

NOISE

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2700 **NOISE**

INTRODUCTION

2701 This element has been prepared in accordance with Section 65302 of the California Government Code. The major purpose of the element is to establish noise exposure criteria and standards for new development and to provide information for both public and private landowners regarding noise sources, impacts and mitigation measures.

2702 Major sources of noise in Woodside are cars, trucks, motorcycles and aircraft. Traffic noise levels are the highest on I-280 Freeway and Woodside Road (Highway 84). Aircraft flying over Woodside create a clearly distinguishable and annoying sound, and are a concern to Woodside residents. Noise is generated in residential areas by power mowers, leaf blowers, chain saws, air conditioners, swimming pool filters, animals, sound amplifiers, etc. Building construction creates noise from earth-moving equipment and power tools. Recreational activities in and near the Town are generally quiet; however, noise problems are caused by excessive concentrations of people, vehicular traffic, sound amplifiers and other noise sources at public and commercial recreation facilities. The Town has no industrial activity to generate noise; adjacent to the Town, however, noise is generated by the cooling towers of Stanford Linear Accelerator Center. The Town Center generates little noise, other than that of some mechanical equipment, and the motor vehicles that are attracted to the Center. Occasional loud noise emanating from the Moffett Naval Air Station can be heard in Woodside.

2703 The ambient noise level in Woodside (that is, the background noise that is generally present) is generally less than 40 dBA in the daytime, and probably less than 35 dBA in the evening, except in those areas near I-280 and near Woodside Road (Highway 84).

2704 **GOALS**

The goals of the Town of Woodside include the following:

- G1 To retain the quiet atmosphere within the Town.
- G2 To minimize within the Town the amount of noise generated from all sources, including motor vehicles, and by aircraft flying over the Town.
- G3 To ensure that the residents will not be exposed to noise levels which diminish the ability to enjoy an amenable environment and render areas unsuitable for residential use.

- G4 To reduce impact of highway noise levels.
- G5 To encourage all county, state and national agencies to provide mitigation measures to reduce highway and freeway noise.

2705 **POLICIES**

Policies for Noise from Vehicular Traffic

- P1 Motor vehicles passing through Woodside on state highways are the primary source of noise in the town. Woodside desires noise reduction from this source, and therefore endorses those measures which will reduce the number of vehicles which travel through the Town. One such measure may be a mass transit system; this could reduce traffic on I-280. Woodside endorses the concept of mass transit, and will support specific transit proposals for the Midpeninsula area if found to be effective, convenient, quiet, and economically feasible.
- P2 The existing State and Federal noise regulations which apply to motor vehicles should be fairly and effectively enforced.
- P3 Noise standards for motor vehicles in California should receive continuous review, and standards should be adopted which will permit the operation only of vehicles which are reasonably quiet.
- P4 The Town does not support the location of any new highways or freeways through or modification for increased capacity in the planning areas of Woodside.
- P5 The reduction of the noise generating characteristics of motor vehicles shall be encouraged. This may be accomplished by applying known technology to the design of exhaust systems, intake manifolds, tires, and the aerodynamics of vehicle design. This measure will require cooperation from vehicle manufacturers, as well as new State and Federal regulations. It will also require effective enforcement of existing and future regulations.
- P6 The noise barriers between State highways and residential properties in Woodside shall be improved. This may be accomplished through building earthmounds in appropriate locations, and under certain limited conditions by planting substantial vegetation.* In general, the Town prefers the construction of landscaped mounds and earth berms rather than the conventional solid "sound walls" typically found along roadway corridors. Although considered effective in reducing sound, solid fences and walls are not considered appropriate within highway and freeway

corridors since they detract from the natural and scenic quality of these roadways.

Policies for Aircraft

- P7 Commercial aircraft should be encouraged to be fitted with effective noise suppression systems.
- P8 Whenever possible, commercial airline traffic should be routed over the Bay and the ocean when making approaches to or departures from the San Francisco and San Jose airports. When overflights of residential areas are unavoidable, they should be conducted at the highest feasible altitude.
- P9 Military and general aviation activities (including flight training) should not be conducted over residential areas, or recreation areas.
- P10 The Town will cooperate with all local, State and National agencies and provide its best efforts toward minimizing aircraft noise.
- P11 No aircraft shall land or take off from or hover over lands within the Town Planning Area except for emergency services or when such activity is deemed beneficial by Town officials.

Policies for Community Development

- P12 When land is being divided, the sponsor of the land division must show that the building sites being created are suitable for the purposes for which they are intended. In some instances it may be necessary for the sponsor to undertake effective noise reduction measures in order to make proposed new sites suitable for residential uses.
- P13 When new structures are built, care must be taken to assure that the future occupants of each building will enjoy appropriate levels of quiet and privacy. (See Section 2709)
- P14 When new uses, which generate some unavoidable noise, are established in the Woodside Planning Area, adequate open space or noise shielding shall be provided between the noise source and the boundaries of the property.

- * Cook and Haverbeke, in TREES AND SHRUBS FOR NOISE ABATEMENT (U.S. Forest Service Research Bulletin #246) recommend 65 to 100 foot wide bands of densely planted evergreen trees and shrubs, with a height of 45 feet, in rural areas adjacent to Interstate freeways.

- P15 A noise study may be required for projects which increase the capacity of noise impacted roads. If the study indicates a significant increase in noise level, noise mitigation or reduction in the size of the project may be required.

Policy for Individual Noise Sources

- P16 Activities that take place within the Town, within practical limits, shall be conducted so that the noise from individual identifiable sources shall not disturb the peace and quiet of any neighborhood.

2706 **PROGRAM OBJECTIVES**

The Town of Woodside will:

- 01 Cooperate with and encourage the California Highway Patrol, and the San Mateo County Sheriff in the enforcement of motor vehicle noise regulations.
- 02 Cooperate with the California Transportation Department in the review of the design of I-280, with the objective of increasing the shielding of vehicular noise.
- 03 Cooperate with other cities and the County of San Mateo to establish a mass transit system which provides convenient, quiet service at a reasonable economic cost. Such a mass transit system should be designed to serve both regional and local transportation needs; in this way the number of private cars traveling on State highways through Woodside may be reduced.
- 04 Continue to encourage the use of alternative forms of local transportation by providing bicycle lanes, pedestrian paths, and equestrian trails.
- 05 Cooperate with the Federal Aviation Administration to ensure that commercial aircraft on flights to and from the San Francisco and San Jose airports and military flights out of Moffett Naval Air Station are routed in a manner which will produce minimum disturbance to residential areas.
- 06 Support measures to ensure that users of general aviation aircraft be restricted from practicing or training over residential areas and that altitude requirements for intransit flights be raised as high as possible to mitigate noise disturbances.

- 07 Support measures which will require effective noise suppression in the design of motor vehicles and of other mechanical equipment, and in the paving of road surfaces.
- 08 Require that appropriate noise reduction measures be taken by the subdivider in all future subdivisions of land in noise impacted areas to assure that proposed new home sites will be suitable for residential use and will provide adequate building sites for residents' activities to take place without creating noise impacts on neighbors.
- 09 Require that in the event a use of land is proposed which entails an unavoidable generation of noise, that adequate open space or noise barriers be provided which will limit the noise level, as measured at the boundaries of the property, to those set forth in Section 2810.

2707 **DEFINITIONS**

Noise: unwanted sound.

Decibel: a unit of measurement of the relative loudness of sounds. Abbreviated dB. The scale of decibels is logarithmic; a measurement of 60 dB is 10 times as great as 50 dB, which, in turn, is 10 times as great as 40 dB.

A-Weighted Sound Level: a weighting of the response of an instrument used to measure the intensity of sound, so that the instrument reacts to generally the same frequencies of sound as does the human ear. Measurements recorded using this scale are indicated with the abbreviation dBA.

Ambient Noise Level: the noise which exists at a given location as a result of the combination of many distant noise sources, individually indistinguishable.

Attenuation: any decrease in sound intensity.

(As a general rule, sound passing through air decreases in intensity 6dB every time the distance from the source of the sound is doubled.) The attenuation of sound can be increased by placing barriers, such as walls, hills, and vegetation, in the path of the sound waves. Attenuation also may be achieved by the advantageous location of the structure, choice of building materials, and building design.

Ldn: a descriptor established by the U. S. Environmental Protection Agency to describe the average day-night level with a weighting applied to noise occurring during the nighttime hours (10 pm-7 am) to account for the increased sensitivity of people to noise during sleeping hours.

Noise Contour: a line passing through points where the same sound intensity level prevails.

Noise Impacted Areas: land areas that are located on the Noise Contour Map within the Noise Contour Bands of 60 Ldn or greater.

Noise Measurement: the measurement of the noise level at a given location. It is usually desirable to indicate both the intensity of the noise at the given location, and the distance between the noise source and the location at which the measurement is made. For example, one would report that a diesel truck generates 88 dBA of noise, as measured at a distance of 50 feet.

STANDARDS FOR MAXIMUM NOISE LEVELS

2708 When considering the appropriate maximum noise levels, distinction is made between: (a) Ambient noise levels within the Town, (b) Identifiable "single event" noises which may exceed the ambient noise level, and (c) Noise from vehicular traffic on roads passing through the Town.

2709 **Ambient Noise Levels**

It is the objective of the Town to keep ambient noise to levels lower than those indicated for the areas and activities listed below:

<u>Area</u>	<u>Noise Level Exterior*</u>	<u>(In Ldn terms) Interior</u>
Residential Areas	55	40
Commercial Areas	60	45
Open Space	55	n.a.

* For exterior living areas such as swimming pools, tennis courts, patios, etc.

2710 **Individual Noise Sources**

Identifiable noises from individual sources do, by definition, exceed the ambient noise level. Some of these noises occur infrequently or are considered necessary, and may be considered unobjectionable. Examples are an occasional vehicle or use of construction equipment. Other noises, however, may be considered objectionable if they are too loud, are of excessive duration or occur at night. Examples are skidding tires or amplified music out of doors.

2711 The criteria to be considered in determining whether the policy concerning individual noise source is being observed include, but are not limited to, the following:

1. The level of the noise;
2. The intensity of the noise;
3. Whether the nature of the noise is usual or unusual;
4. Whether the origin of the noise is natural or unnatural;
5. The level and intensity of the background noise, if any;
6. The proximity of the noise to residential sleeping facilities;
7. The nature and zoning of the area within which the noise emanates;
8. The density of the inhabitation of the area within which the noise emanates;
9. The time of the day or night the noise occurs;
10. The duration of the noise;
11. Whether the noise is recurrent, intermittent, or constant;
12. Whether the noise is produced by a commercial or noncommercial activity; and
13. Whether the noise is produced by equipment normally required for maintenance of residential properties or for authorized construction projects.

Noise from Traffic on Roads Passing through Woodside

2712 In 1973, the California Transportation Department supplied information which indicated the level of noise generated on State highways in the Town, and the noise levels down to the 65 dBA contour that are projected for the year 1995, based on anticipated traffic loads. This information is on file in Town Hall.

2713 These State studies indicated that in 1973 there was a band of land about 750 feet wide along I-280 in which the noise level was estimated to be at 65 dBA or more (this band was narrower in those areas where the freeway passed through cuts in the terrain which serve as noise barriers). The State studies indicated that increased traffic loads on I-280 will cause more noise to be generated, so

that by the year 1995 a band of land 1,400 feet wide can be expected to have a noise level of at least 65 dBA.

- 2714 The State studies also indicated that along the more heavily traveled portions of Woodside Road, that, when the traffic noise is not shielded by the terrain, a band of land about 400 feet in width had a noise level of 65 dBA in 1973, and that this band can be expected to increase in width to 680 feet by the year 1995.
- 2715 A study was conducted in 1986 to meet State requirements for including noise contours in the General Plan. Existing and projected noise data were obtained for state and local roads, and were reported for levels of 60 Ldn's and greater. The resulting noise contour map is incorporated as Figure 8. State law requires that the contours 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 must include implementation measures and possible solutions that address noise problems.
- 2716 The results of the study indicate that noise level projections for the year 2005 are similar to the 1995 projections. The bands of 65 dBA's (or Ldn's, since these two terms are roughly equivalent) projected for the I-280 corridor are approximately similar — 1,400 feet wide. The 65 dBA or Ldn bands along Woodside Road are slightly wider in the 1995 projections versus the 2005 projections.
- 2717 The 1986 study reported current and projected noise levels. Table 24 shows that there will be a slight increase in noise levels between 1986 and 2005. The highest level of noise measures is 70 Ldn's at I-280. A 1,200 foot band of 65 Ldn's is found at I-280, and on the road portions of parts of Woodside Road. The 60 Ldn band is found along I-280 and Woodside Road, as well as on the actual Woodside, Whiskey Hill, Canada, and Sandhill Roads.
- 2718 The implications of the study are that Woodside residents residing along the I-280 corridor and portions of Woodside Road are exposed to high noise levels, and that implementation measures and solutions should be devised to minimize community residents to excessive noise. Standards should be set to establish a definition of "excessive noise levels."
- 2719 The Town of Woodside views the 2005 projections of noise as indicating a highly undesirable condition, and does not accept them as being predictions of the inevitable. The town believes that too many residents are now subjected to undesirable noise levels, and contends that the areas subject to high noise levels should be reduced in scope, not permitted to expand.

2820 Noise from Aircraft

Noise from commercial and private aircraft is a concern to Woodside residents. Commercial aircraft flight paths and low-flying private aircraft activities have created unacceptable noise levels in the past. The Town should be aware of regional airport plans, particularly San Francisco International Airport, which may direct flights over Woodside.

TABLE 24
TRAFFIC NOISE LEVELS FOR 1986 AND 2005

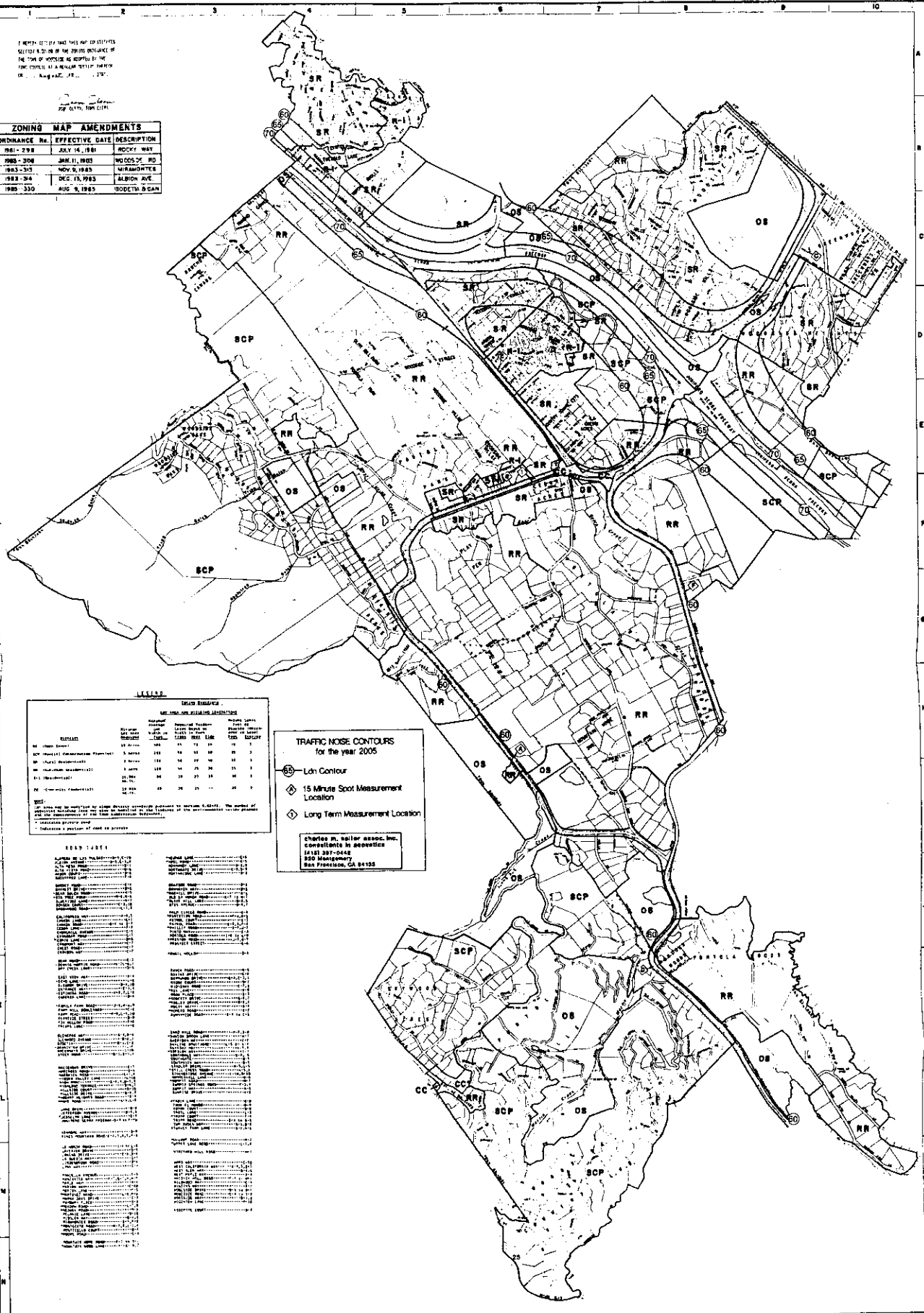
<u>Road Segment</u>	<u>ADT</u>	<u>Trucks %</u>	<u>Speed (mph)</u>	<u>Ldn at 50 Ft. 1986</u>	<u>Ldn at 50 Ft. 2005</u>
WOODSIDE ROAD					
Portola Rd. to Tripp Rd.	4,250	1.5	50	60	62
Canada Rd. to Whiskey Hill Rd.	10,400	1.5	35	60	62
I-280 to Alameda de las Pulgas	22,000	1.5	35	65	67
	18,000	2.5	40	67	69
	26,000	3.3	40	70	72
I-280					
Sand Hill Rd. to Woodside Rd.	65,000	2.5	60	80	81
Farm Hill Rd. to Canada Rd.	63,000	2.5	60	80	81
Edgewood Rd.	60,000	2.5	60	79	80
	61,000	2.5	60	79	80
PORTOLA	7,000	3.0	40	62	63
CANADA	4,000	1.5	40	61	62
WHISKEY HILL	5,000	2.5	45	61	62
FARM HILL	8,000	3.0	40	64	65
ALAMEDA DE LAS PULGAS	13,300	1.0	35	66	67

Source: Charles M. Salter Associates, Inc.

A NORTH-SOUTH AND EAST-WEST SECTION OF THE TOWN OF WOODSIDE IN THE COUNTY OF SAN MATEO, CALIFORNIA, AS SHOWN BY THE TOWN MAP OF WOODSIDE, CALIFORNIA, DATED AUGUST 19, 1954.

ZONING MAP AMENDMENTS

ORDINANCE No.	EFFECTIVE DATE	DESCRIPTION
1981-298	JULY 14, 1981	ROCKY WAY
1982-308	JUNE 11, 1982	WINDYBUSH RD
1983-305	MAY 21, 1983	WINDYBUSH RD
1983-304	DEC. 15, 1983	ALBION AVE
1983-330	AUG. 8, 1985	RODETA & CAN



LEGEND

TRAFFIC NOISE CONTOURS for the year 2005

ROAD NAME	TRAFFIC VOLUME	ADJUSTED VOLUME	NOISE LEVEL (dBA)
RR	100	100	70
OS	100	100	70
SCP	100	100	70
CC	100	100	70

TRAFFIC NOISE CONTOURS for the year 2005

- 65 Ldn Contour
- 15 Minute Spot Measurement Location
- Long Term Measurement Location

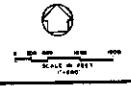
Charles M. Spiller Assoc. Inc.
 Consultants in acoustics
 1618 29th Street
 350 Montgomery
 San Francisco, CA 94115

1019 14814

NOISE SOURCE	NOISE LEVEL (dBA)
RR	70
OS	70
SCP	70
CC	70

FIGURE 8 NOISE CONTOURS

**TOWN OF WOODSIDE
 SAN MATEO COUNTY, CALIFORNIA**



REVISIONS

NO.	DATE	DESCRIPTION
1	08/15/05	ISSUED