# CITY OF PISMO BEACH

# GENERAL PLAN NOISE ELEMENT UPDATE 2020

# TECHNICAL BACKGROUND REPORT

# 1 Acoustics Principles

## 1.1 Sound and Environmental Noise

Acoustics is the science of sound. Sound can be described as the energy of a vibrating object transmitted by pressure waves through a medium (e.g., air) to human (or animal) ear. If the pressure variations occur frequently enough (at least 20 times per second), 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). As an example of this phenomenon, a person speaking creates energy through vibration of the vocal chords, pressure waves caused from this vibration are carried through the air to a nearby listener's ear, where they are detected as the sound of a human voice.

The speed of sound in air is approximately 770 miles per hour, or 1,130 feet/second. Knowing the speed and frequency of a sound, one may calculate its wavelength, the physical distance in air from one compression of the atmosphere to the next. An understanding of wavelength is useful in evaluating the effectiveness of physical sound control devices such as mufflers or barriers, which depend upon either absorbing or blocking sound waves to reduce sound levels.

Noise is defined as loud, unexpected, or annoying sound. The fundamental acoustics model consists of a noise source, receptor, and the propagation path between the two. The loudness of the noise source, obstructions, or atmospheric factors affecting the propagation path, determine the perceived sound level and noise characteristics at the receptor. Acoustics deal primarily with the propagation and control of sound. A typical noise environment consists of ambient noise that is the sum of many distant and indistinguishable noise sources. Superimposed on this ambient noise is the sound from individual local sources. These sources can vary from an occasional aircraft or train passing by to continuous noise from traffic on a major highway. Perceptions of sound and noise are highly subjective from person to person.

Measuring sound directly in terms of pressure would require a large range of numbers. To avoid this, the decibel (dB) scale was devised. The dB scale uses the hearing threshold of 20 micropascals (µPa) 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 dB scale allows a million-fold increase in pressure to be expressed as 120 dB; another useful aspect of the decibel scale is that changes in levels (dB) are uniform throughout the scale, which corresponds closely to human perception of relative loudness.

## 1.2 Noise Descriptors

The dB scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Several rating scales have been developed to analyze the adverse effect of community noise on people. Because environmental noise fluctuates over time, these scales consider that the effect of noise on people is largely dependent on the total acoustical energy content of the noise, as well as the time of day when the noise occurs. The equivalent noise level ($L_{eq}$) is the average noise level averaged over the measurement period, while the day-night noise level ($L_{dn}$) and Community Equivalent Noise Level (CNEL) are measures of energy average during a 24-hour period, with dB weighted sound levels from 7:00 PM to 7:00 AM Most commonly, environmental sounds are described in terms of $L_{eq}$ that has the same acoustical energy as the summation of all the time-varying events.

## 1.3 Metrics Used in Noise Assessment

### A-Weighted Decibel Scale

The A weighted decibel (dBA) sound level scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be used. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends on the distance between the receptor and the noise source.

The perceived loudness of sounds is dependent on 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 dBA values. There is a strong correlation between dBA and the way the human ear perceives sound. For this reason, the dBA has become the standard tool of environmental noise assessment. All noise levels reported in this document are in terms of dBA, but are expressed as dB, unless otherwise noted.

### Addition of Decibels

The dB scale is logarithmic, not linear, and therefore sound levels cannot be added or subtracted through ordinary arithmetic. Two sound levels 10 dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic dB 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 (Caltrans 2013). When two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dBA higher than one source under the same conditions. Under the dB scale, three sources of equal loudness together would produce an increase of approximately 5 dBA. (Caltrans 2013)

### Sound Propagation and Attenuation

Sound spreads (propagates uniformly outward in a spherical pattern, and the sound level decreases (attenuates) at a rate of approximately 6 dB for each doubling of distance from a stationary or point source. Sound from a line source, such as a highway, propagates outward in a cylindrical pattern. Sound levels attenuate at a rate of approximately 3 dB for each doubling of distance from a line source, such as a roadway, depending on ground surface characteristics (Caltrans 2013). No excess attenuation is assumed for hard surfaces like a parking lot or a body of water. Soft surfaces, such as soft dirt or grass, can absorb sound, so an excess ground-attenuation value of 1.5 dB per doubling of distance is normally assumed. Thus, soft-site attenuation from a point source is at a rate of 7.5 dB for each doubling of distance, while soft-site attenuation from a line source is 4.5 dB per each doubling of distance (Caltrans 2013).

Noise levels may also be reduced by intervening structures; generally, a single row of buildings between the receptor and the noise source reduces the noise level by about 5 dBA, while a solid wall or berm reduces noise levels by 5 to 10 dBA (Cowan 1994). The way older homes in California were constructed generally provides a

reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows. The exterior-to-interior reduction of newer residential units is generally 30 dBA or more (HUD 2009).

## 1.4 Human Response to Noise

The human response to environmental noise is subjective and varies considerably from individual to individual. Noise in the community has often been cited as a health problem, not in terms of actual physiological damage, such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from interference with human activities, including sleep, speech, recreation, and tasks that demand concentration or coordination. When community noise interferes with human activities or contributes to stress, public annoyance with the noise source increases, and the acceptability of the environment for people decreases. This decrease in acceptability and the threat to public well-being is the basis for land use planning policies directed towards the prevention of exposure to excessive community noise levels. Hearing loss can occur at the highest noise intensity levels.

Noise environments and consequences of human activities are usually well represented by median noise levels during the day or night or over a 24-hour period. Environmental noise levels are generally considered low when the CNEL is below 60 dBA, moderate in the 60 to 70 dBA range, and high above 70 dBA. Examples of low daytime levels are isolated, natural settings with noise levels as low as 20 dBA and quiet, suburban, residential streets with noise levels around 40 dBA (Cowan 1994). Interior noise levels above 45 dBA at night can disrupt sleep. Examples of moderate-level noise environments are urban residential or semi-commercial areas (typically 55 to 60 dBA) and commercial locations (typically 60 dBA). People may consider louder environments adverse, but most will accept the higher levels associated with noisier urban residential or residential-commercial areas (60 to 75 dBA) or dense urban or industrial areas (65 to 80 dBA). Regarding increases in dBA, the following relationships should be noted (Caltrans 2013).

- Except in carefully controlled laboratory experiments, a 1-dBA change cannot be perceived by humans.
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference.
- A minimum 5-dBA change is required before any noticeable change in community response would be expected. A 5-dBA increase is typically considered substantial.
- A 10-dBA change is subjectively heard as an approximate doubling in loudness and would almost certainly cause an adverse change in community response.

### Health Effects of Noise on People

**Hearing Loss**. While physical damage to the ear from an intense noise impulse is rare, a degradation of auditory acuity can occur even within a community noise environment. Hearing loss occurs mainly due to chronic exposure to excessive noise but may be due to a single event such as an explosion. Natural hearing loss associated with aging may also be accelerated from chronic exposure to loud noise. The Occupational Safety and Health Administration has a noise exposure standard that is set at the noise threshold where hearing loss may occur from long-term exposures. The maximum allowable level is 90 dBA averaged over 8 hours. If the noise is above 90 dBA, the allowable exposure time is correspondingly shorter.

**Annoyance**. Attitude surveys are used for measuring the annoyance felt in a community for noises intruding into homes or affecting outdoor activity areas. In these surveys, it was determined that causes for annoyance include interference with speech, radio and television, house vibrations, and interference with sleep and rest. The $L_{dn}$ as a measure of noise has been found to provide a valid correlation of noise level and the percentage of people annoyed. People have been asked to judge the annoyance caused by aircraft noise and ground transportation noise. There continues to be disagreement about the relative annoyance of these different sources. A noise level of about 55 dBA $L_{dn}$ is the threshold at which a substantial percentage of people begin to report annoyance (FICON 1992).

# 2 Community Noise Survey

## 2.1 Description of Major Noise Sources in the Community

### 2.1.1 Transportation Noise Sources

#### Aviation

The nearest public airports to the study area are the San Luis Obispo County Regional Airport located approximately 5 miles due northwest, and the Oceano County Airport located approximately 2 miles to the south. According to the Airport Land Use Plan (ALUP 2005) the mapped 60 dB noise contour for the San Luis Obispo County Regional Airport extends no further than 1,000 feet from the runways in the direction of Pismo Beach; this 60 dB contour is therefore located more than 4.5 miles from Pismo Beach. According to the ALUP for Ocean County Airport (ALUP 2007), the 65 dB noise contour for Oceano Airport extends no closer to Pismo Beach than approximately Farroll Road in Grover Beach (approximately one mile south of the Pismo Beach City limits). High-altitude overflights for aircraft using the San Luis Obispo County Airport occur over the study area, but do not contribute to the ambient noise environment within the study area. Consequently the Pismo Beach noise environment is not affected by aircraft operations associated with airport facilities in the region.

#### Roadways

Highways are a major noise source in many jurisdictions, and they are the primary means of circulation throughout Pismo Beach. Pismo Beach is primarily subject to noise impacts from US Highway 101 and State Route 1. US Highway 101 roughly bisects Pismo Beach in the southern and central portions of the City, and is aligned along the east side of urban development in the northern portion of the City. The relatively central alignment of US Highway 101 means that traffic noise from this facility affects much of the area within the City. State Route 1 is a separate two-lane at grade highway only within the southern section of the City, joining with US Highway 101 in the vicinity of Pismo Preserve. State Route 1 generally bisects the western urban areas of the City between US Highway 101 and the beach. With more limited traffic and only two travel lanes, noise from Route 1 is not as extensive as that from US Highway 101. One short-term noise measurement and manual traffic counts were conducted for each of these highways to characterize existing noise levels.

Major arterial roadways in Pismo Beach also contribute traffic noise to the ambient noise environment. While traffic speeds are lower on these facilities than on highways, setback distances from travel lanes to adjacent uses tend to be less, and therefore noise from arterial roadways can result in unacceptably high noise levels at adjacent noise-sensitive land uses. Dudek completed a short-term noise measurement and manual traffic counts

for Ocean Boulevard, North 4th Street, Mattie Road, North Oak Boulevard, Price Canyon Road, and Shell Beach Road, to characterize existing traffic noise levels along these roadways.

#### Railroads

The Union Pacific Railroad (UPRR) owns rail lines that traverse Pismo Beach, carrying UPRR freight trains and Amtrak passenger trains. The UPRR line extends from the Bello Street industrial area at the City's northern boundary, due south to the vicinity of Pismo State Beach before continuing on to Grover Beach.

Although train noise is intermittent, it is a significant source of noise due to its magnitude and associated vibration effects. Train noise is comprised of the sounds of the locomotive engine, wheel-on-rail noise, and train whistles near at-grade roadway crossings. For train horns to be an effective warning device for motorists, they must provide a sound level capable of initiating a response from the driver as the train approaches the crossing. Dudek completed a 24-hour continuous sound level measurement adjacent to the UPRR alignment in order to characterize community noise levels associated with train operations.

### 2.1.2 Industrial - Commercial Noise Sources

#### Industrial Sources

Noise from industrial businesses and large stationary sources varies but can result in substantially elevated noise levels and impacts on adjacent noise-sensitive land uses. Industrial operations often involve the use of mechanical equipment, generators, and vehicles that contribute to noise levels at industrial sites, particularly if operations occur outdoors. Pismo Beach has one area designated for industrial uses; the area is situated east of Price Canyon Road, generally north of Bello Street, and along the west side of the UPRR alignment (described above). Currently this area serves as storage and staging for Pacific Gas and Electric. Dudek conducted a 24-hour measurement near the closest residences west of this industrial area to characterize community noise levels from industrial operations.

#### Commercial Sources

Most of the commercial businesses in Pismo Beach are aligned along Price Street, Shell Beach Road, 5 Cities Drive, and Hinds Avenue/Price Canyon Road. The Pismo Beach Premium Outlets represents the largest commercial use, by size and in relation to traffic generation. As a major commercial land use and stationary noise source, Dudek completed a 24-hour measurement near the closest residences south of Pismo Beach Premium Outlets area to characterize community noise levels from major commercial retail operations.

## 2.2 Existing Noise Levels

### 2.2.1 Sound Level Measurement Program

Existing noise conditions present in the City of Pismo Beach were inventoried by Dudek in October 2019. Two types of sound-level measurements were taken: short-term (varying from 5 to 30 minutes) measurements were performed along highways and major local roadways to characterize noise levels associated with transportation facilities and for calibration of the transportation noise model; and, 24-hour measurements were performed

adjacent to the railroad, in the vicinity of the Price Canyon Road industrial area, and adjacent to the Pismo Beach Premium outlets. Noise measurement location points are illustrated in Exhibit 1 (at the back of this report).

Sound-level measurements were performed using two different integrating sound-level meters: A Rion Model NL-32 (American National Standards Institute [ANSI] Type I), and three SoftdB Piccolo II Model (ANSI Type II). ANSI Type I and Type II sound-level meters both have sufficient accuracy to be used for environmental noise evaluation. The sound-level meters were calibrated before and after each series of measurements using a Rion Model NC-74 calibrator.

## SHORT-TERM MEASUREMENTS

### Roadway Sound Level Measurements

Since roadway traffic is often a primary contributor to the noise environment in any community, short-term noise measurements were conducted adjacent to selected existing roadways within Pismo Beach. These measurements are useful in characterizing ambient noise levels along roadways, as well as providing sound data and manual traffic counts used to calibrate the transportation noise model. A total of 10 short-term noise measurements were conducted. The results of short-term roadway traffic noise measurements are presented in Table 1. Field data for each short-term sound level measurement are provided in Attachment 1 (Short-term Noise Measurements Field Data Sheets), including measured sound levels, manual traffic count results, distance from the roadway edge to the measurement point, vehicle speed on the roadway, and measurement point identification.

**Table 1**
**Roadway Noise Level Measurements (Existing) (dBA)**

| ST # | Date Measured | Measurement Time Period | $L_{eq}$ | $L_{max}$ | $L_{min}$ | Roadway |
|---|---|---|---|---|---|---|
| 1 | 10/22/19 | 11:35 - 11:50 | 55 | 62 | 50 | **Seacliff Drive** (between Paddock & Baker) |
| 2 | | 12:30 - 12:45 | 54 | 61 | 49 | **Ocean Blvd.** (between Palisade & Seaview) |
| 3 | | 14:05 - 14:20 | 43 | 46 | 41 | **Dugan Road.** (between Christine & Elaine) |
| 4 | | 9:40 - 9:45 | 72 | 76 | 69 | **US Highway 101** (at southbound 5 Cities Drive ramps) |
| 5 | | 13:00 - 13:10 | 69 | 83 | 51 | **State Route 1** (between Park & Addie) |
| 6 | | 10:10 - 10:20 | 73 | 82 | 49 | **North 4th Street** (south of 5 Cities Drive) |
| 7 | | 10:50 - 11:20 | 66 | 80 | 62 | **Mattie Road** (between Foothill and Bayfront) |
| 8 | | 13:50 – 14:00 | 67 | 79 | 45 | **North Oak Park Blvd.** (south of Dell Ct.) |
| 9 | | 13:20 - 13:30 | 71 | 86 | 48 | **Price Canyon Road.** (south of Meadowlark) |
| 10 | | 12:00 - 12:15 | 66 | 83 | 55 | **Shell Beach Road.** (south of Ebb Tide Lane) |

Traffic noise measurements (short-term) were collected using the Rion NL-32 ANSI Type I Meter. The meter was placed on a tri-pod at approximately five feet above the ground, in accordance with the ANSI standard for environmental noise measurements. The sound level meter was oriented toward the adjacent street, and a windscreen was employed. The distance from the edge of the pavement to the sound level meter was noted in the field data sheet for each measurement location. The number of cars, medium trucks, and heavy trucks

passing the measurement point during the measurement period were tallied, along with identification of the posted speed limit for the roadway. The duration was noted for each measurement, and sound levels including $L_{eq}$. $L_{max}$, $L_{min}$, and other percentile statistics were recorded on the data sheet for each measurement location (Refer to Attachment 1). The measurement identifications (ST#) in Table 1 correspond to locations illustrated in Exhibit 1 for these short-term measurements.

As presented in Table 1, recorded traffic noise levels range from a high of 73 dBA $L_{eq}$ to a low of 43 dBA $L_{eq}$. The highest traffic noise levels are associated with US Highway 101, North 4th Street, and Price Canyon Road, with each of these roadways carrying a large number of vehicles at higher speeds. Dugan Road (LT3) had the lowest recorded noise level, and there were also no vehicles that passed the measurement point during the measurement. There were also no vehicles that passed the measurement point on Seacliff Drive (LT1) during the measurement, but background surf noise was dominant at this measurement point along the sea cliff, resulting in a moderate recorded noise level of 55 dBA $L_{eq}$.

## LONG-TERM MEASUREMENTS

Dudek completed a total of three long-term (24-hour) measurements to characterize environmental noise associated with industrial, commercial, and railroad operations. Long term measurement locations (LT#) are indicated on Exhibit 1 (at the end of this report). Measurements were conducted using three SoftdB Piccolo II Model (ANSI Type II) sound level meters. The measurements were unattended, but locked cases were employed to prevent tampering of the meters. The Piccolo meters were calibrated before and after the 24-hour measurements to verify accuracy.

The Piccolo meters were configured to record data each hour (using a one-hour averaging period) across the entire 24-hour measurement. Sound level metrics including $L_{eq}$. $L_{max}$, $L_{min}$, and other percentile statistics were recorded for each hourly period. Data logs for each long term measurement location are included in Attachment 3. Based on the recorded hourly averages at each long-term measurement location, the CNEL was calculated at these monitoring locations; a CNEL worksheet for each location is also provided in Attachment 3.

Table 2 summarizes the minimum ($L_{min}$) and maximum ($L_{max}$) sound levels recorded for each monitor location during the 24-hour measurement, as well as the calculated 24-hour weighted average noise level (CNEL). The sound monitor location description and source being measured are also provided in Table 2 for each monitor location. More detail about each monitoring location is provided below Table 2.

### Table 2
### Ambient Sound Level Measurements (dBA)

| Site | Location | Noise Sources | Dates | CNEL | $L_{max}$ | $L_{min}$ |
|---|---|---|---|---|---|---|
| LT1 | Closest residences west of Price Canyon Industrial Area | Price Canyon Industrial Area | 10/22/19 – 10/23/19 | 56 | 82.5 | 37.1 |
| LT2 | Adjacent to UPRR alignment, vicinity of Park View Avenue | UPRR train operations | 10/22/19 – 10/23/19 | 66 | 94.9 | 43 |
| LT3 | Near closest residences, southwest corner of Pismo Premium Outlets | Pismo Premium Outlets | 10/22/19 – 10/23/19 | 64 | 92.7 | 43.1 |

### Industrial Noise Sources (LT1)

The only area designated for industrial uses within Pismo Beach is located along the west side of the UPRR alignment, north of Bello Street, and east of Price Canyon Road. To characterize industrial noise levels, a 24-hour measurement was conducted along Dell Court, between two widely-spaced residences closest to the western boundary of the industrial area (LT1 on Exhibit 1). The measurement location is approximately 300 feet from the western boundary of the industrial area. A 56 dBA CNEL at this location was determined from hourly average noise levels. Using this CNEL value and separation distance from the industrial area, the distance to the 70, 65 and 60 CNEL contours was calculated. This calculation was based upon outdoor attenuation rates of 6 dBA per doubling of distance for a point source. This calculation ignores topography, the presence of structures or walls, and the presence of vegetation, and is therefore very conservative (i.e., the presence of topography between the industrial uses and receivers would partially or fully block the propagation of sound, reducing the distance from the industrial noise source to the calculated noise contour boundary). The distance to the 70, 65, and 60 dBA CNEL contour associated with the industrial area operations is reported in Table C (Attachment 2).

### Railroad Noise Sources (LT2)

To characterize community noise levels from rail (train) operations, a 24-hour measurement was conducted along the UPRR tracks, in the vicinity of Park View Avenue (LT2 on Exhibit 1). The measurement location is approximately 40 feet from the center of the tracks. A 66 dBA CNEL at this location was determined from hourly average noise levels. Using this CNEL value and separation distance from the industrial area, the distance to the 70, 65 and 60 CNEL contours was calculated. This calculation was based upon outdoor attenuation rates of 3 dBA per doubling of distance for a line source. This calculation is a conservative worst-case distance, ignoring topography, the presence of structures or walls, and the presence of vegetation. The distance to the 70, 65, and 60 dBA CNEL contour associated with UPRR operations is reported in Table C (Attachment 2).

### Commercial Noise Sources (LT3)

The Pismo Beach Premium Outlets represents the largest commercial use, by size and in relation to traffic generation. To characterize noise levels associated with major commercial operations, a 24-hour measurement was conducted at the southwest corner of the Pismo Premium Outlets, near the closest adjacent residences (LT3 on Exhibit 1). The measurement location is approximately 55 feet from the southern boundary of the Pismo Premium Outlets site. A 64 dBA CNEL at this location was determined from hourly average noise levels. Using this CNEL value and separation distance from the commercial retail operations, the distance to the 70, 65 and 60 CNEL contours was calculated. This calculation was based upon outdoor attenuation rates of 6 dBA per doubling of distance for a point source. This calculation is a conservative worst-case distance, ignoring topography, the presence of structures or walls, and the presence of vegetation. The distance to the 70, 65, and 60 dBA CNEL contour associated with UPRR operations is reported in Table C (Attachment 2).

## 2.2.2 Traffic Noise Modeling (Existing Conditions)

The traffic noise levels presented in Table 1 are the average noise level ($L_{eq}$) over the period of the measurement. In order to determine the CNEL associated with current traffic volumes, traffic modeling is performed. The existing CNEL was calculated for each of the roadways represented by the short-term measurement locations, except for ST1 and ST3. The roadway segments adjacent to ST1 and ST3 had no traffic occurring during the measurement, and no published traffic data exists for these roads (Seacliff Drive and Dugan Road). As such, ST1 and ST3 are representative of ambient noise levels in residential areas removed from major transportation noise

sources. Adjacent to the ocean, residences can expect a background level of approximately 55 dBA $L_{eq}$.hourly; in areas removed from both the ocean and US Highway 101, residential neighborhood noise levels are as low as 43 dBA $L_{eq}$.hourly.

Traffic counts, vehicle speeds, roadway configuration, and noise levels recorded during the short-term measurement at ST2 and at ST4 through ST10 were used to set up and calibrate the TNM 2.5 Traffic Noise Model (FHWA 2004) in order to model existing traffic noise (CNEL) along the roadway segments adjacent to these measurement points. In accordance with FHWA guidelines for TNM 2.5, the counted vehicles at each measurement point were normalized to a one-hour volume (for example if the measurement period was for thirty minutes, the counted number of vehicles was doubled to account for vehicles passing the measurement point during a 60-minute period). The normalized traffic volume, vehicle composition ratios, vehicle speeds, and lane configurations recorded during the noise measurement at each location were used to calibrate the model and verify the input used in the noise model. The modeled $L_{eq}$ for short-term measurement locations are within one dB of the measured noise levels. This result generally confirms the assumptions used in the noise model.

The calibrated noise model was then run using "existing" average daily trip (ADT) data from the Citywide Transportation Model and Circulation Study, Final Report (Pismo Beach 2016) for each of the selected highway and roadway segments. The existing scenario input ADT data for the model runs in presented in Attachment 2 (Table A - Traffic Count Data and Future traffic Volume Forecast Summary). The calculated existing CNEL for each selected highway and roadway segment is also presented in Attachment 2 (Table B - Traffic Noise Levels and Noise Contour Boundary Distances). The TNM 2.5 model runs used a uniform distance of 50 feet from the centerline of US Highway 101, and 25 feet from the center-line of all other roadways. The CNEL values at this uniform distance are reported in Table B.

The modeled CNEL at a given distance of 50 feet (US Highway 101) or 25 feet (all other roadways) from the roadway was then used to calculate the distance from the roadway center-line to the boundary of the 70, 65, and 60 dBA CNEL contours. This calculation was based upon outdoor attenuation rates of 3 dBA per doubling of distance for a line source. This calculation ignores topography, the presence of structures or walls, and the presence of vegetation, and is therefore very conservative (i.e., the presence of buildings along a roadway would partially or fully block the propagation of sound, reducing the distance from the roadway to the calculated noise contour boundary). The distance to the 70, 65, and 60 dBA CNEL contour is also reported in Table B.

## 2.3 Predicted Future Noise Levels

Roadway transportation represents the most important and pervasive noise source for a compact community such as Pismo Beach. Therefore the prediction of future community noise levels in Pismo Beach rests heavily on modeling of traffic noise associated with ADT forecasts pertaining to major local roadways and highways. The Citywide Transportation Model and Circulation Study, Final Report (Pismo Beach 2016) provides the forecast ADT to the year 2035 for each of the selected highway and roadway segments. In order to extend the forecast to Year 2040, Dudek applied the annual growth rate indicated in the 2019 Regional Transportation Plan (SLOCOG 2019). The RTP identifies an annual growth rate of 0.053%, which Dudek applied to the 2035 ADT values in the Circulation Study, to increment the predicted ADT values to the Year 2040.

The calibrated noise model was then run using the calculated Year 2040 ADT data (described above) for each of the selected highway and roadway segments. The Year 2040 scenario input ADT data for the model runs in presented in Attachment 2 (Table A - Traffic Count Data and Future traffic Volume Forecast Summary). The

calculated Year 2040 CNEL for each selected highway and roadway segment is also presented in Attachment 2 (Table B - Traffic Noise Levels and Noise Contour Boundary Distances). The TNM 2.5 model runs used a uniform distance of 50 feet from the centerline of US Highway 101, and 25 feet from the center-line of all other roadways. The modeled Year 2040 CNEL values at this uniform distance are reported in Table B.

The modeled Year 2040 CNEL at a given distance of 50 feet (US Highway 101) or 25 feet (all other roadways) from the roadway was then used to calculate the distance from the roadway center-line to the boundary of the 70, 65, and 60 dBA CNEL contours. This calculation was based upon outdoor attenuation rates of 3 dBA per doubling of distance for a line source. This calculation is a conservative worst-case distance, ignoring topography, the presence of structures or walls, and the presence of vegetation. The distance to the 70, 65, and 60 dBA CNEL contour is also reported in Table B.

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SOURCE: NAIP 2016; San Luis Obispo County 2019

DUDEK 0 1,200 2,400 Feet

**EXHIBIT 1**

Noise Measurement Locations

Pismo Beach Noise Element Update ▯ Background Technical Report

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# ATTACHMENT 1

## FIELD DATA SHEETS - SHORT TERM MEASUREMENTS

DUDEK

# FIELD NOISE MEASUREMENT DATA

PROJECT: Pismo Beach NEU — PROJECT #: 11924
SITE ID: ST-1 Memory Park
SITE ADDRESS:
START DATE: 10/22 — END DATE: 10/22
START TIME: 11:35 — END TIME: 11:50
OBSERVER(S): JVL

**METEOROLOGICAL CONDITIONS**

TEMP: 72 F — HUMIDITY: 38 % R.H. — WIND: (CALM) LIGHT MODERATE
WINDSPD: 0 MPH — DIR. N NE S SE S SW W NW — VARIABLE STEADY GUSTY
SKY: (SUNNY) (CLEAR) OVRCAST PRTLY CLDY FOG RAIN

**ACOUSTIC MEASUREMENTS**

MEAS. INSTRUMENT: RION NL-32 — TYPE (1) 2 — SERIAL # 01030561
CALIBRATOR: RION NC-74 — SERIAL # 34678576
CALIBRATION CHECK — PRE-MEASUREMENT: 94 dBA SPL — POST-MEASUREMENT: 94 dBA SPL — WINDSCRN: X

SETTINGS: (A-WTD) (SLOW) FAST (FRONTAL) RANDOM ANSI OTHER:

| REC. # | BEGIN | END | Leq | Lmax | Lmin | L90 | L50 | L10 | OTHER (SPECIFY METRIC |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 11:35 | 11:50 | 55.2 | 61.6 | 50.1 | 52.3 | 54.3 | 57.4 | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

COMMENTS: MEMORY PARK - ADJACENT TO CLIFF STREET
TYPICAL DAYTIME FOR RESIDENTIAL NEIGHBORHOOD

**SOURCE INFO AND TRAFFIC COUNTS**

PRIMARY NOISE SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL OTHER: BACKGROUNDS
ROADWAY TYPE: — DIST. TO RDWY C/L OR EOP:
TRAFFIC COUNT DURATION: ___ MIN — SPEED

| COUNT 1 (OR RDWY 1) DIRECTION | NB/EB | SB/WB | NB/EB SPEED | SB/WB SPEED |
|---|---|---|---|---|
| AUTOS | | | | |
| MED TRKS | | | | |
| HVY TRKS | | | | |
| BUSES | | | | |
| MOTRCLS | | | | |

IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE ___

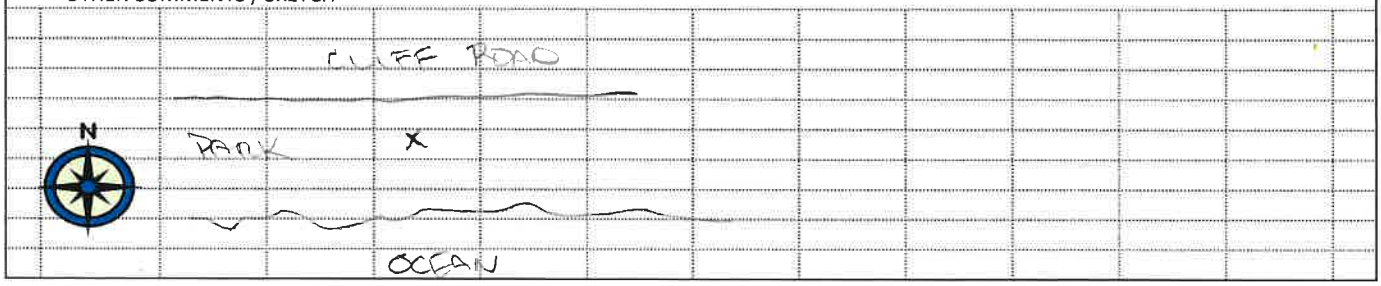
| COUNT 2 (OR RDWY 2) | NB/EB | SB/WB | NB/EB SPEED | SB/WB SPEED |
|---|---|---|---|---|
| ___ MIN | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
POSTED SPEED LIMIT SIGNS SAY:

OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT RUSTLING LEAVES DIST. BARKING DOGS BIRDS DIST. INDUSTRIAL
DIST. KIDS PLAYING DIST. CONVRSTNS / YELLING DIST. TRAFFIC (LIST RDWYS BELOW) DISTD GARDENERS/LANDSCAPING NOISE
OTHER: OCEAN SURF

**DESCRIPTION / SKETCH**

TERRAIN: HARD SOFT (MIXED) FLAT OTHER:
PHOTOS: #8 > #9
OTHER COMMENTS / SKETCH:



DUDEK

# FIELD NOISE MEASUREMENT DATA

PROJECT: PISMO BEACH NEU | PROJECT #: 11924
SITE ID: ST-2
SITE ADDRESS: OCEAN BLVD. | OBSERVER(S): JVL
START DATE: 10/22 | END DATE: 10/22
START TIME: 12:30 | END TIME: 12:45

**METEOROLOGICAL CONDITIONS**

TEMP: 74 F | HUMIDITY: 35 % R.H. | WIND: CALM (LIGHT) MODERATE
WINDSPD: 2 MPH | DIR. N (NE) S SE S SW W NW | VARIABLE STEADY GUSTY
SKY: (SUNNY) (CLEAR) | OVRCAST PRTLY CLDY FOG RAIN

**ACOUSTIC MEASUREMENTS**

MEAS. INSTRUMENT: RION NL-32 | TYPE 1 (2) | SERIAL # 01030561
CALIBRATOR: RION NC-74 | SERIAL # 34678576
CALIBRATION CHECK: PRE-MEASUREMENT 94 dBA SPL | POST-MEASUREMENT 94 dBA SPL | WINDSCRN X

SETTINGS: (A-WTD) (SLOW) FAST | FRONTAL (RANDOM) ANSI | OTHER:

| REC. # | BEGIN | END | Leq | Lmax | Lmin | L90 | L50 | L10 | OTHER (SPECIFY METRIC |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 12:30 | 12:45 | 53.6 | 60.9 | 49.3 | 51.3 | 52.6 | 55.6 | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

COMMENTS: BACKGROUND FOR RESIDENTIAL NEIGHBORHOOD AT BEACH. LITTLE TRAFFIC ON OCEAN BLVD DURING MEASURE.

**SOURCE INFO AND TRAFFIC COUNTS**

PRIMARY NOISE SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL OTHER: SURF STREAM/SEA WAVES
ROADWAY TYPE: COLLECTOR | DIST. TO RDWY C/L OR EOP: 10'

TRAFFIC COUNT DURATION: ___ MIN | SPEED 25

| COUNT 1 (OR RDWY 1) DIRECTION | NB/EB | SB/WB | NB/EB SPEED | SB/WB SPEED |
|---|---|---|---|---|
| AUTOS | 5 | | | |
| MED TRKS | 0 | | | |
| HVY TRKS | 0 | | | |
| BUSES | 0 | | | |
| MOTRCLS | 0 | | | |

IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE ___

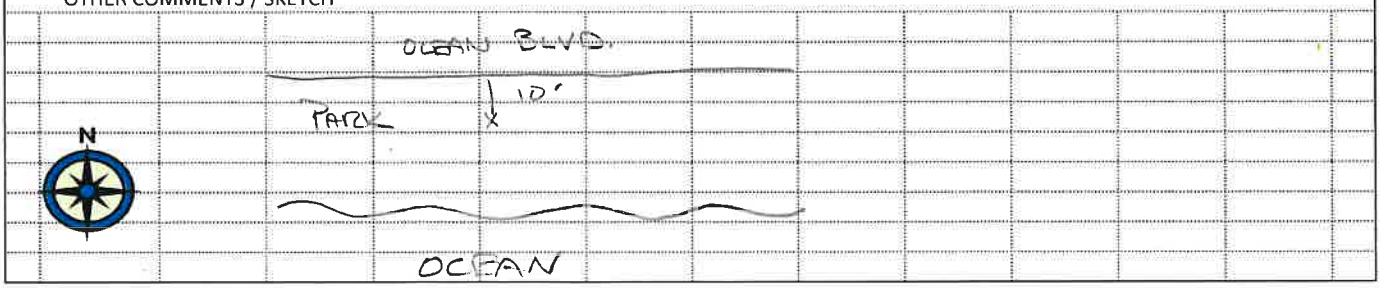
| COUNT 2 (OR RDWY 2) | NB/EB | SB/WB | NB/EB SPEED | SB/WB SPEED |
|---|---|---|---|---|
| ___ MIN | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
POSTED SPEED LIMIT SIGNS SAY: 25

OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT RUSTLING LEAVES DIST. BARKING DOGS BIRDS DIST. INDUSTRIAL
DIST. KIDS PLAYING DIST. CONVRSTNS / YELLING DIST. TRAFFIC (LIST RDWYS BELOW) DISTD GARDENERS/LANDSCAPING NOISE
OTHER: OCEAN SURF

**DESCRIPTION / SKETCH**

TERRAIN: (HARD) SOFT MIXED FLAT OTHER:
PHOTOS: #13 & #14
OTHER COMMENTS / SKETCH



DUDEK

# FIELD NOISE MEASUREMENT DATA

PROJECT: PISMO BEACH NEU | PROJECT #: 11924
SITE ID: ST-3
SITE ADDRESS: DUGAN RD @ ELAINE WAY | OBSERVER(S): TVL
START DATE: 10/22/19 | END DATE: 10/22/19
START TIME: 2:05 | END TIME: 2:20

**METEOROLOGICAL CONDITIONS**

TEMP: 74 F | HUMIDITY: 32 % R.H. | WIND: CALM (LIGHT) MODERATE
WINDSPD: 3 MPH | DIR. N (NE) S SE S SW W NW | VARIABLE (STEADY) GUSTY
SKY: (SUNNY) (CLEAR) | OVRCAST | PRTLY CLDY | FOG | RAIN

**ACOUSTIC MEASUREMENTS**

MEAS. INSTRUMENT: RION NL-32 | TYPE (1) 2 | SERIAL # 01030561
CALIBRATOR: Rion NC-74 | SERIAL # 34678576
CALIBRATION CHECK | PRE-MEASUREMENT: 94.0 dBA SPL | POST-MEASUREMENT: 94.0 dBA SPL | WINDSCRN: x

SETTINGS: A-WTD | SLOW | FAST | FRONTAL | RANDOM | ANSI | OTHER:

| REC. # | BEGIN | END | Leq | Lmax | Lmin | L90 | L50 | L10 | OTHER (SPECIFY METRIC |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2:05 | 2:20 | 42.7 | 45.9 | 41.1 | 41.7 | 42.3 | 44.1 | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

COMMENTS

**SOURCE INFO AND TRAFFIC COUNTS**

PRIMARY NOISE SOURCE: TRAFFIC | AIRCRAFT | RAIL | INDUSTRIAL | OTHER: BACKGROUND
ROADWAY TYPE: | DIST. TO RDWY C/L OR (EOP): 8'

TRAFFIC COUNT DURATION: ___ MIN | SPEED

| COUNT 1 (OR RDWY 1) | DIRECTION | NB/EB | SB/WB | NB/EB SPEED | SB/WB SPEED |
|---|---|---|---|---|---|
| | AUTOS | | | | |
| | MED TRKS | | | | |
| | HVY TRKS | | | | |
| | BUSES | | | | |
| | MOTRCLS | | | | |

IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE: ___

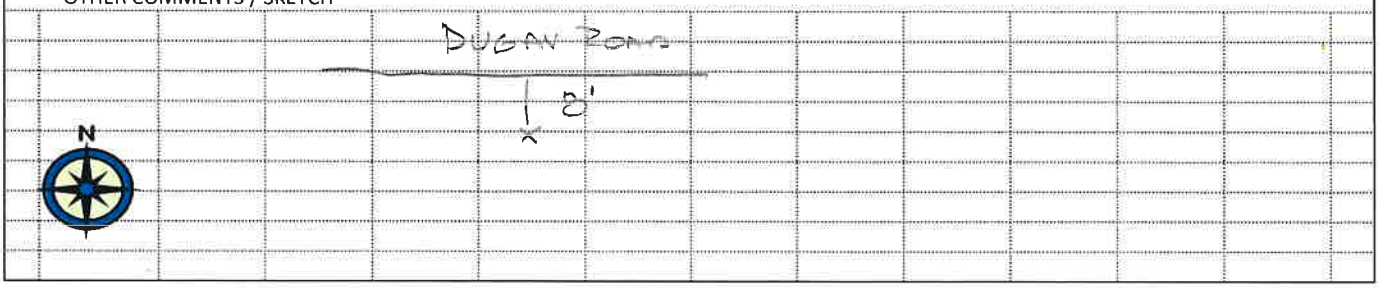
| COUNT 2 (OR RDWY 2) | ___ MIN | NB/EB | SB/WB | NB/EB SPEED | SB/WB SPEED |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
POSTED SPEED LIMIT SIGNS SAY:

OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT | RUSTLING LEAVES | DIST. BARKING DOGS | BIRDS | DIST. INDUSTRIAL
DIST. KIDS PLAYING | DIST. CONVRSTNS / YELLING | DIST. TRAFFIC (LIST RDWYS BELOW) | DISTD GARDENERS/LANDSCAPING NOISE
OTHER: DISTANT US101, TRAIN HORN

**DESCRIPTION / SKETCH**

TERRAIN: (HARD) SOFT MIXED (FLAT) OTHER:
PHOTOS: #19, #20
OTHER COMMENTS / SKETCH



DUDEK

# FIELD NOISE MEASUREMENT DATA

PROJECT: PISMO BEACH NEU | PROJECT #: 11974
SITE ID: ST-4
SITE ADDRESS: FIVE CITIES DRIVE McDONALDS | OBSERVER(S): JVL
START DATE: 10/22 | END DATE: 10/22
START TIME: | END TIME:

**METEOROLOGICAL CONDITIONS**

TEMP: 72 F | HUMIDITY: 36 % R.H. | WIND: (CALM) LIGHT MODERATE
WINDSPD: 0 MPH | DIR. N NE S SE S SW W NW | VARIABLE STEADY GUSTY
SKY: (SUNNY) (CLEAR) OVRCAST PRTLY CLDY FOG RAIN

**ACOUSTIC MEASUREMENTS**

MEAS. INSTRUMENT: RION NL-32 | TYPE (1) 2 | SERIAL # 01030561
CALIBRATOR: RION NC-74 | SERIAL # 34678576
CALIBRATION CHECK: PRE-MEASUREMENT 94 dBA SPL | POST-MEASUREMENT 94 dBA SPL | WINDSCRN X

SETTINGS: (A-WTD) (SLOW) FAST (FRONTAL) RANDOM ANSI OTHER:

| REC. # | BEGIN | END | Leq | Lmax | Lmin | L90 | L50 | L10 | OTHER (SPECIFY METRIC |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 9:40 | 9:45 | 72.4 | 75.8 | 63.7 | 69.3 | 72.1 | 74.4 | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

COMMENTS: 10-15' ABOVE ELEVATION OF U.S. 101

**SOURCE INFO AND TRAFFIC COUNTS**

PRIMARY NOISE SOURCE: (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL OTHER:
ROADWAY TYPE: US 101 | DIST. TO RDWY C/L OR (EOP): 125'

TRAFFIC COUNT DURATION: ___ MIN SPEED ___ | ___ MIN SPEED

| | DIRECTION | COUNT 1 (OR RDWY 1) NB/EB | COUNT 1 (OR RDWY 1) SB/WB | COUNT 1 NB/EB SPEED | COUNT 1 SB/WB SPEED | COUNT 2 (OR RDWY 2) NB/EB | COUNT 2 (OR RDWY 2) SB/WB | COUNT 2 NB/EB SPEED | COUNT 2 SB/WB SPEED |
|---|---|---|---|---|---|---|---|---|---|
| | AUTOS | 316 | | | | | | | |
| | MED TRKS | 4 | | | | | | | |
| | HVY TRKS | 14 | | | | | | | |
| | BUSES | 1 | | | | | | | |
| | MOTRCLS | 2 | | | | | | | |

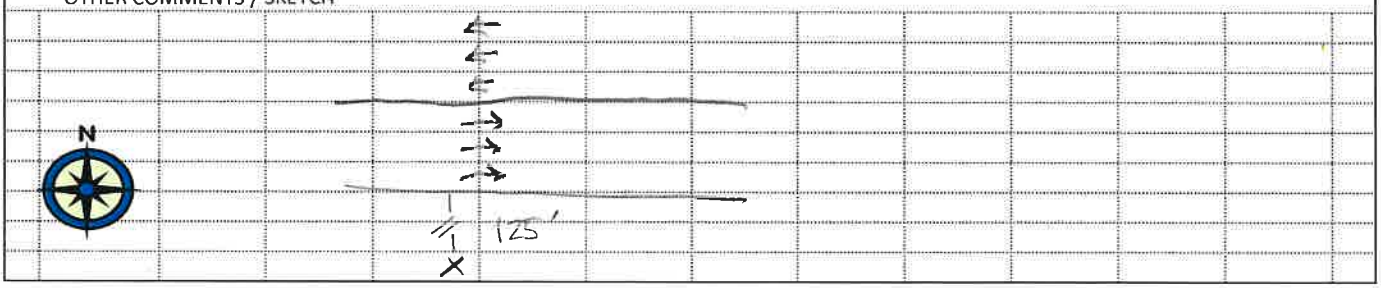
IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE: X

SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
POSTED SPEED LIMIT SIGNS SAY: 65

OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT RUSTLING LEAVES DIST. BARKING DOGS BIRDS DIST. INDUSTRIAL
DIST. KIDS PLAYING DIST. CONVRSTNS / YELLING DIST. TRAFFIC (LIST RDWYS BELOW) DISTD GARDENERS/LANDSCAPING NOISE
OTHER:

**DESCRIPTION / SKETCH**

TERRAIN: HARD SOFT (MIXED) FLAT OTHER:
PHOTOS: #1 & #2
OTHER COMMENTS / SKETCH



# FIELD NOISE MEASUREMENT DATA

DUDEK

PROJECT: MSMD BEACH NEU | PROJECT #: 11924
SITE ID: ST-5
SITE ADDRESS: US 1 | OBSERVER(S): JVL
START DATE: 10/22 | END DATE: 10/22
START TIME: 1:00 | END TIME:

**METEOROLOGICAL CONDITIONS**

TEMP: 74 F | HUMIDITY: 32 % R.H. | WIND: CALM (LIGHT) MODERATE
WINDSPD: 3 MPH | DIR. N (NE) S SE S SW W NW | VARIABLE STEADY GUSTY
SKY: SUNNY CLEAR OVRCAST PRTLY CLDY FOG RAIN

**ACOUSTIC MEASUREMENTS**

MEAS. INSTRUMENT: Rion NL-32 | TYPE (1) 2 | SERIAL # 01030561
CALIBRATOR: Rion NC-74 | SERIAL # 34678576
CALIBRATION CHECK: PRE-MEASUREMENT 94.0 dBA SPL | POST-MEASUREMENT 94.0 dBA SPL | WINDSCRN X

SETTINGS: (A-WTD) (SLOW) FAST (FRONTAL) RANDOM ANSI OTHER:

| REC. # | BEGIN | END | Leq | Lmax | Lmin | L90 | L50 | L10 | OTHER (SPECIFY METRIC |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1:00 | 1:10 | 69.3 | 83.0 | 51.3 | 58.7 | 67.2 | 72.2 | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

COMMENTS

**SOURCE INFO AND TRAFFIC COUNTS**

PRIMARY NOISE SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL OTHER:
ROADWAY TYPE: | DIST. TO RDWY C/L OR EOP:
TRAFFIC COUNT DURATION: ___ MIN | SPEED

| COUNT 1 (OR RDWY 1) DIRECTION | NB/EB | SB/WB | NB/EB SPEED | SB/WB SPEED |
|---|---|---|---|---|
| AUTOS | 129 | | | |
| MED TRKS | 3 | | | |
| HVY TRKS | 3 | | | |
| BUSES | 0 | | | |
| MOTRCLS | 2 | | | |

IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE: X

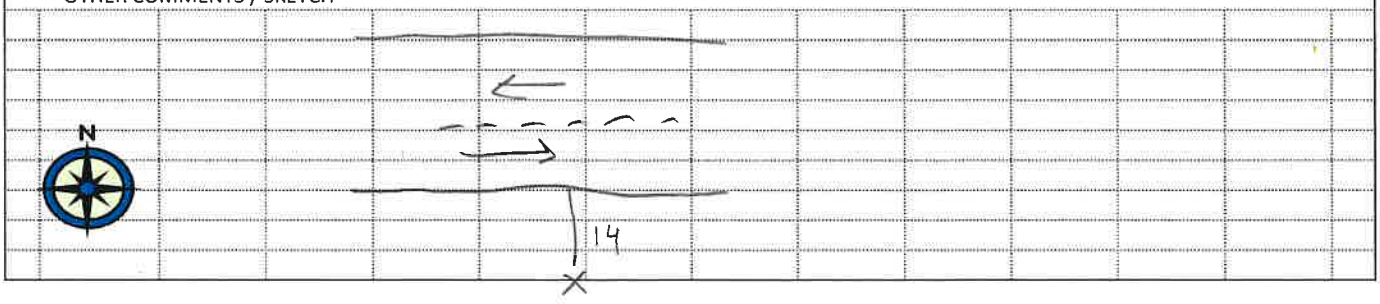
| COUNT 2 (OR RDWY 2) | ___ MIN NB/EB | SB/WB | SPEED NB/EB | SB/WB |
|---|---|---|---|---|
| | | | | |
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SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
POSTED SPEED LIMIT SIGNS SAY: 45

OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT RUSTLING LEAVES DIST. BARKING DOGS BIRDS DIST. INDUSTRIAL
DIST. KIDS PLAYING DIST. CONVRSTNS / YELLING DIST. TRAFFIC (LIST RDWYS BELOW) DISTD GARDENERS/LANDSCAPING NOISE
OTHER:

**DESCRIPTION / SKETCH**

TERRAIN: HARD SOFT MIXED FLAT OTHER:
PHOTOS: # 15 & #16
OTHER COMMENTS / SKETCH



# FIELD NOISE MEASUREMENT DATA

DUDEK

PROJECT: PISMO BEACH NEU — PROJECT #: 11924
SITE ID: ST-6
SITE ADDRESS: 11TH STREET — OBSERVER(S): JVL
START DATE: 10/22 — END DATE: 10/22
START TIME: — END TIME:

**METEOROLOGICAL CONDITIONS**

TEMP: 72 F — HUMIDITY: 36 % R.H. — WIND: (CALM) LIGHT MODERATE
WINDSPD: 0 MPH — DIR. N NE S SE S SW W NW — VARIABLE STEADY GUSTY
SKY: (SUNNY) (CLEAR) OVRCAST PRTLY CLDY FOG RAIN

**ACOUSTIC MEASUREMENTS**

MEAS. INSTRUMENT: RION NL-32 — TYPE (1) 2 — SERIAL # 01030561
CALIBRATOR: RION NC-74 — SERIAL # 34678576
CALIBRATION CHECK — PRE-MEASUREMENT: 94 dBA SPL — POST-MEASUREMENT: 94 dBA SPL — WINDSCRN: X

SETTINGS: (A-WTD) (SLOW) FAST (FRONTAL) RANDOM ANSI OTHER:

| REC. # | BEGIN | END | Leq | Lmax | Lmin | L90 | L50 | L10 | OTHER (SPECIFY METRIC |
|---|---|---|---|---|---|---|---|---|---|
| | 10:10 | 10:20 | 72.8 | 81.5 | 49.5 | 59.9 | 70.2 | 76.7 | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

COMMENTS:

**SOURCE INFO AND TRAFFIC COUNTS**

PRIMARY NOISE SOURCE: (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL OTHER:
ROADWAY TYPE: ARTERIAL — DIST. TO RDWY C/L OR (EOP): 10' EDGE OF LANE
TRAFFIC COUNT DURATION: ___ MIN SPEED ___ — ___ MIN SPEED

| COUNT 1 (OR RDWY 1) | DIRECTION | NB/EB | SB/WB | NB/EB | SB/WB |
|---|---|---|---|---|---|
| | AUTOS | 128 | | | |
| | MED TRKS | 1 | | | |
| | HVY TRKS | 3 | | | |
| | BUSES | 1 | | | |
| | MOTRCLS | 0 | | | |

IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE: X

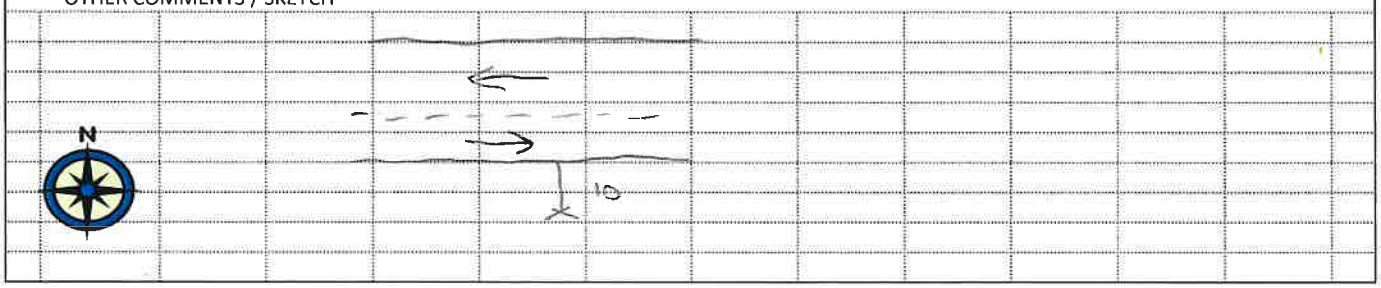
| COUNT 2 (OR RDWY 2) | NB/EB | SB/WB | NB/EB | SB/WB |
|---|---|---|---|---|
| | | | | |
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| | | | | |

SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
POSTED SPEED LIMIT SIGNS SAY: 45

OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT RUSTLING LEAVES DIST. BARKING DOGS BIRDS DIST. INDUSTRIAL
DIST. KIDS PLAYING DIST. CONVRSTNS / YELLING DIST. TRAFFIC (LIST RDWYS BELOW) DISTD GARDENERS/LANDSCAPING NOISE
OTHER:

**DESCRIPTION / SKETCH**

TERRAIN: (HARD) SOFT MIXED FLAT OTHER:
PHOTOS: #3 & #4
OTHER COMMENTS / SKETCH



DUDEK

# FIELD NOISE MEASUREMENT DATA

PROJECT: PISMO BEACH NEU | PROJECT #: 11924
SITE ID: ST-7
SITE ADDRESS: MATTIE ROAD | OBSERVER(S): JVL
START DATE: 10/22 | END DATE: 10/22
START TIME: 10:50 | END TIME: 11:20

**METEOROLOGICAL CONDITIONS**

TEMP: 72 F | HUMIDITY: 36 % R.H. | WIND: CALM (LIGHT) MODERATE
WINDSPD: 3 MPH | DIR. N (NE) S SE S SW W NW | VARIABLE (STEADY) GUSTY
SKY: (SUNNY) (CLEAR) OVRCAST PRTLY CLDY FOG RAIN

**ACOUSTIC MEASUREMENTS**

MEAS. INSTRUMENT: RION NL-32 | TYPE (1) 2 | SERIAL # 01030561
CALIBRATOR: RION NC-74 | SERIAL # 34678576
CALIBRATION CHECK | PRE-MEASUREMENT: 94 dBA SPL | POST-MEASUREMENT: 94 dBA SPL | WINDSCRN: X

SETTINGS: (A-WTD) (SLOW) FAST (FRONTAL) RANDOM ANSI OTHER:

| REC. # | BEGIN | END | Leq | Lmax | Lmin | L90 | L50 | L10 | OTHER (SPECIFY METRIC |
|---|---|---|---|---|---|---|---|---|---|
| | 10:50 | 11:20 | 65.7 | 79.8 | 57.1 | 62.0 | 64.5 | 67.3 | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

COMMENTS

**SOURCE INFO AND TRAFFIC COUNTS**

PRIMARY NOISE SOURCE: (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL OTHER:
ROADWAY TYPE: | DIST. TO RDWY C/L OR (EOP): 9'
TRAFFIC COUNT DURATION: ___ MIN | SPEED

| COUNT 1 (OR RDWY 1) DIRECTION | NB/EB | SB/WB | NB/EB SPEED | SB/WB SPEED |
|---|---|---|---|---|
| AUTOS | 38 | | | |
| MED TRKS | 0 | | | |
| HVY TRKS | 0 | | | |
| BUSES | 0 | | | |
| MOTRCLS | 1 | | | |

IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE: X

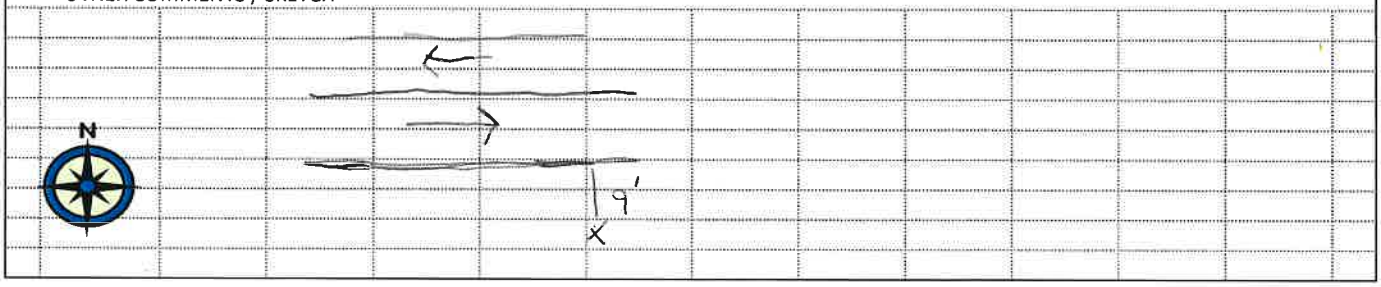
| COUNT 2 (OR RDWY 2) | NB/EB | SB/WB | NB/EB SPEED | SB/WB SPEED |
|---|---|---|---|---|
| | | | | |
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| | | | | |
| | | | | |

SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
POSTED SPEED LIMIT SIGNS SAY: 35

OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT RUSTLING LEAVES DIST. BARKING DOGS BIRDS DIST. INDUSTRIAL
DIST. KIDS PLAYING DIST. CONVRSTNS / YELLING DIST. TRAFFIC (LIST RDWYS BELOW) DISTD GARDENERS/LANDSCAPING NOISE
OTHER: US 101 BACKGROUND

**DESCRIPTION / SKETCH**

TERRAIN: (HARD) SOFT MIXED FLAT OTHER:
PHOTOS: #5 & #6 & #7
OTHER COMMENTS / SKETCH



DUDEK

# FIELD NOISE MEASUREMENT DATA

PROJECT: PISMO BEACH NEU | PROJECT #: 11924
SITE ID: ST-8
SITE ADDRESS: N. OAK PARK BLVD | OBSERVER(S): JVL
START DATE: 10/22/19 | END DATE: 10/22/19
START TIME: 1:50 | END TIME:

**METEOROLOGICAL CONDITIONS**

TEMP _____ F | HUMIDITY _____ % R.H. | WIND: CALM / LIGHT / MODERATE
WINDSPD _____ MPH | DIR. N NE E SE S SW W NW | VARIABLE / STEADY / GUSTY
SKY: SUNNY / CLEAR / OVRCAST / PRTLY CLDY / FOG / RAIN

**ACOUSTIC MEASUREMENTS**

MEAS. INSTRUMENT: RION NL-32 | TYPE (1) 2 | SERIAL # 01030561
CALIBRATOR: RION NC-74 | SERIAL # 34678576
CALIBRATION CHECK | PRE-MEASUREMENT 94.0 dBA SPL | POST-MEASUREMENT 94.0 dBA SPL | WINDSCRN X

SETTINGS: A-WTD / SLOW / FAST / FRONTAL / RANDOM / ANSI / OTHER:

| REC. # | BEGIN | END | Leq | Lmax | Lmin | L90 | L50 | L10 | OTHER (SPECIFY METRIC |
|---|---|---|---|---|---|---|---|---|---|
| | 1:50 | 2:00 | 67.3 | 79.1 | 45.1 | 49.6 | 63.3 | 71.3 | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

COMMENTS

**SOURCE INFO AND TRAFFIC COUNTS**

PRIMARY NOISE SOURCE: TRAFFIC / AIRCRAFT / RAIL / INDUSTRIAL / OTHER: _____
ROADWAY TYPE: _____ | DIST. TO RDWY C/L OR EOP: 10'
TRAFFIC COUNT DURATION: ___ MIN | SPEED 40 | ___ MIN | SPEED

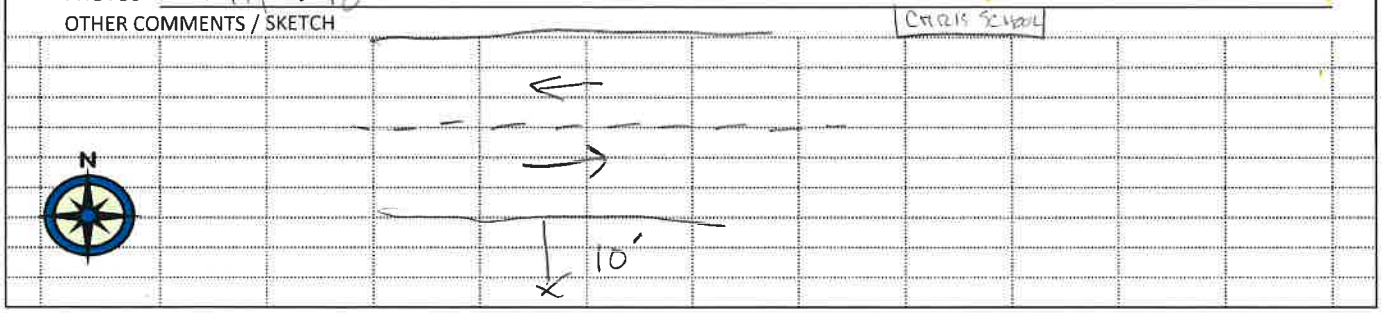
| | DIRECTION | NB/EB | SB/WB | NB/EB | SB/WB | IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE | | NB/EB | SB/WB | NB/EB | SB/WB |
|---|---|---|---|---|---|---|---|---|---|---|---|
| COUNT 1 (OR RDWY 1) | AUTOS | 82 | | | | | COUNT 2 (OR RDWY 2) | | | | |
| | MED TRKS | 3 | | | | | | | | | |
| | HVY TRKS | 0 | | | | | | | | | |
| | BUSES | 1 | | | | | | | | | |
| | MOTRCLS | 0 | | | | | | | | | |

SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
POSTED SPEED LIMIT SIGNS SAY: 40

OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT / RUSTLING LEAVES / DIST. BARKING DOGS / BIRDS / DIST. INDUSTRIAL
DIST. KIDS PLAYING / DIST. CONVRSTNS / YELLING / DIST. TRAFFIC (LIST RDWYS BELOW) / DISTD GARDENERS/LANDSCAPING NOISE
OTHER: _____

**DESCRIPTION / SKETCH**

TERRAIN: HARD / SOFT / MIXED / FLAT / OTHER: _____
PHOTOS #17, #18
OTHER COMMENTS / SKETCH



DUDEK

# FIELD NOISE MEASUREMENT DATA

PROJECT: PISMO BEACH NEU | PROJECT #: 11924
SITE ID: ST-9
SITE ADDRESS: PRICE CANYON ROAD @ DELL CT | OBSERVER(S): JVL
START DATE: 10/22/19 | END DATE: 10/22/19
START TIME: 1:20 | END TIME: 1:30

**METEOROLOGICAL CONDITIONS**

TEMP: 74 F | HUMIDITY: 34 % R.H. | WIND: (CALM) LIGHT MODERATE
WINDSPD: 0 MPH | DIR. N NE S SE S SW W NW | VARIABLE STEADY GUSTY
SKY: (SUNNY) (CLEAR) OVRCAST PRTLY CLDY FOG RAIN

**ACOUSTIC MEASUREMENTS**

MEAS. INSTRUMENT: RION NL-32 | TYPE (1) 2 | SERIAL # 01030561
CALIBRATOR: RION NC-74 | SERIAL # 34678576
CALIBRATION CHECK: PRE-MEASUREMENT 94 dBA SPL | POST-MEASUREMENT 94 dBA SPL | WINDSCRN X

SETTINGS: A-WTD SLOW FAST FRONTAL RANDOM ANSI OTHER:

| REC. # | BEGIN | END | Leq | Lmax | Lmin | L90 | L50 | L10 | OTHER (SPECIFY METRIC |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1:20 | 1:30 | 71.0 | 86.5 | 48.3 | 53.5 | 64.9 | 74.2 | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

COMMENTS

**SOURCE INFO AND TRAFFIC COUNTS**

PRIMARY NOISE SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL OTHER:
ROADWAY TYPE: | DIST. TO RDWY C/L OR (EOP): 12 ft.
TRAFFIC COUNT DURATION: ___ MIN | SPEED 45

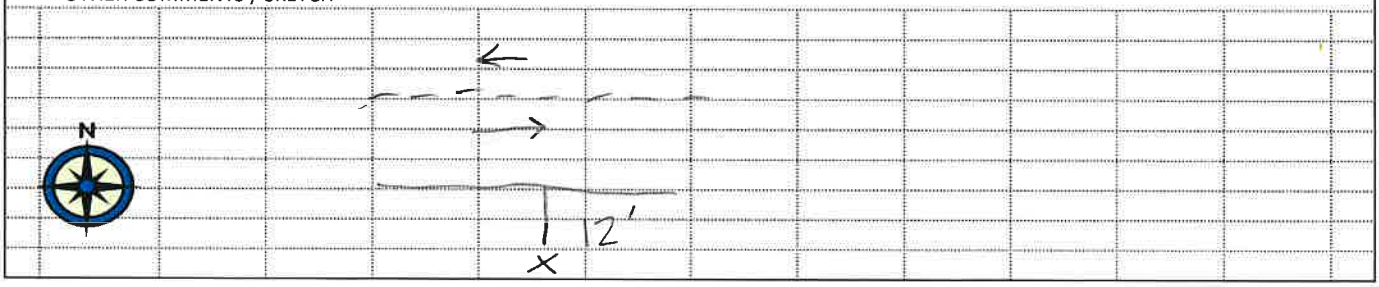
| | DIRECTION | COUNT 1 (OR RDWY 1) NB/EB | COUNT 1 (OR RDWY 1) SB/WB | COUNT 1 NB/EB SPEED | COUNT 1 SB/WB SPEED | IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE ___ | COUNT 2 (OR RDWY 2) NB/EB | COUNT 2 (OR RDWY 2) SB/WB | COUNT 2 NB/EB SPEED | COUNT 2 SB/WB SPEED |
|---|---|---|---|---|---|---|---|---|---|---|
| | AUTOS | 81 | | | | | | | | |
| | MED TRKS | 4 | | | | | | | | |
| | HVY TRKS | 7 | | | | | | | | |
| | BUSES | 0 | | | | | | | | |
| | MOTRCLS | 0 | | | | | | | | |

SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
POSTED SPEED LIMIT SIGNS SAY: 45

OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT RUSTLING LEAVES DIST. BARKING DOGS BIRDS DIST. INDUSTRIAL
DIST. KIDS PLAYING DIST. CONVRSTNS / YELLING DIST. TRAFFIC (LIST RDWYS BELOW) DISTD GARDENERS/LANDSCAPING NOISE
OTHER: BACKGROUND LEAF BLOWER

**DESCRIPTION / SKETCH**

TERRAIN (HARD) SOFT MIXED (FLAT) OTHER:
PHOTOS #15, #16
OTHER COMMENTS / SKETCH



# FIELD NOISE MEASUREMENT DATA

DUDEK

PROJECT: PISMO BEACH NEW | PROJECT #: 11924
SITE ID: ST-10
SITE ADDRESS: SHELL BEACH ROAD | OBSERVER(S):
START DATE: 10/22 | END DATE: 10/22
START TIME: NOON | END TIME: 12:15

**METEOROLOGICAL CONDITIONS**

TEMP: 76 F | HUMIDITY: 34 % R.H. | WIND: CALM (LIGHT) MODERATE
WINDSPD: 3 MPH | DIR. N (NE) S SE S SW W NW | VARIABLE STEADY GUSTY
SKY: (SUNNY) (CLEAR) | OVRCAST PRTLY CLDY FOG RAIN

**ACOUSTIC MEASUREMENTS**

MEAS. INSTRUMENT: RION NL-32 | TYPE (1) 2 | SERIAL # 00305161
CALIBRATOR: RION NC-74 | SERIAL # 34678576O
CALIBRATION CHECK: PRE-MEASUREMENT 94 dBA SPL | POST-MEASUREMENT 94 dBA SPL | WINDSCRN X

SETTINGS: A-WTD SLOW FAST FRONTAL RANDOM ANSI OTHER:

| REC. # | BEGIN | END | Leq | Lmax | Lmin | L90 | L50 | L10 | OTHER (SPECIFY METRIC |
|---|---|---|---|---|---|---|---|---|---|
| | 12:00 | 12:15 | 66.1 | 83.3 | 54.9 | 58.7 | 62.1 | 69.3 | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

COMMENTS: BACKGROUND US101 NOISE MICROPHONE ORIENTED TOWARD SHELL BEACH ROAD, AWAY FROM US101

**SOURCE INFO AND TRAFFIC COUNTS**

PRIMARY NOISE SOURCE: (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL OTHER: US 101 BACKGROUND
ROADWAY TYPE: ARTERIAL | DIST. TO RDWY C/L OR (EOP): 7 FT-
TRAFFIC COUNT DURATION: ___ MIN SPEED ___ | ___ MIN SPEED

| COUNT 1 (OR RDWY 1) | DIRECTION | NB/EB | SB/WB | NB/EB | SB/WB |
|---|---|---|---|---|---|
| | AUTOS | | 71 | | |
| | MED TRKS | | 2 | | |
| | HVY TRKS | | 1 | | |
| | BUSES | | 0 | | |
| | MOTRCLS | | 0 | | |

IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE ___

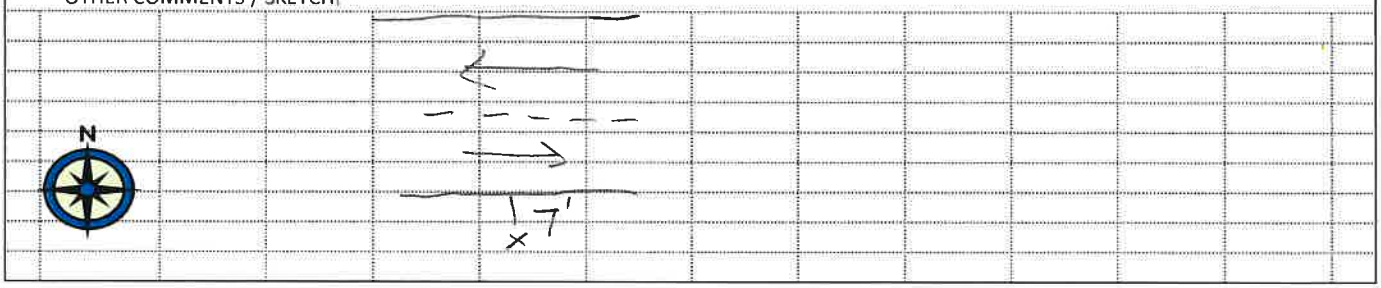
| COUNT 2 (OR RDWY 2) | NB/EB | SB/WB | NB/EB | SB/WB |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
POSTED SPEED LIMIT SIGNS SAY: 35

OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT RUSTLING LEAVES DIST. BARKING DOGS BIRDS DIST. INDUSTRIAL
DIST. KIDS PLAYING DIST. CONVRSTNS / YELLING DIST. TRAFFIC (LIST RDWYS BELOW) DISTD GARDENERS/LANDSCAPING NOISE
OTHER:

**DESCRIPTION / SKETCH**

TERRAIN (HARD) SOFT MIXED FLAT OTHER:
PHOTOS #10 & 11 & 12
OTHER COMMENTS / SKETCH



# ATTACHMENT 2

## TRAFFIC NOISE MODELING DATA AND RESULTS

**TABLE A** - Traffic Count Data and Future Traffic Volume Forecast Summary

| Site | Road | Minutes | Autos | MT/Bus | HT | Total A+MT+HT | % Auto | % MT | % HT | Hourly Trips | Speed (mph) | EOP Distance | # of Lanes | $L_{eq}$ | Existing ADT City Streets [3] | Existing ADT Highway [4] | 2040 ADT Highway [5] | 2040 ADT City Streets [6] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ST-1 | Seacliff Drive [1] | 15 | 0 | 0 | 0 | 0 | N/A | N/A | N/A | 0 | 25 | 8 | 2 | 55.2 | - | - | - | - |
| ST-2 | Ocean Boulevard | 15 | 5 | 0 | 0 | 5 | 100% | 0% | 0% | 20 | 25 | 10 | 2 | 53.6 | 200 | - | - | 221 |
| ST-3 | Dugan Road (at Elawe Way) [1] | 15 | 0 | 0 | 0 | 0 | N/A | N/A | N/A | 0 | 25 | 8 | 2 | 42.7 | - | - | - | - |
| ST-4 | US Highway 101 (adjacent to 5 Cities Drive) | 5 | 318 | 5 | 14 | 337 | 94% | 1% | 4% | 4044 | 65 | 125 | 4 | 72.4 | - | 69600 | 77652 | - |
| ST-5 | US 1 | 10 | 131 | 3 | 3 | 137 | 96% | 2% | 2% | 822 | 45 | 14 | 2 | 69.3 | - | 7900 | 8814 | - |
| ST-6 | 4th Street | 10 | 128 | 2 | 3 | 133 | 96% | 2% | 2% | 798 | 45 | 10 | 2 | 72.8 | 8990 | - | - | 10210 |
| ST-7 | Mattie Road | 30 | 39 | 0 | 0 | 39 | 100% | 0% | 0% | 78 | 35 | 9 | 2 | 65.7 | 930 | - | - | 1281 |
| ST-8 | N. Oak Park Boulevard | 10 | 82 | 4 | 0 | 86 | 95% | 5% | 0% | 516 | 40 | 10 | 2 | 67.3 | 16090 | - | - | 19283 |
| ST-9 | Price Canyon Road (at Dell Court) | 10 | 81 | 4 | 7 | 92 | 88% | 4% | 8% | 552 | 45 | 12 | 2 | 71 | 4630 | - | - | 5823 |
| ST-10 | Shell Beach Road | 15 | 71 | 2 | 1 | 74 | 96% | 3% | 1% | 296 | 35 | 7 | 2 | 66.1 | 3530 | - | - | 4131 |
| | | | | | | | | | | | | | | | | | | |
| 2018 Circulation Element Update IS/MND Data | US 101: Price St (North) to Mattie Road | - | - | - | - | - | - | - | - | - | 65 | 50 | 4 | - | - | 64670 | 72152 | - |
| | US 101: North of Avila Beach Drive [2] | - | - | - | - | - | - | - | - | - | 65 | 50 | 4 | - | - | 62020 | 69195 | - |
| | US 101: South of Oak Park Blvd. [2] | - | - | - | - | - | - | - | - | - | 65 | 50 | 4 | - | - | 62230 | 69429 | - |
| | US 101: Price St (South) to Prce St (North) | - | - | - | - | - | - | - | - | - | 65 | 50 | 4 | - | - | 62840 | 70110 | - |
| | US 101: Mattie Road to Spyglass Drive | - | - | - | - | - | - | - | - | - | 65 | 50 | 4 | - | - | 63550 | 70902 | - |
| | US 101: Spyglass Drive to Avila Beach Drive | - | - | - | - | - | - | - | - | - | 65 | 50 | 4 | - | - | 64860 | 72364 | - |
| | US 101: Oak Park Blvd to Fourth St | - | - | - | - | - | - | - | - | - | 65 | 50 | 4 | - | - | 71070 | 79292 | - |
| | US 101: Fourth St to Price St | - | - | - | - | - | - | - | - | - | 65 | 50 | 4 | - | - | 78600 | 87693 | - |

Table Notes:

1 Measurement collected to characterize residential neghborhood sound levels distant from major traffic sources, no traffic occurred on adjacent street during measurement.
2 This segment of US 101 is adjacent to, but outside, Pismo Beach City limits.
3 Existing Local Street Roadway Volumes from Citywide Transportation Model and Circulation Study 2016; ADT for local roadways not included in 2016 study based upon manual traffic counts during short-term sound measurements.
4 US 101 segments ADT and US 1 segment ADT from 2018 Pismo Beach General Plan Circulation Element Update IS/MND.
5 Year 2040 volumes based on 2016 Circulation Study, with 2019 RTP annual growth rates (0.5%) applied to predict increase from 2035 to 2040.
6 Year 2040 volumes based on 2016 Circulation Study, with 2019 RTP annual growth rates (0.5%) applied to predict increase from 2035 to 2040.

**TABLE A** - Traffic Count Data and Future Traffic Volume Forecast Summary

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**TABLE B -TRAFFIC NOISE LEVELS AND NOISE CONTOUR BOUNDARY DISTANCES**

**Project Number:** 11924
**Project Name:** Pismo Beach NEU

DUDEK

**Noise Model Assumptions and Background Data**

Model Description: FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels.
Traffic Data Source: 2017 Circulation Element Update MND, San Luis Obispo County RTP 2019
Community Noise Descriptor: CNEL

| 24 Hour Traffic Distrbution Assumptions | Day | Evening | Night |
|---|---|---|---|
| Total ADT Volumes | 77.70% | 12.70% | 9.60% |
| Medium Trucks | 87.43% | 5.05% | 7.52% |
| Heavy Trucks | 89.10% | 2.64% | 8.06% |

**CNEL Contour Notes:**
" - " countour is located within the roadway right-of-way
Distance is from the centerline of the roadway segment
to the receptor location.

| Analysis Condition / Highway Segment | Lanes | Median Width | ADT Volume | Design Speed (mph) | Vehicle Mix: Medium Trucks | Vehicle Mix: Heavy Trucks | CNEL at 50 Feet | Distance from Centerline of Roadway to Contour: 70 CNEL | 65 CNEL | 60 CNEL |
|---|---|---|---|---|---|---|---|---|---|---|
| **US Highway 101** | | | | | | | | | | |
| Price Street to Mattie Road, Existing | 4 | 25 | 64,670 | 65 | 5% | 6% | 75.5 | 177 | 561 | 1774 |
| Price Street to Mattie Road, 2040 | 4 | 25 | 72,152 | 65 | 5% | 6% | 76.0 | 199 | 629 | 1991 |
| **US Highway 101** | | | | | | | | | | |
| North of Avlia Beach Drive, Existing | 4 | 25 | 62,020 | 65 | 5% | 6% | 75.6 | 182 | 574 | 1815 |
| North of Avlia Beach Drive, 2040 | 4 | 25 | 69,195 | 65 | 5% | 6% | 76.1 | 204 | 644 | 2037 |
| **US Highway 101** | | | | | | | | | | |
| South of Oak Park Blvd, Existing | 4 | 25 | 62,230 | 65 | 5% | 6% | 75.6 | 182 | 574 | 1815 |
| South of Oak Park Blvd, 2040 | 4 | 25 | 69,429 | 65 | 5% | 6% | 76.1 | 204 | 644 | 2037 |
| **US Highway 101** | | | | | | | | | | |
| Price Street (south) to Price Street (north), Existing | 4 | 25 | 62,840 | 65 | 5% | 6% | 75.6 | 182 | 574 | 1815 |
| Price Street (south) to Price Street (north), 2040 | 4 | 25 | 70,110 | 65 | 5% | 6% | 76.1 | 204 | 644 | 2037 |
| **US Highway 101** | | | | | | | | | | |
| Mattie Road to Spyglass Drive, Existing | 4 | 25 | 63,550 | 65 | 5% | 6% | 75.7 | 186 | 587 | 1858 |
| Mattie Road to Spyglass Drive, 2040 | 4 | 25 | 70,902 | 65 | 5% | 6% | 76.2 | 208 | 659 | 2084 |
| **US Highway 101** | | | | | | | | | | |
| Spyglass Drive to Avila Beach Drive, Existing | 4 | 25 | 64,860 | 65 | 5% | 6% | 75.8 | 190 | 601 | 1901 |
| Spyglass Drive to Avila Beach Drive, 2040 | 4 | 25 | 72,364 | 65 | 5% | 6% | 76.3 | 213 | 674 | 2133 |
| **US Highway 101** | | | | | | | | | | |
| Oak Park Blvd. to Fourth Street, Existing | 4 | 25 | 71,070 | 65 | 5% | 6% | 76.6 | 229 | 723 | 2285 |
| Oak Park Blvd. to Fourth Street, 2040 | 4 | 25 | 79,292 | 65 | 5% | 6% | 77.1 | 256 | 811 | 2564 |
| **US Highway 101** | | | | | | | | | | |
| Fourth Street to Price Street, Existing | 4 | 25 | 78,600 | 65 | 5% | 6% | 77.0 | 251 | 792 | 2506 |
| Fourth Street to Price Street, 2040 | 4 | 25 | 87,693 | 65 | 5% | 6% | 77.5 | 281 | 889 | 2812 |

| Analysis Condition / Roadway Segment | Lanes | Median Width | ADT Volume | Design Speed (mph) | Vehicle Mix: Medium Trucks | Vehicle Mix: Heavy Trucks | **CNEL at 25 Feet** | Distance from Centerline of Roadway to Contour: 70 CNEL | 65 CNEL | 60 CNEL |
|---|---|---|---|---|---|---|---|---|---|---|
| **Ocean Boulevard** | | | | | | | | | | |
| Between Palisade Ave and Seaview Ave, Existing | 2 | 0 | 200 | 25 | 1% | 1% | 48.1 | - | - | - |
| Between Palisade Ave and Seaview Ave, 2040 | 2 | 0 | 221 | 25 | 1% | 1% | 48.5 | - | - | - |
| **North 4th Street** | | | | | | | | | | |
| South of 5 Cities Drive, Existing | 2 | 0 | 8,990 | 45 | 2% | 2% | 70.1 | 25 | 81 | 256 |
| South of 5 Cities Drive, 2040 | 2 | 0 | 10,210 | 45 | 2% | 2% | 70.6 | 29 | 91 | 287 |
| **Mattie Road** | | | | | | | | | | |
| Between Foothill Road and Baycliff Drive, Existing | 2 | 0 | 930 | 35 | 1% | 1% | 57.9 | - | - | - |
| Between Foothill Road and Baycliff Drive, 2040 | 2 | 0 | 1,281 | 35 | 1% | 1% | 59.3 | - | - | - |
| **North Oak Park Blvd.** | | | | | | | | | | |
| South of Meadowlark Drive, Existing | 2 | 0 | 16,090 | 40 | 2% | 1% | 71.5 | 25 | 112 | 353 |
| South of Meadowlark Drive, 2040 | 2 | 0 | 19,283 | 40 | 2% | 1% | 72.3 | 42 | 134 | 425 |
| **Price Canyon Road** | | | | | | | | | | |
| South of Dell Court, Existing | 2 | 0 | 4,630 | 45 | 2% | 4% | 67.2 | - | 41 | 131 |
| South of Dell Court, 2040 | 2 | 0 | 5,823 | 45 | 2% | 4% | 68.2 | - | 52 | 165 |
| **Shell Beach Road** | | | | | | | | | | |
| Between Solano Road and Ebb Tide Lane, Existing | 2 | 0 | 3,530 | 35 | 3% | 1% | 63.7 | - | 19 | 59 |
| Between Solano Road and Ebb Tide Lane, 2040 | 2 | 0 | 4,131 | 35 | 3% | 1% | 64.4 | - | 22 | 69 |
| **Cabrillo Highhway (US-1)** | | | | | | | | | | |
| Between Addie Street and Park Avenue, Existing | 2 | 0 | 7,900 | 45 | 2% | 2% | 69.5 | 25 | 70 | 223 |
| Between Addie Street and Park Avenue, 2040 | 2 | 0 | 8,814 | 45 | 2% | 2% | 70.0 | 25 | 79 | 250 |

**TABLE C: NON-TRAFFIC NOISE LEVELS AND NOISE CONTOUR BOUNDARY DISTANCES**

**Project Number:** **11924**
**Project Name:** **Noise Element Update**

DUDEK

| Noise Source | CNEL (dBA) | Distance from Noise Source | Distance to Contour Boundary (feet) 70 CNEL | 65 CNEL | 60 CNEL |
|---|---|---|---|---|---|
| **UPRR Rail Line** (Distance reference is center of tracks) | 66.3 | 40 | 17 | 54 | 171 |
| **Industrial Area** (Distance Reference is from boundary of Industrial Area) | 56.1 | 300 | 61 | 108 | 191 |
| **Retail Center** (Distance Reference is from boundary of Retail Center) | 63.7 | 55 | 27 | 47 | 84 |

# ATTACHMENT 3

## LONG-TERM MEASUREMENTS AND CALCULATIONS

| Number | Start Date | Start Time | End Time | SPL Time Weight | Freq Weight | LAeq | LAmax | LAmin | LApeak | L1% | L5% | L10% | L50% | L90% |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 10/22/2019 | 9:00:00 AM | 10:00:00 AM | Slow | dBA | 49.7 | 72.5 | 42.3 | 86.8 | 55.5 | 53.2 | 52 | 48.2 | 45 |
| 2 | 10/22/2019 | 10:00:00 AM | 11:00:00 AM | Slow | dBA | 46.3 | 57.9 | 38.7 | 74.7 | 53.4 | 50.4 | 49.1 | 44.8 | 41.9 |
| 3 | 10/22/2019 | 11:00:00 AM | 12:00:00 PM | Slow | dBA | 49.3 | 66.2 | 38.1 | 87.4 | 61 | 56.4 | 48.9 | 43.6 | 41.3 |
| 4 | 10/22/2019 | 12:00:00 PM | 1:00:00 PM | Slow | dBA | 50 | 67.2 | 43 | 86.6 | 61.4 | 53.2 | 49.5 | 47.1 | 45.7 |
| 5 | 10/22/2019 | 1:00:00 PM | 2:00:00 PM | Slow | dBA | 57.1 | 80.8 | 44.3 | 100.4 | 68.4 | 61.9 | 58.7 | 51.7 | 46.4 |
| 6 | 10/22/2019 | 2:00:00 PM | 3:00:00 PM | Slow | dBA | 49.5 | 75.5 | 44.6 | 86.6 | 54.5 | 50.4 | 49.5 | 47.9 | 46.2 |
| 7 | 10/22/2019 | 3:00:00 PM | 4:00:00 PM | Slow | dBA | 51.3 | 78.1 | 44.5 | 93.4 | 57.3 | 53 | 51.7 | 49.4 | 46.8 |
| 8 | 10/22/2019 | 4:00:00 PM | 5:00:00 PM | Slow | dBA | 50.9 | 63.9 | 44.9 | 89.9 | 58.3 | 53.3 | 52.1 | 50.2 | 48 |
| 9 | 10/22/2019 | 5:00:00 PM | 6:00:00 PM | Slow | dBA | 50.4 | 63.4 | 41.6 | 84.5 | 58 | 55.6 | 53.3 | 48.9 | 45 |
| 10 | 10/22/2019 | 6:00:00 PM | 7:00:00 PM | Slow | dBA | 54.2 | 65.4 | 48.8 | 84 | 58.2 | 56.9 | 56.1 | 53.7 | 51.2 |
| 11 | 10/22/2019 | 7:00:00 PM | 8:00:00 PM | Slow | dBA | 52.5 | 59.5 | 47.4 | 75 | 57.2 | 56.1 | 55.2 | 51.2 | 49.3 |
| 12 | 10/22/2019 | 8:00:00 PM | 9:00:00 PM | Slow | dBA | 49.7 | 56.9 | 45.9 | 76 | 53.6 | 52 | 51.3 | 49.4 | 47.7 |
| 13 | 10/22/2019 | 9:00:00 PM | 10:00:00 PM | Slow | dBA | 55.2 | 82.5 | 45.7 | 96.1 | 57.3 | 53.6 | 52.5 | 49.8 | 48.3 |
| 14 | 10/22/2019 | 10:00:00 PM | 11:00:00 PM | Slow | dBA | 49 | 61.5 | 43.1 | 80.9 | 54.6 | 52.1 | 51.1 | 48.2 | 46.1 |
| 15 | 10/22/2019 | 11:00:00 PM | 12:00:00 AM | Slow | dBA | 47.8 | 58.3 | 42.2 | 74 | 53.5 | 51.3 | 50.2 | 46.8 | 44.4 |
| 16 | 10/23/2019 | 12:00:00 AM | 1:00:00 AM | Slow | dBA | 44.7 | 53.6 | 40 | 70.3 | 49.3 | 47 | 46.3 | 44.3 | 42.2 |
| 17 | 10/23/2019 | 1:00:00 AM | 2:00:00 AM | Slow | dBA | 44.2 | 53.3 | 37.9 | 66.9 | 49.4 | 47.6 | 46.5 | 43.3 | 41.2 |
| 18 | 10/23/2019 | 2:00:00 AM | 3:00:00 AM | Slow | dBA | 46.1 | 60.6 | 39.1 | 75.3 | 52.5 | 49.8 | 48.3 | 45 | 42.2 |
| 19 | 10/23/2019 | 3:00:00 AM | 4:00:00 AM | Slow | dBA | 47.6 | 60.2 | 37.2 | 74.5 | 55.1 | 52.4 | 50.8 | 45.8 | 41.7 |
| 20 | 10/23/2019 | 4:00:00 AM | 5:00:00 AM | Slow | dBA | 48.1 | 71.8 | 37.1 | 86.8 | 54.5 | 51.6 | 50.3 | 45.7 | 42 |
| 21 | 10/23/2019 | 5:00:00 AM | 6:00:00 AM | Slow | dBA | 50.5 | 61.3 | 41.2 | 73.8 | 57.3 | 55.3 | 53.9 | 48.7 | 45.2 |
| 22 | 10/23/2019 | 6:00:00 AM | 7:00:00 AM | Slow | dBA | 51.4 | 72.3 | 42.6 | 96.1 | 57.6 | 55.2 | 53.9 | 50 | 47 |
| 23 | 10/23/2019 | 7:00:00 AM | 8:00:00 AM | Slow | dBA | 51 | 66.8 | 43 | 82.7 | 60.7 | 53.7 | 52.6 | 49.3 | 46.4 |
| 24 | 10/23/2019 | 8:00:00 AM | 9:00:00 AM | Slow | dBA | 49 | 60.5 | 42.4 | 83.3 | 54.6 | 51.9 | 51 | 48.2 | 46.2 |
| 25 | 10/23/2019 | 9:00:00 AM | 9:04:13 AM | Slow | dBA | 64.4 | 79.5 | 44.8 | 110.6 | 76.6 | 71.4 | 67.5 | 51.7 | 46.4 |

| Number | Start Date | Start Time | End Time | SPL Time Weight | Freq Weight | LAeq | LAmax | LAmin | LApeak | L1% | L5% | L10% | L50% | L90% |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 10/22/2019 | 9:00:00 AM | 10:00:00 AM | Slow | dBA | 62.5 | 90.1 | 44.7 | 118.1 | 71.2 | 64.6 | 63 | 58 | 49.2 |
| 2 | 10/22/2019 | 10:00:00 AM | 11:00:00 AM | Slow | dBA | 58.7 | 72.3 | 43.9 | 85.8 | 65.9 | 63.2 | 61.9 | 57.2 | 49.4 |
| 3 | 10/22/2019 | 11:00:00 AM | 12:00:00 PM | Slow | dBA | 60.7 | 73.4 | 54.1 | 91.8 | 67.6 | 63.9 | 62.8 | 59.8 | 56.7 |
| 4 | 10/22/2019 | 12:00:00 PM | 1:00:00 PM | Slow | dBA | 60.9 | 71.5 | 52 | 88.3 | 67.8 | 64.4 | 63.1 | 60 | 56.5 |
| 5 | 10/22/2019 | 1:00:00 PM | 2:00:00 PM | Slow | dBA | 60.3 | 74.8 | 51.9 | 87.8 | 67.2 | 64.2 | 62.9 | 59.1 | 54.7 |
| 6 | 10/22/2019 | 2:00:00 PM | 3:00:00 PM | Slow | dBA | 64.8 | 88.7 | 51.3 | 107.3 | 69.2 | 65.3 | 64.2 | 60.7 | 55.7 |
| 7 | 10/22/2019 | 3:00:00 PM | 4:00:00 PM | Slow | dBA | 72.3 | 94.9 | 51.1 | 114.1 | 79.2 | 68.3 | 66.5 | 61.6 | 56.1 |
| 8 | 10/22/2019 | 4:00:00 PM | 5:00:00 PM | Slow | dBA | 67.2 | 93.3 | 50.4 | 112.8 | 68.4 | 64.2 | 63.1 | 59.5 | 54.7 |
| 9 | 10/22/2019 | 5:00:00 PM | 6:00:00 PM | Slow | dBA | 61.6 | 79.8 | 50.2 | 99.9 | 68.8 | 64.9 | 63.9 | 60.4 | 55.9 |
| 10 | 10/22/2019 | 6:00:00 PM | 7:00:00 PM | Slow | dBA | 62.4 | 80.1 | 54.6 | 105.7 | 68.4 | 65.4 | 64.6 | 61.3 | 57.6 |
| 11 | 10/22/2019 | 7:00:00 PM | 8:00:00 PM | Slow | dBA | 60.5 | 69.1 | 53.7 | 82.4 | 65.7 | 64 | 63.3 | 59.7 | 56.2 |
| 12 | 10/22/2019 | 8:00:00 PM | 9:00:00 PM | Slow | dBA | 60.8 | 82.3 | 51.6 | 99.9 | 67.7 | 63.6 | 62.8 | 58.8 | 54.6 |
| 13 | 10/22/2019 | 9:00:00 PM | 10:00:00 PM | Slow | dBA | 63.2 | 84.6 | 51.9 | 101.3 | 74.1 | 64.6 | 63.1 | 58 | 54.4 |
| 14 | 10/22/2019 | 10:00:00 PM | 11:00:00 PM | Slow | dBA | 59 | 71.3 | 50.7 | 87.3 | 65.8 | 63.6 | 62.2 | 57.3 | 53.8 |
| 15 | 10/22/2019 | 11:00:00 PM | 12:00:00 AM | Slow | dBA | 55.9 | 67.1 | 43.8 | 82.1 | 64.2 | 61.5 | 59.8 | 52.9 | 46.7 |
| 16 | 10/23/2019 | 12:00:00 AM | 1:00:00 AM | Slow | dBA | 54.1 | 69.2 | 44.9 | 81.5 | 63.8 | 60.3 | 57.8 | 50.2 | 47.3 |
| 17 | 10/23/2019 | 1:00:00 AM | 2:00:00 AM | Slow | dBA | 52.4 | 65.9 | 43 | 79.2 | 62.1 | 56.6 | 54.3 | 50.6 | 46.8 |
| 18 | 10/23/2019 | 2:00:00 AM | 3:00:00 AM | Slow | dBA | 51.8 | 66.7 | 43 | 89.3 | 61.5 | 57.8 | 53.6 | 48.9 | 45 |
| 19 | 10/23/2019 | 3:00:00 AM | 4:00:00 AM | Slow | dBA | 56.2 | 66.2 | 49.5 | 79.9 | 63.3 | 60 | 58.8 | 54.9 | 52.1 |
| 20 | 10/23/2019 | 4:00:00 AM | 5:00:00 AM | Slow | dBA | 55.8 | 67.1 | 47.7 | 80.3 | 64.3 | 60.5 | 58.6 | 54 | 51.2 |
| 21 | 10/23/2019 | 5:00:00 AM | 6:00:00 AM | Slow | dBA | 58.1 | 71.4 | 46.8 | 88.8 | 65.6 | 63.1 | 61.9 | 55.3 | 50.6 |
| 22 | 10/23/2019 | 6:00:00 AM | 7:00:00 AM | Slow | dBA | 61.7 | 75.1 | 49.2 | 90.5 | 68.9 | 66.4 | 65.3 | 60 | 52.7 |
| 23 | 10/23/2019 | 7:00:00 AM | 8:00:00 AM | Slow | dBA | 67.9 | 93.1 | 50.2 | 110.1 | 69.8 | 67.8 | 67.1 | 63.3 | 56.2 |
| 24 | 10/23/2019 | 8:00:00 AM | 9:00:00 AM | Slow | dBA | 61.9 | 70.9 | 47.6 | 92 | 67.1 | 65.7 | 64.9 | 61.2 | 53.7 |
| 25 | 10/23/2019 | 9:00:00 AM | 9:12:30 AM | Slow | dBA | 61.5 | 74.6 | 47.6 | 104.9 | 69 | 66 | 64.7 | 59.8 | 52.3 |

| Number | Start Date | Start Time | End Time | SPL Time Weight | Freq Weight | LAeq | LAmax | LAmin | LApeak | L1% | L5% | L10% | L50% | L90% |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 10/22/2019 | 9:00:00 AM | 10:00:00 AM | Slow | dBA | 62.2 | 92.7 | 50.7 | 125.8 | 70.1 | 61.5 | 59 | 56.4 | 53.3 |
| 2 | 10/22/2019 | 10:00:00 AM | 11:00:00 AM | Slow | dBA | 53.1 | 64.4 | 49.4 | 82.8 | 57.4 | 55.6 | 54.7 | 52.6 | 51.2 |
| 3 | 10/22/2019 | 11:00:00 AM | 12:00:00 PM | Slow | dBA | 58.4 | 67.3 | 49.4 | 80.7 | 63.6 | 62.3 | 61.4 | 57.7 | 52.5 |
| 4 | 10/22/2019 | 12:00:00 PM | 1:00:00 PM | Slow | dBA | 55.6 | 72.9 | 49.2 | 93 | 63.5 | 60.6 | 58.4 | 53 | 51.1 |
| 5 | 10/22/2019 | 1:00:00 PM | 2:00:00 PM | Slow | dBA | 62.6 | 89.7 | 50.9 | 107.8 | 72.8 | 62.9 | 59.1 | 54.6 | 52.7 |
| 6 | 10/22/2019 | 2:00:00 PM | 3:00:00 PM | Slow | dBA | 57.3 | 70.3 | 52.7 | 85.9 | 62 | 59.2 | 58.5 | 56.8 | 55.1 |
| 7 | 10/22/2019 | 3:00:00 PM | 4:00:00 PM | Slow | dBA | 56 | 75.1 | 50.6 | 88.2 | 61.7 | 58.2 | 57.1 | 55.1 | 53.5 |
| 8 | 10/22/2019 | 4:00:00 PM | 5:00:00 PM | Slow | dBA | 54.6 | 67.9 | 50 | 84.1 | 59.4 | 57 | 56.3 | 54.1 | 51.8 |
| 9 | 10/22/2019 | 5:00:00 PM | 6:00:00 PM | Slow | dBA | 55.6 | 71.2 | 49.6 | 91.6 | 60.1 | 57.7 | 56.9 | 55.1 | 53.2 |
| 10 | 10/22/2019 | 6:00:00 PM | 7:00:00 PM | Slow | dBA | 56 | 63.7 | 51 | 79.7 | 60.2 | 59 | 58.1 | 55.4 | 53.1 |
| 11 | 10/22/2019 | 7:00:00 PM | 8:00:00 PM | Slow | dBA | 57.3 | 64.7 | 52.1 | 81.1 | 61.4 | 59.8 | 59 | 56.8 | 55 |
| 12 | 10/22/2019 | 8:00:00 PM | 9:00:00 PM | Slow | dBA | 55 | 61.4 | 51.3 | 75.2 | 58.5 | 57.5 | 56.8 | 54.5 | 52.8 |
| 13 | 10/22/2019 | 9:00:00 PM | 10:00:00 PM | Slow | dBA | 56.6 | 79.7 | 50.2 | 90.9 | 61.9 | 59.4 | 58.1 | 55.3 | 53.4 |
| 14 | 10/22/2019 | 10:00:00 PM | 11:00:00 PM | Slow | dBA | 56.1 | 63.4 | 49.6 | 79.7 | 61 | 59.1 | 58.2 | 55.5 | 53.1 |
| 15 | 10/22/2019 | 11:00:00 PM | 12:00:00 AM | Slow | dBA | 53.9 | 62.9 | 45.8 | 76.8 | 58.9 | 57.1 | 56.4 | 53.1 | 49.9 |
| 16 | 10/23/2019 | 12:00:00 AM | 1:00:00 AM | Slow | dBA | 55.3 | 69.2 | 43.6 | 82.2 | 63.1 | 59.5 | 58 | 53.6 | 48.6 |
| 17 | 10/23/2019 | 1:00:00 AM | 2:00:00 AM | Slow | dBA | 54.6 | 65.9 | 43.1 | 80 | 61.8 | 59.5 | 58.1 | 52.8 | 47.8 |
| 18 | 10/23/2019 | 2:00:00 AM | 3:00:00 AM | Slow | dBA | 54.1 | 63.7 | 43.1 | 82.5 | 61.4 | 59 | 57.5 | 52.3 | 47.1 |
| 19 | 10/23/2019 | 3:00:00 AM | 4:00:00 AM | Slow | dBA | 55.8 | 69 | 43 | 80.1 | 63.9 | 61 | 59.2 | 53.5 | 47.2 |
| 20 | 10/23/2019 | 4:00:00 AM | 5:00:00 AM | Slow | dBA | 56.8 | 71.2 | 45.8 | 88 | 62.3 | 60.7 | 59.6 | 55.8 | 52 |
| 21 | 10/23/2019 | 5:00:00 AM | 6:00:00 AM | Slow | dBA | 60 | 79.1 | 51.1 | 99.1 | 65.7 | 63.5 | 62.1 | 59.1 | 56.3 |
| 22 | 10/23/2019 | 6:00:00 AM | 7:00:00 AM | Slow | dBA | 59.5 | 72.3 | 53.6 | 91.5 | 64.1 | 62.1 | 61.4 | 58.9 | 56.1 |
| 23 | 10/23/2019 | 7:00:00 AM | 8:00:00 AM | Slow | dBA | 61.3 | 68.6 | 53.8 | 87.1 | 66 | 64.9 | 64.2 | 60.4 | 56.6 |
| 24 | 10/23/2019 | 8:00:00 AM | 9:00:00 AM | Slow | dBA | 58.6 | 79.9 | 50.2 | 102 | 67.3 | 61 | 59.9 | 56.8 | 54 |
| 25 | 10/23/2019 | 9:00:00 AM | 9:21:03 AM | Slow | dBA | 59.6 | 79.2 | 52.1 | 103.7 | 70.7 | 61.8 | 59.6 | 56.5 | 54.4 |

| Leq | Time | Adjustment | | | | | |
|---|---|---|---|---|---|---|---|
| 44.7 | Midnight | 10 | 54.7 | 54.7 | | | |
| 44.2 | 1 | 10 | 54.2 | 54.2 | | | |
| 46.1 | 2 | 10 | 56.1 | 56.1 | | | |
| 47.6 | 3 | 10 | 57.6 | 57.6 | | | |
| 48.1 | 4 | 10 | 58.1 | 58.1 | | | |
| 50.5 | 5 | 10 | 60.5 | 60.5 | | | |
| 51.4 | 6 | 10 | 61.4 | 61.4 | | | |
| 51 | 7am | | 51 | 51 | | | |
| 49 | 8 | | 49 | 49 | | | |
| 49.7 | 9 | | 49.7 | 49.7 | | | |
| 46.3 | 10 | | 46.3 | 46.3 | | | |
| 49.3 | 11 | | 49.3 | 49.3 | | | |
| 50 | noon | | 50 | 50 | | | |
| 57.1 | 1 | | 57.1 | 57.1 | | | |
| 49.5 | 2 | | 49.5 | 49.5 | | | |
| 51.3 | 3 | | 51.3 | 51.3 | | | |
| 50.9 | 4 | | 50.9 | 50.9 | | | |
| 50.4 | 5 | | 50.4 | 50.4 | | | |
| 54.2 | 6 | | 54.2 | 54.2 | | | |
| 52.5 | 7 | 5 | 57.5 | 52.5 | | | |
| 49.7 | 8 | 5 | 54.7 | 49.7 | | | |
| 55.2 | 9 | 5 | 60.2 | 55.2 | | | |
| 49 | 10 | 10 | 59 | 59 | | | |
| 47.8 | 11 | 10 | 57.8 | 57.8 | | | |
| | | | | | | | |
| | | | 56.1 | 55.5 | | | |
| | | | CNEL | LDN | | | |
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Train CNEL

| Leq | Time | Adjustment | | | | | |
|---|---|---|---|---|---|---|---|
| 54.1 | Midnight | 10 | 64.1 | 64.1 | | | |
| 52.4 | 1 | 10 | 62.4 | 62.4 | | | |
| 51.8 | 2 | 10 | 61.8 | 61.8 | | | |
| 56.2 | 3 | 10 | 66.2 | 66.2 | | | |
| 55.8 | 4 | 10 | 65.8 | 65.8 | | | |
| 58.1 | 5 | 10 | 68.1 | 68.1 | | | |
| 61.7 | 6 | 10 | 71.7 | 71.7 | | | |
| 67.9 | 7am | | 67.9 | 67.9 | | | |
| 61.9 | 8 | | 61.9 | 61.9 | | | |
| 62.5 | 9 | | 62.5 | 62.5 | | | |
| 58.7 | 10 | | 58.7 | 58.7 | | | |
| 60.7 | 11 | | 60.7 | 60.7 | | | |
| 60.9 | noon | | 60.9 | 60.9 | | | |
| 60.3 | 1 | | 60.3 | 60.3 | | | |
| 64.8 | 2 | | 64.8 | 64.8 | | | |
| 72.3 | 3 | | 72.3 | 72.3 | | | |
| 67.2 | 4 | | 67.2 | 67.2 | | | |
| 61.6 | 5 | | 61.6 | 61.6 | | | |
| 62.4 | 6 | | 62.4 | 62.4 | | | |
| 60.5 | 7 | 5 | 65.5 | 60.5 | | | |
| 60.8 | 8 | 5 | 65.8 | 60.8 | | | |
| 63.2 | 9 | 5 | 68.2 | 63.2 | | | |
| 59 | 10 | 10 | 69 | 69 | | | |
| 55.9 | 11 | 10 | 65.9 | 65.9 | | | |
| | | | | | | | |
| | | | 66.3 | 65.9 | | | |
| | | | CNEL | LDN | | | |

Retail Center CNEL

| Leq | Time | Adjustment | | | | | |
|---|---|---|---|---|---|---|---|
| 55.3 | Midnight | 10 | 65.3 | 65.3 | | | |
| 54.6 | 1 | 10 | 64.6 | 64.6 | | | |
| 54.1 | 2 | 10 | 64.1 | 64.1 | | | |
| 55.8 | 3 | 10 | 65.8 | 65.8 | | | |
| 56.8 | 4 | 10 | 66.8 | 66.8 | | | |
| 60 | 5 | 10 | 70 | 70 | | | |
| 59.5 | 6 | 10 | 69.5 | 69.5 | | | |
| 61.3 | 7am | | 61.3 | 61.3 | | | |
| 58.6 | 8 | | 58.6 | 58.6 | | | |
| 62.2 | 9 | | 62.2 | 62.2 | | | |
| 53.1 | 10 | | 53.1 | 53.1 | | | |
| 58.4 | 11 | | 58.4 | 58.4 | | | |
| 55.6 | noon | | 55.6 | 55.6 | | | |
| 62.6 | 1 | | 62.6 | 62.6 | | | |
| 57.3 | 2 | | 57.3 | 57.3 | | | |
| 56 | 3 | | 56 | 56 | | | |
| 54.6 | 4 | | 54.6 | 54.6 | | | |
| 55.6 | 5 | | 55.6 | 55.6 | | | |
| 56 | 6 | | 56 | 56 | | | |
| 57.3 | 7 | 5 | 62.3 | 57.3 | | | |
| 55 | 8 | 5 | 60 | 55 | | | |
| 56.6 | 9 | 5 | 61.6 | 56.6 | | | |
| 56.1 | 10 | 10 | 66.1 | 66.1 | | | |
| 53.9 | 11 | 10 | 63.9 | 63.9 | | | |
| | | | | | | | |
| | | | 63.7 | 63.4 | | | |
| | | | CNEL | LDN | | | |
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