NOISE ELEMENT

INTRODUCTION

PURPOSE AND CONTENT

The simplest definition of noise is "unwanted sound." This definition is a subjective one, since people react differently to sounds and even react differently to the same sound. However it is perceived, noise is an important factor in the living and work environment. It can have adverse effects on people, including sleep interference; communication interference; physiological and psychological stress; and in some cases, hearing loss. Noise decreases the enjoyment of the home environment and recreational activities. Therefore, the location of existing or planned noise-sensitive land uses should be considered when placing facilities that generate significant volumes of noise. For purposes of this Noise Element, "noise-sensitive areas and uses" include residential areas, parks, schools, churches, hospitals, and long-term care facilities.

The intent of the Noise Element is to document existing noise conditions and identify areas where potential noise problems exist. This information is to be considered when planning the location and type of development throughout the Planning Area. The primary objective is to protect people from exposure to excessive noise.

Background data and information for this element are contained within Chapter 11 of the City of Redding *General Plan Background Report.*

Specific topics addressed within the Policy Document include:

- Noise Environment and Measurements.
- Transportation Noise Sources.
- Fixed Noise Sources.

AUTHORITY

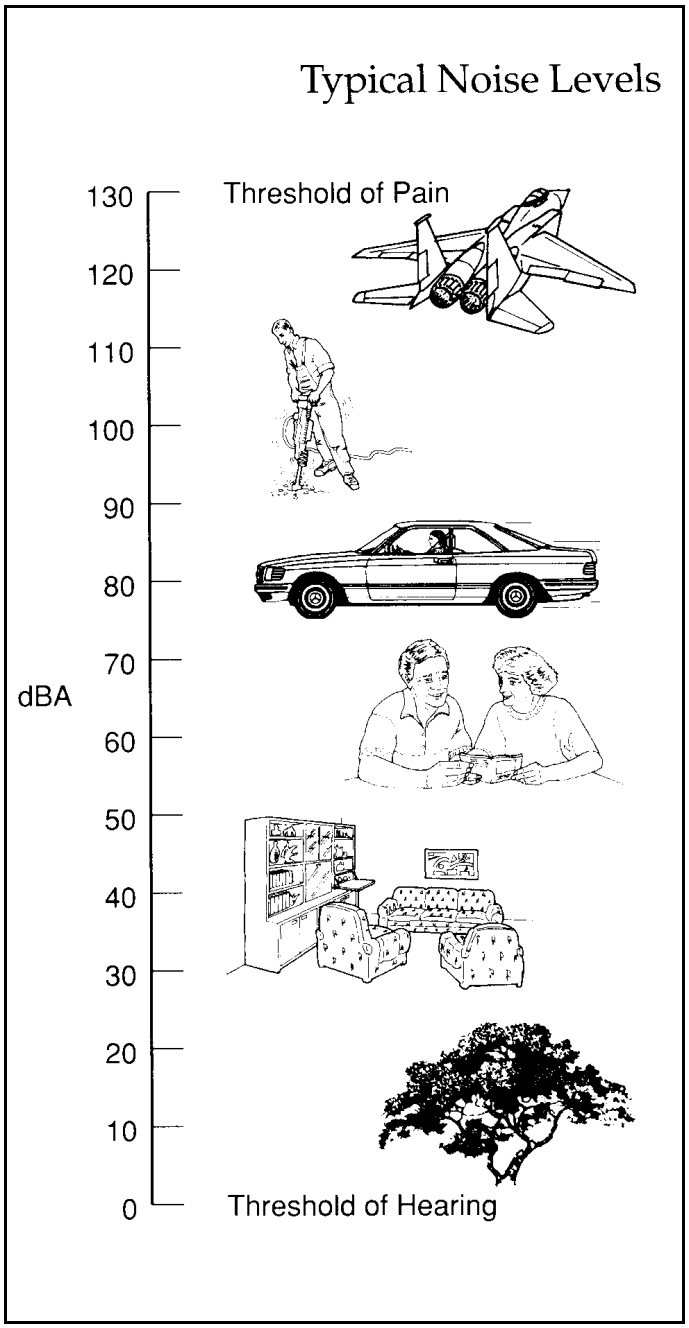
Pursuant to Government Code Section 65302(f), a general plan shall include:

> A Noise Element which identifies and appraises 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, current and projected noise levels for all of the following sources:
>
> 1. Highways and freeways.
> 2. Primary arterials and major local streets.
> 3. Passenger and freight on-line railroad operations and ground rapid transit systems.
> 4. 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.
> 5. Local industrial plants, including, but not limited to, railroad classification yards.
> 6. Other ground stationary noise sources identified by local agencies as contributing to the community noise environment.
>
> Noise contours shall be shown for transportation-related noise sources and stated in terms of community noise equivalent level (CNEL) or day-night average level (L_{dn}). Noise contours for non-transportation-related noise must be stated in terms of the hourly energy-equivalent noise level (L_{eq}). The noise contours must be prepared on the basis of noise-monitoring or generally accepted noise-modeling techniques for the various sources identified in paragraphs (1) through (6).
>
> Noise contours are to 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 also include implementation measures or possible solutions that address existing and foreseeable noise problems. The adopted Noise Element shall serve as a guideline for compliance with the state's Noise Insulation Standards.

GOALS AND POLICIES

NOISE ENVIRONMENT AND MEASUREMENTS

Ambient noise, which is the total noise in a given environment, is usually measured with an A-weighted decibel scale (dB^A). However, ambient noise varies over time; therefore, other measurements that give an average noise level for a period of time are used. Such measurements include the energy-equivalent noise level (L_{eq}), the day-night average noise level (L_{dn}), and the community noise equivalent level (CNEL). L_{eq} is an hourly average, while L_{dn} and CNEL are 24-hour weighted averages. All three of the aforementioned measurements were used in the noise survey conducted for the *General Plan Background Report.*



Noise-modeling techniques and noise measurements were used to develop generalized noise contours describing existing conditions for major roadways, railroads, and fixed noise sources (predominantly existing industrial uses) in the Planning Area. The noise-modeling methods closely follow recommendations made by the State Office of Noise Control, supplemented where appropriate by field-measured, noise-level data to account for local conditions. The noise contours are based upon annual average conditions. Because local topography, vegetation, or intervening structures may significantly affect noise exposure at a particular location, the noise contours should not be considered site-specific.

A community noise survey was conducted to document noise exposure in areas containing noise-sensitive land uses. Noise-monitoring sites were selected as representative of typical residential conditions in the City. Community noise-monitoring systems were calibrated with acoustical calibrators in the field prior to use. The systems complied with all pertinent requirements of the American National Standards Institute (ANSI) for Type I sound-level meters.

Generally, noise is generated from two types of sources: transportation sources and fixed sources. These sources are discussed in more detail later in the element.

GOAL N1

PROTECT RESIDENTS FROM THE HARMFUL AND ANNOYING EFFECTS OF EXPOSURE TO EXCESSIVE NOISE.

Policies to achieve this goal are to:

N1A. Monitor and update periodically the community's ambient and fixed noise levels.

N1B. Adopt a noise ordinance to address the following:

- Permitted days and hours for nonemergency construction activities (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.
- Regulations pertaining to the use of "jake" brakes within the City limits and excessive noise created by vehicular stereo systems.
- Standards that establish limits for peak noise emissions measured from the property line of the noise-creating use. These standards should be geared primarily toward commercial and industrial uses.
- Regulations that are tied to criteria such as those outlined in Table 5-1 of the Noise Element.

analysis must comply with the guidelines identified in Table 5-1.

Note: Existing dwellings and new dwellings constructed under previous approvals are not 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), Federal Housing Administration (FHA), and 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.

Table 5-1
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.	Estimate the noise levels at affected receivers and the location of existing and projected (20-year) noise contours. Compare those values to the adopted policies of the Noise Element for both interior and exterior exposure levels.
D.	Recommend appropriate mitigation to achieve compliance with the adopted policies and standards of the Noise Element, giving preference to site planning and building design over mitigation measures which require the construction of unusually large walls or noise barriers. Where the noise source in question consists of intermittent single events, the report must address the effects of maximum noise levels in sleeping rooms in terms of possible sleep disturbance.
E.	Estimate noise exposure after the prescribed mitigation measures have been implemented.

- Guidelines for noise measurement and monitoring activities.
- Enforcement procedures.

N1C. Require acoustical analysis for new development in locations where exterior and/or interior noise levels will likely exceed the City's noise standards to determine appropriate mitigation measures. This

N1D. Encourage the use of site planning and building materials/design as primary methods of noise-attenuation.

N1E. Prepare a Noise Attenuation Manual, which illustrates preferred noise mitigation techniques.

N1F. Discourage use of noise barriers and walls constructed exclusively for noise-attenuation purposes, where possible. In instances where noise barriers cannot be avoided, require the use of site planning and building material/design features in conjunction with barriers to mitigate visual impacts and reduce the size of barriers.

TRANSPORTATION NOISE

The Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA-ROAD-77-108) was used to develop L_{dn} contours for all highways and major roadways in the Redding Planning Area. The FHWA Model is the analytical method presently favored for traffic noise prediction by most state and local agencies, including the California Department of Transportation (Caltrans). The FHWA Model predicts hourly L_{eq} values for free-flowing traffic conditions, and it is generally considered to be accurate within 1.5 dB. To establish the baseline noise conditions, traffic data representing annual average traffic volumes for existing conditions on major roadways was obtained from Caltrans, the City of Redding, and the files of the General Plan's noise consultants. Using these data and the FHWA Model, traffic noise levels as defined by L_{dn} were calculated for existing and projected traffic volumes. Distances from the centerlines of selected roadways to the 60 and 65 dB L_{dn} contours are summarized in Table 5-2. These distances should be treated as estimates, since actual distances may vary due to factors such as road curvature, roadway grade, shielding by local topography or structures, and elevated roadways.

Table 5-2
Existing and Projected Noise Contours For Selected Road Segments

NOISE CONTOUR DATA Distance (Feet) from Center of Roadway to L_{dn} Contours					
Segment	Description	Existing		Projected	
		60 dB	65 dB	60 dB	65 dB
I-5					
1	Knighton Road to Churn Creek Road	1,666	773	2,065	959
2	Churn Creek Road to East Cypress Avenue	1,733	804	2,065	959
3	East Cypress Avenue to SR 44	1,683	781	1,968	914
4	SR 44 to SR 299	1,803	837	2,139	993
5	SR 299 to SR 273	1,487	690	1,812	841
6	SR 273 to Oasis Road	1,561	724	1,880	872
7	Oasis Road to Pine Grove Avenue	1,385	643	1,743	809
SR 44					
8	I-5 to Churn Creek Road	268	125	355	165
9	Churn Creek Road to Old Oregon Trail	289	134	455	211
10	Old Oregon Trail to East Boundary	281	131	316	147
SR 273					
11	Canyon Road to Clear Creek Road	284	132	323	150
12	Clear Creek Road to South Bonnyview Road	343	159	367	170
13	South Bonnyview Road to Radio Lane	277	129	351	163
14	Radio Lane to Railroad Avenue	215	100	351	163
15	SR 299 West to Del Mar Avenue	350	163	341	158
16	Del Mar Avenue to SR 299 East	314	146	334	155
17	SR 299 East to I-5	160	74	230	107
SR 299					
18	East Boundary to Old Oregon Trail	271	126	284	132
19	Old Oregon Trail to I-5 North	345	160	362	168
20	I-5 South to Tehama	539	250	634	294
SR 299 Tehama					
21	Pine Street to Liberty Street	230	107	234	109

NOISE CONTOUR DATA Distance (Feet) from Center of Roadway to L_{dn} Contours					
Segment	Description	Existing		Projected	
		60 dB	65 dB	60 dB	65 dB
SR 299 Shasta					
22	Liberty Street to Pine Street	221	102	234	109
SR 299 Eureka Way					
23	Market Street to Court Street	218	101	251	116
24	Court Street to Buenaventura	250	116	280	130
25	Buenaventura to West Boundary	337	157	367	170
Airport Road					
26	SR 44 to Hartnell Avenue	182	84	220	102
27	Hartnell Avenue to Rancho Road	163	76	242	112
28	Rancho Road to Meadow View Drive	142	66	214	99
29	Meadow View Drive to Fig Tree Lane	142	66	191	89
30	Fig Tree Lane to Dersh Road	142	66	189	88
Alta Mesa Drive					
31	Galaxy to Hartnell Avenue	52	24	75	35
Angelo Avenue					
32	Market Street to Parkview Avenue	66	31	61	28
Athens Avenue					
33	Cypress Avenue to Locust Street	118	55	118	55
34	Locust Street to South Street	83	38	57	26
Bechelli Lane					
35	Hemsted to Grove Street	66	31	69	32
36	Grove Street to East Cypress Avenue	66	31	69	32
37	East Cypress Avenue to Hartnell Avenue	112	52	105	49
38	Hartnell Avenue to 3rd Street	137	64	125	58
39	3rd Street to Loma Vista Drive	131	61	105	49
40	Loma Vista Drive to South Bonnyview Road	90	42	91	42
Benton Drive					
41	North Market Street to Quartz Hill Road	47	22	163	76
Browning Street					
42	Hilltop Drive to East End	49	23	91	42
Buenaventura Boulevard					
43	Eureka Way to Placer Street	66	31	81	38
44	Placer Street to Canyon Creek Road	47	22	95	44
45	Canyon Creek Road to Railroad Avenue	52	24	75	35
46	Railroad Avenue to Market Street	125	58	152	71
Butte Street					
47	Continental Street to Sequoia Avenue	79	37	93	43
48	Sequoia Avenue to Auditorium Drive	85	39	108	50
California Street					
49	Riverside Drive to Trinity Street	57	26	68	31
50	Trinity Street to Eureka Way	118	55	68	31
51	Eureka Way to Tehama Street	98	45	68	31
Continental Street					
52	Placer Street to Butte Street	62	29	72	33
53	Butte Street to Trinity Street	47	22	59	27
Canyon Road					
54	West City Limits to SR 273	90	42	100	46

NOISE CONTOUR DATA Distance (Feet) from Center of Roadway to L_{dn} Contours					
Segment	Description	Existing		Projected	
		60 dB	65 dB	60 dB	65 dB
Churn Creek Road					
55	Rancho Road to Victor Avenue	83	38	98	45
56	Victor Avenue to South Bonnyview Road	87	40	93	43
57	South Bonnyview Road to Loma Vista Drive	101	47	121	56
58	Loma Vista Drive to Shirley Lane	131	61	144	67
59	Shirley Lane to Hartnell Avenue	166	77	156	72
60	Hartnell Avenue to East Cypress Avenue	166	77	139	65
61	Mistletoe Lane to Dana Drive	183	85	188	87
62	Dana Drive to Old Alturas Road	131	61	155	72
63	Old Alturas Road to Canby Road	105	49	125	58
64	Canby Road to Palacio Drive	105	49	137	64
65	Palacio Drive to College View Drive	105	49	137	64
66	College View Drive to Collyer Drive	87	40	143	67
Clear Creek Road					
67	South Market Street to ACID Canal	57	26	49	23
College View Drive					
68	Churn Creek Road to Shasta View Drive	47	22	58	27
Court Street					
69	Schley Street to South Street	118	55	133	62
70	South Street to Placer Street	118	55	112	52
71	Placer Street to Shasta Street	137	64	131	61
72	Shasta Street to Eureka Way	112	52	131	61
Cypress Avenue and East Cypress Avenue					
73	Market Street to Akard Avenue	177	82	203	94
74	Akard Avenue to Athens Avenue	208	97	205	95
75	Athens Avenue to Hartnell Avenue	260	121	264	123
76	Hartnell Avenue to Bechelli Lane	218	101	198	92
77	Bechelli Lane to Southbound I-5 ramps	255	119	226	105
78	Southbound I-5 ramps to Northbound ramp	255	119	237	110
79	Northbound I-5 ramp to Hilltop Drive	208	97	246	114
80	Hilltop Drive to Larkspur Lane	203	94	198	92
81	Larkspur Lane to Churn Creek Road	161	75	166	77
82	Churn Creek Road to Victor Avenue	66	31	143	67
Dana Drive					
83	Hilltop Drive to Canby Road	118	55	143	67
84	Canby Road to Churn Creek Road	131	61	118	55
85	Churn Creek Road to Friendly Lane	131	61	160	79
86	Friendly Lane to Bradford Way	75	35	122	56
87	Bradford Way to Victor Avenue	66	31	98	45
East Street					
88	Cypress Avenue to South Street	73	34	77	36
89	South Street to Placer Street	83	38	112	52
90	Placer Street to Tehama Street	90	42	105	49
91	Tehama Street to Shasta Street	105	49	98	46
Eastside Road					
92	Wyndham Lane to Breslauer Lane	54	25	27	12
93	Breslauer Lane to Radio Lane	73	34	59	27
94	Radio Lane to East Bonnyview Road	60	28	24	11
95	East Bonnyview Road to South Bonnyview Road	47	22	23	10
96	South Bonnyview Road to Girvan Road	66	31	43	20
Freebridge Street					
97	Parkview Avenue to Weldon Street	47	22	23	10

NOISE CONTOUR DATA Distance (Feet) from Center of Roadway to L_{dn} Contours					
Segment	Description	Existing		Projected	
		60 dB	65 dB	60 dB	65 dB
Girvan Road					
98	Eastside Road to Creekside Drive	57	26	69	32
Hartnell Avenue					
99	East Cypress Avenue to Parkview Avenue	143	67	134	62
100	Parkview Avenue to Bechelli Lane	118	55	143	67
101	Bechelli Lane to Churn Creek Road	155	72	146	68
102	Churn Creek Road to Victor Avenue	183	85	152	71
103	Victor Avenue to Shasta View Drive	137	64	148	69
104	Shasta View Drive to Goodwater Avenue	112	52	103	48
105	Goodwater Avenue to Argyle Avenue	83	38	91	42
106	Argyle Avenue to Airport Road	47	22	60	28
Hilltop Drive					
107	East Lake Boulevard to Peppertree Lane	118	55	161	75
108	Peppertree Lane to Browning Street	125	58	170	79
109	Browning Street to East Palisades Avenue	149	69	155	72
110	East Palisades Avenue to Dana Drive	161	75	172	80
111	Dana Drive to SR 44 Eastbound ramps	183	85	201	93
112	SR 44 Eastbound ramps to I-5 Off-ramp	172	80	193	90
113	I-5 Off-ramp to Mistletoe Lane	172	80	177	82
114	Mistletoe Lane to Industrial Street	143	67	115	53
115	Industrial Street to Cypress Avenue	137	64	107	50
116	Cypress Avenue to Maraglia Avenue	105	49	105	49
Lake and East Lake Boulevard					
117	North City Limits to Oasis Road	112	52	121	56
118	Oasis Road to Keswick Dam Road	118	55	131	61
119	Keswick Dam Road to Panorama Drive	143	67	135	63
120	Panorama Drive to Clay Street	149	69	152	71
121	Clay Street to North Point Drive	166	77	177	82
122	North Point Drive to Masonic Avenue	172	80	177	82
123	Masonic Avenue to North Market Street	232	108	245	114
124	North Market Street to Hilltop Drive	218	101	219	101
125	Hilltop Drive to Southbound I-5 ramp	166	77	165	77
Locust Street					
126	East Street to Athens Avenue	47	22	44	20
127	Athens Avenue to Park Marina Drive	57	26	62	29
Mistletoe Lane					
128	Hilltop Drive to Churn Creek Road	90	42	115	53
129	Churn Creek Road to Victor Avenue	66	31	72	33
North Court Street					
130	Eureka Way to Quartz Hill Road	N/A	N/A	N/A	N/A
Oasis Road					
131	Lake Boulevard to Beltline Road	57	26	64	30
132	Beltline Road to Cascade Boulevard	47	22	68	31
133	Cascade Boulevard to Twin View Boulevard	75	35	152	71
134	Twin View Boulevard to Gold Hills Drive	66	31	143	67
135	Gold Hills Drive to Old Oregon Trail	57	26	100	46

NOISE CONTOUR DATA Distance (Feet) from Center of Roadway to L_{dn} Contours					
Segment	Description	Existing		Projected	
		60 dB	65 dB	60 dB	65 dB
Old Alturas Road					
136	Churn Creek Road to Friendly Lane	83	38	117	54
137	Friendly Lane to Browning Street	66	31	112	52
138	Browning Street to Victor Avenue	112	52	112	52
139	Victor Avenue to Shasta View Drive	105	49	112	52
140	Shasta View Drive to Old Oregon Trail	66	31	81	38
141	Old Oregon Trail to East Planning Area Limits	53	25	57	26
Old Oregon Trail					
142	SR 44 to Old Highway 44	87	41	151	70
143	Old Highway 44 to Old Alturas Road	62	29	92	43
144	Old Alturas Road to College View Drive	62	29	81	38
145	College View Drive to Collyer Drive	118	55	131	61
146	Collyer Drive to Oasis Road	66	31	85	39
147	Oasis Road to Bear Mountain Road	83	38	98	45
Park Marina Drive					
148	Auditorium Drive to SR 299E ramps	90	42	107	50
149	SR 299E Eastbound ramps to Athens Avenue	83	38	92	43
150	Athens Avenue to South Street	125	58	92	43
151	South Street to Locust Street	118	55	82	38
152	Locust Street to Cypress Avenue	66	31	57	26
Parkview Avenue					
153	South Market Street to Akard Avenue	101	47	83	38
154	Akard Avenue to Freebridge Street	75	35	75	35
Placer Street					
155	West City Limits to Buenaventura Boulevard	66	31	65	30
156	Buenaventura Boulevard to Pleasant Street	131	61	65	30
157	Pleasant Street to Airpark Road	137	64	134	62
158	Airpark Road to Court Street	143	67	172	80
159	Court Street to California Street	118	55	177	82
160	California Street to Pine Street	112	52	177	82
161	Pine Street to East Street	66	31	115	53
162	East Street to Sequoia Street	66	31	119	55
Quartz Hill Road					
163	Harlan Drive to Benton Drive	66	31	112	52
164	Benton Drive to North Market Street	90	42	72	33
Radio Lane					
165	East Bonnyview Road to South Bonnyview Road	47	22	53	25
Railroad Avenue					
166	Canyon Creek Road to Schley Avenue	87	40	122	57
Rancho Road					
167	Churn Creek Road to Alta Mesa Drive	75	35	95	44
168	Alta Mesa Drive to Airport Road	57	26	76	35
Shasta View Drive					
169	Hartnell Avenue to SR 44	83	38	119	55
170	SR 44 to Old Alturas Road	49	23	70	33
South Bonnyview Road					
171	South Market Street to Eastside Road	183	85	169	79
172	Eastside Road to Bechelli Lane	149	69	193	90
173	Bechelli Lane to Southbound I-5 ramp	149	69	183	85
174	Southbound I-5 ramp to Northbound I-5 ramp	125	58	172	80
175	Northbound I-5 ramp to Churn Creek Road	125	58	155	72

NOISE CONTOUR DATA Distance (Feet) from Center of Roadway to L_{dn} Contours					
Segment	Description	Existing		Projected	
		60 dB	65 dB	60 dB	65 dB
South Street					
176	Court Street to California Street	118	55	152	70
177	California Street to Market Street	98	45	137	64
178	Market Street to Pine Street	118	55	137	64
179	Pine Street to East Street	83	38	101	47
180	East Street to Athens Avenue	66	31	59	27
181	Athens Avenue to Park Marina Drive	52	24	63	29
Twin View Boulevard					
182	North Market Street to Caterpillar Road	75	35	96	44
183	Caterpillar Road to Constitution Way	90	42	121	56
Victor Avenue					
184	Churn Creek Road to Hartnell Avenue	66	31	112	52
185	Hartnell Avenue to East Cypress Avenue	66	31	115	53
186	East Cypress Avenue to SR 44 Eastbound ramp	90	42	128	59
187	SR 44 Eastbound ramp to SR 44 Westbound ramp	83	38	142	66
188	SR 44 Westbound ramp to Dana Drive	75	35	128	59
189	Dana Drive to Old Alturas Road	57	26	128	59
Westside Road					
190	Kenyon Road to Breslauer Lane	49	23	0	0
191	Breslauer Lane to Buenaventura Boulevard	51	24	0	0
Sources: California Department of Transportation (Caltrans) and Brown-Buntin Associates.					

RAIL

Railroad activity in the Planning Area is limited primarily to the Union Pacific (UP) north/south mainline track, which runs generally parallel to State Route 273 until just south of Lake Redding. UP officials reported that there are 52 freight train operations per day on the mainline track. This track is also used by Amtrak for its Coast Starlight train run. To determine the contribution of UP railroad operations to the area noise environment, noise measurements were conducted at three sites on January 11-12, 1996, and April 9-10, 1996. Based on the data from these measurements, the L_{dn} values were calculated, and the 60 and 65 dB Ldn noise-level contours were plotted. The results are shown on Table 5-3. The monitoring site at Veda Street is located adjacent to the tracks. The site at the end of Clay Street is located above the tracks, and the site at Caldwell Park is located below the tracks. The purpose of taking the readings at three locations with such unique characteristics is to provide a general idea about the location of the referenced contours under different topographical circumstances. This data should be used as a guide for determining the approximate distance to the 60 dB and 65 dB contours at other locations with similar characteristics. However, preparation of a site-specific acoustical analysis is highly recommended for projects likely to fall within projected rail contours.

Table 5-3
Approximate Distances to Union Pacific Railroad Noise Contours

Measurement Site	L_{dn} at Distance from RR Track of:		Distance to L_{dn} Contour (feet)	
	50 feet	100 feet	60 dB	65 dB
3210 Veda Street	72.1 dB	67.0 dB	321	149
West end of Clay Street	81.4 dB	76.9 dB	1,339	621
Caldwell Park	72.2 dB	67.7 dB	326	151
Source: Brown-Buntin Associates, January 11-12, 1996, and April 9-10, 1996				

AIRPORTS

There are two airports within the Planning Area. The Redding Municipal Airport is a commercial service primary airport. In 1993-94, there were approximately 112,500 total aircraft operations. Existing noise impacts for the Airport were identified in the *Redding Municipal Airport Master Plan Report Update*, August 1995. Currently, the 60 dB CNEL noise contour does not encroach on existing residential areas. Figures 5-1 and 5-2 show existing and projected noise contours for the Redding Municipal Airport. Benton Airpark is a basic utility airport used primarily by single-engine and small twin-engine airplanes. There are approximately 32,000 annual aircraft operations currently. The *Comprehensive Land Use Plan* for Benton Airpark adopted in October 1993, indicates that the 60 dB CNEL noise contour may intrude into residential areas north and south of the Airpark when operations reach a level of 75,000 to 100,000. This level is unlikely to be reached given hangar, tie-down, and other capacity limitations at the Airpark. A noise measurement conducted at the south end of the Airpark produced a measured CNEL of approximately 57 dB. Figure 5-3 depicts projected noise contours based on 90,000 operations a year.

GOAL N2

PROTECT RESIDENTS FROM EXPOSURE TO EXCESSIVE TRANSPORTATION-RELATED NOISE.

Policies to achieve this goal are to:

N2A. Update existing and projected noise contours periodically for all transportation noise sources.

N2B. Prevent development of new projects which contain noise-sensitive land uses in areas exposed to existing or projected levels of noise from transportation sources which exceed the levels specified in Table 5-4, unless the project design includes effective mitigation measures to reduce exterior noise and noise levels in interior spaces to the levels specified in that table.

N2C. Mitigate noise created by new transportation noise sources consistent with the levels specified in Table 5-4 in outdoor-activity areas and interior spaces of existing noise-sensitive land uses.

N2D. Consider the significance of noise-level increases associated with roadway-improvement projects needed to accommodate buildout of the General Plan. Since it may be impractical to reduce increased traffic noise to levels in Table 5-4, 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} in the outdoor-activity areas of noise-sensitive uses, roadway improvement projects which increase noise levels to 60 dB L_{dn} will not be considered significant.

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

- Where existing traffic noise levels are greater than 65 dB L_{dn} in the outdoor-activity areas of noise-sensitive uses, a +1.5dB L_{dn} increase in noise levels due to a roadway- improvement project will be considered significant.

N2E. Require acoustical analysis for noise-sensitive land uses proposed in areas exposed to existing or projected exterior noise levels exceeding the levels specified in Table 5-4 or the performance standards of Table 5-5 to determine mitigation for inclusion in the project design. Single-family dwellings on existing lots are excluded from this review.

N2F. Minimize motor vehicle noise impacts from streets and highways through proper route location and sensitive roadway design by employing the following strategies:

Table 5-4
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	60[3]	45	--
Transient Lodging	60[3]	45	--
Hospitals, Nursing Homes	60[3]	45	--
Theaters, Auditoriums, Music Halls	--	--	35
Churches, Meeting Halls	60[3]	--	40
Office Buildings	--	--	45
Schools, Libraries, Museums	--	--	45
Playgrounds, Neighborhood Parks	70	--	--

[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 noise in outdoor activity areas to 60 dB L_{dn}/CNEL or less, using a practical application of the best-available, noise-reduction measures, higher exterior noise levels 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.

[4] 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.

Table 5-5
Noise Level Performance Standards for New Projects
Affected By or Including Nontransportation 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

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 for residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings). The City can impose noise-level standards which are more restrictive than those specified above based upon determination of existing low ambient noise levels.

Industrial, light industrial, commercial, and public-service facilities which have the potential for producing objectionable noise levels at nearby noise-sensitive uses are dispersed throughout the City. Fixed noise sources which are typically of concern include, but are not limited to, the following:

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

The types of uses which may typically produce the noise sources described above include, but are not limited to: industrial facilities, including lumber mills, 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.

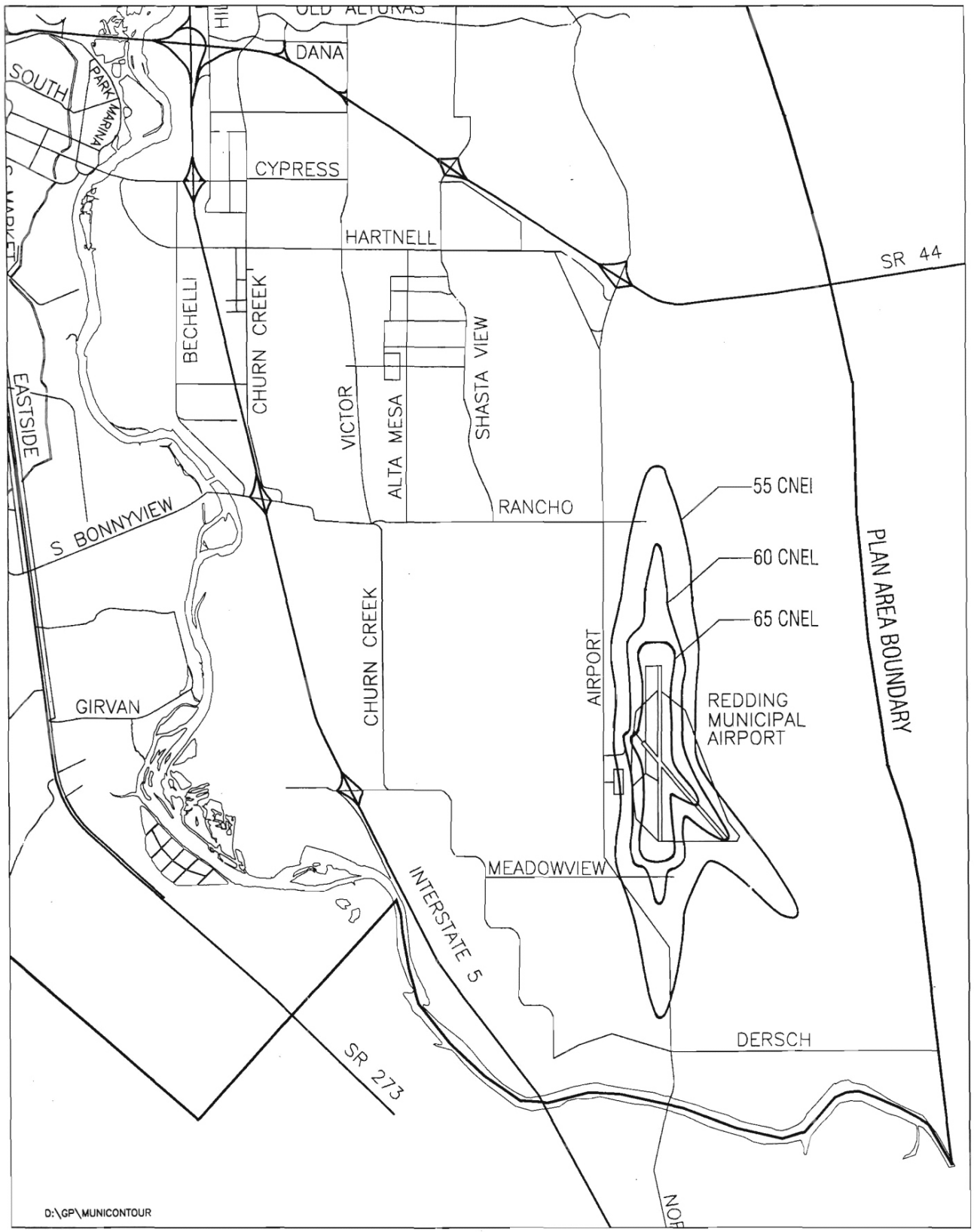


Figure 5-1 Redding Municipal Airport Existing Noise Contours

Noise Element

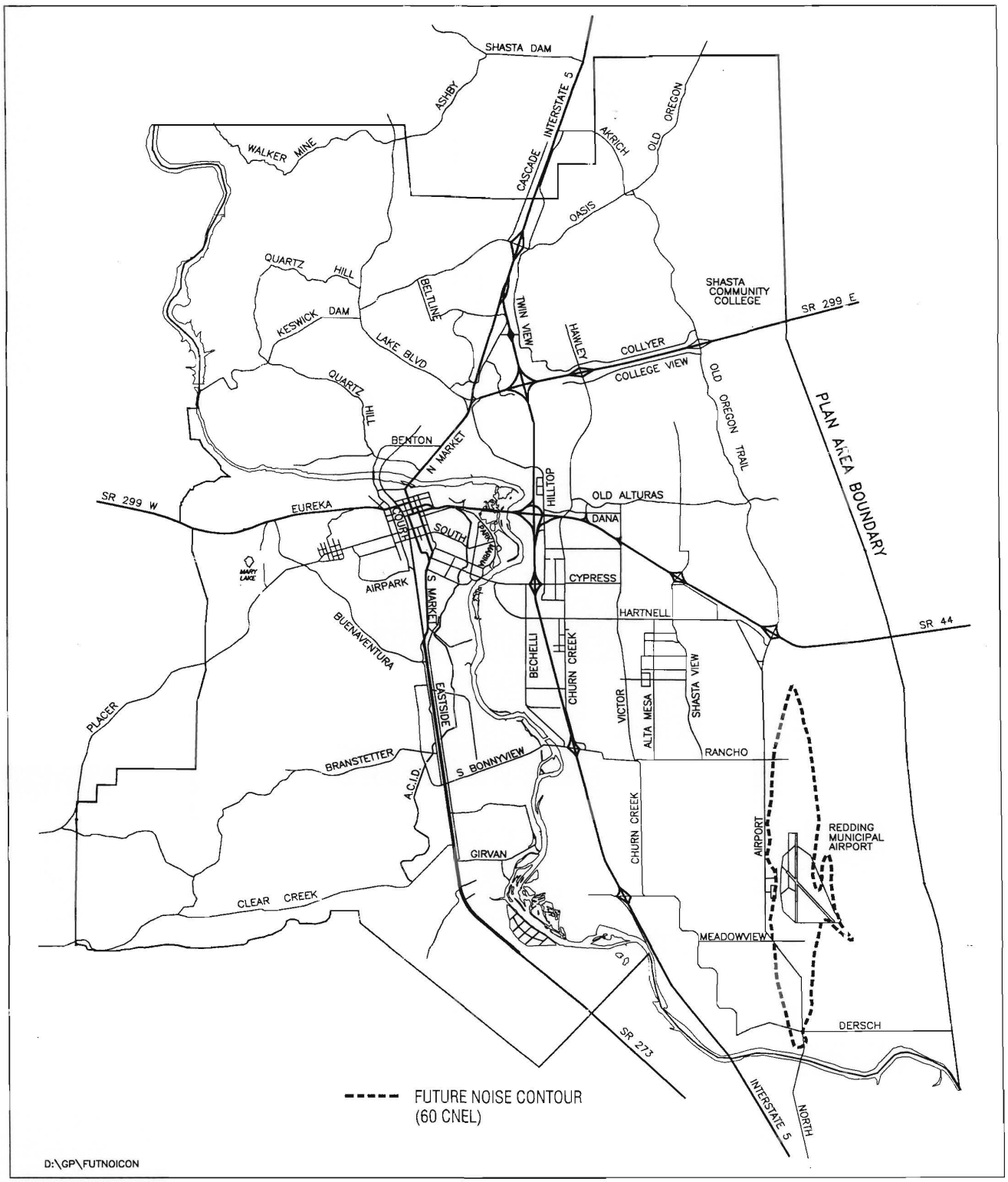


Figure 5-2 Future Noise Contour Municipal Airport

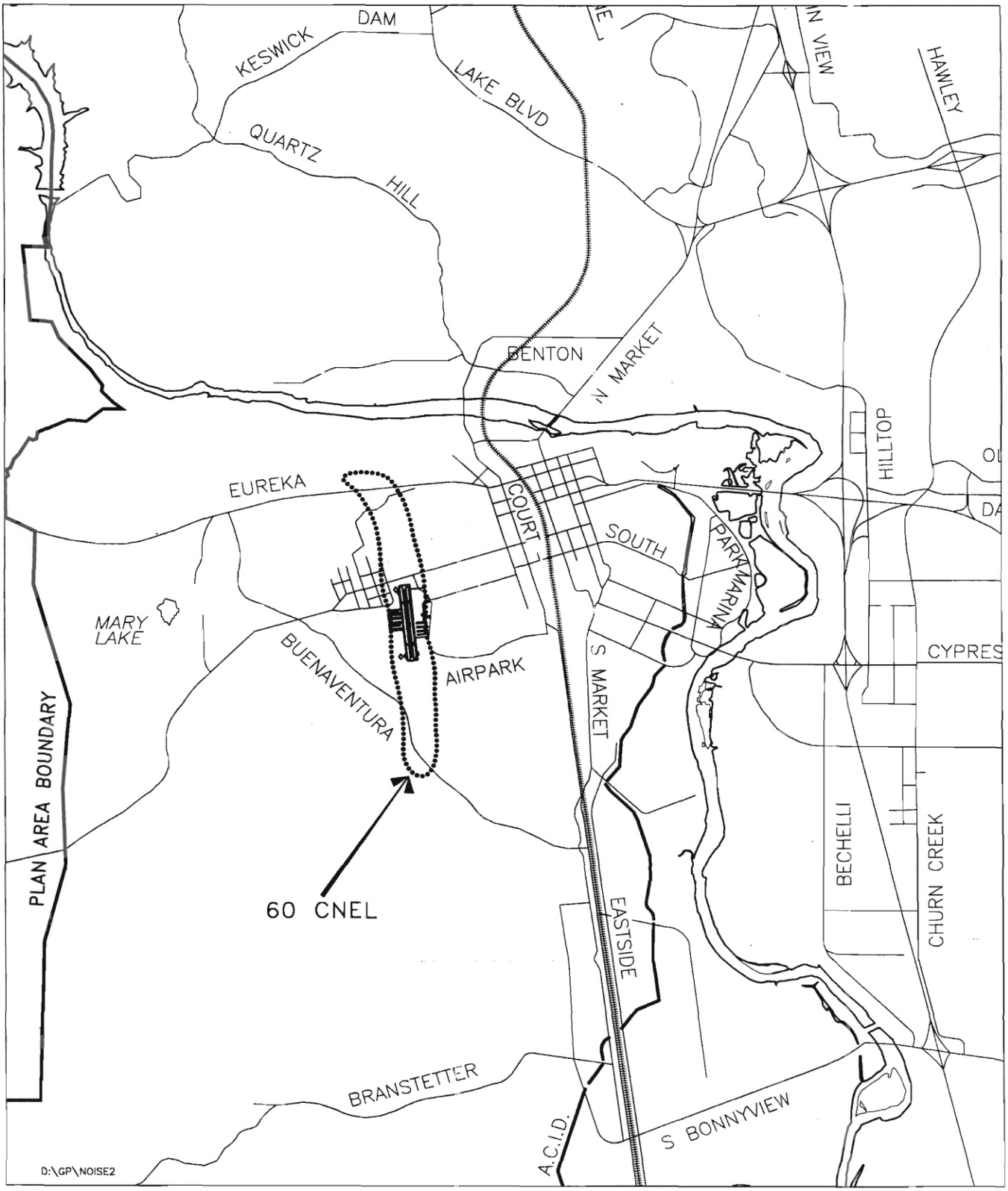


Figure 5-3 Future Noise Contour Benton Airpark

- Consider the impacts of truck routes, the effects of a variety of truck traffic, and future motor vehicle volumes on noise levels adjacent to master planned roadways when improvements to the circulation system are planned.

- Mitigate traffic volumes and vehicle speed through residential neighborhoods.

- Work closely with Caltrans in the early stages of highway improvements and design modifications to ensure that proper consideration is given to potential noise impacts on the City.

N2G. Enforce existing applicable sections of the California Vehicle Code related to vehicle or equipment mufflers and modified exhaust systems.

N2H. Ensure that any municipal vehicles or noise-generating mechanical equipment purchased or used by the City of Redding complies with acceptable standards.

N2I. Require that development in the vicinity of Redding Municipal Airport and Benton Airpark complies with the noise standards of the Comprehensive Land Use Plan for each facility.

N2J. Encourage railroad officials to install mitigation features whenever possible, and instruct railroad engineers to limit their use of air horns to reduce rail-related noise impacts on the community.

NONTRANSPORTATION NOISE

Activities at industrial, light industrial, commercial, and public-service facilities often involve processes or equipment that produce noise.

Noise measurements were conducted at three sites that contained fixed noise sources. These include sand and gravel operations along Clear Creek Road, lumber-related industries along Bonnyview Road, and the City of Redding Solid Waste Transfer Station. The L_{eq} values obtained at all three sites were between 50 dB and 60 dB, and no measurements of 60 dB, or greater, were recorded. Figures 5-4, 5-5, and 5-6 depict the 50 dB noise contours around the three sites.

Some existing residential uses are located near existing industrial uses on Moore Road and within the Mountain Lakes Industrial Park. Additional residential and industrial development within these areas will have to be carefully designed to ensure that future industrial uses can operate successfully without exposing surrounding noise-sensitive land uses to excessive noise levels.

GOAL N3

PROTECT THE ECONOMIC BASE OF THE CITY OF REDDING BY PREVENTING INCOMPATIBLE LAND USES FROM ENCROACHING UPON EXISTING OR PLANNED NOISE-PRODUCING USES.

PREVENT THE INTRODUCTION OF NEW FIXED NOISE SOURCES IN NOISE-SENSITIVE AREAS.

Policies to achieve this goal are to:

N3A. Prohibit the development of noise-sensitive uses where the noise level due to nontransportation sources will exceed the noise-level standards of Table 5-5 as measured immediately within the property line of the new development, unless effective noise-mitigation measures have been incorporated into the development design to achieve the standards specified in Table 5-5.

N3B. Mitigate noise created by new proposed nontransportation sources consistent with the noise-level standards of Table 5-5 as measured immediately within the property line of lands designated for noise-sensitive land uses. Noise- level standards for non-noise-sensitive uses will generally be 10 dB higher before mitigation is required.

N3C. Require acoustical analysis of new nonresidential land uses and the expansion of existing nonresidential land uses if likely to produce noise levels exceeding the performance standards of Table 5-5 within the property line of existing or planned noise-sensitive uses.

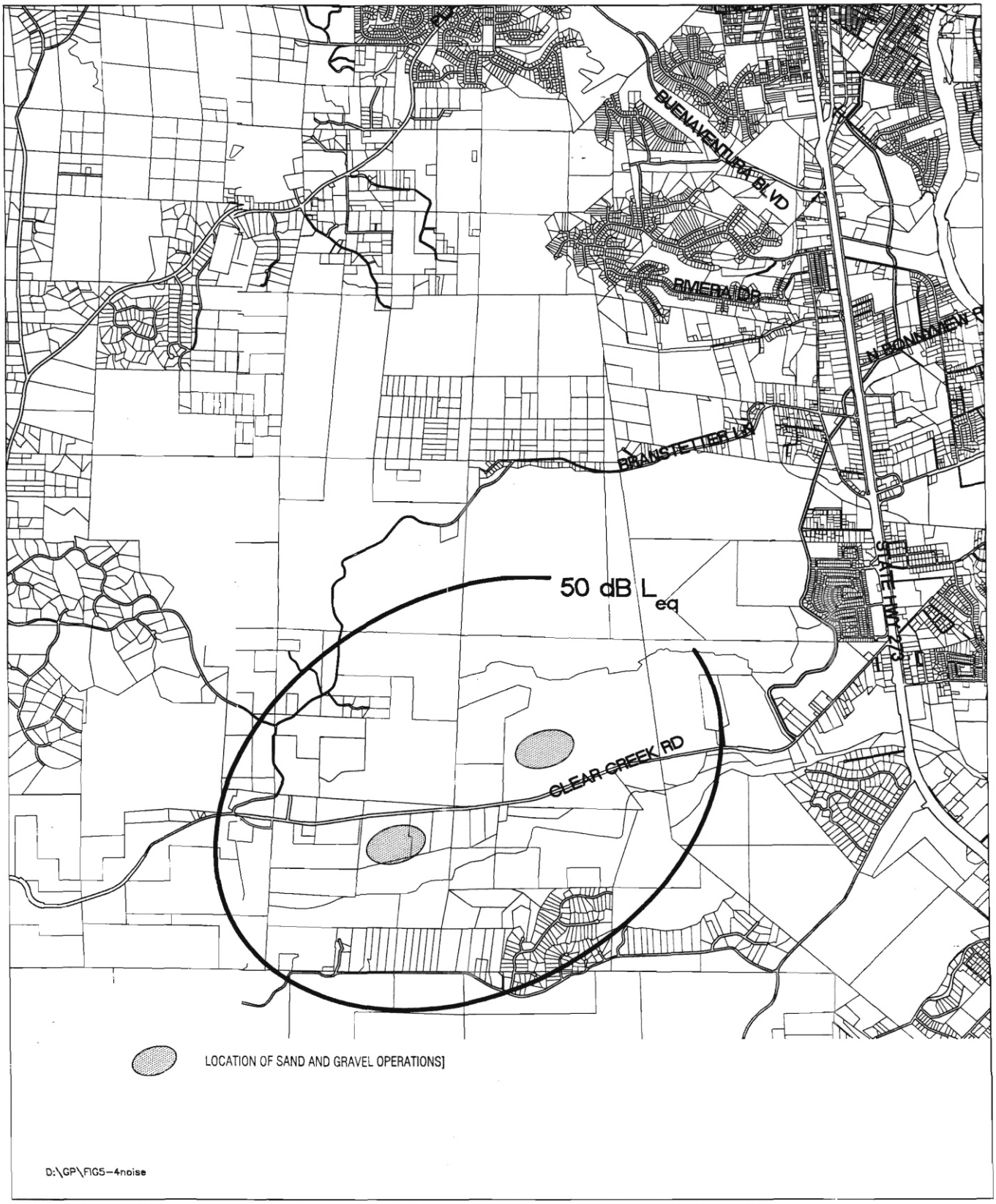


Figure 5-4 Noise Contours Sand And Gravel Operations

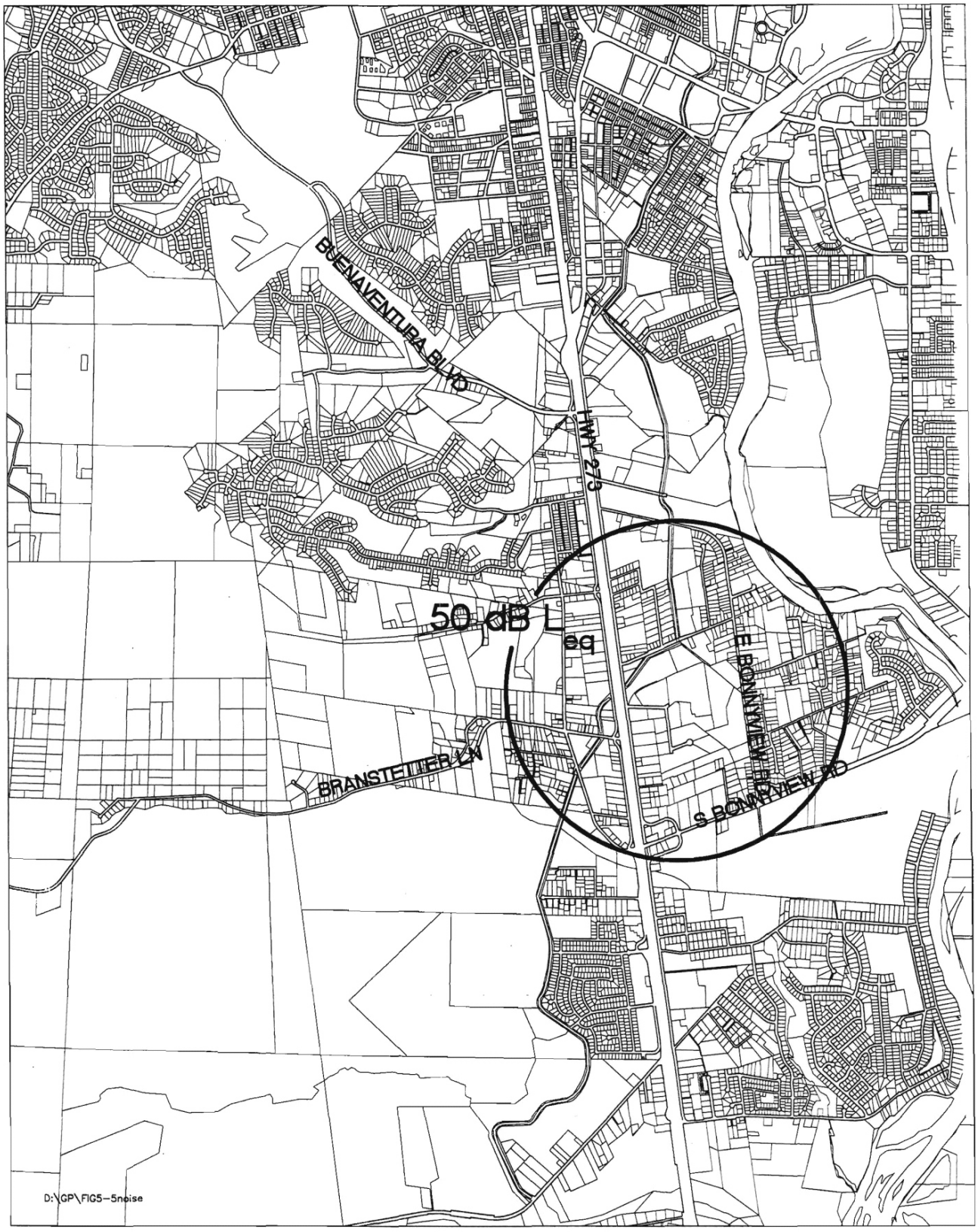


Figure 5-5 Noise Contours East Bonnyview Road Lumber Industries

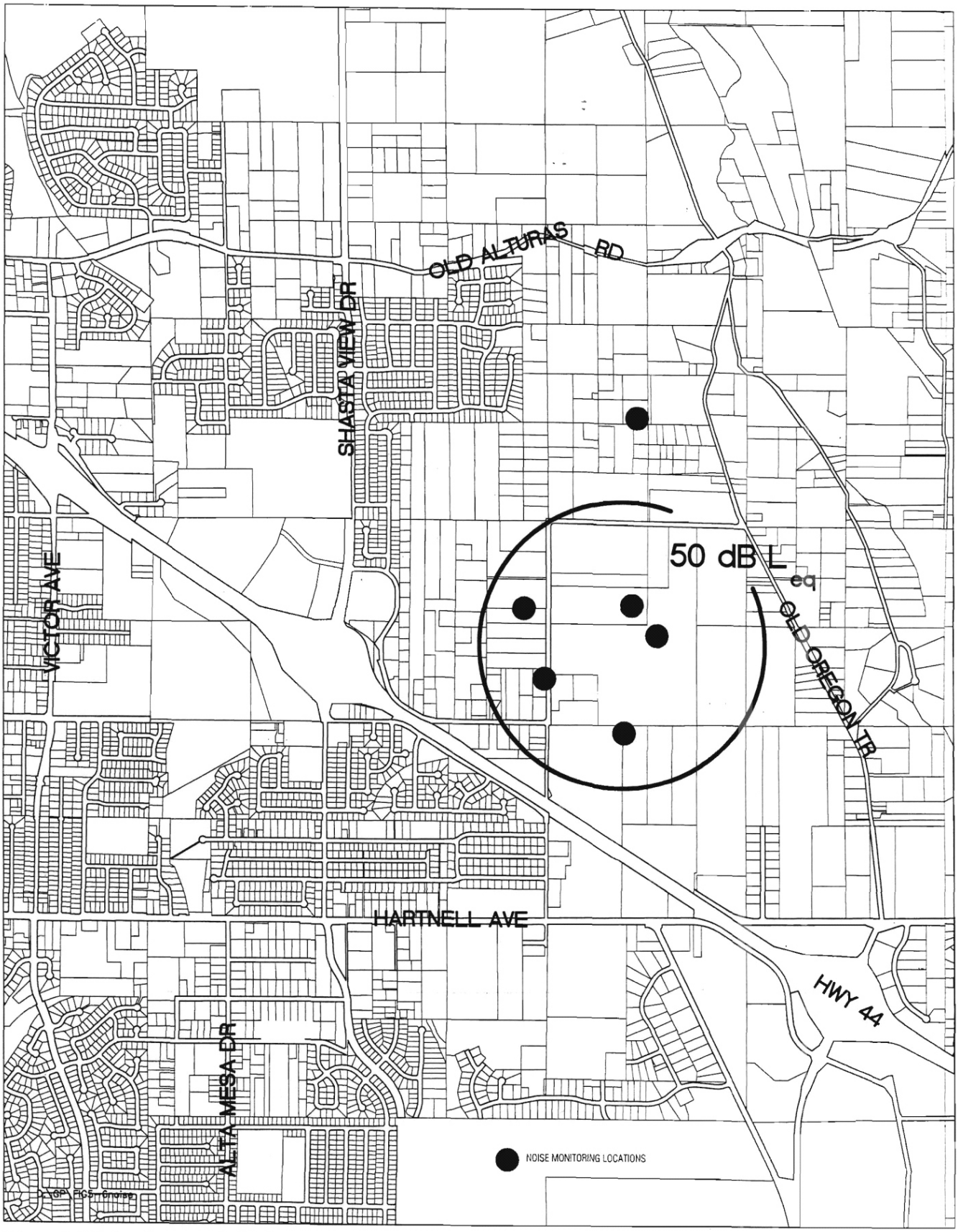


Figure 5-6 Noise Contours Solid Waste Transfer Station

N3D. Limit the siting of loading and shipping facilities for commercial and industrial land uses adjacent to residential parcels, whenever practicable.

N3E. Require that parking areas for commercial and industrial land uses be set back from adjacent residential areas to the maximum extent feasible or buffered and shielded by walls, fences, berms, and/or landscape.

N3F. Require that parking structures serving commercial or industrial land uses be designed to minimize the potential noise impacts both on site and on adjacent properties. Design measures may include the use of materials that mitigate sound transmission and the configuration of interior spaces to minimize sound amplification and transmission.

N3G. Encourage existing major fixed noise sources throughout the City of Redding to voluntarily install additional noise-buffering or reduction mechanisms within their facilities to reduce noise impacts to the lowest level practicable.

N3H. Require the installation of noise-buffering or reduction mechanisms, where appropriate, for major fixed noise sources throughout the City prior to the approval, amendment, and/or issuance of conditional use permits for these facilities.

N3I. Require residential development projects, newly developed residential areas, and noise-sensitive projects to be responsible for noise mitigations to lessen the impacts from adjacent and nearby industrial uses and urban activities when the following conditions exist:

- If, at the time of development, the industrial uses complied with all the noise mitigations based on anticipated noise sources and noise levels.
- If, at the time of development, adjacent vacant land is designated for commercial or industrial development.
- The noise level measured at the residential property line exceeds the residential noise standards due to the cumulative effect of nearby existing industrial and new industrial noise sources and increased noise levels of urban activities (i.e., traffic, trains, aircraft, etc.)
- The industrial use emitting the noise conforms with the land use classification of the General Plan, zoning district, and all conditions of City permits.
- The industrial use has not added additional noise-producing equipment or substantially changed its hours of operation from what has been approved by the City.