

## **Appendix G**

## **NOISE ANALYSIS REPORT**

# **SUN LAKES BOULEVARD EXTENSION**

**Banning, CA**

April 8, 2022 DRAFT

Prepared for:  
Albert A. Webb Associates  
3788 McCray Street  
Riverside, CA 92506

Prepared by:



dBF Associates, Inc.  
3129 Tiger Run Court, Suite 202  
Carlsbad, CA 92010  
619-609-0712

---

|                                                                |           |
|----------------------------------------------------------------|-----------|
| <b>Executive Summary .....</b>                                 | <b>2</b>  |
| <b>1.0 Project Description.....</b>                            | <b>4</b>  |
| <b>2.0 Environmental Noise Background .....</b>                | <b>6</b>  |
| <b>3.0 Regulatory Framework.....</b>                           | <b>9</b>  |
| 3.1 City of Banning .....                                      | 9         |
| 3.2 City of Beaumont .....                                     | 10        |
| 3.3 County of Riverside.....                                   | 10        |
| <b>4.0 Environmental Setting and Existing Conditions .....</b> | <b>11</b> |
| 4.1 Surrounding Land Uses and Environmental Setting .....      | 11        |
| <b>5.0 Potential Noise Impacts .....</b>                       | <b>12</b> |
| <b>6.0 Recommendations.....</b>                                | <b>16</b> |
| <b>7.0 References .....</b>                                    | <b>17</b> |
| <b>8.0 List of Preparers .....</b>                             | <b>18</b> |

## Tables

|                                                                             |    |
|-----------------------------------------------------------------------------|----|
| Table 1. Sound Levels of Typical Noise Sources and Noise Environments ..... | 7  |
| Table 2. City of Banning Noise Thresholds .....                             | 9  |
| Table 3. City of Beaumont Noise Thresholds .....                            | 10 |
| Table 4. Project Roadways .....                                             | 14 |
| Table 5. Noise Levels Along Project Roadways .....                          | 15 |

## Figures

|                              |   |
|------------------------------|---|
| Figure 1. Vicinity Map ..... | 3 |
|------------------------------|---|

---

## EXECUTIVE SUMMARY

This analysis evaluates noise associated with the proposed extension of Sun Lakes Boulevard between Highland Home Road and Sunset Avenue in the City of Banning, California (Figure 1).

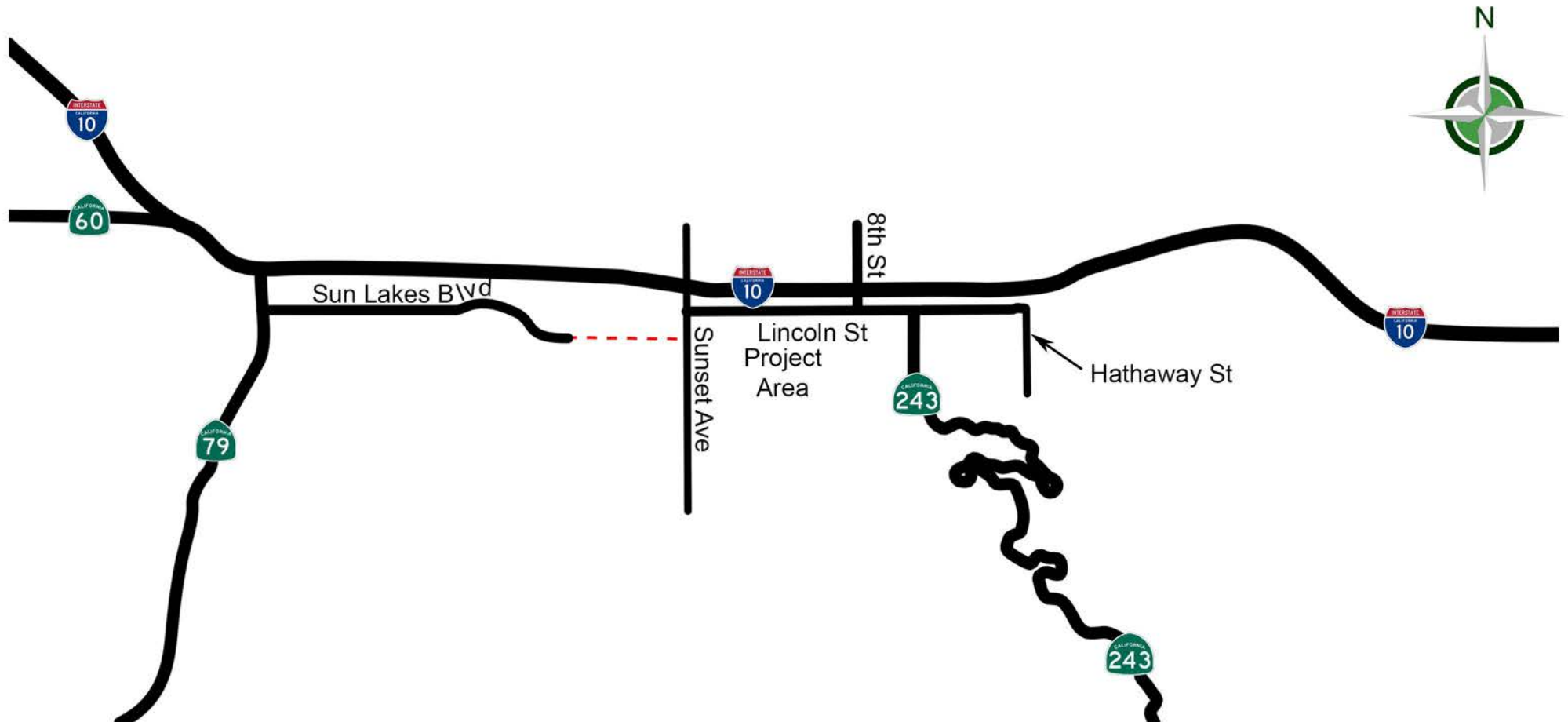
Along one roadway segment in the City of Banning, the project would result in noise levels increasing from Normally Acceptable to Conditionally Acceptable. Along all other segments, the noise environment descriptor would not change as a result of the project.

The impact of project-generated traffic noise would be less than significant.

---

## Sun Lakes Boulevard Extension Noise Analysis

---



---

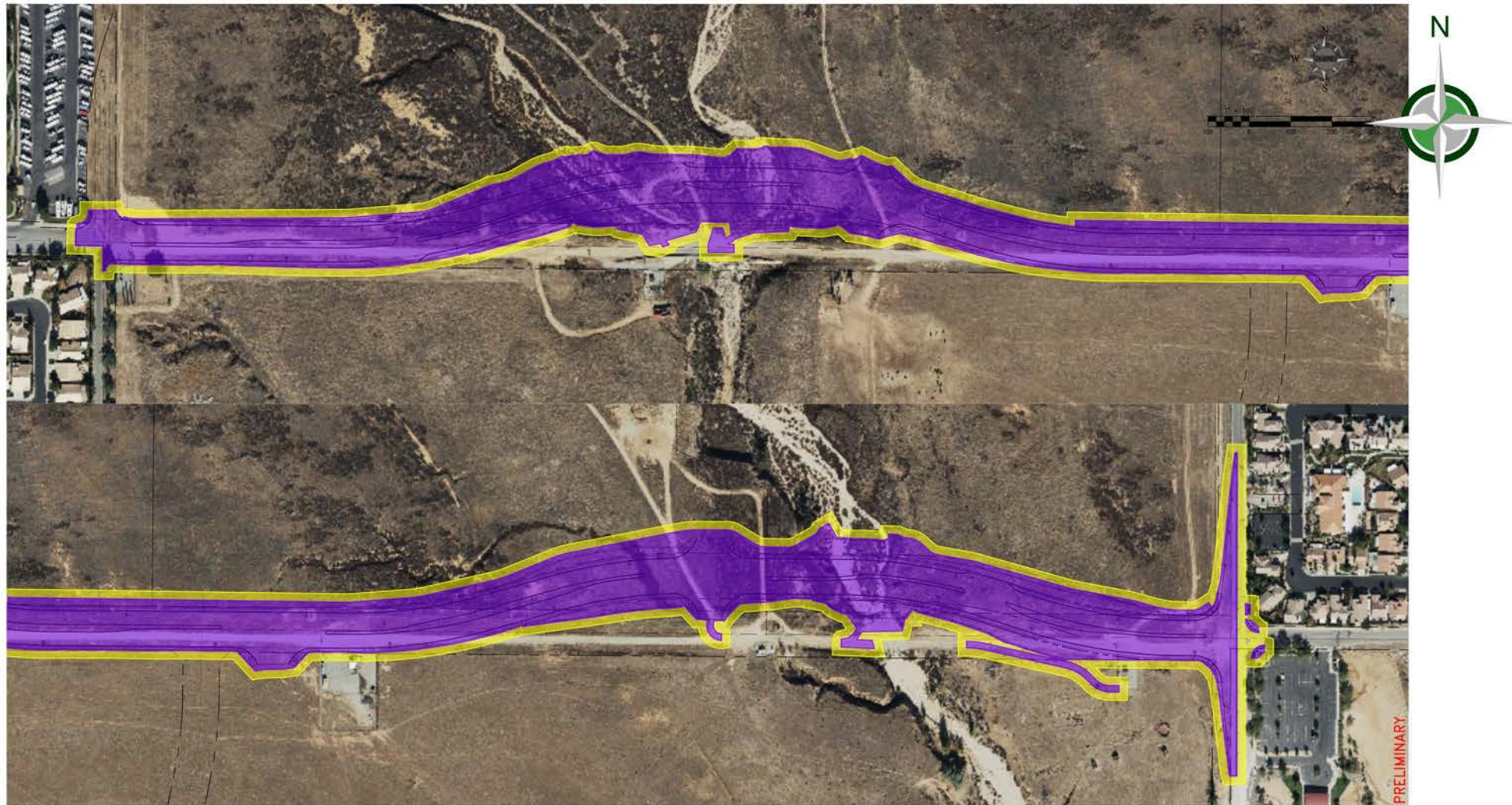
## 1.0 PROJECT DESCRIPTION

The project proposes to construct an extension to Sun Lakes Boulevard between Highland Home Road and Sunset Avenue in the City of Banning, California. The proposed roadway segment would connect the existing portion of Sun Lakes Boulevard to align with Westward Avenue at Sunset Avenue. Refer to Figure 2.

---

## Sun Lakes Boulevard Extension Noise Analysis

---



---

## 2.0 ENVIRONMENTAL NOISE BACKGROUND

Noise is generally defined as loud, unpleasant, unexpected, or undesired sound typically associated with human activity and that interferes with or disrupts normal activities. The human environment is characterized by a certain consistent noise level which varies with each area. This is called ambient noise. Although exposure to high noise levels has been demonstrated to cause hearing loss, the principal human response to environmental noise is annoyance. The response of individuals to similar noise events is diverse and influenced by the type of noise, perceived importance of the noise and its appropriateness in the setting, time of day and type of activity during which the noise occurs, and sensitivity of the individual.

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air, and are sensed by the human ear. Sound is generally characterized by several variables, including frequency and intensity. Frequency describes the sound's pitch and is measured in cycles per second, or hertz (Hz), whereas intensity describes the sound's loudness and is measured in decibels (dB). Decibels are measured using a logarithmic scale. A sound level of 0 dB is approximately the threshold of human hearing and is barely audible under extremely quiet listening conditions. Normal speech has a sound level of approximately 60 dB. Sound levels above about 120 dB begin to be felt inside the human ear as discomfort and eventually as pain at still higher levels. Studies have shown that the smallest perceptible change in sound level for a person with normal hearing sensitivity is approximately 3 dBA. A change of at least 5 dBA would be noticeable and would likely evoke a community reaction. A 10-dBA increase is subjectively heard as a doubling in loudness and would cause a community response [Caltrans 2013a]. Sound levels of typical noise sources and environments are provided in Table 2.

Because of the logarithmic nature of the decibel unit, sound levels cannot be added or subtracted directly and are somewhat cumbersome to handle mathematically. A simple rule is useful, however, in dealing with sound levels. If a sound's intensity is doubled, the sound level increases by 3 dB, regardless of the initial sound level. Thus, for example,  $60 \text{ dB} + 60 \text{ dB} = 63 \text{ dB}$ , and  $80 \text{ dB} + 80 \text{ dB} = 83 \text{ dB}$ . The normal human ear can detect sounds that range in frequency from about 20 Hz to 20,000 Hz.

However, all sounds in this wide range of frequencies are not heard equally well by the human ear, which is most sensitive to frequencies in the range of 1,000 Hz to 4,000 Hz. This frequency dependence can be taken into account by applying a correction to each frequency range to approximate the human ear's sensitivity within each range. This is called A-weighting and is commonly used in measurements of community environmental noise. The A-weighted sound pressure level (abbreviated as dBA) is the sound level with the "A-weighting" frequency correction. In practice, the level of a noise source is conveniently measured using a sound level meter that includes a filter corresponding to the dBA curve.

**Table 1. Sound Levels of Typical Noise Sources and Noise Environments**

| Noise Source<br>(at Given Distance)                                                   | Noise Environment                                      | A-Weighted<br>Sound Level | Human Judgment<br>of Noise Loudness<br>(Relative to Reference<br>Loudness of 70 Decibels*) |
|---------------------------------------------------------------------------------------|--------------------------------------------------------|---------------------------|--------------------------------------------------------------------------------------------|
| Military Jet Takeoff<br>with Afterburner (50 ft)                                      | Carrier Flight Deck                                    | 140 Decibels              | 128 times as loud                                                                          |
| Civil Defense Siren (100 ft)                                                          |                                                        | 130                       | 64 times as loud                                                                           |
| Commercial Jet Take-off (200 ft)                                                      |                                                        | 120                       | 32 times as loud<br><b>Threshold of Pain</b>                                               |
| Pile Driver (50 ft)                                                                   | Rock Music Concert<br>Inside Subway Station (New York) | 110                       | 16 times as loud                                                                           |
| Ambulance Siren (100 ft)<br>Newspaper Press (5 ft)<br>Gas Lawn Mower (3 ft)           |                                                        | 100                       | 8 times as loud<br><b>Very Loud</b>                                                        |
| Food Blender (3 ft)<br>Propeller Plane Flyover (1,000 ft)<br>Diesel Truck (150 ft)    | Boiler Room<br>Printing Press Plant                    | 90                        | 4 times as loud                                                                            |
| Garbage Disposal (3 ft)                                                               | Noisy Urban Daytime                                    | 80                        | 2 times as loud                                                                            |
| Passenger Car, 65 mph (25 ft)<br>Living Room Stereo (15 ft)<br>Vacuum Cleaner (10 ft) | Commercial Areas                                       | 70                        | Reference Loudness<br><b>Moderately Loud</b>                                               |
| Normal Speech (5 ft)<br>Air Conditioning Unit (100 ft)                                | Data Processing Center<br>Department Store             | 60                        | 1/2 as loud                                                                                |
| Light Traffic (100 ft)                                                                | Large Business Office<br>Quiet Urban Daytime           | 50                        | 1/4 as loud                                                                                |
| Bird Calls (distant)                                                                  | Quiet Urban Nighttime                                  | 40                        | 1/8 as loud<br><b>Quiet</b>                                                                |
| Soft Whisper (5 ft)                                                                   | Library and Bedroom at Night<br>Quiet Rural Nighttime  | 30                        | 1/16 as loud                                                                               |
|                                                                                       | Broadcast and Recording Studio                         | 20                        | 1/32 as loud<br>Just Audible                                                               |
|                                                                                       |                                                        | 0                         | 1/64 as loud<br>Threshold of Hearing                                                       |

Source: Compiled by dBF Associates, Inc.

---

Because community noise fluctuates over time, a single measure called the Equivalent Sound Level (Leq) is often used to describe the time-varying character of community noise. The Leq is the energy-averaged A-weighted sound level during a measured time interval, and is equal to the level of a continuous steady sound containing the same total acoustical energy over the averaging time period as the actual time-varying sound. Additionally, it is often desirable to know the acoustic range of the noise source being measured. This is accomplished through the Lmax and Lmin indicators, which represent the root-mean-square maximum and minimum noise levels obtained during the measurement interval. The Lmin value obtained for a particular monitoring location is often called the “acoustic floor” for that location.

To describe the time-varying character of environmental noise, the statistical noise descriptors L10, L50, and L90 are commonly used. They are the noise levels equaled or exceeded during 10, 50, and 90 percent of a stated time, respectively. Sound levels associated with L10 typically describe transient or short-term events, whereas levels associated with L90 describe the steady-state (or most prevalent) noise conditions.

The Community Noise Equivalent Level (CNEL) is a descriptor representing a 24-hour, time-weighted, annual average noise level based on the “A-weighted” decibel. In the calculation process, noise occurring in the evening time period (7 p.m. to 10 p.m.) is penalized by adding 5 dB, while noise occurring in the nighttime period (10 p.m. to 7 a.m.) is penalized by adding 10 dB. These time periods and decibel increases were selected to reflect a typical person's increased sensitivity to noise during late-night and early morning hours. This descriptor is used by the City of Banning, City of Beaumont, and County of Riverside to evaluate land-use compatibility with regard to noise.

---

## 3.0 REGULATORY FRAMEWORK

To limit exposure to physically and/or psychologically damaging as well as intrusive noise levels, the federal government, state of California, and local governments have established standards and ordinances to control noise and vibration. In most areas, automobile and truck traffic is the major source of environmental noise. Traffic activity generally produces an average sound level that remains fairly constant with time. Air and rail traffic, and commercial and industrial activities are also major sources of noise in some areas. Federal, state, and local agencies regulate different aspects of environmental noise. Federal and state agencies generally set noise standards for mobile sources such as aircraft and motor vehicles, while regulation of stationary sources and noise / land use compatibility is left to local agencies.

No federal regulations are applicable to this project.

### 3.1 City of Banning

The Noise Element of the City of Banning General Plan [2006] indicates land use compatibility for community noise environments. Applicable thresholds are summarized in Table 2. No guidance is provided for undeveloped or vacant land.

**Table 2. City of Banning Noise Thresholds**

| Land Use                   | Highest<br>Normally Acceptable<br>Noise Level | Highest<br>Conditionally Acceptable<br>Noise Level |
|----------------------------|-----------------------------------------------|----------------------------------------------------|
| Single-Family Residential  | 55 dBA CNEL                                   | 65 dBA CNEL                                        |
| Commercial                 | 65 dBA CNEL                                   | 72.5 dBA CNEL                                      |
| School                     | 65 dBA CNEL                                   | 65 dBA CNEL                                        |
| Industrial / Manufacturing | 70 dBA CNEL                                   | 75 dBA CNEL                                        |

---

### 3.2 City of Beaumont

The Safety Element of the City of Beaumont General Plan [2007] indicates land use compatibility for community noise environments. Applicable thresholds are summarized in Table 3. No guidance is provided for undeveloped or vacant land.

**Table 3. City of Beaumont Noise Thresholds**

| Land Use                  | Desirable Maximum Noise Level | Maximum Acceptable Noise Level |
|---------------------------|-------------------------------|--------------------------------|
| Single-Family Residential | 55 dBA CNEL                   | 65 dBA CNEL                    |
| Commercial                | 65 dBA CNEL                   | 75 dBA CNEL                    |

### 3.3 County of Riverside

The Noise Element of the Riverside County General Plan [2013] indicates land use compatibility for community noise environments. Noise levels up to 75 dBA CNEL are Normally Acceptable at industrial land uses, and noise levels up to 80 dBA CNEL are Conditionally Acceptable. No guidance is provided for undeveloped or vacant land.

---

## **4.0 ENVIRONMENTAL SETTING AND EXISTING CONDITIONS**

Noise-sensitive land uses are locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. Residences, schools, hospitals, guest lodging, libraries, and some passive recreation areas would each be considered noise-sensitive and may warrant unique measures for protection from intruding noise.

### **4.1 Surrounding Land Uses and Environmental Setting**

The project site is along the unpaved western extension of Westward Avenue, between the eastern end of Sun Lakes Boulevard at its intersection with Highland Home Road to the western end of paved Western Avenue at its intersection with Sunset Avenue. It is access-controlled with gates at both ends, and serves as a service road for the water infrastructure along it.

The primary existing noise source in the vicinity of the project is natural activity and vehicular traffic on nearby roadways. The ambient sound level along the project alignment is approximately 42 dBA Leq [dBFA 2019].

---

## 5.0 POTENTIAL NOISE IMPACTS

The project would result in a redistribution of traffic on segments in the existing and future roadway network [WEBB 2022]. Refer to Table 4. To evaluate the effect of the project on noise levels along adjacent land uses, the horizon year (2050) conditions, with and without the project, were compared. Refer to Table 5.

The Federal Highway Administration (FHWA) Traffic Noise Model (TNM) version 2.5 was used to estimate traffic noise levels. The modeling effort considered the peak-hour traffic volume, average estimated vehicle speed, and estimated vehicle mix, i.e., percentage of cars, medium trucks, heavy trucks, buses, and motorcycles. The peak hour traffic noise level was considered equivalent to the CNEL [24 CFR §51.106]. Vehicular traffic calculations are summarized in Appendix A.

Sound levels caused by line sources (i.e., variable or moving sound sources such as traffic) generally decrease at a rate of 3 to 4.5 dBA when the distance from the road is doubled, depending on the ground surface hardness between the source and the receiving property [Caltrans 2013]. The model assumed “hard soil” propagation conditions, which corresponds to a drop-off rate of approximately 3 dBA per doubling of distance. The actual sound level at any receptor location is dependent upon such factors as the source-to-receptor distance and the presence of intervening structures (walls and buildings), barriers, and topography. The noise attenuating effects of changes in elevation, topography, and intervening structures were not included in the model. Therefore, the modeling effort is considered a worst-case representation of the roadway noise.

The I-10 ramps and segments between were not analyzed, as the noise environment at adjacent land uses is and would continue to be dominated by traffic on I-10. The project would have an inconsequential effect on noise levels in these areas.

Traffic mixes on Sunset Avenue and Sun Lakes Boulevard were obtained from Translutions. Traffic mixed on other roadway segments were assumed to be similar.

The land uses along both sides of the project are expected to be developed with industrial land uses as part of the Sunset Crossroads project.

The City of Banning General Plan indicates that Highland Home Road is planned to extend north, as a 4- or 6-lane Major Highway, from Sun Lakes Boulevard to a new interchange at I-10. Based on the 2050 with-project traffic volumes, it was assumed that it would be 4 lanes. The exact alignment, and distance to the nearby receptors in the Sun Lakes Country Club neighborhood is unknown. It was assumed that all other existing roadway geometry would remain the same in the future.

There are three locations at which two roadways affect the noise level at the receptor closest to the intersection. These were analyzed independently; the results are presented in Table 5.

Along one roadway segment in the City of Banning, the project would result in noise levels increasing from Normally Acceptable to Conditionally Acceptable. Along all other segments, the noise environment descriptor would not change as a result of the project.

---

The City of Banning General Plan states that, at Conditionally Acceptable noise environments, “New construction or development should be undertaken only after a detailed analysis of the noise reduction requirement is made and needed noise insulation features included in the design.” Existing construction is not addressed. It is assumed that Conditionally Acceptable noise environments are not incompatible with residential land uses.

The impact of project-generated traffic noise would be less than significant.

Table 4. Project Roadways

| Roadway                 | Segment                               | Traffic Mix (%) | Speed Limit | Traffic Volume |                        |                     |
|-------------------------|---------------------------------------|-----------------|-------------|----------------|------------------------|---------------------|
|                         |                                       |                 |             | Existing       | Without Project (2050) | With Project (2050) |
| East 1st Street         | West of Highland Springs Avenue       | 95.5 / 3 / 1.5  | 45 mph      | 810            | 1,645                  | 2,022               |
| Sun Lakes Boulevard     | East of Highland Springs Avenue       | 95.5 / 3 / 1.5  | 35 mph      | 570            | 1,266                  | 2,358               |
|                         | West of Highland Home Road            | 95.5 / 3 / 1.5  | 35 mph      | 30             | 147                    | 2,721               |
|                         | East of Highland Home Road            | 95.5 / 3 / 1.5  | 35 mph *    | 0              | 0                      | 2,898               |
|                         | West of Sunset Avenue                 | 95.5 / 3 / 1.5  | 35 mph *    | 0              | 1,712                  | 2,390               |
| Westward Avenue         | East of Sunset Avenue                 | 97 / 2 / 1      | 35 mph *    | 62             | 340                    | 1,032               |
| Lincoln Street          | East of Sunset Avenue                 | 97 / 2 / 1      | 40 mph      | 131            | 1,562                  | 1,960               |
| Highland Springs Avenue | South of I-10 Eastbound Ramps         | 95.5 / 3 / 1.5  | 30 mph      | 2,894          | 4,422                  | 4,364               |
|                         | North of Sun Lakes Boulevard          | 95.5 / 3 / 1.5  | 30 mph      | 1,275          | 2,688                  | 2,580               |
|                         | South of Sun Lakes Boulevard          | 95.5 / 3 / 1.5  | 35 mph      | 641            | 1,878                  | 2,159               |
| Highland Home Road      | North of Sun Lakes Boulevard          | 95.5 / 3 / 1.5  | 45 mph *    | 0              | 219                    | 654                 |
|                         | South of Sun Lakes Boulevard          | 97 / 2 / 1      | 30 mph *    | 30             | 136                    | 54                  |
| Sunset Avenue           | I-10 Eastbound Ramps – Lincoln Street | 94 / 4 / 2      | 35 mph      | 272            | 2,703                  | 1,604               |
|                         | South of Lincoln Street               | 94 / 4 / 2      | 35 mph      | 164            | 1,641                  | 1,594               |
|                         | North of Westward Avenue              | 94 / 4 / 2      | 35 mph      | 85             | 1,641                  | 1,595               |
|                         | South of Westward Avenue              | 97 / 2 / 1      | 30 mph *    | 29             | 87                     | 78                  |

\* estimated

**Table 5. Noise Levels Along Project Roadways**

| Roadway                                                      | Segment                               | Closest Adjacent Land Use                       | Noise Level |                        |                     | Project Effect on 2050 Noise Levels | Noise Thresholds *                                          | Impact / Effect                                   |  |
|--------------------------------------------------------------|---------------------------------------|-------------------------------------------------|-------------|------------------------|---------------------|-------------------------------------|-------------------------------------------------------------|---------------------------------------------------|--|
|                                                              |                                       |                                                 | Existing    | Without Project (2050) | With Project (2050) |                                     |                                                             |                                                   |  |
| East 1st Street                                              | West of Highland Springs Avenue       | Single-family residential; 57' from CL, 6' wall | 60.3        | 63.3                   | 64.0                | + 0.7 dBA CNEL                      | 55 / 65 dBA CNEL                                            | None                                              |  |
| Sun Lakes Boulevard                                          | East of Highland Springs Avenue       | Single-family residential; 53' from CL, 6' wall | 56.5        | 59.6                   | 62.1                | + 2.5 dBA CNEL                      | 55 / 65 dBA CNEL                                            | None                                              |  |
|                                                              | West of Highland Home Road            | Single-family residential; 53' from CL, 6' wall | 49.1        | 51.7                   | 62.7                | + 11.0 dBA CNEL                     | 55 / 65 dBA CNEL                                            | Noise level increases to Conditionally Acceptable |  |
|                                                              | East of Highland Home Road            | Currently vacant; industrial land use planned   | N/A         | N/A                    | 69.4                | N/A                                 | 70 / 75 dBA CNEL (Banning)<br>75 / 80 dBA CNEL (Riverside)  | None                                              |  |
|                                                              | West of Sunset Avenue                 | Currently vacant; industrial land use planned   | N/A         | 68.6                   | 70.0                | + 1.4 dBA CNEL                      | 70 / 75 dBA CNEL (Banning)<br>75 / 80 dBA CNEL (Riverside)  | None                                              |  |
| Westward Avenue                                              | East of Sunset Avenue                 | Single-family residential; 30' from CL, 6' wall | 50.5        | 56.6                   | 60.6                | + 4.0 dBA CNEL                      | 55 / 65 dBA CNEL                                            | None                                              |  |
| Lincoln Street                                               | East of Sunset Avenue                 | Single-family residential; 32' from CL, 6' wall | 52.8        | 62.8                   | 63.7                | + 0.9 dBA CNEL                      | 55 / 65 dBA CNEL                                            | None                                              |  |
| Highland Springs Avenue                                      | South of I-10 Eastbound Ramps         | Commercial; 80' from CL                         | 66.5        | 68.5                   | 68.4                | - 0.1 dBA CNEL                      | 65 / 75 dBA CNEL (Beaumont)<br>65 / 72.5 dBA CNEL (Banning) | None                                              |  |
|                                                              | North of Sun Lakes Boulevard          | Commercial; 75' from CL                         | 64.6        | 67.4                   | 67.4                | 0 dBA CNEL                          | 65 / 75 dBA CNEL (Beaumont)<br>65 / 72.5 dBA CNEL (Banning) | None                                              |  |
|                                                              | South of Sun Lakes Boulevard          | Single-family residential; 50' from CL, 6' wall | 57.7        | 62.0                   | 62.7                | + 0.7 dBA CNEL                      | 55 / 65 dBA CNEL (Beaumont)<br>55 / 65 dBA CNEL (Banning)   | None                                              |  |
| Highland Home Road                                           | North of Sun Lakes Boulevard          | Vehicle storage                                 | N/A         | 62.6                   | 67.6                | + 5.0 dBA CNEL                      | N/A                                                         | None                                              |  |
|                                                              | South of Sun Lakes Boulevard          | Single-family residential; 30' from CL, 6' wall | 49.3        | 51.7                   | 54.8                | + 3.1 dBA CNEL                      | 55 / 65 dBA CNEL (Banning)<br>75 / 80 dBA CNEL (Riverside)  | None                                              |  |
| Sunset Avenue                                                | I-10 Eastbound Ramps – Lincoln Street | Vacant                                          | 60.1        | 69.9                   | 67.7                | - 2.2 dBA CNEL                      | N/A                                                         | None                                              |  |
|                                                              | South of Lincoln Street               | Single-family residential; 30' from CL, 6' wall | 54.1        | 63.7                   | 63.5                | - 0.2 dBA CNEL                      | 55 / 65 dBA CNEL                                            | None                                              |  |
|                                                              | North of Westward Avenue              | Single-family residential; 40' from CL, 6' wall | 50.1        | 62.2                   | 61.3                | - 0.9 dBA CNEL                      | 55 / 65 dBA CNEL                                            | None                                              |  |
|                                                              | South of Westward Avenue              | Educational; 70' from CL                        | 50.9        | 57.2                   | 58.2                | + 1.0 dBA CNEL                      | 65 dBA CNEL (Banning)<br>75 / 80 dBA CNEL (Riverside)       | None                                              |  |
| 802 Bay Hill Road (Sun Lakes Boulevard & Highland Home Road) |                                       |                                                 | 49.9        | 52.9                   | 62.4                | + 9.5 dBA CNEL                      | 55 / 65 dBA CNEL                                            | Noise level increases to Conditionally Acceptable |  |
| 783 Sunshine Street (Westward Avenue & Sunset Avenue)        |                                       |                                                 | 51.3        | 61.4                   | 62.4                | + 1.0 dBA CNEL                      | 55 / 65 dBA CNEL                                            | None                                              |  |
| 447 Soboba Drive (Lincoln Street & Sunset Avenue)            |                                       |                                                 | 54.7        | 64.5                   | 64.6                | + 0.1 dBA CNEL                      | 55 / 65 dBA CNEL                                            | None                                              |  |

At vacant or non-noise sensitive land uses, noise level reported at 50 feet from centerline.

\* Normally / Conditionally Acceptable or Desirable Maximum / Maximum Acceptable

---

## **6.0 RECOMMENDATIONS**

No significant impacts were identified. Therefore, no recommendations are required.

---

## 7.0 REFERENCES

City of Banning. 2006. General Plan. Adopted January 31.

City of Beaumont. 2007. General Plan. Approved March.

Harris, Cyril M. 1998. Handbook of Acoustical Measurements and Noise Control, Third Edition. Acoustical Society of America. Woodbury, NY.

International Organization for Standardization (ISO). 1996a. ISO 1996/1. Acoustics – Description and Measurement of Environmental Noise – Part 1: Basic Quantities and Procedures.

1996b. ISO 1996-2. Acoustics – Description and Measurement of Environmental Noise – Part 2: Acquisition of Data Pertinent to Land Use.

1996c. ISO 1996-3. Acoustics – Description and Measurement of Environmental Noise – Part 3: Application to Noise Limits.

Riverside County. 2015. General Plan. Noise Element. December 8.

Albert A. Webb Associates. 2022. Realignment of Sun Lakes Boulevard – Westward Avenue Transportation Impact Analysis. February 24.

---

## 8.0 LIST OF PREPARERS

---

Steven Fiedler, INCE  
Principal, dBF Associates, Inc.