

Short Term Aircraft Noise Monitoring



Portola Valley
Woodside

Prepared for Portola Valley and Woodside Communities
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Technical Report #092014-974-969

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Quarterly Noise Monitoring Results

Residents in Portola Valley and Woodside reported concerns of increased aircraft noise in southern San Mateo County. In response to these concerns, SFO Noise Abatement Office at the request of the Airport Community Roundtable (ACR) performed quarterly noise monitoring in these communities. Sound level measurements were collected near Sioux Water Tanks, located off of Sioux Way and Cervantes Road for Portola Valley and at OSI-VORTAC, a ground navigational aid for aircraft pilots in Woodside. Beginning 3rd Quarter 2013, sound level data were continuously collected for a minimum of 14 days each quarter, and for the same period in subsequent quarters. So far, 4 quarters of data have been collected simultaneously at these locations. These quarterly measurements, along with past short-term monitoring results (where available) are provided herein. The results are for periods where full 24 hour days of data are available and are presented in A-weighted decibels (dBA). Table 1 and Table 2 provide the results of the current study for Portola Valley and Woodside, respectively. Daily noise climates are also provided by measurement period and location. Additionally, identified SFO Aircraft Events were tallied and grouped by day, evening and nighttime hours and events' levels summarized.

At all measurement sites the equipment used to measure the sound level was an Environmental Monitoring Unit 2200 noise monitor and Type 41DM-2 microphone manufactured by Bruel & Kjaer. The measurements consisted of monitoring the A-weighted decibels and processing the information into the Airport Noise and Operations Management System (ANOMS) for identification, noise to flight track matching and Community Noise Equivalent Level (CNEL) metric calculations.

The noise level thresholds of 52 dBA during the daytime hours from 7:00 a.m. to 10:00 p.m. and 50 dBA for the nighttime hours from 10:01 p.m. to 6:59 a.m. were used for this study. Although the ACR's acoustic consultant recommended a lower threshold of 42 dBA to account for lower ambient levels for night hours, the lower level could not be achieved due to the threshold limitations of the equipment.

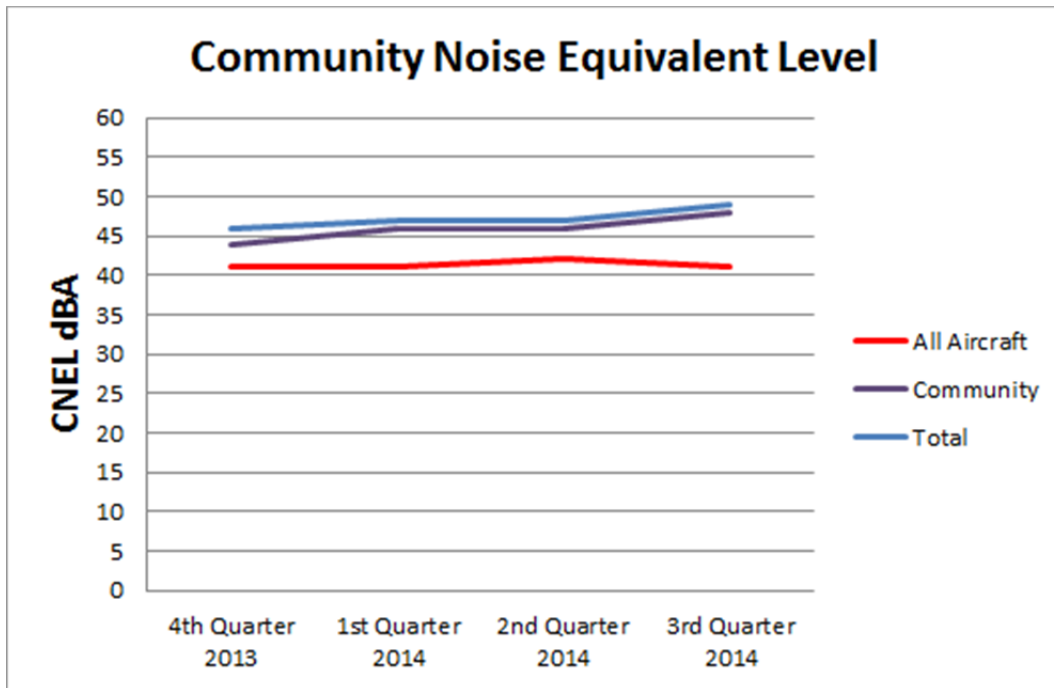
Aircraft noise levels in Portola Valley and Woodside are at levels expected in communities that are 15 nautical miles away from a large hub airport, and below several arrival corridors serving 2 main commercial use runways (28L, 28R) at SFO. The California Code of Federal Regulations, Title 21, Division 2.5, Chapter 6, paragraph 5012 states:

"The standard for the acceptable level of aircraft noise for persons living in the vicinity of airports is hereby established to be a community noise equivalent level of 65 decibels."

Since Aircraft CNEL was measured at 41dBA for Portola Valley and 42dBA for Woodside, both communities have an acceptable level of aircraft noise as defined by state law. The results of these field monitoring validates the extent of the 65dBA CNEL noise impact boundary confirming Aircraft CNEL is significantly less than 65dBA CNEL.

Table 1 – Sioux Way, Portola Valley

Quarter/Year	Number of days	ALL Aircraft CNEL	Community CNEL	Total CNEL
3Q2014	18	41	48	49
2Q2014	21	42	46	47
1Q2014	15	41	46	47
4Q2013	16	41	44	46

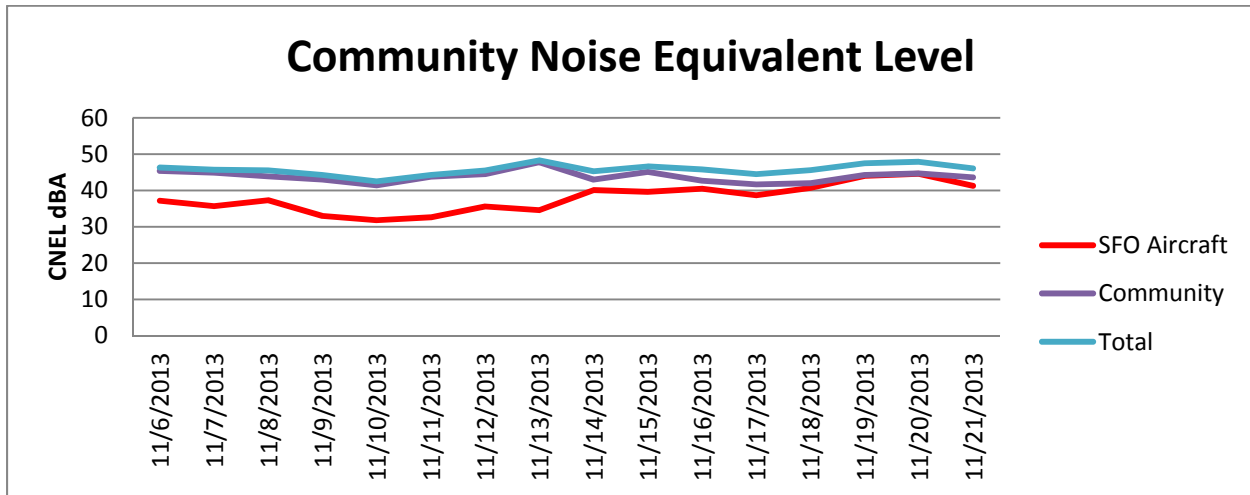


Past Measurements in Portola Valley

Month/Year	Location	Number of days	ALL Aircraft CNEL	Community CNEL	Total CNEL
4-2013	Alhambra Ct.	12	39	62	62
3-2012 to 7-2012	Westridge Dr.	125	37	58	58
4-2011	Westridge Dr.	19	35	50	51
7-2000	Grove Ct.*	7	37	51	51

*Monitoring for the Grove Court site was completed by Harris Miller Miller & Hanson Inc. as part of the City-by-City Noise Project in 2000. Larson-Davis Model 820/870 Sound Level Meters were used.

**Portola Valley
Fourth Quarter 2013**



Average	SFO Aircraft CNEL - 40	Community CNEL - 44	Total CNEL - 46
Range	32-45	41-48	43-48

SFO Aircraft Noise Data Summary – 16 Days Measurement Period

	Total Noise Events	Lowest Value	Highest Value	Average Value
Aircraft Lmax	504	51	70	60
Aircraft SEL	504	58	81	70
Noise Event Duration	504	8 seconds	88 seconds	24 seconds

32 events per day

Daytime Hours 7:00 a.m. to 7:00 p.m.

	Total Noise Events	Lowest Value	Highest Value	Average Value
Aircraft Lmax	347	52	70	60
Aircraft SEL	347	59	81	71
Noise Event Duration	347	8 seconds	67 seconds	24 seconds

22 events per day

Evening Hours 7:00 p.m. to 10:00 p.m.

	Total Noise Events	Lowest Value	Highest Value	Average Value
Aircraft Lmax	88	52	68	59
Aircraft SEL	88	60	80	70
Noise Event Duration	88	8 seconds	54 seconds	22 seconds

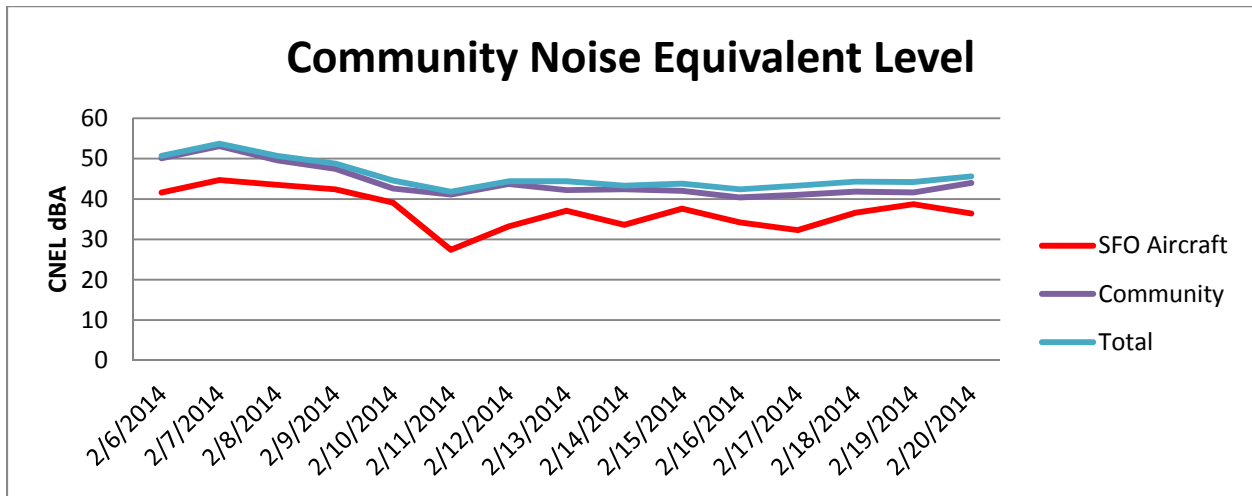
6 events per day

Nighttime Hours 10:00 p.m. to 7:00 a.m.

	Total Noise Events	Lowest Value	Highest Value	Average Value
Aircraft Lmax	69	51	69	59
Aircraft SEL	69	58	79	69
Noise Event Duration	69	8 seconds	88 seconds	26 seconds

4 events per day

**Portola Valley
First Quarter 2014**



Average	SFO Aircraft CNEL - 39	Community CNEL - 46	Total CNEL - 47
Range	27-45	40-53	42-54

SFO Aircraft Noise Data Summary – 15 Days Measurement Period

	Total Noise Events	Lowest Value	Highest Value	Average Value
Aircraft Lmax	436	50	75	60
Aircraft SEL	436	55	87	70
Noise Event Duration	436	5 seconds	105 seconds	21 seconds

29 events per day

Daytime Hours (7:00 a.m. to 7:00 p.m.)

	Total Noise Events	Lowest Value	Highest Value	Average Value
Aircraft Lmax	297	52	75	61
Aircraft SEL	297	58	87	71
Noise Event Duration	297	5 seconds	105 seconds	21 seconds

20 events per day

Evening Hours 7:00 p.m. to 10:00 p.m.

	Total Noise Events	Lowest Value	Highest Value	Average Value
Aircraft Lmax	72	53	67	60
Aircraft SEL	72	59	79	70
Noise Event Duration	72	5 seconds	57 seconds	20 seconds

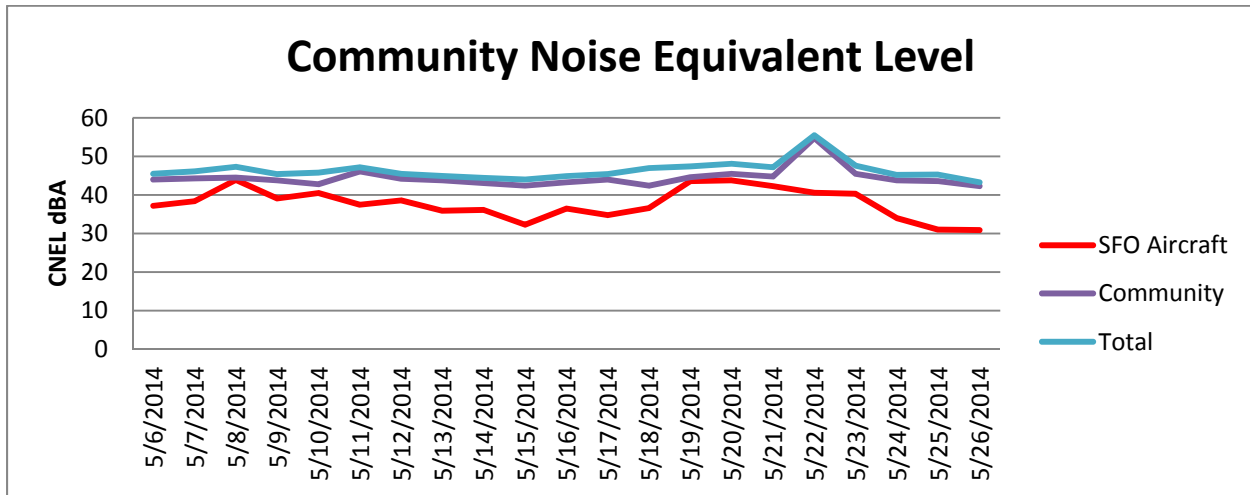
5 events per day

Nighttime Hours 10:00 p.m. to 7:00 a.m.

	Total Noise Events	Lowest Value	Highest Value	Average Value
Aircraft Lmax	67	50	71	59
Aircraft SEL	67	55	81	69
Noise Event Duration	67	5 seconds	86 seconds	23 seconds

4 events per day

Portola Valley
Second Quarter 2014



Note: On 5/22 community noise climate increased due to landscape trimming activities from 6:38 p.m. to 7:20 p.m.

Average	SFO Aircraft CNEL - 39	Community CNEL - 46	Total CNEL - 47
Range	31-44	42-55	43-56

SFO Aircraft Noise Data Summary – 21 Days Measurement Period

	Total Noise Events	Lowest Value	Highest Value	Average Value
Aircraft Lmax	794	50	73	60
Aircraft SEL	794	57	83	70
Noise Event Duration	794	8 seconds	78 seconds	25 seconds

38 events per day

Daytime Hours 7:00 a.m. to 7:00 p.m.

	Total Noise Events	Lowest Value	Highest Value	Average Value
Aircraft Lmax	529	51	73	61
Aircraft SEL	529	58	83	70
Noise Event Duration	529	8 seconds	76 seconds	26 seconds

25 events per day

Evening Hours 7:00 p.m. to 10:00 p.m.

	Total Noise Events	Lowest Value	Highest Value	Average Value
Aircraft Lmax	177	50	70	60
Aircraft SEL	177	57	80	70
Noise Event Duration	177	8 seconds	78 seconds	25 seconds

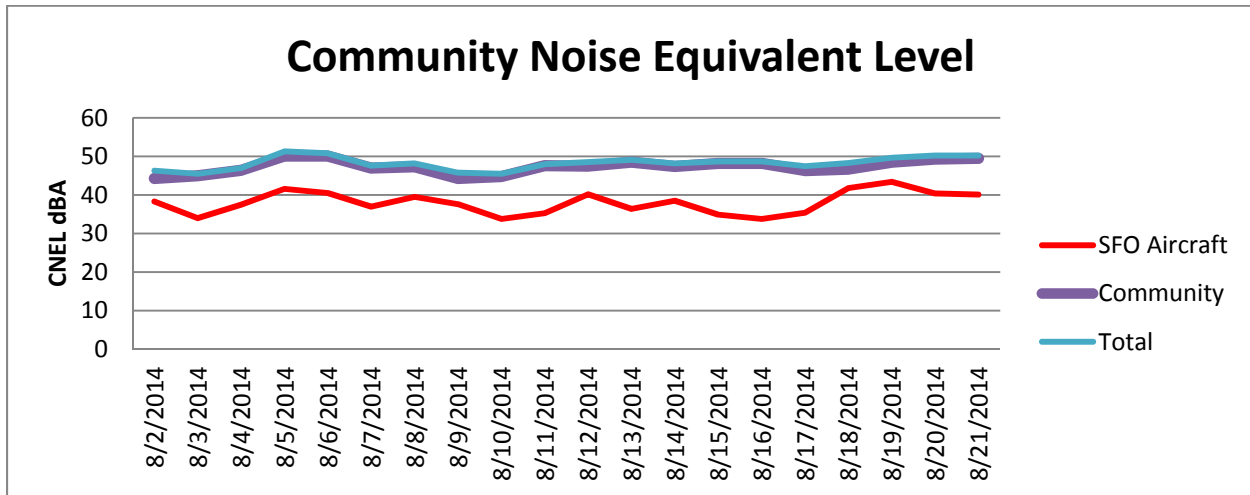
8 events per day

Nighttime Hours 10:00 p.m. to 7:00 a.m.

	Total Noise Events	Lowest Value	Highest Value	Average Value
Aircraft Lmax	88	51	67	58
Aircraft SEL	88	59	75	68
Noise Event Duration	88	8 seconds	53 seconds	20 seconds

4 events per day

Portola Valley
Third Quarter 2014



Note: 8/11 missing 10p.m. to midnight and 8/12 missing midnight to noon.

Average	SFO Aircraft CNEL - 39	Community CNEL - 48	Total CNEL - 49
Range	34-43	44-50	46-51

SFO Aircraft Noise Data Summary – 20 Days Measurement Period

	Total Noise Events	Lowest Value	Highest Value	Average Value
Aircraft Lmax	686	50	74	59
Aircraft SEL	686	59	85	70
Noise Event Duration	686	8	120	27

34 events per day

Daytime Hours 7:00 a.m. to 7:00 p.m.

	Total Noise Events	Lowest Value	Highest Value	Average Value
Aircraft Lmax	419	51	74	60
Aircraft SEL	419	59	85	70
Noise Event Duration	419	8	71	23

21 events per day

Evening Hours 7:00 p.m. to 10:00 p.m.

	Total Noise Events	Lowest Value	Highest Value	Average Value
Aircraft Lmax	218	50	70	59
Aircraft SEL	218	59	79	70
Noise Event Duration	218	8	120	35

11 events per day

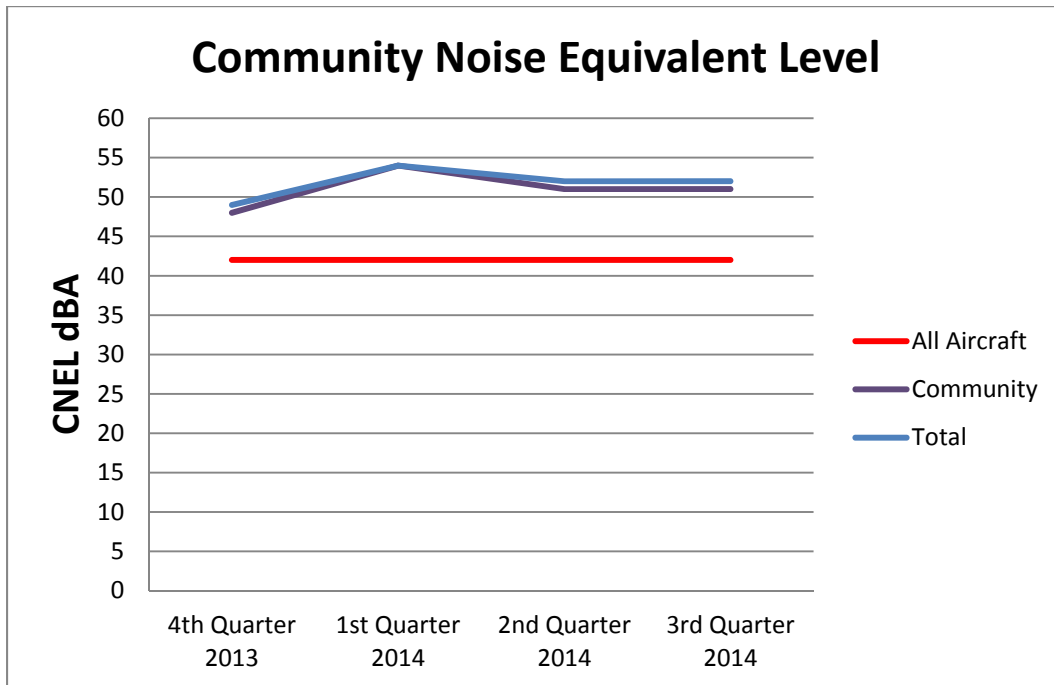
Nighttime Hours 10:00 p.m. to 7:00 a.m.

	Total Noise Events	Lowest Value	Highest Value	Average Value
Aircraft Lmax	49	51	66	58
Aircraft SEL	49	59	77	68
Noise Event Duration	49	8	61	25

2 events per day

Table 2 – OSI-VORTAC, Woodside

Quarter/Year	Number of days	ALL Aircraft CNEL	Community CNEL	Total CNEL
3Q2014	15	42	51	52
2Q2014	16	42	51	52
1Q2014	14	42	54	54
4Q2013	21	42	48	49

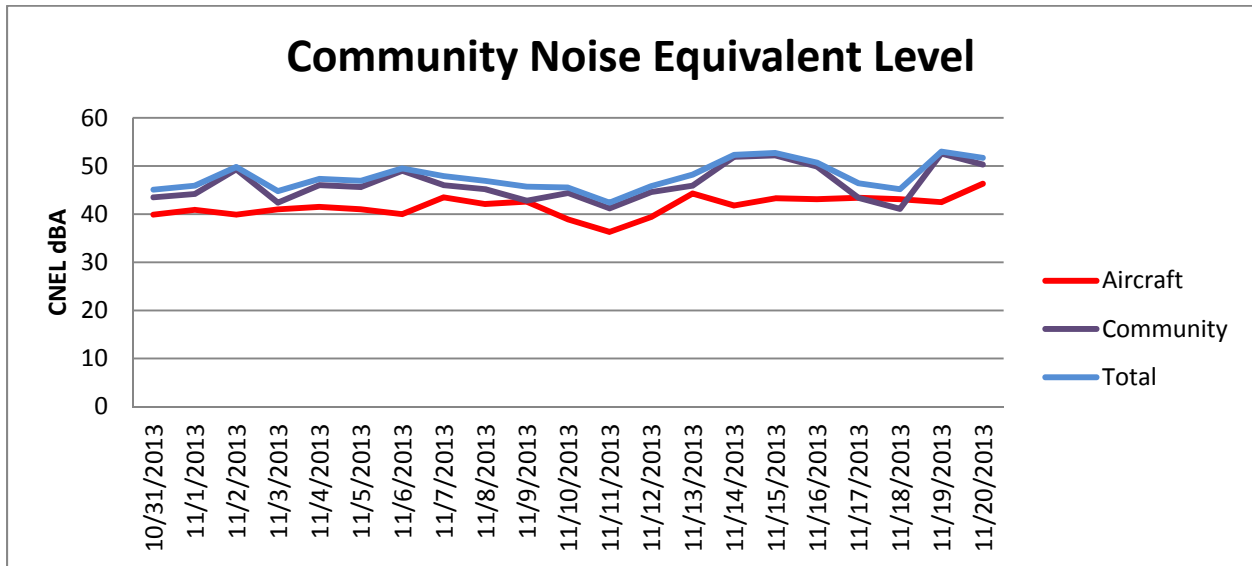


Past Measurements in Woodside

Month/Year	Location	Number of days	ALL Aircraft CNEL	Community CNEL	Total CNEL
3-2012 to 7-2012	OSI-VORTAC	122	42	105	105
1-2011 to 4-2011	OSI-VORTAC	103	44	57	57
1-2008 to 12-2008	OSI-VORTAC	329	49	73	73
11-2007 to 12-2007	OSI-VORTAC	32	46	59	59
1-2007	OSI-VORTAC	11	44	51	52
12-2006	OSI-VORTAC	23	46	57	57
9-2006	OSI-VORTAC	5	42	55	55
8-2006	OSI-VORTAC	16	43	54	54
2-2006	OSI-VORTAC	9	42	46	48
7-2000	Fox Hollow Rd.*	7	40	55	55

*Monitoring for the Fox Hollow Road site was completed by Harris Miller Miller & Hanson Inc. as part of the City-by-City Noise Project in 2000. Larson-Davis Model 820/870 Sound Level Meters were used.

Woodside
Third Quarter 2013



Average	SFO Aircraft CNEL - 40	Community CNEL - 48	Total CNEL - 49
Range	34-46	41-53	42-53

SFO Aircraft Noise Data Summary – 21 Days Measurement Period

	Total Noise Events	Lowest Value	Highest Value	Average Value
Aircraft Lmax	577	50	78	61
Aircraft SEL	577	59	86	71
Noise Event Duration	577	8	120	26

27 events per day

Daytime Hours 7:00 a.m. to 7:00 p.m.

	Total Noise Events	Lowest Value	Highest Value	Average Value
Aircraft Lmax	354	52	78	62
Aircraft SEL	354	60	86	72
Noise Event Duration	354	8	120	27

17 events per day

Evening Hours 7:00 p.m. to 10:00 p.m.

	Total Noise Events	Lowest Value	Highest Value	Average Value
Aircraft Lmax	119	51	67	59
Aircraft SEL	119	59	78	70
Noise Event Duration	119	8	81	25

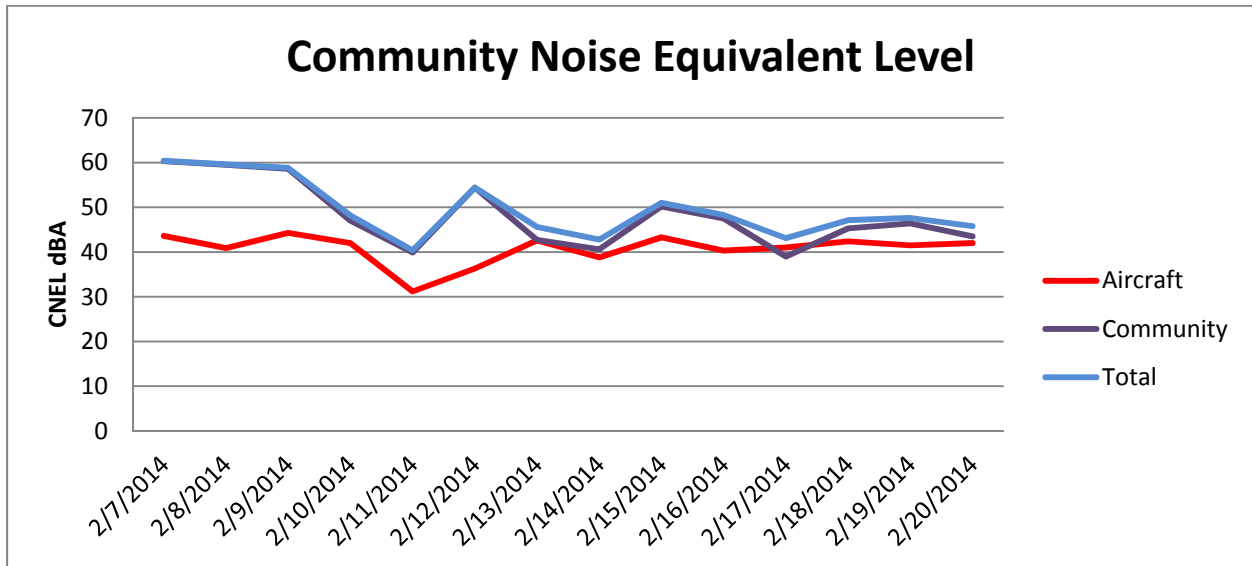
6 events per day

Nighttime Hours 10:00 p.m. to 7:00 a.m.

	Total Noise Events	Lowest Value	Highest Value	Average Value
Aircraft Lmax	104	50	66	58
Aircraft SEL	104	59	76	68
Noise Event Duration	104	5	52	23

5 events per day

Woodside
First Quarter 2014



Average	SFO Aircraft CNEL - 39	Community CNEL - 54	Total CNEL - 54
Range	28-43	39-60	40-60

SFO Aircraft Noise Data Summary – 14 Days Measurement Period

	Total Noise Events	Lowest Value	Highest Value	Average Value
Aircraft Lmax	339	51	71	61
Aircraft SEL	339	60	82	72
Noise Event Duration	339	8	120	28

24 events per day

Daytime Hours 7:00 a.m. to 7:00 p.m.

	Total Noise Events	Lowest Value	Highest Value	Average Value
Aircraft Lmax	241	53	71	61
Aircraft SEL	241	61	82	72
Noise Event Duration	241	8	120	28

17 events per day

Evening Hours 7:00 p.m. to 10:00 p.m.

	Total Noise Events	Lowest Value	Highest Value	Average Value
Aircraft Lmax	51	53	69	60
Aircraft SEL	51	62	79	71
Noise Event Duration	51	8	120	25

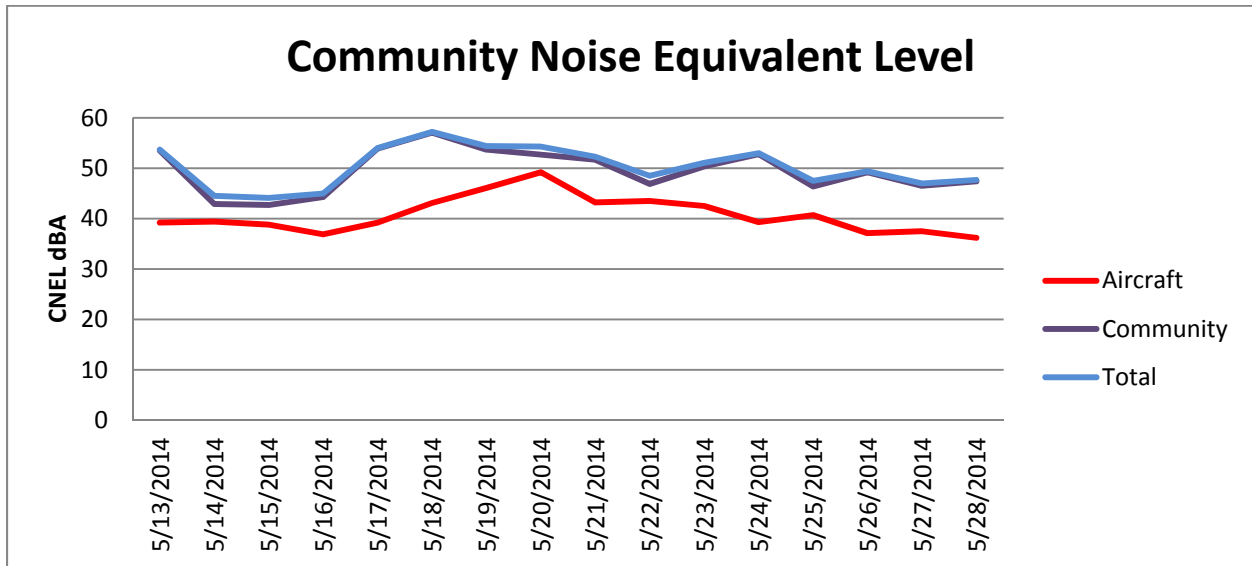
4 events per day

Nighttime Hours 10:00 p.m. to 7:00 a.m.

	Total Noise Events	Lowest Value	Highest Value	Average Value
Aircraft Lmax	47	51	67	59
Aircraft SEL	47	60	77	70
Noise Event Duration	47	9	120	30

3 events per day

Woodside
Second Quarter 2014



Average	SFO Aircraft CNEL – 41	Community CNEL – 52	Total CNEL - 52
Range	30-48	43-57	44-57

SFO Aircraft Noise Data Summary – 16 Days Measurement Period

	Total Noise Events	Lowest Value	Highest Value	Average Value
Aircraft Lmax	529	50	74	60
Aircraft SEL	529	58	82	70
Noise Event Duration	529	8	120	27

33 events per day

Daytime Hours 7:00 a.m. to 7:00 p.m.

	Total Noise Events	Lowest Value	Highest Value	Average Value
Aircraft Lmax	317	50	74	60
Aircraft SEL	317	59	82	70
Noise Event Duration	317	8	77	24

20 events per day

Evening Hours 7:00 p.m. to 10:00 p.m.

	Total Noise Events	Lowest Value	Highest Value	Average Value
Aircraft Lmax	135	51	66	59
Aircraft SEL	135	59	79	70
Noise Event Duration	135	8	120	29

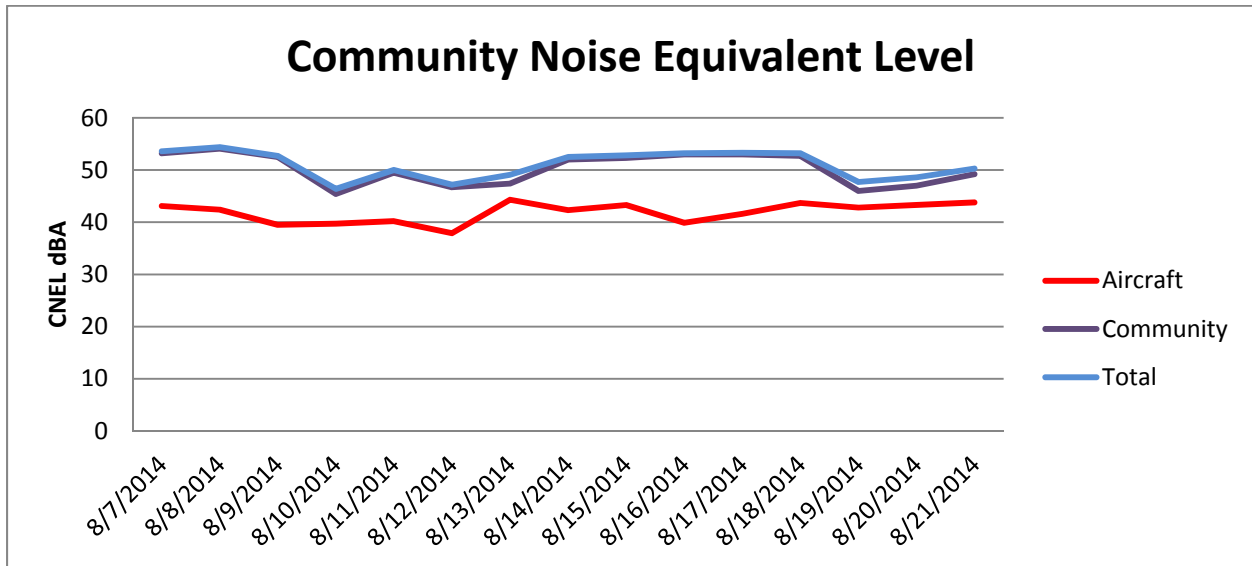
8 events per day

Nighttime Hours 10:00 p.m. to 7:00 a.m.

	Total Noise Events	Lowest Value	Highest Value	Average Value
Aircraft Lmax	77	50	70	59
Aircraft SEL	77	58	79	70
Noise Event Duration	77	8	120	32

5 events per day

Woodside
Third Quarter 2014



Average	SFO Aircraft CNEL – 40	Community CNEL – 51	Total CNEL - 52
Range	34-43	45-54	46-54

SFO Aircraft Noise Data Summary – 15 Days Measurement Period

	Total Noise Events	Lowest Value	Highest Value	Average Value
Aircraft Lmax	529	50	72	59
Aircraft SEL	529	58	81	70
Noise Event Duration	529	8	120	27

35 events per day

Daytime Hours 7:00 a.m. to 7:00 p.m.

	Total Noise Events	Lowest Value	Highest Value	Average Value
Aircraft Lmax	295	51	72	60
Aircraft SEL	295	59	81	71
Noise Event Duration	295	8	71	24

20 events per day

Evening Hours 7:00 p.m. to 10:00 p.m.

	Total Noise Events	Lowest Value	Highest Value	Average Value
Aircraft Lmax	134	50	69	58
Aircraft SEL	134	58	79	69
Noise Event Duration	134	8	120	33

9 events per day

Nighttime Hours 10:00 p.m. to 7:00 a.m.

	Total Noise Events	Lowest Value	Highest Value	Average Value
Aircraft Lmax	100	50	66	58
Aircraft SEL	100	59	76	68
Noise Event Duration	100	8	120	26

7 events per day

Portola Valley (974) and Woodside (969) Noise Monitoring Locations



Portola Valley (974) Microphone



Woodside (969) Microphone

