6. NOISE
INTRODUCTION

Noise in a community has often been cited as being a health problem, not only in terms of actual physiological damages 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 a community arise from interference with human activities such as sleep, speech, recreation, and tasks demanding 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 corresponding threat to public well-being is the basis for land use planning policies preventing exposures to excessive community noise levels.

The Noise Element requirements contained in California Government Code Section 65302(f) are summarized as follows:

- The Noise Element shall identify and appraise noise problems in the community. The Noise Element shall recognize the guidelines established by the Office of Noise Control in the State Department of Health Services and shall analyze and quantify, to the extent practicable, as determined by the legislative body, current and projected noise levels for all of the following sources:
  - Highways and freeways.
  - Primary arterials and major local streets.
  - Passenger and freight railroad operations and ground rapid transit systems.
  - Commercial, general aviation, heliport, helistop, and military airport operations, aircraft overflights, jet engine test stands, and all other ground facilities and maintenance functions related to airport operation.
  - Local industrial plants, including, but not limited to, railroad classification yards.
  - Other ground stationary sources identified by local agencies as contributing to the community noise environment.

Noise contours shall be shown for all of these sources and stated in terms of the day-night average level ($L_{dn}$) or other appropriate noise descriptors. The noise contours shall be prepared on the basis of noise monitoring or following generally accepted noise modeling techniques for the various sources identified above.

The noise contours shall be used as a guide for establishing a pattern of land uses in the land use element that minimizes the exposure of community residents to excessive noise. The noise element shall include policies, implementation measures, and possible solutions that address existing and foreseeable noise problems, if any.

FUNDAMENTALS OF NOISE

Noise is often described as unwanted sound. Although there are many factors that can make a sound undesirable, one of the most common is loudness. The loudness of sound is measured by units called decibels (dB), and the range of sound volumes is covered by the decibel scale. A useful aspect of the decibel scale is that changes in levels correspond closely to human perception of relative loudness. This correspondence is
more closely approximated by weighing the frequency response of a sound level meter by means of the standardized A-weighing network. There is a strong correlation between A-weighted sound levels (dBA) and community response to noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this document are in terms of A-weighted levels (Figure 6-1).

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

It is commonly assumed that people are more sensitive to noise at certain times of the day. Thus, noise descriptors have been developed that give extra weight to noises that occur at certain times. The day-night average level (L_{dn}) is one such descriptor. It is based upon the average noise level over a 24-hour day, with a 10-decibel weighting applied to noise occurring during nighttime hours (10:00 p.m.-7:00 a.m.). The Community Noise Equivalent Level (CNEL) is the same as Ldn, except that CNEL also has a 3-decibel weighting applied to noise occurring during evening hours (7:00 p.m. - 10:00 p.m.). Both L_{dn} and CNEL represent 24-hour averages; thus, both descriptors tend to disguise short-term variations in the noise environment.

COMMUNITY NOISE SURVEY

The Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA-RD-77-108) with the Calveno vehicle noise emission curves was used to predict traffic noise levels within the Atwater City Limits. The FHWA Model is the traffic noise prediction model currently preferred by the Federal Highway Administration, the State of California Department of Transportation (Caltrans), and most city and county governments, for use in traffic noise assessment. Although the FHWA Model is in the process of being updated by a more sophisticated traffic noise prediction model, the use of RD-77-108 is considered acceptable for the development of General Plan traffic noise contours. The FHWA Model was used with traffic data obtained from Valley Research and Planning Technologies, published Caltrans traffic counts, and field surveys to develop existing and projected L_{dn} noise contours.

For railroads, existing noise emissions were quantified through continuous noise level measurements conducted over a 48-hour period (July 27-30, 1998) at the locations shown in Figure 6-5 on page 11.

For non-transportation sources, noise level measurements were conducted in the vicinity of the Atwater Canning Company facility, and an estimated location of the plant’s 55 dB L_{eq} noise contour was developed. To quantify existing noise levels in the quieter parts of the City of Atwater, a community noise survey was performed at seven locations in the City which are somewhat removed from major noise sources. One of the seven locations was monitored over a continuous 24-hour period, while the other six locations were each monitored for two 15-minute periods during daytime hours and one 15-minute period during nighttime hours.
### Figure 6-1

**Typical A-Weighted Sound Levels of Common Noise Sources**

<table>
<thead>
<tr>
<th>Loudness Ratio Level</th>
<th>A-Weighted Sound Level (dBA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threshold of pain</td>
<td>130</td>
</tr>
<tr>
<td>Jet aircraft take-off at 100 feet</td>
<td>120</td>
</tr>
<tr>
<td>Riveting machine at operators position</td>
<td>110</td>
</tr>
<tr>
<td>Shotgun at 200 feet</td>
<td>100</td>
</tr>
<tr>
<td>Bulldozer at 50 feet</td>
<td>90</td>
</tr>
<tr>
<td>Diesel locomotive at 300 feet</td>
<td>80</td>
</tr>
<tr>
<td>Commercial jet aircraft interior during flight</td>
<td>70</td>
</tr>
<tr>
<td>Normal conversation speech at 5-10 feet</td>
<td>60</td>
</tr>
<tr>
<td>Open office background level</td>
<td>50</td>
</tr>
<tr>
<td>Background level within a residence</td>
<td>40</td>
</tr>
<tr>
<td>Soft whisper at 2 feet</td>
<td>30</td>
</tr>
<tr>
<td>Interior of recording studio</td>
<td>20</td>
</tr>
</tbody>
</table>

Notes:
The loudness ratio is an expression of the magnitude increase of noise. A 10dBA increase in noise is perceived as twice as loud. For example, 70 dBA is perceived as twice as loud as 60 dBA.
GOAL NO-1. Protect residents from the harmful and annoying effects of exposure to excessive noise.

Policy NO-1.1. Monitor and update data regarding the community’s ambient and fixed noise levels.

Policy NO-1.2. Require that an acoustical analysis be submitted for new development in locations where exterior and/or interior noise levels will likely exceed the City’s noise standards, so that appropriate mitigation measures can be determined. The analysis must comply with the guidelines identified in Table 6-1 below.

Table 6-1 Guidelines for Acoustical Analysis

| 1. | The analysis shall be the financial responsibility of the applicant. |
| 2. | The analysis shall be prepared by a qualified person experienced in the fields of environmental noise assessment and architectural acoustics. |
| 3. | Noise levels shall be documented with sufficient sampling periods and locations to adequately describe noise conditions and noise sources. |
| 4. | Existing and projected (20 year) noise levels shall be estimated in terms of L_{dn} or CNEL and levels shall be compared to the policies of the Noise Element. |
| 5. | Mitigation shall be recommended to comply with the standards of the Noise Element, giving preference to site planning and design rather than noise barriers. |
| 6. | Noise exposure after the prescribed mitigation measures have been implemented shall be estimated. |
| 7. | A post-project assessment program to evaluate the success of mitigation measures shall be described. |

Policy NO-1.3. Encourage the use of site planning and building materials/design as primary methods of noise attenuation.

Implementation Program NO-1.a. Periodically update existing local noise maps as new information about the community’s noise environment becomes available to ensure accuracy in land use compatibility planning and appropriate mitigation of noise impacts.

Implementation Program NO-1.b. Adopt and enforce a Noise Ordinance that complies with the State’s Noise Insulation Standards. Said ordinance shall contain policies and regulations addressing both ambient and fixed source noise impacts, including but not limited to:

- Permitted days and hours for non-emergency construction (AM starting time to PM cease of operations).
- Permitted days and hours of operation for noise-generating commercial and industrial outdoor equipment (leaf blowers, parking lot sweepers, etc.) on sites located adjacent to residential areas.
- Standards geared primarily toward commercial and industrial land uses, limiting peak noise emissions measured from the property line of the noise generating use.
- Guidelines for noise measurement/monitoring activities and enforcement.

TRANSPORTATION NOISE SOURCES

Roadways

The FHWA Model was used to develop existing L_{dn} contours for SR 99 and major roadways within the City. The distances from the centerlines of the major roadways to the existing 60 and 65 dB L_{dn} contours are summarized in Table 6-2. The 60 dB L_{dn} contour locations for existing conditions on major roadways in the Atwater area are shown on Figure 6-2. The distances from the centerlines of the major roadways to the...
# Table 6-2
Traffic Noise Model Data Inputs and Distances to Existing Noise Contours

<table>
<thead>
<tr>
<th>Seg.</th>
<th>Roadway Name</th>
<th>Segment Description</th>
<th>ADT</th>
<th>Day %</th>
<th>Night %</th>
<th>Truck Usage Speed (mph)</th>
<th>Distance to L_{eq} Contours (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Med.</td>
<td>Hvy.</td>
<td>60 dB</td>
<td>65 dB</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>State Route 99</td>
<td>Buhach - Shaffer</td>
<td>63,276</td>
<td>75</td>
<td>25</td>
<td>5</td>
<td>65</td>
</tr>
<tr>
<td>2</td>
<td>Shaffer - Winton</td>
<td></td>
<td>44,983</td>
<td>75</td>
<td>25</td>
<td>5</td>
<td>65</td>
</tr>
<tr>
<td>3</td>
<td>Winton - NW City Limits</td>
<td></td>
<td>43,742</td>
<td>75</td>
<td>25</td>
<td>5</td>
<td>65</td>
</tr>
<tr>
<td>4</td>
<td>Applegate Road</td>
<td>South City Limits - Atwater</td>
<td>20,023</td>
<td>83</td>
<td>17</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>Winton Way</td>
<td>Atwater - Bellevue</td>
<td>20,353</td>
<td>83</td>
<td>17</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>Bellevue - North City Limits</td>
<td></td>
<td>14,158</td>
<td>83</td>
<td>17</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>1st Street</td>
<td>Atwater - Bellevue</td>
<td>8,407</td>
<td>83</td>
<td>17</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>Giannini</td>
<td>Atwater Jordan - Commerce</td>
<td>1,846</td>
<td>83</td>
<td>17</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>9</td>
<td>Shaffer Road</td>
<td>Atwater - Bellevue</td>
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<td>83</td>
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<td>2</td>
<td>2</td>
</tr>
<tr>
<td>10</td>
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<td>12,207</td>
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<td>2</td>
</tr>
<tr>
<td>11</td>
<td>Buhach Road</td>
<td>Broadway - Juniper</td>
<td>9,649</td>
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<td>5</td>
</tr>
<tr>
<td>12</td>
<td>Juniper - Santa Fe</td>
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<td>6,510</td>
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<tr>
<td>13</td>
<td>Atwater Boulevard</td>
<td>Wedel - Winton</td>
<td>15,425</td>
<td>83</td>
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<td>5</td>
</tr>
<tr>
<td>14</td>
<td>Winton - Shaffer</td>
<td></td>
<td>18,270</td>
<td>83</td>
<td>17</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>15</td>
<td>Commerce Avenue</td>
<td>Applegate - Industry</td>
<td>3,047</td>
<td>83</td>
<td>17</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>16</td>
<td>Broadway</td>
<td>Winton - Shaffer</td>
<td>4,063</td>
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<tr>
<td>17</td>
<td>Shaffer - 99 (to the South)</td>
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<td>6,825</td>
<td>83</td>
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<tr>
<td>18</td>
<td>Juniper Avenue</td>
<td>Winton - Shaffer</td>
<td>1,929</td>
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<tr>
<td>19</td>
<td>Shaffer - Buhach</td>
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<td>7,451</td>
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</tr>
<tr>
<td>20</td>
<td>Bellevue Road</td>
<td>Gibson - Shaffer</td>
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<tr>
<td>21</td>
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<td>83</td>
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<td>2</td>
<td>2</td>
</tr>
<tr>
<td>22</td>
<td>Santa Fe Drive</td>
<td>Bellevue - Shaffer</td>
<td>15,518</td>
<td>83</td>
<td>17</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

ADT - Average Daily Traffic
Day%/Night % - percentage of daily traffic on road at day/night
Noise Element

Projected future 60 and 65 dB $L_{dn}$ contours are summarized in Table 6-3 on the following page. The 60 dB $L_{dn}$ contour locations for projected future conditions on major roadways in the Atwater area are shown in Figure 6-3 on page 9.

To approximate the distances to the 60 dB $L_{dn}$ contour for arterial roadways not included in Tables 6-2 and 6-3 or Figures 6-2 and 6-3, the nomograph in Figure 6-4 (displayed on page 10) can be utilized.

Within the framework of the Noise Element, it is not feasible to account for the variability in the SR 99 elevation or shielding of roadway noise in the City by intervening structures. Therefore, the noise exposure contours should be considered conservative estimates of traffic noise exposure, to be supplemented by detailed and project-specific studies as needed.

Railroads

Railroad activity in the City of Atwater consists of freight and passenger operations on the Burlington Northern & Santa Fe Railroad (BN&SF) and freight operations on the Union Pacific Railroad (UPRR) tracks. On average, there were approximately 24 and 20 railroad operations on the BN&SF and UPRR lines, respectively, over a 24-hour period.

For a conservative estimate of railroad noise exposure, it was assumed that existing operations on these railroad tracks consist of 25 daily trains, and that the trains would be randomly distributed throughout the day and nighttime hours. It was also assumed that the mean sound exposure level of the trains on both lines would be approximately 103 dB at a distance of 100 feet from the railroad tracks, including horn usage. The approximate location of the future 60 dB $L_{dn}$ railroad noise level contours are shown on Figure 6-5 on page 11.

It is difficult to predict future railroad noise exposure in the City of Atwater without knowing if, or to what degree, railroad activity may change in the future. Therefore, predictions of future railroad noise exposure in the City are provided for various numbers of daily railroad operations on these lines. The results of this analysis are shown in Table 6-4.

Table 6-4
Distances to Existing and Future Railroad Noise Contours

<table>
<thead>
<tr>
<th>Number of Daily Trains</th>
<th>Distance from Railroad Tracks to Noise Contours (feet)$^1$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$60 \text{ dB } L_{dn}$</td>
</tr>
<tr>
<td>25</td>
<td>856</td>
</tr>
<tr>
<td>30</td>
<td>967</td>
</tr>
<tr>
<td>35</td>
<td>1,072</td>
</tr>
<tr>
<td>40</td>
<td>1,171</td>
</tr>
</tbody>
</table>

$^1$ Contour distances based on a mean sound exposure level of 103 dB at a reference distance of 100 feet, and a uniform distribution of trains throughout the daytime and nighttime hours.

Airport

Castle Airport is located immediately northeast of the City of Atwater. The conversion of the airfield from military to civilian use has resulted in a significant change in the characteristics of the noise generated at Castle. However, since the airfield has only recently been converted, the potential future character and volume of aircraft activity at Castle Airport remains uncertain.
## Table 6-3
Traffic Noise Model Data Inputs and Distances to Future Noise Contours

<table>
<thead>
<tr>
<th>Seg.</th>
<th>Roadway Name</th>
<th>Segment Description</th>
<th>ADT</th>
<th>Day %</th>
<th>Night %</th>
<th>Truck Usage Speed (mph)</th>
<th>Distance to $L_{eq}$ Contours (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Med.</td>
<td>Hvy.</td>
</tr>
<tr>
<td>1</td>
<td>State Route 99</td>
<td>Buhach - Shaffer</td>
<td>106,985</td>
<td>75</td>
<td>25</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Shaffer - Winton</td>
<td>80,808</td>
<td>75</td>
<td>25</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>3</td>
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<td>Winton - NW City Limits</td>
<td>76,839</td>
<td>75</td>
<td>25</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>4</td>
<td>Applegate Road</td>
<td>South City Limits - Atwater</td>
<td>10,444</td>
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<td>5</td>
<td>5</td>
</tr>
<tr>
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<td>Winton Way</td>
<td>Atwater - Bellevue</td>
<td>35,886</td>
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<td>2</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>Bellevue - North City Limits</td>
<td>24,604</td>
<td>83</td>
<td>17</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>1st Street</td>
<td>Atwater - Bellevue</td>
<td>13,078</td>
<td>83</td>
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<td>2</td>
<td>2</td>
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<tr>
<td>8</td>
<td>Giannini</td>
<td>Atwater Jordan - Commerce</td>
<td>5,191</td>
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<tr>
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<td>Atwater - Bellevue</td>
<td>30,701</td>
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<tr>
<td>10</td>
<td></td>
<td>Bellevue - Santa Fe</td>
<td>23,409</td>
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<td>2</td>
<td>2</td>
</tr>
<tr>
<td>11</td>
<td>Buhach Road</td>
<td>Broadway - Juniper</td>
<td>12,937</td>
<td>83</td>
<td>17</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>12</td>
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<td>Juniper - Santa Fe</td>
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<td>5</td>
<td>5</td>
</tr>
<tr>
<td>13</td>
<td>Atwater Boulevard</td>
<td>Wedel - Winton</td>
<td>28,503</td>
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<td>5</td>
<td>5</td>
</tr>
<tr>
<td>14</td>
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<td>5</td>
<td>5</td>
</tr>
<tr>
<td>15</td>
<td>Commerce Avenue</td>
<td>Applegate - Industry</td>
<td>1,570</td>
<td>83</td>
<td>17</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>16</td>
<td>Broadway</td>
<td>Winton - Shaffer</td>
<td>3,540</td>
<td>83</td>
<td>17</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>17</td>
<td></td>
<td>Shaffer - 99 (to the South)</td>
<td>8,552</td>
<td>83</td>
<td>17</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>18</td>
<td>Juniper Avenue</td>
<td>Winton - Shaffer</td>
<td>4,607</td>
<td>83</td>
<td>17</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>19</td>
<td></td>
<td>Shaffer - Buhach</td>
<td>11,034</td>
<td>83</td>
<td>17</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>20</td>
<td>Bellevue Road</td>
<td>Gibson - Shaffer</td>
<td>26,961</td>
<td>83</td>
<td>17</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>21</td>
<td></td>
<td>Shaffer - Santa Fe</td>
<td>29,960</td>
<td>83</td>
<td>17</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>22</td>
<td>Santa Fe Drive</td>
<td>Bellevue - Shaffer</td>
<td>31,418</td>
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<td>17</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>23</td>
<td>Castle Parkway</td>
<td>99 - Sante Fe</td>
<td>35,106</td>
<td>83</td>
<td>17</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

ADT - Average Daily Traffic
Day%/Night % - percentage of daily traffic on road at day/night
FIGURE 6-3
FUTURE TRAFFIC NOISE CONTOURS 60 dBA LDN
FIGURE 6-4

METHODOLOGY FOR PREDICTING DISTANCE TO TRAFFIC NOISE CONTOURS FOR ARTERIAL TRAFFIC, CITY OF ATWATER NOISE ELEMENT
Figure 6-5
Railroad Noise Contours
Estimates of future aircraft activity levels and flight paths were developed for the Merced County Airport Land Use Compatibility Plan. Noise exposure contours were developed and presented in that document based on these estimates. Those contours, which are reproduced in this document as Figure 6-6, indicate that the noise impact area for the airport would be located to the north and east of Santa Fe Drive. Although the City of Atwater would apparently not be located within the noise impact area, it is probable that aircraft overflights of the City will occur more frequently as the number of daily operations at the airport increase over time.

**GOAL NO-2.** Protect residents from exposure to excessive transportation related noise.

**Policy NO-2.1.** Periodically update existing and projected noise contours for all transportation noise sources.

**Policy NO-2.2.** Utilize Table 6-5 as a general guide when considering the feasibility of new development with respect to existing and future transportation noise levels. Noise levels should be measured from the outdoor activity area of each specified use.

**Policy NO-2.3.** Prevent new development of noise-sensitive land uses in areas exposed to existing or projected levels of noise from transportation sources which exceed the levels specified in Table 6-6, unless the project design includes effective mitigation measures to reduce interior and exterior volumes to the levels specified in that table.

**Policy NO-2.4.** Mitigate noise created by new transportation noise sources consistent with the levels specified in Table 6-6 in outdoor activity areas or interior spaces of existing noise-sensitive land uses.

**Policy NO-2.5.** Consider the significance of noise level increases associated with major roadway improvement projects prior to construction. In instances where mitigation will not reduce noise volumes to the levels recommended in Table 6-6, the following criteria should be used as a test of significance for roadway improvement projects:

a. Where existing traffic noise levels are less than 60 dB L_aron in the outdoor activity areas of noise-sensitive uses, roadway improvement projects which increase noise levels to 60 dB L_adn will not be considered significant.

b. Where existing traffic noise levels range between 60 and 65 dB L_aron in the outdoor activity areas of noise-sensitive land uses, a +3 dB L_adn increase in noise levels due to a roadway improvement project will be considered significant.

c. Where existing traffic noise levels are greater than 65 dB L_aron in the outdoor activity areas on noise-sensitive uses, a +1.5 dB L_adn increase in noise levels due to a roadway improvement project will be considered significant.

**Policy NO-2.6.** Prevent the introduction of new incompatible land uses in areas impacted by existing and projected operations at Castle Airport.

**Policy NO-2.7.** Require an acoustical analysis when noise-sensitive land uses are proposed in areas exposed to existing or projected exterior noise levels exceeding the levels specified in Table 6-6 so that noise mitigation may be included in the project design.

**Implementation Program NO-2.a.** Require development within the Area of Influence for Castle Airport to comply with the noise standards and recommendations contained within the Merced County Airport Land Use Compatibility Plan for that facility.
FIGURE 6-6
NOISE IMPACT AREA - CASTLE AIRPORT
### Table 6-5
Land Use Compatibility Guidelines for Development

<table>
<thead>
<tr>
<th>Land Use Category</th>
<th>Community Noise Exposure $L_{dn}$ or CNEL, dB</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>55</td>
</tr>
<tr>
<td>Residential, Theaters, Meeting Halls, Churches, Auditoriums</td>
<td>A.</td>
</tr>
<tr>
<td>Transient Lodging, Motels, Hotels</td>
<td>A.</td>
</tr>
<tr>
<td>Schools, Libraries, Hospitals, Child Care, Museums</td>
<td>A.</td>
</tr>
<tr>
<td>Playgrounds, Neighborhood Parks, Amphitheaters</td>
<td>A.</td>
</tr>
<tr>
<td>Office Buildings, Businesses, Commercial and Professional</td>
<td>A.</td>
</tr>
<tr>
<td>Industrial, Utilities, Manufacturing, Agriculture</td>
<td>A.</td>
</tr>
<tr>
<td>Golf Courses, Riding Stables, Outdoor Spectator Sports</td>
<td>A.</td>
</tr>
</tbody>
</table>

A. **Generally Acceptable** - No noise mitigation measures are required.
C.A. **Conditionally Acceptable** - Use should be permitted only after careful study and inclusion of mitigation measures as needed to satisfy the policies of the Noise Element.
U. **Generally Unacceptable** - Development is usually not acceptable.

*Source:* 1990 California General Plan Guidelines (Appendix A)
Noise Element

Table 6-6
Maximum Allowable Noise Exposure
Transportation Noise Sources

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Outdoor Activity Areas</th>
<th>Interior Spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$L_{dn}/CNEL$, dBA</td>
<td>$L_{dn}/CNEL$, dBA</td>
</tr>
<tr>
<td>Residential</td>
<td>60$^3$</td>
<td>45</td>
</tr>
<tr>
<td>Transient Lodging</td>
<td>60$^3$</td>
<td>45</td>
</tr>
<tr>
<td>Hospitals, Nursing Homes</td>
<td>60$^3$</td>
<td>45</td>
</tr>
<tr>
<td>Theaters, Auditoriums, Music Halls</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Churches, Meeting Halls</td>
<td>60$^3$</td>
<td>--</td>
</tr>
<tr>
<td>Office Buildings</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Schools, Libraries, Museums</td>
<td>60$^3$</td>
<td>--</td>
</tr>
<tr>
<td>Playgrounds, Neighborhood Parks</td>
<td>70</td>
<td>--</td>
</tr>
</tbody>
</table>

1 The exterior noise-level standard shall be applied to the outdoor activity area of the receiving land use. Outdoor activity areas are normally located near or adjacent to the main structure and often occupied by porches, patios, balconies, etc.

2 As determined for a typical worst-case hour during periods of use.

3 Where it is not possible to reduce the noise in outdoor activity areas to 60 dBA, $L_{dn}/CNEL$ or less using a practical application of the best available noise reduction measures, an exterior noise level of up to 65 dBA, $L_{eq}$ may be allowed, provided that practical exterior noise level reduction measures have been implemented and that interior noise levels are in compliance with this table.

Industrial Activities

Industry in the City of Atwater is essentially focused in the area bounded by Broadway to the northeast, the City limits to the southwest, Giannini Road to the southeast, and the City limits to the west. This grouping of industries is ideally located in that it is in very close proximity to SR 99 and the UPRR, and in that it is fairly well removed from the established residential neighborhoods of the City.

Atwater Canning Company

The Atwater Canning Company is the largest industry identified within the City limits. Located between SR 99 and the UPRR tracks, it is situated with other major noise sources in the City. Operations at the Atwater Canning Company consist of canning fruits and vegetables. From June through September, the plant operates 7 days per week, 24 hours per day. The rest of the year it reportedly operates 5 days per week for 10 hours per day. The most significant noise-producing equipment at this facility is the steam generator, which is clearly audible in the plant vicinity. The plant generates approximately 35 truck trips on a typical day. In addition, the plant utilizes the railroad 2 to 3 times per month for deliveries. The railroad operations reportedly occur on weekdays between 6 a.m. and 6 p.m.

Noise level measurements conducted in the vicinity of this facility indicate that plant-generated noise levels vary, but are highest in the immediate vicinity of the main processing equipment. The estimated location of the plant $55$ dB $L_{eq}$ noise contour is shown on Figure 6-7. The plant is unaware of any noise complaints associated with the operation of this facility, and there are currently no specific plans for expansion of the plant.

STATIONARY NOISE SOURCES

Descriptions of existing fixed noise sources in the City of Atwater are provided below. These uses are intended to be representative of the relative noise generation of such uses, and are intended to identify specific noise sources which should be considered in the review of development proposals.
FIGURE 6-7
INDUSTRIAL NOISE LOCATIONS

LEGEND:
- - - - Project Study Limits
- - - - Atwater City Limits
• • • • Sphere of Influence (1984)
Δ Δ Δ Noise Measurement Sites
Castle Airport & Aviation
Development Center

55 dB Leq Atwater Packing Plant
Industrial Zone
Noise Element

Commerce Avenue/Air Park Business Center Industries

A large group of industrial facilities is located in the Commerce Avenue/Air Park Business Center area. Businesses include moving, construction, packaging, glass, well drilling, and cabinet making companies, to name a few. In addition, the City’s corporation yard, the Winton Disposal Company, and the NCI Building Systems company are located in this area. A detailed site inspection of this area revealed that, despite the presence of numerous industries in this area, most of the noise associated with these operations appears to be either equipment entering or leaving the site, or it is enclosed within warehouse-type buildings. As a result, no noise survey was conducted within this area. Nonetheless, this area should be considered a potentially significant source of noise, and proposals for development of noise-sensitive uses anywhere near this area should not proceed without a project-specific noise analysis.

General Service Commercial and Light Industrial Uses

Noise sources associated with service commercial uses are found within the City. They include automotive and truck repair facilities, wrecking yards, tire installation centers, car washes, loading docks, transfer stations, body shops, and feed stores. Many of these sources are located on Atwater Boulevard and Broadway, although several are located along Bellevue Road. The noise emissions of these uses are dependent on many factors, and therefore are difficult to quantify precisely. Nonetheless, noise generated by these uses contributes to the ambient noise environment in the immediate vicinity of these uses, and should be considered whenever either new noise-sensitive uses are proposed nearby or similar uses are proposed in existing residential areas.

Parks and School Playing Fields

There are several park and school uses within the City limits. These uses are spread throughout the City. Noise generated by these uses depends on the age and number of people utilizing the respective facility at a given time, and the types of activities they are engaged in. School playing field activities tend to generate more noise than those of neighborhood parks, as the intensity of school playground usage tends to be much higher. At a distance of 100 feet from an elementary school playground being used by 100 students, average and maximum noise levels of 60 and 75 dB, respectively, can be expected. At organized events, such as high-school football games with large crowds and public address systems, the noise generation is often significantly higher. As with service commercial uses, the noise generation of parks and school playing fields is variable.

Residential Areas

To quantify existing noise levels in the quieter parts of the City of Atwater, a community noise survey was performed at seven locations in the City which are somewhat removed from major noise sources. One of the seven locations was monitored over a continuous 24-hour period, while the other six locations were each monitored for two 15-minute periods during daytime hours and one 15-minute period during nighttime hours. The community noise survey noise measurement locations are shown on Figure 6-8. The results of the community noise survey are provided in Table 6-7, and Figure 6-9 shows the measurement results at the continuous monitoring site.
FIGURE 6-8
NOISE SURVEY MEASUREMENT SITES
Table 6-7
Community Noise Measurement Survey Results

<table>
<thead>
<tr>
<th>Site</th>
<th>Location</th>
<th>Date</th>
<th>Time Period</th>
<th>$L_{eq}$</th>
<th>$L_{max}$</th>
<th>Estimated $L_{eq}$</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Violet Court</td>
<td>7-28-98</td>
<td>Morning</td>
<td>54</td>
<td>68</td>
<td>53</td>
<td>Train &amp; distant traffic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7-28-98</td>
<td>Afternoon</td>
<td>50</td>
<td>68</td>
<td></td>
<td>Traffic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7-28-98</td>
<td>Nighttime</td>
<td>44</td>
<td>62</td>
<td></td>
<td>Distant traffic</td>
</tr>
<tr>
<td>2</td>
<td>Albiani Park</td>
<td>7-29-98</td>
<td>Morning</td>
<td>45</td>
<td>49</td>
<td>52</td>
<td>Air conditioning unit - distant traffic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7-28-98</td>
<td>Afternoon</td>
<td>51</td>
<td>72</td>
<td></td>
<td>Distant Traffic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7-28-98</td>
<td>Nighttime</td>
<td>44</td>
<td>54</td>
<td></td>
<td>Distant Traffic</td>
</tr>
<tr>
<td>3</td>
<td>Osborn Park</td>
<td>7-29-98</td>
<td>Morning</td>
<td>52</td>
<td>63</td>
<td>59</td>
<td>Distant Traffic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7-28-98</td>
<td>Afternoon</td>
<td>59</td>
<td>67</td>
<td></td>
<td>Railroad horn - Traffic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7-28-98</td>
<td>Nighttime</td>
<td>51</td>
<td>62</td>
<td></td>
<td>Traffic - Crickets</td>
</tr>
<tr>
<td>4</td>
<td>Atwater High School</td>
<td>7-29-98</td>
<td>Morning</td>
<td>58</td>
<td>68</td>
<td>61</td>
<td>Traffic - Children</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7-28-98</td>
<td>Afternoon</td>
<td>56</td>
<td>66</td>
<td></td>
<td>Local Traffic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7-28-98</td>
<td>Nighttime</td>
<td>54</td>
<td>65</td>
<td></td>
<td>Traffic</td>
</tr>
<tr>
<td>5</td>
<td>Walter Park</td>
<td>7-29-98</td>
<td>Morning</td>
<td>54</td>
<td>66</td>
<td>55</td>
<td>Local Traffic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7-28-98</td>
<td>Afternoon</td>
<td>53</td>
<td>63</td>
<td></td>
<td>Local Traffic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7-28-98</td>
<td>Nighttime</td>
<td>47</td>
<td>50</td>
<td></td>
<td>Local Traffic</td>
</tr>
<tr>
<td>6</td>
<td>Bloss Park</td>
<td>7-29-98</td>
<td>Morning</td>
<td>52</td>
<td>56</td>
<td>58</td>
<td>Traffic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7-28-98</td>
<td>Afternoon</td>
<td>57</td>
<td>71</td>
<td></td>
<td>Traffic - wind blowing through trees</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7-28-98</td>
<td>Nighttime</td>
<td>51</td>
<td>59</td>
<td></td>
<td>Traffic</td>
</tr>
<tr>
<td>7</td>
<td>St. Anthony's Church</td>
<td>7-28-98</td>
<td>Daytime</td>
<td>52</td>
<td>73</td>
<td>55</td>
<td>Distant Traffic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7-28-98</td>
<td>Nighttime</td>
<td>48</td>
<td>72</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: BAC
FIGURE 6-9

MEASUREMENT RESULTS AT CONTINUOUS MONITORING SITE
GOAL NO-3. Protect the economic base of the City of Atwater by preventing incompatible land uses from encroaching upon existing or planned noise producing uses.

_Policy NO-3.1._ Avoid development of new noise-sensitive uses where the noise levels generated by existing or anticipated non-transportation sources exceeds the noise level standards of Table 6-8 as measured immediately within the property line of the new development, unless effective noise mitigation measures have been incorporated.

Table 6-8
Noise Level Performance Standards for New Projects Affected By, or Including, Non-Transportation Noise Sources

<table>
<thead>
<tr>
<th>Noise Level Descriptor</th>
<th>Daytime (7 am - 10 pm)</th>
<th>Nighttime (10 pm - 7 am)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hourly ( L_{eq} )</td>
<td>55 dB</td>
<td>45 dB</td>
</tr>
<tr>
<td>Maximum Level</td>
<td>75 dB</td>
<td>65 dB</td>
</tr>
</tbody>
</table>

Each of the noise levels specified shall be lowered by five dB for simple tone noises, noises consisting primarily of speech, or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).

Note: For the purposes of the Noise Element, transportation noise sources are defined as traffic on public roadways, railroad line operations, and aircraft in flight. Control of noise from these sources is preempted by Federal and State regulations. Other noise sources are subject to local regulations, such as a noise control ordinance. Non-transportation noise sources may include industrial operations, outdoor recreation facilities, HVAC units, loading docks, etc.

GOAL NO-4. Prevent the introduction of new fixed noise sources in noise-sensitive areas.

_Policy NO-4.1._ Mitigate noise created by new proposed nontransporation sources consistent with the noise level standards of Table 6-8 as measured immediately within the property line of lands designated for noise-sensitive land uses.

Policy NO-4.2. Require an acoustical analysis when proposed new nonresidential land uses or the expansion of existing nonresidential land uses is likely to produce noise level exceeding the performance standards of Table 6-8 immediately within the property line of existing or planned noise-sensitive uses.

Implementation Program NO-4.a. Use the development review process to ensure that noise impacts are adequately addressed and sufficiently mitigated in accordance with the State’s Noise Insulation Standards and the policies set forth in the General Plan.