23-feet. HVAC units are estimated to be 3-feet in height. The nearest noise sensitive receptor is predicted to be 50-feet from the Activity and Wellness Center. At this distance, HVAC noise levels would be approximately 35 dBA  $L_{eq}$ , or less. By locating the HVAC units on the rooftop of the Activity and Wellness Center, noise resulting from the mechanical equipment would comply with the City of Davis Noise Ordinance.

#### SWIMMING POOL

The proposed project may include the construction of an outdoor swimming pool as part of the proposed Activity and Wellness Center. The outdoor swimming pool is proposed primarily for use by on-site residents and the public. However, the pool is not intended for use in high attendance activities such as swim meets.

People using swimming pools generate noise, and pool equipment, such as electrical pumps, could be a significant noise source. To quantify likely noise levels from people using the pool facilities on the project site, j.c. brennan & associates, Inc. utilized noise level data collected for other pool facilities. The noise level measurements were conducted at a distance of 50-feet from the center of the pool. The results of the noise level measurements indicate that, during the busiest hour of operations, the measured sound level would be 60 dB  $L_{eq}$ . Because this noise level represents the busiest hour of pool activity, it is expected to represent worst case noise levels associated with typical use of the proposed pool facilities. This could potentially exceed the City of Davis Noise Ordinance daytime standard of 55 dB  $L_{eq}$ . This is considered to be an amenity to the project site, and will not exceed noise level standards at any existing adjacent uses.

#### DOG EXERCISE AREA

The proposed project includes the construction of a dog exercise area north of the proposed senior affordable apartments.

Interactions between dogs and humans at dog parks have the potential to generate significant noise levels at nearby sensitive receptors. To quantify likely noise levels from the dog exercise area on the project site, j.c. brennan & associates, Inc. utilized noise level data collected at the Ashley Off-Leash Dog Park in Auburn, California. The primary noise sources at the dog park were caused by humans

interacting with each other and with their pets. Dogs were observed to play quietly with other dogs, with occasional short barks or growls. The noise level measurements were conducted at a distance of 75-feet from the center of the dog park. The results of the noise level measurements indicate that, during the busiest hour of the day, the measured sound level was 53 dB  $L_{eq}$ . Because this noise level represents the busiest hour of dog park activity, it is expected to represent worst case noise levels associated with typical use of dog park facilities. This could potentially exceed the City of Davis Noise Ordinance daytime standard of 55 dB  $L_{eq}$ . This is considered to be an amenity to the project site, and will not exceed noise level standards at any existing adjacent uses.

### CONCLUSION

As demonstrated above, operation of the proposed project would not result in exceedance of the City's noise level standards at existing sensitive receptors. Therefore, this impact would be considered *less than significant*.

### **Impact 3.11-5: The proposed project may expose proposed residences or workers to excessive noise levels due to aircraft noise (Less than Significant)**

The proposed project is located within the two-mile radius of the University Airport. However, as shown in Figure 3.11-2, the project site is located outside of the 55 dB CNEL noise level contour. Therefore, this impact would be *less than significant*.



**West Davis Active Adult Community**  
 Figure : 3.11-1  
 Project Location and Noise Measurement Locations

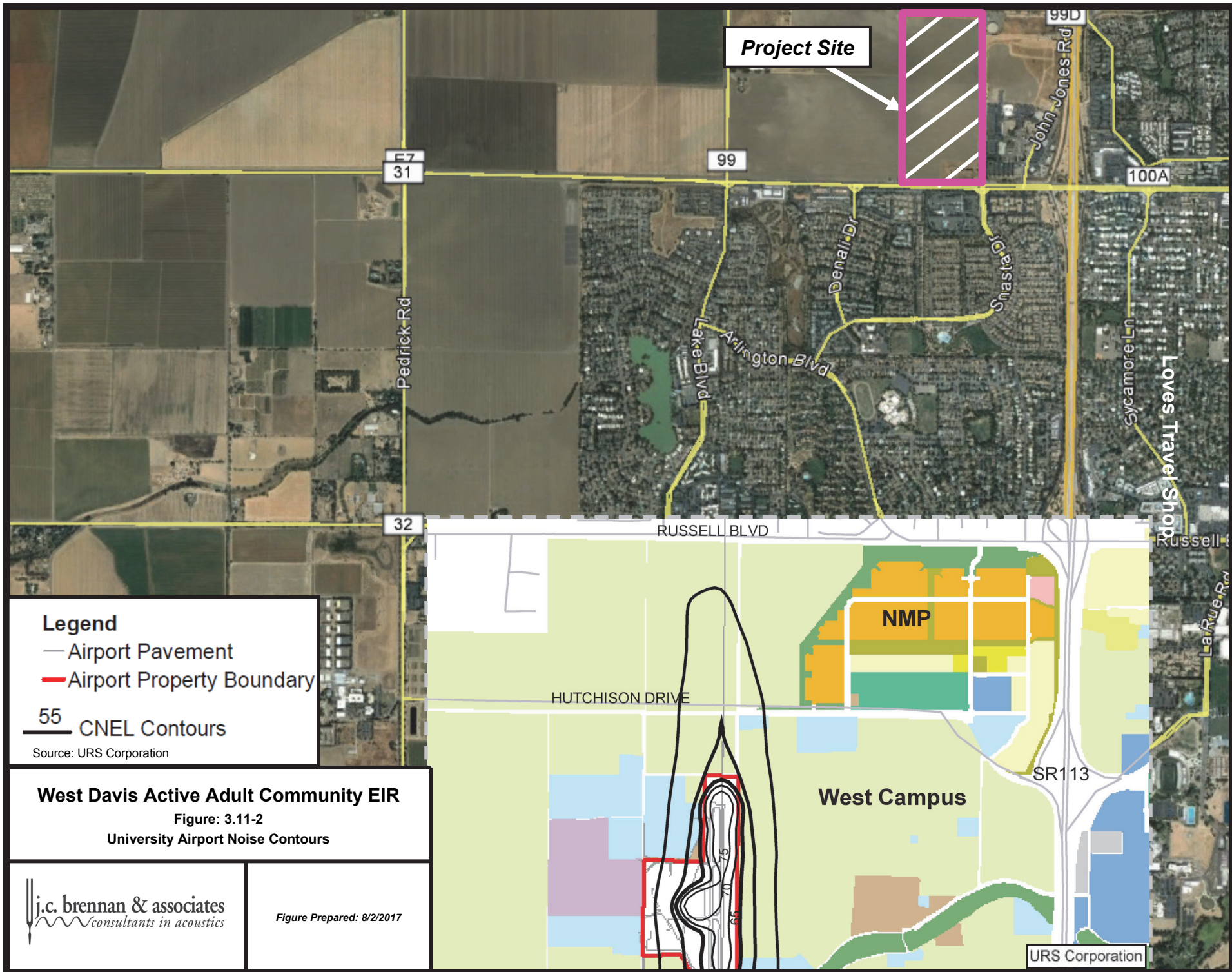


Figure Prepared: August 2017

- : West Davis Active Adult Community (Current)
- : West Davis Innovation Center (Former)
- : 24-hr Noise Measurement Locations
- : Short Term Noise Measurement Locations

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**Project Site**



E7  
31

99

99D

100A

32

RUSSELL BLVD

Russell

**Legend**

- Airport Pavement
- Airport Property Boundary
- 55 CNEL Contours

Source: URS Corporation

**West Davis Active Adult Community EIR**  
 Figure: 3.11-2  
 University Airport Noise Contours

*j.c. brennan & associates*  
*consultants in acoustics*

Figure Prepared: 8/2/2017

HUTCHISON DRIVE

**West Campus**

**NMP**

SR113

**UR S Corporation**

Pedrick Rd

Lake Blvd

Arlington Blvd

Denali Dr

Shasta Dr

Sycamore Ln

Loves Travel Shop

Lair Rue Rd

John Jones Rd

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