

CHAPTER

9

NOISE ELEMENT

INTRODUCTION

The preservation and enhancement of the acoustical environment relates directly to the quality of life that can be achieved in a community. By recognizing existing sources of noise pollution, taking reasonable steps to mitigate future impacts, and preventing additional sources of noise, the City may achieve an amiable environment and a comfortable and calming community. Noise has been linked directly to human health and, aside from general annoyances, excessive noise is a source of discomfort, interferes with sleep, and disrupts communication and relaxation.

There are no obvious sources of disruptive noise in the City of Oakley, though ambient noise can be heard, especially in those areas adjacent to major highways, intersections, and rail lines.

As development occurs, though, additional noise pollution will emerge as a temporary impact of construction. The City is committed to imposing “Best Management Practices” on all development and construction in the City. This may include limiting the hours of construction to avoid disruption during normal sleep hours. In addition, the development of new

neighborhoods may unintentionally create situations where new residents are introduced to existing noise pollution. However, proper land use practices will minimize the proximate placement of conflicting uses. Sound-walls can minimize many of these impacts, though land use practices will more effectively address the true issue. By recognizing the impacts of noise pollution, the City can effectively address any proposed sources of noise or noise conflicts as they arise.

Consistency with State Law

Government Code 65302(f) establishes the requirement for a Noise Element to “identify and appraise noise problems in a community” and to “analyze and quantify, to the extent practicable, . . . current and projected noise levels.” This Noise Element must identify these sources of noise and provide noise contours – distances at which a predicted noise level will occur. The intent of the Noise Element is to provide valuable information and useful policies to prevent development in areas that are considered unsuitable due to excessive noise.

GOALS, POLICIES AND PROGRAMS

Goal 9.1 Protect residents from the harmful and annoying effects of exposure to excessive noise.

Policies

9.1.1 New development shall use the land use compatibility table shown in Figure 9.1 and the standards contained within Tables 9.1 and 9.3 for determining noise compatibility.

9.1.2 New development of noise-sensitive uses shall not be allowed where the noise level due to non-transportation noise sources will exceed the noise level standards of Table 9-1 as measured immediately within the property line or within a designated outdoor activity area (location is at the discretion of the Community Development Director) of the new development, unless effective noise mitigation measures have been incorporated into the development design to achieve the standards specified in Table 9-1.

9.1.3 Noise created by new proposed non-transportation noise sources shall be mitigated so as not to exceed the noise level standards of Table 9-1 as measured immediately within the property line of lands designated for noise-sensitive uses.

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 presumed to be subject to local regulations, such as a noise control ordinance. Non-transportation noise sources may include industrial operations, outdoor recreation facilities, Heating, Ventilation, Air Conditioning (HVAC) units, loading docks, etc.

9.1.4 Where proposed non-residential land uses are likely to produce noise levels exceeding the performance standards of Table 9-1 at existing or planned noise-sensitive uses, an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design. The requirements for the contents of an acoustical analysis are given by Table 9-2.

9.1.5 Noise created by new transportation noise sources shall be mitigated so as not to exceed the levels specified in Table 9-3 at outdoor activity areas or interior spaces of existing noise-sensitive land uses.

9.1.6 It is anticipated that roadway improvement projects will be needed to accommodate build-out of the general plan. Therefore, existing noise-sensitive uses may be exposed to increased noise levels due to roadway improvement projects as a result of increased roadway capacity, increases in travel speeds, etc. It may not be practical to reduce increased traffic noise levels consistent with those contained Table 9-3. Therefore, as an alternative, the following criteria may be used as a test of significance for roadway improvement projects:

- Where existing traffic noise levels are less than 60 dB L_{dn} at the outdoor activity areas of noise-sensitive uses, a +5 dB L_{dn} increase in noise levels due to roadway improvement projects will be considered significant; and
- Where existing traffic noise levels range between 60 and 65 dB L_{dn} at the outdoor activity areas of noise-sensitive uses, a +3 dB L_{dn} increase in noise levels due to roadway improvement projects will be considered significant; and
- Where existing traffic noise levels are greater than 65 dB L_{dn} at the outdoor activity areas of noise-sensitive uses, a +1.5 dB L_{dn} increase in noise levels due to

roadway improvement projects will be considered significant.

- 9.1.7 Where noise mitigation measures are required to achieve the standards of Tables 9-1 and 9-3, the emphasis of such measures shall be placed upon site planning and project design. The use of noise barriers shall be considered a means of achieving the noise standards only after all other practical design-related noise mitigation measures have been integrated into the project.

Note: Existing dwellings and new single-family dwellings may not be subject to City review with respect to satisfaction of the standards of the Noise Element. As a consequence, such dwellings may be constructed in areas where noise levels exceed the standards of the Noise Element. It is not the responsibility of the City to ensure that such dwellings meet the noise standards of the Noise Element, or the noise standards imposed by lending agencies such as U.S. Department of Housing and Urban Development (HUD), the Federal Housing Administration (FHA) and the State of California Department of Veteran Affairs (Cal Vet). If homes are located and constructed in accordance with the Noise Element, it is expected that the resulting exterior and interior noise levels will conform to the HUD/FHA/Cal Vet noise standards.

- 9.1.8 Obtrusive, discretionary noise generated from residences, motor vehicles, commercial establishments, and/or industrial facilities should be minimized or prohibited.
- 9.1.9 Activities associated with agricultural operations are recognized as noise sources which may be considered annoying to some residents. These activities can occur during the daytime and nighttime hours. Activities include crop dusting, tractor operations, zon

guns, etc. The city will require that all new development of residential uses adjacent to agricultural uses provide full disclosure of potential noise sources to future residents consistent with the City’s right to farm ordinance.

Programs

- 9.1.A The City has adopted and will update as necessary a Noise Ordinance to govern nuisance noise introduced by residential, commercial, or industrial uses. The purpose of this Ordinance is to regulate excessive noise produced by sources including, but not limited to, car stereos, parties, commercial and industrial activities (except where approved by the City), and other discretionary noise observed to be a nuisance to adjacent communities or businesses.

Goal 9.2 Protect the economic base of the City by preventing incompatible land uses from encroaching upon existing or planned noise-producing uses.

Policies

- 9.2.1 New development of noise-sensitive land uses shall not be permitted in areas exposed to existing or projected levels of noise from transportation noise sources which exceed the levels specified in Table 9-3, unless the project design includes effective mitigation measures to reduce exterior noise and noise levels in interior spaces to the levels specified in Table 9-3.
- 9.2.2 Where noise-sensitive land uses are proposed in areas exposed to existing or projected exterior noise levels exceeding the levels specified in Table 9-3 or the performance standards of Table 9-1, an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design.

**Table 9-1
NOISE LEVEL PERFORMANCE STANDARDS FOR NEW PROJECTS
AFFECTED BY OR INCLUDING NON-TRANSPORTATION NOISE SOURCES**

Noise Level Descriptor	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)																						
Hourly L_{eq} , dB	55	45																						
<p>1. Each of the noise levels specified above shall be lowered by five dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises (e.g., humming sounds, outdoor speaker systems). These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).</p> <p>2. The City can impose noise level standards which are more restrictive than those specified above based upon determination of existing low ambient noise levels.</p> <p>3. Fixed noise sources which are typically of concern include, but are not limited to the following:</p> <table border="0" data-bbox="380 814 1149 1171"> <tr> <td>HVAC Systems</td> <td>Cooling Towers/Evaporative Condensers</td> </tr> <tr> <td>Pump Stations</td> <td>Lift Stations</td> </tr> <tr> <td>Emergency Generators</td> <td>Boilers</td> </tr> <tr> <td>Steam Valves</td> <td>Steam Turbines</td> </tr> <tr> <td>Generators</td> <td>Fans</td> </tr> <tr> <td>Air Compressors</td> <td>Heavy Equipment</td> </tr> <tr> <td>Conveyor Systems</td> <td>Transformers</td> </tr> <tr> <td>Pile Drivers</td> <td>Grinders</td> </tr> <tr> <td>Drill Rigs</td> <td>Gas or Diesel Motors</td> </tr> <tr> <td>Welders</td> <td>Cutting Equipment</td> </tr> <tr> <td>Outdoor Speakers</td> <td>Blowers</td> </tr> </table> <p>4. The types of uses which may typically produce the noise sources described above include but are not limited to: industrial facilities including pump stations, trucking operations, tire shops, auto maintenance shops, metal fabricating shops, shopping centers, drive-up windows, car washes, loading docks, public works projects, batch plants, bottling and canning plants, recycling centers, electric generating stations, race tracks, landfills, sand and gravel operations, and athletic fields.</p>			HVAC Systems	Cooling Towers/Evaporative Condensers	Pump Stations	Lift Stations	Emergency Generators	Boilers	Steam Valves	Steam Turbines	Generators	Fans	Air Compressors	Heavy Equipment	Conveyor Systems	Transformers	Pile Drivers	Grinders	Drill Rigs	Gas or Diesel Motors	Welders	Cutting Equipment	Outdoor Speakers	Blowers
HVAC Systems	Cooling Towers/Evaporative Condensers																							
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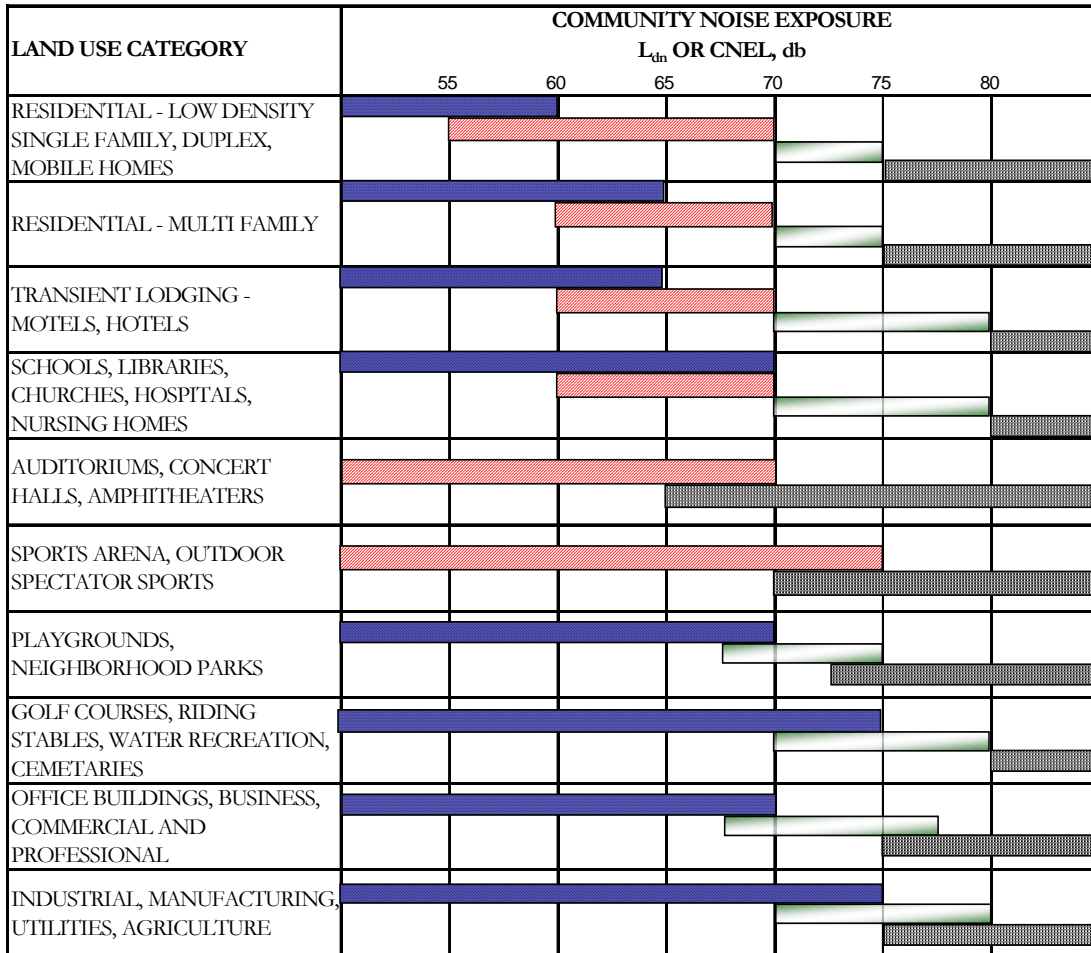
**Table 9-2
REQUIREMENTS FOR AN ACOUSTICAL ANALYSIS**

An acoustical analysis prepared pursuant to the Noise Element shall:	
A.	Be the financial responsibility of the applicant.
B.	Be prepared by a qualified person experienced in the fields of environmental noise assessment and architectural acoustics.
C.	Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions and the predominant noise sources.
D.	Estimate existing and projected cumulative (20 years) noise levels in terms of L _{dn} or CNEL and/or the standards of Table 1, and compare those levels to the adopted policies of the Noise Element.
E.	Recommend appropriate mitigation to achieve compliance with the adopted policies and standards of the Noise Element, giving preference to proper site planning and design over mitigation measures which require the construction of noise barriers or structural modifications to buildings which contain noise-sensitive land uses.
F.	Estimate noise exposure after the prescribed mitigation measures have been implemented.
G.	Describe a post-project assessment program which could be used to evaluate the effectiveness of the proposed mitigation measures

**Table 9-3
MAXIMUM ALLOWABLE NOISE EXPOSURE TRANSPORTATION NOISE SOURCES**

Land Use	Outdoor Activity Areas ¹ L _{dn} /CNEL, dB	Interior Spaces	
		L _{dn} /CNEL, dB	L _{eq} , dB ²
Residential	65	45	--
Transient Lodging	65 ³	45	--
Hospitals, Nursing Homes	65	45	--
Theaters, Auditoriums, Music Halls	--	--	35
Churches, Meeting Halls	65	--	40
Office Buildings	--	--	45
Schools, Libraries, Museums	--	--	45
Playgrounds, Neighborhood Parks	70	--	--
1. Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use. Where it is not practical to mitigate exterior noise levels at patio or balconies of apartment complexes, a common area such as a pool or recreation area may be designated as the outdoor activity area. 2. As determined for a typical worst-case hour during periods of use. 3. In the case of hotel/motel facilities or other transient lodging, outdoor activity areas such as pool areas may not be included in the project design. In these cases, only the interior noise level criterion will apply.			

Figure 9-1
LAND COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS



NORMALLY ACCEPTABLE

Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.



NORMALLY UNACCEPTABLE

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.



CONDITIONALLY ACCEPTABLE

New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design.



CLEARLY UNACCEPTABLE

New construction or development clearly should not be undertaken.

SETTING

ROADWAY NOISE

A primary source of noise in the City of Oakley is the sound generated from vehicles traveling over roadways. Roadway noise is a combination of direct noise emission from the vehicle and the sound from the passing of tires over the road surface. In addition, large truck traffic can dramatically contribute to roadway noise, as the sound generated from jake-brakes, large tires, and diesel engines greatly exceeds noise from passenger cars and light trucks.

Roadway noise is most apparent near the actual roadways, though acoustical conditions can dramatically change the nature and intensity of the noise. The elevation of the roadways relative to adjacent receptors can effect the level of noise, as can dense vegetation and topography. Because the City of Oakley is relatively flat, there is little opportunity to utilize topography to minimize roadway noise. In addition, the current and anticipated levels of traffic may not warrant

the extensive improvement required to improve roadway noise. As such, the location and protection of new developments should be considered to insure that residential, or other sensitive uses are not compromised by extraneous, roadway noise.

Various measures can be implemented in new developments, which will lessen the noise impacts on new neighborhoods. These include strategic placement and protection of sensitive uses and the utilization of sound-walls, earth mounds, or other attenuating devices.

Levels of noise are generally measured in terms of noise contours - delineations of areas where a predicted level of noise (measured in decibels (dB)) can be expected. Generally, noise contours predict the distance (in feet) from a source of noise that a receptor must be in order to experience a specified level (in dB) of noise. The accepted threshold for comfortable ambient noise in a residential area is 65 dB. Prolonged levels above 65 dB are considered to be an annoyance when they occur in residential areas. The following table presents typical sound levels of common noise sources.

**Table 9-4
TYPICAL A-WEIGHTED MAXIMUM SOUND LEVELS OF COMMON NOISE SOURCES**

Decibels	Description
130	Threshold of pain
120	Jet aircraft take-off at 100 feet
110	Riveting machine at operators position
100	Shot-gun at 200 feet
90	Bulldozer at 50 feet
80	Diesel locomotive at 300 feet
70	Commercial jet aircraft interior during flight
60	Normal conversation speech at 5-10 feet
50	Open office background level
40	Background level within a residence
30	Soft whisper at 2 feet
20	Interior of recording studio

9.0 – Noise Element

A study performed by Bollard & Brennan, Inc. produced a series of noise contours for the City of Oakley, which represent the areas where the greatest levels of noise are experienced. The study measured ambient noise levels at various

locations and times during both the day and night. These noise levels, along with the predicted distances, provide a practical measure of noise levels throughout the City of Oakley. Table 9-5 presents the results of the study.

**Table 9-5
PREDICTED EXISTING TRAFFIC NOISE LEVELS
OAKLEY, CALIFORNIA**

Roadway	Segment	Ldn, dB at 100 feet	Distance to Ldn Contours		
			60 dB	65 dB	70 dB
S.R. 4 / Main Street	E. of Bridgehead Rd.	69.1	406	188	87
	West of Empire Ave.	68.5	371	172	80
	E. of Empire Ave.	66.0	251	116	54
	W. of Vintage Pkwy.	65.5	233	108	50
	W. of Rose Ave.	65.1	217	101	47
	S. of Cypress Rd.	64.7	205	95	44
	S. of Laurel Rd.	64.7	205	95	44
	S. of Delta Rd.	61.9	133	62	29
Neroly Road	S. of Main St.	61.0	117	54	25
Cypress Road	E. of Main St.	59.0	85	40	18
	W. of O'Hara Ave.	54.5	43	20	9
Delta Rd.	E. of Main Street	54.1	40	19	9
Empire Ave.	S. of Main St.	59.2	88	41	19
	S. of Laurel Road	55.6	51	24	11
O'Hara Ave.	S. of Main St.	55.1	47	22	10
	S. of Laurel Road	54.4	42	20	9
Laurel Road	E. of O'Hara Ave.	52.6	32	15	7
	W. of Empire Ave.	54.1	40	19	9
Live Oak Road	S. of Main St.	49.8	21	10	4
Carpenter Road	E. of O'Hara Ave.	52.6	32	15	7

Source: Bollard & Brennan, Inc., using FHWA RD-77-108 with inputs from the City of Oakley Long Range Circulation Plan and Caltrans.

Table 9-6 represents the preferred alternative build out traffic noise levels. These figures

predict the levels of noise that can be expected following full build out of the City of Oakley.

**Table 9-6
PREDICTING PREFERRED ALTERNATIVE BUILD OUT TRAFFIC NOISE LEVELS
OAKLEY, CALIFORNIA**

Roadway	Segment	Ldn, dB At 100 feet	Distance to Ldn Contours		
			70 dB	65 dB	60 dB
E. 18 th	W. of Bridgehead	66.6	60	129	277
Main Street S.R. 4	E. of Neroly	68.3	78	167	360
	E. of Live Oak	67.9	72	155	334
	S. of Big Break	67.0	63	135	292
	E. of Empire	66.8	61	131	283
	E. of Vintage	65.3	59	105	227
	E of O'Hara	65.4	50	107	230
	E. of Rose	64.7	45	96	207
	S. of Cypress	64.3	42	90	194
	S. of Laurel	63.8	38	83	178
	S. of Carpenter	63.8	38	83	178
S. of Delta	63.8	38	83	178	
Main	W. of O'Hara	55.4	11	23	50
Oakley	W. of Neroly	57.9	16	34	73
	E. of Neroly	59.5	20	43	92
	E. of Live Oak	60.1	22	47	102
Cypress	E. of Empire	54.8	10	21	45
	E. of O'Hara	52.3	7	14	60
	E. of Rose	55.4	11	23	49
	E. of Main	63.3	36	77	165
	E. of Sellers	64.5	43	92	199
	E. of Jersey Island	63.0	34	74	159
Laurel Bypass	E. of Neroly	65.0	47	100	216
Laurel	E. of Neroly	60.3	23	49	105
	E. of Empire	63.8	38	83	178
	E of Brown	63.8	38	83	178
	E. of O'Hara	62.3	31	67	143
	E of Rose	51.7	6	13	28
	E. of Main	61.7	28	60	129
Carpenter	E. of Empire	56.6	13	27	59
	E. of Brown	56.6	13	27	59
	E. of O'Hara	53.2	8	16	35
	E. of Rose	53.2	8	16	35
Brownstone	E. of O'Hara	53.6	8	17	38
	E. of Rose	53.6	8	17	38
Delta	E. of O'Hara	59.9	21	46	99
	E. of Main	56.4	12	27	58
	W. of Sellers	61.6	27	59	127
Highway 160	N. of E. 18 th	72.0	136	291	631
	S. of E. 18 th	75.3	227	488	1052

Roadway	Segment	Ldn, dB At 100 feet	Distance to Ldn Contours		
			70 dB	65 dB	60 dB
S.R. 4 Bypass	W. of 160	77.4	312	672	1449
	E. of 160	76.9	287	618	1331
	E. of Laurel	75.6	238	513	1105
Bridgehead	N. of Main	60.4	23	49	106
Neroly	S. of Main	61.4	27	58	125
	S. of Oakley	60.0	22	46	100
	S. of Laurel	59.4	20	42	91
	S. of Empire	61.0	25	54	116
	E. of Brown	60.3	23	49	105
Live Oak	S. of Main	5.8	11	24	52
	S. of Oakley	53.9	8	18	39
Empire	S. of Main	62.8	33	71	154
	S. of Cypress	63.2	35	76	163
	S. of Laurel	61.1	25	55	118
	S. of Carpenter	61.2	26	56	120
	S. of Neroly	60.4	23	49	107
Brown	S. of Laurel	45.4	2	5	11
	S. of Carpenter	45.4	2	5	11
O'Hara	S. of Main	56.4	12	27	58
	S. of Cypress	59.3	19	42	90
	S. of Laurel	60.1	22	47	101
	S. of Carpenter	59.5	20	43	93
	S. of Neroly	60.2	22	48	104
Rose	S. of Main	54.7	10	21	44
	S. of Cypress	53.9	8	18	39
	S. of Neroly	50.2	5	10	22
Sellers	N. of Cypress	58.8	18	39	83
	S. of Cypress	62.4	31	67	144
	S. of Laurel	60.2	22	48	103
	S. of Lone Tree	50.5	5	11	23
Jersey Island	N. of Cypress	59.1	19	41	88
Bethel Island	N. of Cypress	63.9	39	84	181

Source: *Bollard & Brennan, Inc. using FHWA RD-77-108 with inputs from the City of Oakley Long Range Circulation Plan and Caltrans*

As shown, the predicted levels of noise often exceed reasonable, comfortable levels. In many cases, comfortable levels for a residence cannot be achieved within one hundred feet of the centerline of the roadway. Utilizing noise data will assist in the proper separation of development from existing roadways and will justify any required noise mitigations.

RAILROADS

Railroad activity in the City of Oakley General Plan Study Area generally occurs along two tracks. The two tracks are located along the western boundary of the City of Oakley, and generally the east side of S.R.4. Each of the tracks is adjacent to residential areas. Discussions with the City of Oakley staff indicate that noises due to railroad operations are considered a nuisance to residents. Discussions with residents adjacent to the Union Pacific Railroad track along the west side of Oakley indicate that very few train operations

occur along this track. There were no observed railroad operations along the UPRR track to the west.

Noise measurements were conducted at two locations by Bollard & Brennan, Inc. for railroad operations within the General Plan study area adjacent to the BMSF track along the eastern portion of the City of Oakley. The measurements were conducted to determine the contribution of railroad mainline operations to the area noise environment.

The purpose of the noise level measurements was to determine typical sound exposure levels (SEL) for railroad line operations in the General Plan study area, accounting for the effects of travel speed, warning horns and other factors which may affect noise generation. In addition, the noise measurement equipment was programmed to identify individual train operations, so that the typical number of train operations could be determined.

The railroad noise measurement locations were at 430 Mockingbird Lane and at 1942 Summerfield Court. The Mockingbird Lane monitoring site was 550 feet from the railroad

track centerline, and the Summerfield Court monitoring site was at 200 feet from the railroad track centerline. At the measurement sites, slow moving locomotives and Amtrak trains, wheel noise, and warning horns were the major contributors to railroad noise levels. The Mockingbird Lane site did not experience significant warning horn noise levels. However, at the Summerfield Court site, all northbound trains used warning horns prior to approaching the at-grade railroad crossing at Big Break Road. Figure 2 shows the noise measurement sites. Appendix C graphically shows the results of the noise level measurements.

Based upon the noise level measurements, the average SEL for train operations along the BMSF railroad main line absent warning horns is 97 dB at 100 feet. The average SEL for train operations near grade crossing where warning horns are used is 106.5 dB.

Based upon the noise measurement results, approximately 20 train operations per day occur on the mainline through Antioch. The trains operations generally are distributed throughout the daytime and nighttime hours.

**Table 9-7
APPROXIMATE DISTANCES TO THE ATCHISON TOPEKA & SANTA FE RAILROAD NOISE
CONTOURS**

Ldn at 100 feet		Distance to Ldn Contour (feet)					
Without Warning Horns	With Warning Horns	Without Warning Horns			With Warning Horns		
		60 dB	65 dB	70 dB	60 dB	65 dB	70 dB
67 dB	76.5 dB	293'	135'	63	1,258	583	271

FIXED NOISE SOURCES

The production of noise is a result of many industrial processes, even when the best available noise control technology is applied. Noise exposures within industrial facilities are controlled by Federal and State employee health and safety regulations (OSHA and Cal-OSHA), but exterior noise levels may exceed locally acceptable standards. Commercial, recreational and public service facility activities can also

produce noise, which affects adjacent sensitive land uses. These noise sources can be continuous and may contain tonal components, which may be annoying to individuals who live in the nearby vicinity. In addition, noise generation from fixed noise sources may vary based upon climatic conditions, time of day and existing ambient noise levels.

From a land use planning perspective, fixed-source noise control issues focus upon two goals: to prevent the introduction of new noise-

producing uses in noise-sensitive areas, and to prevent encroachment of noise sensitive uses upon existing noise-producing facilities. The first goal can be achieved by applying noise level performance standards to proposed new noise-producing uses. The second goal can be met by requiring that new noise-sensitive uses in near proximity to noise-producing facilities include mitigation measures to ensure compliance with noise performance standards.

Fixed noise sources that are typically of concern include but are not limited to the following:

**Table 9-8
SOURCES OF FIXED NOISE**

HVAC Systems	Cooling Towers/ Evaporative Condensers
Pump Stations	Lift Stations
Emergency Generators	Boilers
Steam Valves	Steam Turbines
Generators	Fans
Air Compressors	Heavy Equipment
Conveyor Systems	Transformers
Pile Drivers	Grinders
Drill Rigs	Gas or Diesel Motors
Welders	Cutting Equipment
Outdoor Speakers	Blowers
Chippers	Cutting Equipment
Loading Docks	Amplified music and voice

The types of uses which may typically produce the noise sources described above, include, but are not limited to: wood processing facilities, pump stations, industrial facilities, trucking operations, tire shops, auto maintenance shops, metal fabricating shops, shopping centers, drive-up windows, car washes, loading docks, public works projects, batch plants, bottling and canning plants, recycling centers, electric generating stations, race tracks, landfills, sand and gravel operations, and athletic fields.

Industrial uses are generally confined to the north end of the City of Oakley. In general, these uses are separated from residential uses and do not result in noise-related complaints.

NUISANCE NOISE

In addition to train operations, other noise sources within the community may be considered to be “nuisance noise sources”. These types of noise sources could include barking dogs, live music venues, boom boxes, jake brakes on trucks, etc. These types of noise sources are difficult to quantify due to the sporadic nature in which they occur, and are in many instances transient in nature. However, these are the noise sources which generate complaints and are the primary concern of residents.

The noise element of a General Plan is intended to establish acceptable noise levels for new projects within a community, and is not a tool for responding to noise complaints. A community noise ordinance is widely used for responding to noise complaints. One of the products associated with the Goals & Policies section of the General Plan update may be a policy which states that the City will develop a noise ordinance.

COMMUNITY NOISE SURVEY

A community noise survey was conducted to document noise exposure in areas of the City containing noise sensitive land uses. Noise monitoring sites were selected to be representative of typical residential conditions in the City.

Short-term noise monitoring was conducted at four sites on March 1 & 2, 2001. Each site was monitored twice during the day and evening hours. Three continuous 24-hour noise-monitoring sites were established in the City to record day-night statistical noise level trends. The data collected included the hourly average (Leq), and the maximum level (Lmax) during the measurement period. Noise monitoring sites, measured noise levels at each site are summarized in Table 9-9. Figure 2 shows the locations of the noise measurement sites. Appendix C graphically shows the results of the noise measurements.

Community noise monitoring systems were calibrated with acoustical calibrators in the field

prior to use. The systems comply with all pertinent requirements of the American National Standards Institute (ANSI) for Type I sound level meters.

Based upon the analysis completed for this General Plan, the noise environment within the City of Oakley is similar to that of an urban and

suburban area. Primary noise sources include roadway traffic, railroad operations and typical neighborhood activities. The overall existing noise environment which has been documented herein is intended to be used as a bench-mark for evaluating noise associated with future growth within the City.

**Table 9-9
COMMUNITY NOISE MEASUREMENT RESULTS
MARCH 2001**

Location	Date	Time	Measured Sound Level, dB		Measured Ldn
			Leq	Lmax	
Site 1 - 430 Mockingbird Ln.	March 1-2,	24-hours	Daytime = 53.9 Nighttime = 52.7	Daytime = 73.3 Nighttime = 68.7	59.3 dB
Site 2 - 1942 E. Summerfield Ct.	March 1-2,	24-hours	Daytime = 70.9 Nighttime = 75.0	Daytime = 82.2 Nighttime = 84.6	80.0 dB
Site 3 - End of Piper Lane	March 1-2,	24-hours	Daytime = 47.0 Nighttime = 42.9	Daytime = 67.9 Nighttime = 57.7	50.2 dB
Site 4 - O'Hara Park - School	March 1 st March 1 st	3:00 pm 10:00 pm	53.7 51.2	63.2 64.0	-----
Site 5 - Corner Chicory Drive/Cherry Ct.	March 1 st March 1 st	3:45 pm 9:30 pm	46.8 42.8	51.6 51.1	-----
Site 6 - Live Oak Ave.	March 1 st March 1 st	4:15 pm 9:05 pm	51.9 53.2	56.8 61.0	-----
Gehringer School	March 1 st March 1 st	5:00 pm 10:30 pm	54.2 50.5	67.1 66.1	-----