



LYNN ROAD 2018 NOISE SURVEY UPDATE

Prepared by:

Michael P. Bucka

Initial Release: December 2018

Prepared for:

City of Thousand Oaks

Department of Public Works

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
1.0 INTRODUCTION/SUMMARY	1
2.0 NOISE MEASUREMENT SITES	2
3.0 2018 NOISE MEASUREMENT SURVEY	11
3.1 Lynn Rd Vehicle Counts	11

LIST OF TABLES

<u>Table</u>	<u>Page</u>
1. Microphone Locations used in Blackwood St. Noise Surveys	2
2. Lynn Rd/Blackwood St Traffic Noise Survey - Measured Noise Levels	12-17
3. Results of 24-hour Noise Monitoring Blackwood Street November 2018	18
4. Traffic Counts during November 2018 Noise Survey	20
5. Summary of Historical Noise Measurements on Blackwood St	23

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
1. 3915 Blackwood St. Noise Measurement Site 1b	4
2. 4057 Blackwood St. Noise Measurement Site 2a	5
3. 4151 and 4267 Blackwood St. Noise Measurement Sites 3c and 4b	6
4. Section view of Measurement Sites 1a and 1b	7
5. Section view of Measurement Site 2a	8
6. Section view of Measurement Site 3c	9
7. Section view of Measurement Site 4b	10
8. 2018 Blackwood Street Noise Survey and Traffic Counts Results	19
9. Blackwood Street Historical Traffic Counts Results	21
10. Summary of Historical Noise Measurements on Blackwood St	24

1.0 INTRODUCTION / SUMMARY

The Dos Vientos Ranch EIR requires that noise measurements be obtained in residential locations affected by the project development before construction began, at various intervals during development, and after project buildout. This report documents the final noise measurement survey initiated for this purpose.

Earlier measurement programs identified the need for interior noise mitigation measures in the Blackwood St. neighborhood to meet the City standard of 45 dB CNEL for interior residential living areas. A City program to finance residential window retrofits was initiated and implemented as a result. In 2004, the City Council approved disbursement of \$557,500 for Blackwood Street residents interior noise mitigation improvements. Previous measurements also showed that there is a potential for traffic noise from Lynn Road to exceed the 65 dB CNEL standard adopted by the City for exterior living areas after project completion.

The purpose of the current study is to determine compliance with this standard at the height of the average person in the backyards of the homes on Blackwood Street adjacent to Lynn Road. This report is intended to summarize results of the noise measurement survey performed in the Blackwood Street neighborhood along Lynn Road west of Reino Road in Newbury Park from October 31 - November 14, 2018. Noise levels were measured continuously at four representative residential backyard locations for a two week period to determine the current CNEL (Community Noise Equivalent Level) due to roadway traffic on Lynn Road. The Department of Public Works provided vehicle traffic counts for the noise measurement period.

The Hill fire disaster affected measured noise levels and traffic levels from Thursday November 8 through Tuesday November 13. Data from these days were left out of the average and maximum level calculations. Out of the remaining nine day test period, the maximum daily CNEL measured (noisiest 24-hour period) was 60.4 dB at the elevated pad location (3915). The mid-week average CNEL values were just under 60 dB at the elevated pad location, and between 54 and 60 dB CNEL at all others.

Traffic counts obtained during the noise measurement period indicate that the total mid-week 24-hour volume along Lynn Road is currently about 11,333 between Reino Rd and Fernhill Rd, and about 9,465 west of Fernhill Rd.

2.0 NOISE MEASUREMENT SITES

The automatic noise monitors were placed in four residential backyards on Blackwood St that are adjacent to Lynn Rd. At all four locations, the microphones were located near the patio behind the house between 10 and 15 feet from the back wall of the house and between 65 and 70 feet from the Lynn Rd centerline. These locations were chosen to represent typical exterior living locations. The height of the microphones above local ground level was 6 to 8 feet at single story residences and about 14 feet at the two story residence measured in the current survey. The positioning of the microphone follows the practice established in previous noise surveys on Blackwood St. in 1991, 1992, 1998, 2001, 2004, and 2006, as shown in Table 1.

Table 1. Microphone Locations used in Blackwood St. Noise Surveys

Site No.	Blackwood St. Address	Type	Year(s) Measured	Distance to Lynn Rd C.L.	Distance to House, ft	Height AGL, ft
1	3915	Elevated	1992, 2018	67	12	6
	3927	Elevated	1991	65	10	6
	3943	Elevated	2004, 2006	65	15	6
	4033	Deep Recess	2004, 2006	65	15	8
	4057	Deep Recess	1991, 1992	55*	22*	17*
2	4057	Recessed	2018	67	10	14**
	4127	Recessed	2004, 2006	70	15	6
3	4151	Deep Recess	2018	70	15	6
	4191	Deep Recess	1991, 1992, 1998, 2001	70	5	16
	4243	Recessed	1991, 1992, 2006	60	30	6
4	4267	Deep Recess	2018	70	15	8

* At this address in 1991 and 1992, the microphone was improperly placed on the top of a detached shed 17 feet above house pad level and 10 feet from the property line wall, with a direct line-of-sight to the Lynn Rd traffic noise source. This was not an exterior living area, and so in 2018 the microphone was placed at a more representative location that is consistent with all other Blackwood St. addresses tested.

** This microphone height represents the sound levels expected in exterior living areas of a Recessed lot.

The November 2018 noise measurement survey was conducted to determine current exterior noise levels at Blackwood Street residential backyards neighborhood due to traffic on Lynn Road. This is an update of noise measurement surveys conducted before and after the extension of Lynn Rd west of Fernhill Rd in 1991 and 1992, and prior to and after the start of occupancy of the Dos Vientos Ranch in 1998, 2001, 2006, and 2007.

Table 1 lists and Figures 2-4 display the noise measurement locations used in the past and current noise surveys. The locations used for measurement in 1991, 1992, 2006, 2007, and 2018 are representative of the range of house pad elevation conditions relative to Lynn Road and the property line walls that exist in the Blackwood Street neighborhood. The range of conditions are categorized as elevated, level, recessed, and deeply recessed pads, according to actual house pad and Lynn Road elevations from the original Tract maps. Elevated pads are above Lynn Road, level pads are from 2 feet below Lynn Rd to equal elevation, recessed pads are 3 feet to 6 feet below Lynn Road, and deeply recessed pads are 7 to 18 feet below Lynn Road.

Figures 5 and 6 show cross-section views for the measurement sites used in the current noise survey. Sites 1a, 1b, and 1c are elevated house pads (3927, 3915, and 3943 Blackwood). Site 1c was used in the 2006 survey because it is one of the few homes remaining that do not have a property line wall height extension or wooden fence added at house pad elevation that would reduce measured noise levels. Site 1b (3915 Blackwood) was used in the current survey because the homeowner expressed a specific interest in hosting a noise monitor.

Site 2a (4057 Blackwood) is a deeply recessed pad; however, in 1991 and 1992 the microphone was placed atop a wooden shed and above the property line wall with direct line-of-sight to the traffic noise sources, thereby measuring higher traffic noise levels than if positioned below the wall. The microphone should have been placed at 6 feet above house pad level, well below the top of the property line wall, to represent an exterior living area location. In the current 2018 survey the microphone was placed at 14 feet above ground, in keeping with previous practice of measuring at the height of second story windows. This put the microphone at a height about 3 feet below the property line wall, which is also the approximate height of a person in the exterior living area of a recessed pad (3 to 6 feet below street level). The traffic noise levels measured at this location are therefore representative of those expected in the exterior living areas of recessed house pads.



Figure 1. 3915 Blackwood St. Noise Measurement Site 1b



Figure 2. 4057 Blackwood St. Noise Measurement Site 2a



Figure 3. 4151 and 4267 Blackwood St. Noise Measurement Sites 3c and 4b

1991, 1992 & 2018 NOISE SURVEY

SITE 1 - 3927 (1a) or 3915 (1b) Blackwood (Elevated Pad)

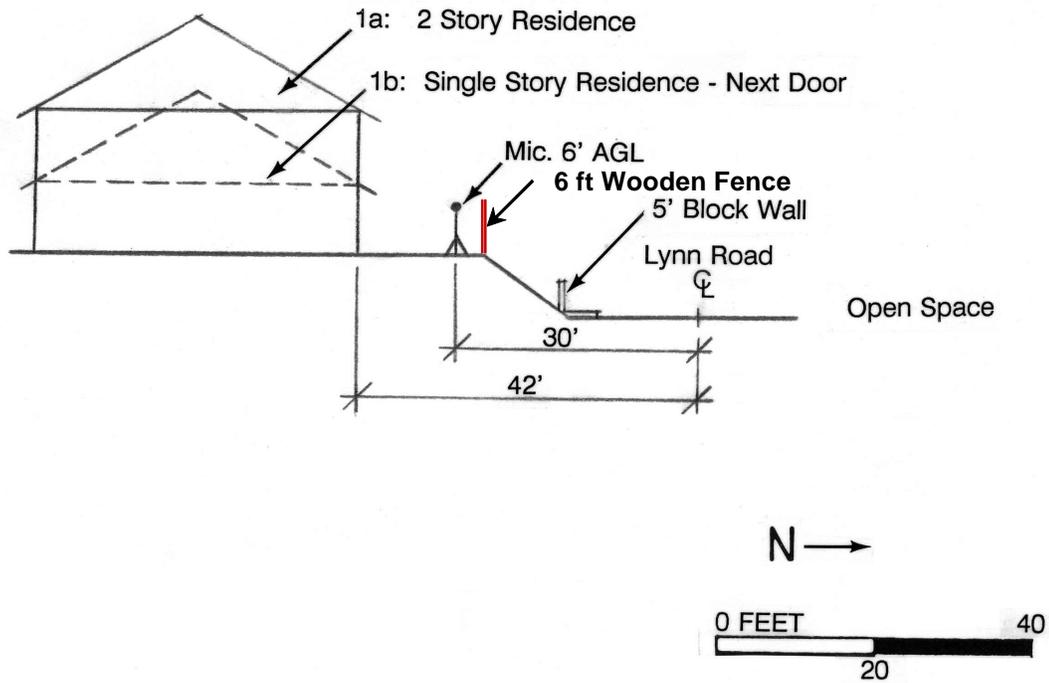


Figure 4. Section view of Measurement Sites 1a and 1b

1991, 1992 & 2018 NOISE SURVEY

SITE 2a 4057 Blackwood (Deeply Recessed Pad)

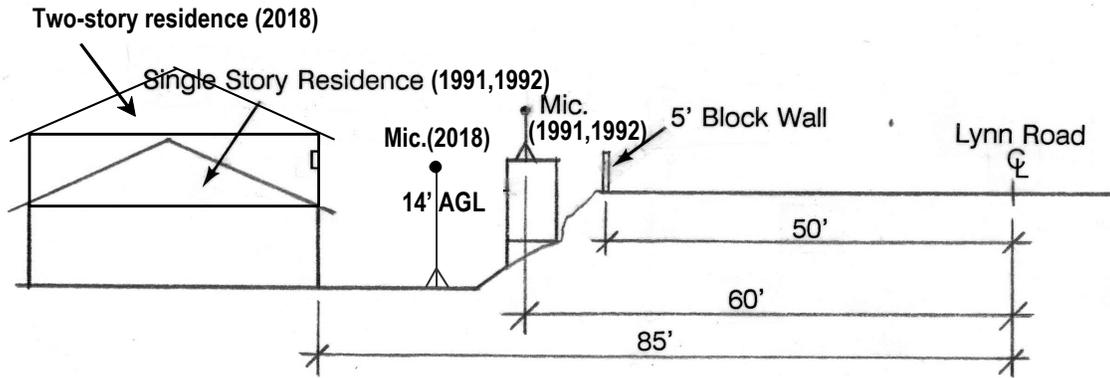
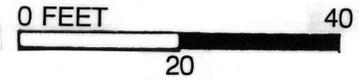
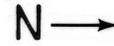


Figure 5. Section view of Measurement Site 2a

2018 NOISE SURVEY
SITE 3c – 4151 Blackwood (Deeply Recessed Pad)

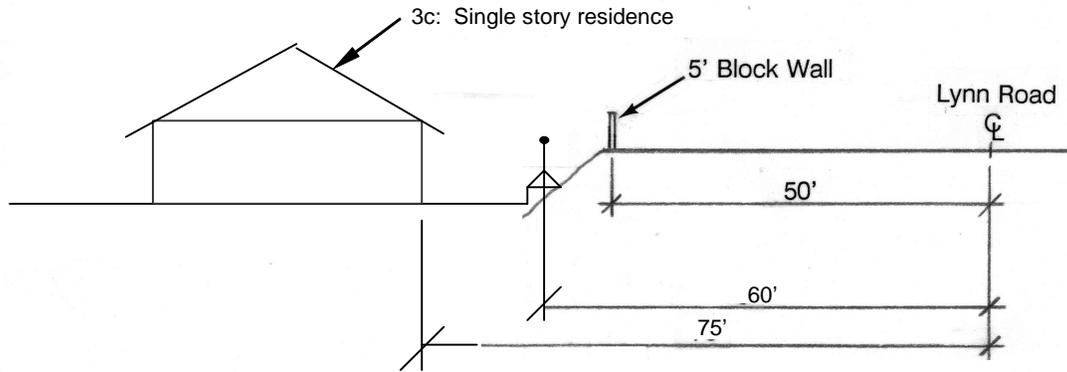


Figure 6. Section view of Measurement Site 3c

2018 NOISE SURVEY
SITE 4b – 4267 Blackwood (Deeply Recessed Pad)

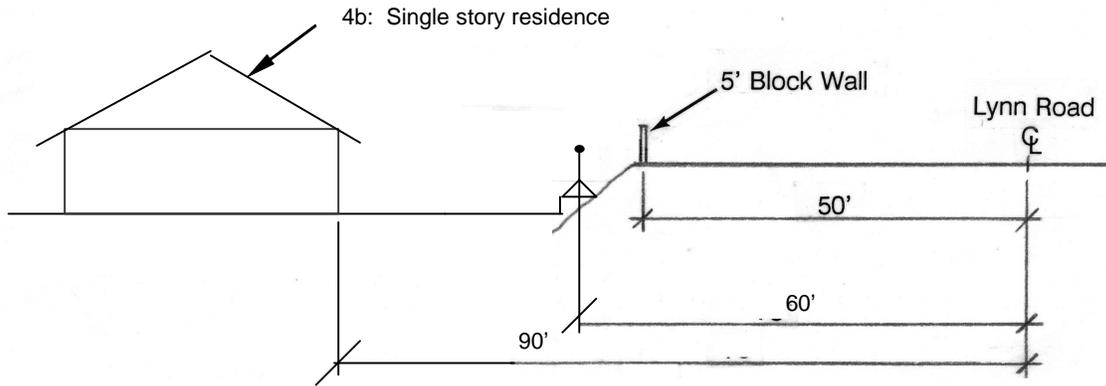


Figure 7. Section view of Measurement Site 4b

Site 2b (4127 Blackwood) is a recessed pad 3 feet below Lynn Road. This site was used in the 2006 and 2007 noise measurement surveys.

Site 3a (4191 Blackwood) is also a deeply recessed pad, where CNEL measurements were made in 1991, 1992, 1998, and 2001. The microphone was placed at 16 feet above ground level and about 3 feet below the top of the property line wall. The 2006 survey used site 3b (4033 Blackwood) to represent deeply recessed house pad locations. The 2018 noise survey used site 3c (4151 Blackwood) to represent deeply recessed house pad locations because the homeowner was available and agreeable.

Site 4a (4243 Blackwood) is a recessed pad at 5 feet below Lynn Road. CNEL measurements were made there in 1991, 1992, and in 2006. The microphone was placed at 8 feet above ground to represent a worst-case condition for recessed house pads 3 feet below Lynn Road. In 2018, a deeply recessed pad west of Fernhill Rd was used (site 4b at 4267 Blackwood) with the microphone placed at 8 feet above ground level.

3.0 2018 NOISE MEASUREMENT SURVEY

The 2018 Lynn Road noise measurement survey in the Blackwood Street area was conducted over the two week period from Wednesday October 31 through Wednesday November 14, 2018. Four identical automatic noise monitoring systems were installed at the locations listed in red in Table 1 at about mid-day on October 30 or 31 and removed at about the same time on November 14.

Noise monitoring equipment at all monitoring locations consisted of Larson-Davis Laboratories (LDL) Model 870 integrating sound level meters equipped with Bruel & Kjaer (B&K) Type 4176 1/2" microphones, which comply with the specifications of the American National Standards Institute (ANSI) and the International Electrotechnical Commission (IEC) for Type 1 (Precision) sound level meters. The measurement systems were calibrated in the field prior to, at intervals during, and after use with a Bruel & Kjaer Type 4231 acoustic calibrator to ensure the accuracy of the measurements.

The purpose of these measurements is to quantify existing (2018) traffic Community Noise Equivalent Level (CNEL) and document fluctuations in noise levels over a two week period,

including several continuous mid-week 24-hour periods, as required in the Dos Vientos Specific Plan project conditions⁴. Table 2 is a summary of the continuous noise level measurement results showing the Leq (Equivalent A-weighted Sound Level, dBA) at hourly intervals during the measurement period at each site.

The data show that the measured noise levels fall into two distinct groups. Measured levels at 3915 Blackwood St. (elevated) and 4057 Blackwood St. (recessed) are typically 5 dB higher than those measured at the other two sites (deeply recessed). It is possible that the 6 foot high wooden fence at house pad level at site 1 reduced traffic noise levels slightly below (1-2 dB) what would have been measured with no fence blocking line-of-sight. The hourly Leq values were combined to compute the weighted 24-hour noise exposure, CNEL. As shown in Table 3 and Figure 9, all daily and average CNEL values were well below the 65 dB criterion level set by the City of Thousand Oaks for residential exterior living areas.

The traffic counts maintained during the 2018 noise survey (summarized in Table 4) show that the average mid-weekday traffic was 11,333 vehicles from October 31 - November 8, 2018. This total is slightly more than the Annual Average Daily Traffic expected (10,935) on Lynn Road west of Reino Road after Dos Vientos Ranch project buildout. Using the ratio of ADT's and the FHWA Traffic Noise Model, the adjustment from measurement to buildout conditions is -0.2 dB, which is insignificant.

3.0 HISTORICAL TRAFFIC AND NOISE DATA

3.1 Lynn Road Vehicle Counts

Figure 10 shows the traffic counts obtained at different locations along Lynn Rd at irregular intervals over the past 27 years. As shown, traffic volumes increased between 1991 and 1992 along Lynn Road when it was extended to Potrero Road, allowing through-traffic. Heavy truck volumes were less than 1% of the total in 1991 and 1992. The total volumes along Lynn Road remained nearly constant until 1997. At that time, heavy truck trips comprised about 1.8 % of the total counted. The traffic volume east of Reino Road was slightly higher than west of Reino Road in 1997. By 2000-2001, total traffic volumes along Lynn Road had increased sharply, particularly west of Reino Road, where heavy truck trips were 3.5 % of the total volume. More recent counts (February-March 2004) show slightly lower total traffic than in 2000, but with heavy trucks comprising 4.3% of the volume west of Reino Road on Lynn Road. The 2006

Table 2. Lynn Rd / Blackwood St Traffic Noise Survey - Measured Noise Levels

101
3915 Blackwood Site 1

Hour Start	10/30 Tuesday	10/31 Wednesday	11/01 Thursday	11/02 Friday	11/03 Saturday	11/04 Sunday	11/05 Monday	11/06 Tuesday
0		50.9	47.2	44.4	54.0	51.4	45.6	46.1
1		41.3	45.6	43.4	48.7	48.4	41.2	41.3
2		41.8	43.3	39.8	43.7	41.2	38.4	38.8
3		41.4	41.4	43.4	41.1	39.9	42.3	38.2
4		45.7	47.4	47.1	43.4	42.5	47.8	45.2
5		51.1	51.6	51.5	48.1	46.0	53.0	51.9
6		54.9	55.6	55.9	54.0	52.2	56.1	56.6
7		59.2	59.2	61.0	57.4	55.3	59.7	59.9
8		60.1	59.6	61.1	58.2	59.0	59.5	59.8
9		58.9	58.1	58.4	58.2	58.1	56.9	57.3
10	56.5	60.4	57.0	56.6	57.6	57.7	56.1	56.5
11	56.5	57.7	57.3	58.5	58.2	59.7	57.1	58.7
12	60.0	58.5	57.9	57.9	58.5	63.8	57.0	57.3
13	57.0	58.2	57.7	56.6	57.6	57.8	57.1	57.0
14	57.4	57.3	59.0	59.2	58.5	64.4	58.4	58.9
15	58.4	58.2	59.3	58.4	58.6	59.4	59.6	59.3
16	59.0	59.0	59.2	59.5	59.2	58.8	60.0	59.8
17	59.8	59.8	60.7	59.5	58.0	58.1	58.9	59.9
18	60.4	58.6	59.0	57.8	57.1	57.5	58.0	58.1
19	57.0	60.7	56.6	59.3	55.7	53.9	55.2	56.8
20	57.5	57.4	56.1	56.3	55.9	52.7	55.9	55.9
21	54.3	56.7	53.0	55.0	54.0	54.5	52.9	53.1
22	51.5	54.5	50.4	53.5	53.9	49.2	50.0	56.9
23	49.3	49.7	47.4	52.0	52.0	54.7	46.2	48.2
Ld	57.3	58.9	58.8	58.9	58.1	60.0	58.4	58.7
Le	56.5	58.6	55.5	57.3	55.3	53.8	54.8	55.5
Ln	44.0	50.5	49.8	50.6	50.9	49.7	50.4	51.5
CNEL	57.3	60.4	59.4	60.2	59.6	59.7	59.4	60.2

3915 Blackwood Site 1

Hour Start	11/07 Wednesday	11/08 Thursday	11/09 Friday	11/10 Saturday	11/11 Sunday	11/12 Monday	11/13 Tuesday	11/14 Wednesday
0	44.8	51.4	45.9	40.3	47.1	47.2	58.1	48.4
1	42.4	43.8	44.7	41.4	41.2	45.3	46.0	42.8
2	39.4	43.4	48.8	30.9	40.2	45.3	44.4	42.4
3	40.7	42.3	46.7	44.1	36.7	44.0	44.7	46.6
4	46.8	45.5	47.5	39.9	41.5	43.7	46.2	46.1
5	52.0	51.8	48.0	42.3	46.0	49.6	52.6	50.8
6	56.1	56.6	48.3	44.9	49.0	52.8	54.8	53.9
7	60.6	60.5	49.4	49.7	50.5	55.8	58.0	56.8
8	59.8	62.1	52.7	50.0	54.5	58.0	58.4	59.5
9	57.5	58.0	54.0	51.3	57.1	59.6	59.2	57.5
10	55.6	58.4	56.0	51.4	60.2	60.0	61.1	60.4
11	57.7	58.9	54.4	55.4	60.4	59.8	59.4	56.5
12	56.7	58.1	53.4	51.5	60.3	60.3	60.5	60.0
13	56.5	59.0	54.4	51.7	59.1	59.6	59.5	57.0
14	57.9	59.7	52.8	55.8	57.6	58.7	58.6	57.4
15	59.2	66.1	51.6	53.7	57.7	58.3	58.4	58.4
16	62.4	60.3	51.6	52.0	58.3	60.0	60.0	59.0
17	60.1	61.2	49.6	53.7	57.6	57.8	62.1	59.8
18	58.9	58.0	52.4	54.9	55.7	55.3	59.2	60.4
19	55.6	56.8	61.1	54.0	54.6	54.3	59.6	57.0
20	54.6	55.4	46.8	53.1	53.1	53.4	56.4	57.5
21	53.0	50.2	45.7	52.8	53.0	52.6	54.7	54.3
22	50.9	48.4	43.9	50.1	50.8	57.8	54.0	51.5
23	46.9	47.0	39.7	48.1	47.1	51.9	50.6	49.3
Ld	58.9	60.8	53.3	53.0	58.4	58.9	59.9	58.8
Le	54.5	54.9	56.6	53.3	53.6	53.5	57.4	56.5
Ln	49.8	50.3	46.6	44.9	46.3	51.3	52.6	49.4
CNEL	59.3	60.5	56.6	54.8	57.7	59.9	61.4	59.4

Table 2. Lynn Rd / Blackwood St Traffic Noise Survey - Measured Noise Levels (cont)

4057 Hour Start	102 Blackwood Site 2							
	10/30 Tuesday	10/31 Wednesday	11/01 Thursday	11/02 Friday	11/03 Saturday	11/04 Sunday	11/05 Monday	11/06 Tuesday
0			45.2	45.2	49.8	0.0	0.0	44.7
1			44.7	44.9	46.7	0.0	0.0	42.0
2			43.0	43.0	43.8	0.0	0.0	40.9
3			41.9	44.1	43.0	0.0	0.0	39.1
4			46.5	47.2	44.3	0.0	0.0	45.0
5			52.4	52.9	49.6	0.0	0.0	51.9
6			57.2	57.3	55.2	0.0	0.0	57.5
7			60.1	61.5	60.3	0.0	0.0	61.3
8			60.4	62.0	58.9	0.0	0.0	60.8
9		59.3	58.9	59.3	58.7	0.0	0.0	59.3
10		59.5	58.0	58.3	58.4	0.0	0.0	58.8
11		58.1	58.2	57.7	59.0	0.0	0.0	59.1
12		58.3	58.0	58.2	58.8	0.0	58.0	58.9
13		57.8	58.5	58.3	58.6	0.0	58.0	58.7
14		57.9	58.8	59.9	59.1	0.0	58.6	59.4
15		58.8	59.4	59.1	59.1	0.0	58.9	59.6
16		58.3	59.1	59.6	75.0	0.0	60.0	58.8
17		58.3	61.0	59.6	0.0	0.0	58.2	58.7
18		57.1	57.7	59.1	0.0	0.0	57.1	57.1
19		56.2	55.6	58.1	0.0	0.0	54.4	55.6
20		55.8	53.6	54.7	0.0	0.0	53.4	54.7
21		55.8	52.6	54.0	0.0	0.0	51.8	52.5
22		53.7	50.4	52.4	0.0	0.0	48.8	52.7
23		48.1	47.9	52.8	0.0	0.0	45.6	46.7
Ld		57.6	59.1	59.6	65.1	0.0	56.1	59.3
Le		55.9	54.1	56.0	0.0	0.0	53.3	54.5
Ln		45.2	50.5	51.5	48.5	0.0	41.5	50.7
CNEL		57.5	59.7	60.5	Equipment Failure - no data			59.9

4057 Hour Start	102 Blackwood Site 2							
	11/07 Wednesday	11/08 Thursday	11/09 Friday	11/10 Saturday	11/11 Sunday	11/12 Monday	11/13 Tuesday	11/14 Wednesday
0	44.7	50.9	45.8	39.9	47.3	46.0	50.2	54.0
1	42.6	44.0	45.3	40.5	46.4	46.5	53.9	50.6
2	42.0	43.6	48.2	39.6	42.4	45.8	45.7	48.4
3	42.0	43.0	46.7	37.3	39.3	47.6	43.8	42.8
4	46.8	45.6	47.3	44.7	38.6	45.8	42.7	42.4
5	51.8	51.7	47.9	38.9	42.8	44.6	45.9	46.6
6	55.6	56.3	48.1	42.1	45.9	47.9	51.6	46.1
7	59.9	60.6	50.4	51.5	49.5	54.9	54.6	50.8
8	59.7	61.3	52.8	55.2	53.6	57.8	57.1	53.9
9	57.1	57.8	54.7	56.0	57.5	60.7	57.5	56.8
10	55.6	58.6	56.1	56.2	59.4	62.3	57.6	59.5
11	57.1	58.1	56.2	56.6	60.8	61.6	59.0	57.5
12	56.2	57.6	56.2	58.1	60.5	60.6	59.0	57.6
13	56.4	58.5	57.5	56.3	61.2	60.3	58.8	58.4
14	57.1	59.7	57.1	56.1	59.5	58.7	58.5	57.9
15	58.0	64.2	56.5	57.5	58.7	58.6	57.7	58.8
16	61.1	59.3	55.9	57.2	58.2	58.3	58.2	58.3
17	59.4	59.2	55.7	57.1	57.3	59.9	59.1	58.3
18	57.7	58.6	56.0	56.9	55.2	56.9	59.0	57.1
19	55.0	57.6	58.8	57.4	53.3	54.1	58.2	56.2
20	54.8	55.2	55.0	57.7	52.1	52.7	57.6	55.8
21	52.7	50.3	54.7	55.3	52.4	52.3	55.0	55.8
22	50.3	48.7	51.4	52.2	50.6	51.5	53.1	53.7
23	46.8	47.4	39.9	49.5	49.1	54.2	51.7	48.1
Ld	58.2	59.9	55.9	56.5	58.7	59.8	58.2	57.5
Le	54.3	55.3	56.6	56.9	52.6	53.1	57.1	55.9
Ln	49.5	50.1	47.6	45.8	46.3	49.0	50.3	49.8
CNEL	58.8	60.1	57.7	57.5	57.8	59.3	59.7	59.0

Table 2. Lynn Rd / Blackwood St Traffic Noise Survey - Measured Noise Levels (cont)

103 4151 Blackwood Site 3		11/01	11/02	11/03	11/04	11/05	11/06	
Hour	10/30	10/31	11/01	11/02	11/03	11/04	11/05	
Start	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	
0			38.7	38.5	47.9	46.2	40.5	39.8
1			37.9	38.9	42.5	43.5	35.8	36.2
2			35.8	34.6	38.8	36.0	33.3	33.7
3			36.1	38.4	38.0	35.8	36.9	35.7
4			40.6	42.4	39.7	37.2	43.6	39.3
5			45.3	47.2	44.0	42.5	48.4	46.2
6			48.8	50.6	50.0	47.4	50.9	50.5
7			53.7	55.8	53.0	49.8	54.6	54.7
8			54.3	56.6	52.0	50.6	54.2	53.9
9		52.9	52.5	52.9	51.4	51.8	50.9	51.9
10		52.7	51.4	50.9	51.3	51.7	50.1	54.3
11		51.6	51.6	51.6	51.9	52.9	51.0	52.7
12		51.7	51.6	51.3	51.6	57.1	51.7	51.9
13		50.8	52.5	51.8	51.8	60.5	51.5	52.0
14		50.6	52.5	53.4	54.0	57.4	52.8	53.5
15		52.6	53.2	53.5	53.2	54.9	52.7	55.6
16		53.7	53.5	54.7	52.3	52.6	54.4	54.3
17		54.0	53.3	54.1	52.2	52.1	52.8	54.6
18		52.4	52.4	53.1	51.9	50.1	52.5	52.4
19		51.4	50.5	51.5	49.9	47.4	49.4	50.4
20		51.4	49.1	51.5	49.6	46.9	49.3	50.2
21		51.7	48.3	49.0	48.9	46.8	46.9	47.4
22		48.6	46.7	48.3	49.6	43.6	43.3	49.6
23		42.3	42.9	46.2	48.0	47.2	39.8	41.0
Ld		51.6	52.8	53.7	52.3	54.8	52.7	53.7
Le		51.5	49.4	50.8	49.5	47.0	48.7	49.5
Ln		40.0	43.7	45.5	46.3	44.0	45.3	45.0
CNEL		52.2	53.4	54.7	54.5	54.2	53.9	54.3

4151	11/07	11/08	11/09	11/10	11/11	11/12	11/13	11/14
Hour	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday
Start	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday
0	38.7	46.7	41.7	36.0	42.4	40.2	50.5	42.4
1	37.3	38.6	42.5	32.0	36.9	45.3	44.0	37.8
2	34.4	37.3	44.9	27.4	34.8	49.6	41.8	38.9
3	35.5	37.2	42.4	43.1	33.1	46.7	39.9	42.5
4	41.4	39.0	43.2	31.1	36.3	44.1	41.0	41.1
5	46.4	46.4	45.1	37.0	40.2	42.4	48.2	46.1
6	50.5	51.3	43.4	42.9	43.4	48.0	53.8	48.8
7	54.4	55.5	45.3	44.5	44.7	49.7	52.1	51.6
8	54.5	55.5	48.7	44.2	50.6	56.3	53.0	58.0
9	51.2	52.7	50.3	46.0	53.8	58.4	53.8	51.7
10	49.9	53.5	53.8	47.9	56.2	57.8	55.3	53.6
11	50.9	53.5	52.1	52.9	55.1	56.5	54.8	52.5
12	51.2	53.3	50.4	49.2	57.0	55.5	54.6	51.3
13	52.2	54.3	50.4	47.4	55.0	55.2	55.2	50.8
14	53.4	55.2	50.8	51.1	53.7	53.3	53.3	50.6
15	53.7	59.4	50.4	52.4	53.1	52.9	54.8	52.6
16	54.4	56.2	45.6	49.4	52.0	54.7	56.0	53.7
17	54.5	55.5	45.1	47.4	50.7	51.2	54.9	54.0
18	52.7	54.6	47.1	48.6	47.8	49.0	53.9	52.4
19	49.9	53.6	48.7	50.3	46.6	47.9	54.1	51.4
20	48.9	52.2	40.6	48.4	46.7	47.8	50.1	51.4
21	47.4	46.7	39.9	50.5	45.3	48.9	48.2	51.7
22	44.8	45.5	39.9	45.5	44.1	48.9	47.0	48.6
23	42.0	43.0	33.9	43.3	40.3	46.7	44.8	42.3
Ld	53.0	55.4	50.4	49.3	53.8	55.0	54.6	53.3
Le	48.9	51.7	45.0	49.8	46.2	48.2	51.5	51.5
Ln	44.2	45.3	42.7	40.8	40.5	46.6	47.9	44.7
CNEL	53.6	55.5	51.4	51.0	52.5	55.5	56.4	54.4

Table 2. Lynn Rd / Blackwood St Traffic Noise Survey - Measured Noise Levels (continued)

4267 Hour Start	104 Blackwood Site 4							
	10/30 Tuesday	10/31 Wednesday	11/01 Thursday	11/02 Friday	11/03 Saturday	11/04 Sunday	11/05 Monday	11/06 Tuesday
0		44.8	38.8	39.6	53.4	45.4	40.3	38.0
1		39.9	38.8	39.3	44.4	43.2	36.3	36.2
2		37.8	35.5	35.4	38.7	37.0	33.0	35.0
3		39.2	35.4	38.3	39.5	39.3	36.1	33.2
4		40.3	41.1	42.1	43.0	36.6	41.7	38.1
5		45.9	45.9	46.7	49.7	41.5	55.0	45.7
6		49.8	54.8	50.2	53.2	46.4	50.5	53.2
7		55.2	54.9	56.0	51.9	48.6	54.6	55.3
8		56.7	55.4	56.1	51.9	52.0	54.7	54.4
9		54.8	53.8	53.6	51.6	51.0	51.6	53.9
10		53.5	56.5	51.3	52.1	50.7	49.2	52.6
11	50.8	52.8	56.4	50.7	52.3	51.2	54.4	52.7
12	54.6	53.3	56.0	50.6	51.5	53.0	50.3	51.4
13	51.5	52.1	54.0	50.0	52.6	51.6	50.2	51.8
14	51.8	51.5	53.8	51.9	52.0	52.0	51.6	52.8
15	53.0	53.0	55.7	52.0	50.8	51.7	53.3	55.5
16	56.3	53.1	56.7	53.4	50.6	51.1	55.1	58.8
17	55.9	52.7	53.4	52.4	50.7	51.2	52.5	54.8
18	52.3	51.2	51.5	51.7	48.9	49.4	52.0	51.3
19	51.0	49.9	49.7	50.7	50.4	47.4	49.0	49.6
20	49.7	50.5	47.8	51.8	49.6	46.7	48.1	48.2
21	49.6	52.2	46.9	51.6	49.2	45.3	46.4	47.3
22	47.6	48.4	45.4	50.3	47.4	43.0	43.2	46.4
23	45.9	42.1	44.3	47.1	45.4	48.5	39.8	39.9
Ld	52.0	53.6	55.1	52.9	51.5	51.3	52.9	54.3
Le	50.1	51.0	48.3	51.4	49.8	46.6	48.0	48.5
Ln	40.3	45.0	46.9	45.9	47.0	43.9	47.9	45.5
CNEL	52.0	54.5	55.7	54.8	54.7	52.5	55.5	54.7

4267 Hour Start	11/07 - 11/14							
	11/07 Wednesday	11/08 Thursday	11/09 Friday	11/10 Saturday	11/11 Sunday	11/12 Monday	11/13 Tuesday	11/14 Wednesday
0	37.9	46.4	44.0	36.8	41.4	40.3	50.4	43.6
1	36.6	38.3	44.2	33.1	36.6	49.6	45.2	38.8
2	35.3	37.5	46.7	27.5	33.3	54.5	43.3	40.1
3	34.7	35.7	42.6	43.5	32.3	51.7	42.4	42.9
4	40.4	39.1	44.9	32.4	36.7	49.1	42.2	41.9
5	45.7	54.4	46.2	36.5	40.1	54.0	51.1	46.5
6	49.8	51.5	46.2	39.9	43.5	48.2	57.3	49.1
7	53.4	55.9	45.5	44.7	45.1	51.2	53.6	52.0
8	54.8	55.6	49.4	44.5	50.6	55.9	54.4	59.2
9	53.3	53.4	50.6	44.4	54.4	58.2	54.6	53.2
10	49.5	54.7	53.3	47.6	56.2	57.5	56.4	54.5
11	50.4	55.0	52.5	52.5	55.9	57.6	55.5	52.9
12	50.0	55.8	51.2	48.7	57.5	55.7	54.9	52.5
13	50.0	55.3	50.5	46.1	54.8	57.6	55.2	51.5
14	51.4	56.5	51.0	50.4	54.2	54.5	54.2	51.8
15	52.4	59.8	50.6	51.4	53.4	53.0	56.7	53.0
16	53.0	56.5	45.5	49.1	52.6	55.0	55.7	56.3
17	53.6	55.3	45.5	46.2	51.6	51.6	57.4	55.9
18	54.4	56.4	48.1	47.7	48.1	49.5	54.2	52.3
19	49.2	54.7	46.9	49.3	47.4	48.5	54.0	51.0
20	50.0	52.8	42.7	49.1	47.1	49.2	50.5	49.7
21	47.2	47.2	41.2	54.4	45.5	52.6	48.8	49.6
22	44.4	46.7	40.1	44.3	44.4	49.1	53.3	47.6
23	41.4	44.3	35.1	42.6	40.8	47.0	45.9	45.9
Ld	52.3	56.2	50.5	48.7	54.1	55.4	55.5	54.4
Le	49.0	52.5	44.3	51.7	46.7	50.5	51.7	50.1
Ln	43.5	47.9	44.3	40.0	40.4	50.7	50.9	45.2
CNEL	53.0	57.1	52.3	51.3	52.8	58.2	58.5	54.8

Table 3. Results of 24-hour Noise Moinitoring Blackwood Street November 2018

		Blackwood Street Address			
		3915	4057	4151	4267
		Elevated	Deep Recess	Recessed	Deep Recess
		6 ft AGL	14 ft AGL	6 ft AGL	6 ft AGL
Day	Date	Site 1	Site 2	Site 3	Site 4
Wed	10/31	60.4			54.5
Thur	11/01	59.4	59.7	53.4	55.7
Fri	11/02	60.2	60.5	54.7	54.8
Sat	11/03	59.6		54.5	54.7
Sun	11/04	59.7		54.2	52.5
Mon	11/05	59.4		53.9	55.5
Tue	11/06	60.2	59.9	54.3	54.7
Wed	11/07	59.3	58.8	53.6	53.0
Thur	11/08	60.5	60.1	55.5	57.1
Fri	11/09	56.6	57.7	51.4	52.3
Sat	11/10	54.8	57.5	51.0	51.3
Sun	11/11	57.7	57.8	52.5	52.8
Mon	11/12	59.9	59.3	55.5	58.2
Tue	11/13	61.4	59.7	56.4	58.5
Wed	11/14	59.4	59.0	54.4	54.8
Averages:	All	59.7	59.6	54.1	54.5
	Weekday	59.8	59.6	54.0	54.7
	Mid-week	59.8	59.4	53.9	54.6
	Weekend	59.7		54.4	53.6
	Maximum	60.4	60.5	54.7	55.7

 Data excluded from averages. Potrero Road closed, DVR evacuated

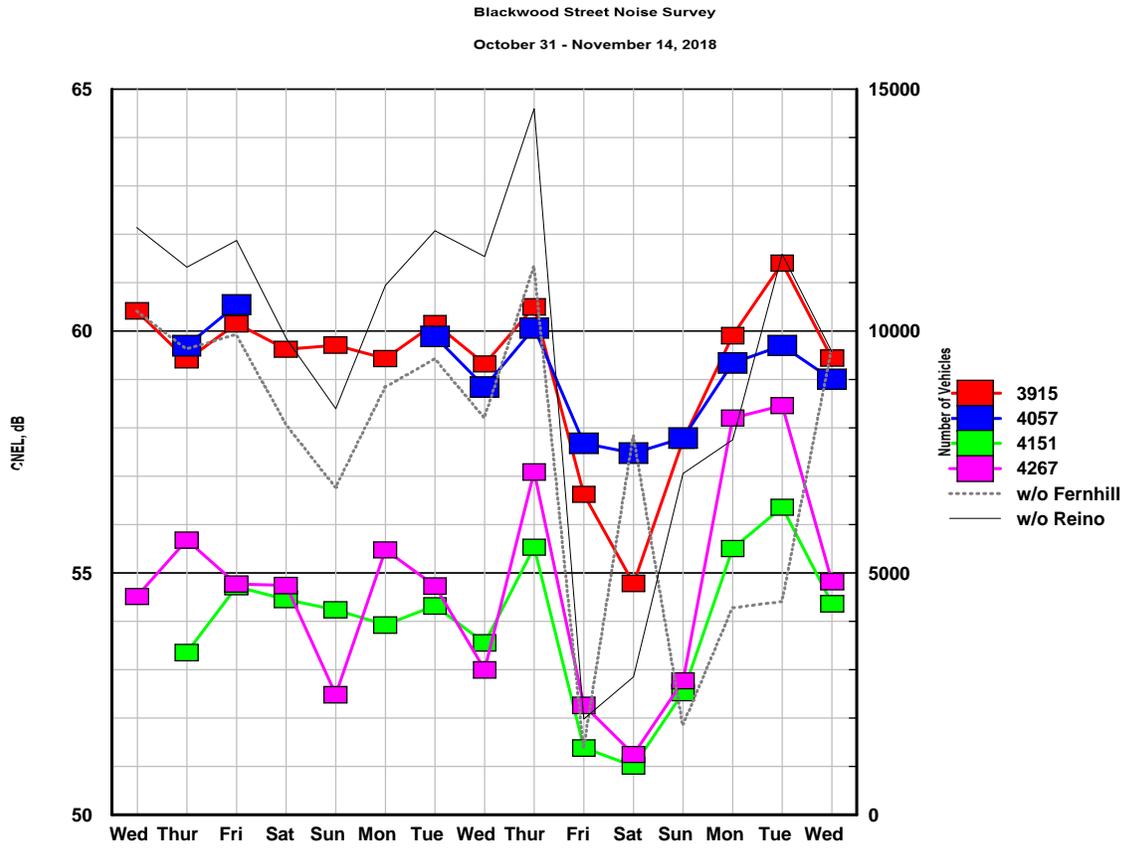


Figure 8. 2018 Blackwood Street Noise Survey and Traffic Counts Results

Table 4. Traffic Counts during November 2018 Noise Survey

		Average Daily Traffic	
		West of Fernhill	West of Reino
Day	Date		
Wed	10/31	10418	12145
Thur	11/01	9626	11321
Fri	11/02	9926	11876
Sat	11/03	8071	9857
Sun	11/04	6765	8395
Mon	11/05	8837	10945
Tue	11/06	9422	12075
Wed	11/07	8210	11548
Thur	11/08	11339	14601
Fri	11/09	1368	1983
Sat	11/10	7836	2856
Sun	11/11	1846	7057
Mon	11/12	4278	7760
Tue	11/13	4410	11588
Wed	11/14	9650	9574
Averages:	All	8992	10860
	Weekday	9441	11355
	Mid-week	9465	11333
	Weekend	7418	9126
	Maximum	10418	12145

 Data excluded from averages. Potrero Road closed, DVR evacuated

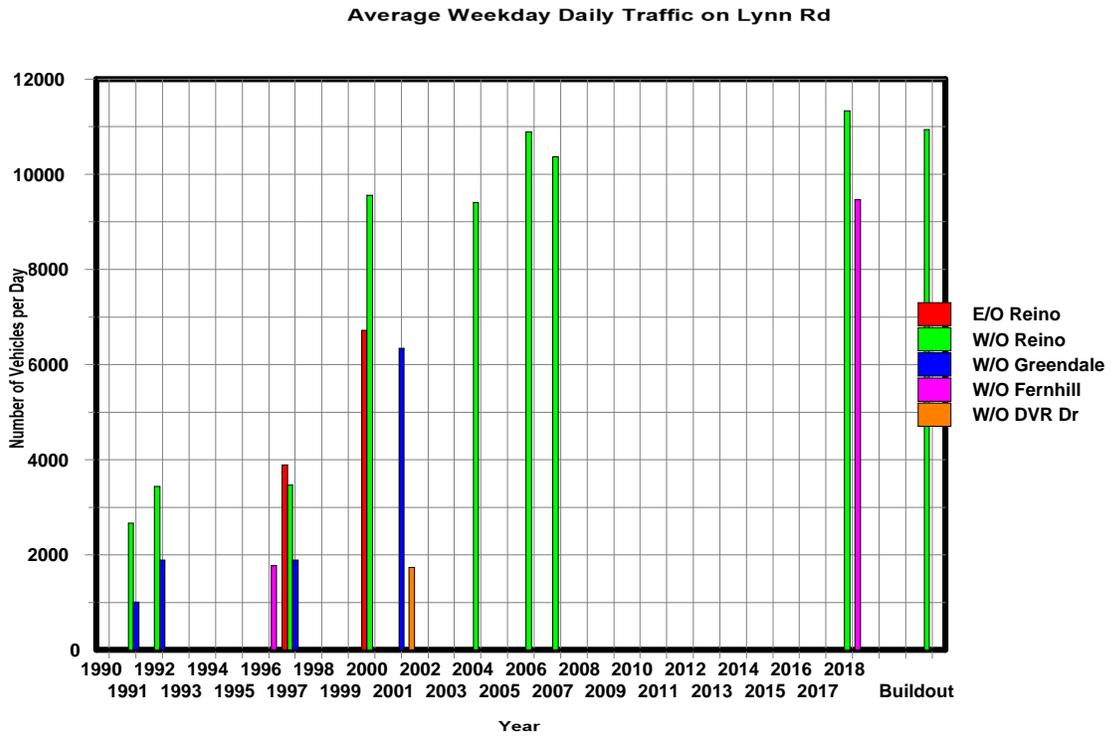


Figure 9. Blackwood Street Historical Traffic Counts Results

traffic counts show the average total volume (10,892) nearly equal to that expected after buildout of the Dos Vientos Ranch (10,935). Heavy truck trips were 3.3% of the total during the 2006 measurements.

The current traffic counts (first week of November 2018) show that the total number of vehicles has increased slightly on an average mid-week day (11,333) since 2006. Vehicle classification equipment was not installed, so the current percentage of heavy truck traffic is unknown. The expectation is that it is lower than 2006 since Dos Vientos Ranch construction is now complete.

Table 5 and Figure 10 includes the results of (minimum) 24-hour noise monitoring conducted in residential backyards along Lynn Road over the past 15 years. The CNEL measured along Lynn Road west of Reino Road in 1992 was 3 to 5 dB higher than in 1991 due to the extension of Lynn Road. By 1998, the CNEL west of Reino Road along Lynn Road increased another 3.5 dB.

It should be noted that no measured CNEL from earlier noise surveys was over the 65 dB Noise Element guideline for residential uses, but long-term measurements were not made in the elevated house pad area on Lynn Road between Reino Road and Greendale Avenue between 1992 and 2004. By that time it was possible that the exterior average weekday noise level at several locations along Lynn Road west of Reino Road might have exceeded 65 dB CNEL, due to the traffic increases shown in Figure 9, prompting the 2006 measurements.

The results of the noise measurement surveys in 2006 and 2007 showed that although the measured noise levels had increased another 1.5 dB since the previous survey, the CNEL 65 dB level was not quite reached at any Blackwood St location.

By 2018, exterior noise levels decreased by 5 dB compared to the highest levels measured in 2006 and 2007. The 2018 exterior CNEL's in the Blackwood St area are all well below 65 dB, and are in fact 60 dB or less. This decrease is attributed to the completion of construction at Dos Vientos Ranch, resulting in a significant decrease in the number of heavy truck trips on Lynn Rd west of Reino Rd.

Table 5. Summary of Historical Noise Measurements on Blackwood St

Summary of CNEL data weekday avg Blackwood St. Measurements				
	3915	4057	4191	4243
	3927	4127	4033	4267
	3943		4151	
	1	2	3	4
1990				
1991	60.1	58.6	49.6	49.8
1992	63.4	61.3	52.2	52.3
1993				
1994				
1995				
1996				
1997				
1998			55.6	
1999				
2000				
2001			58.2	
2002				
2003				
2004				
2005				
2006	64.7	56.9	59.2	58.9
2007	64.8	56.0	57.9	59.1
2008				
2009				
2010				
2011				
2012				
2013				
2014				
2015				
2016				
2017				
2018	59.9	59.4	53.9	54.6

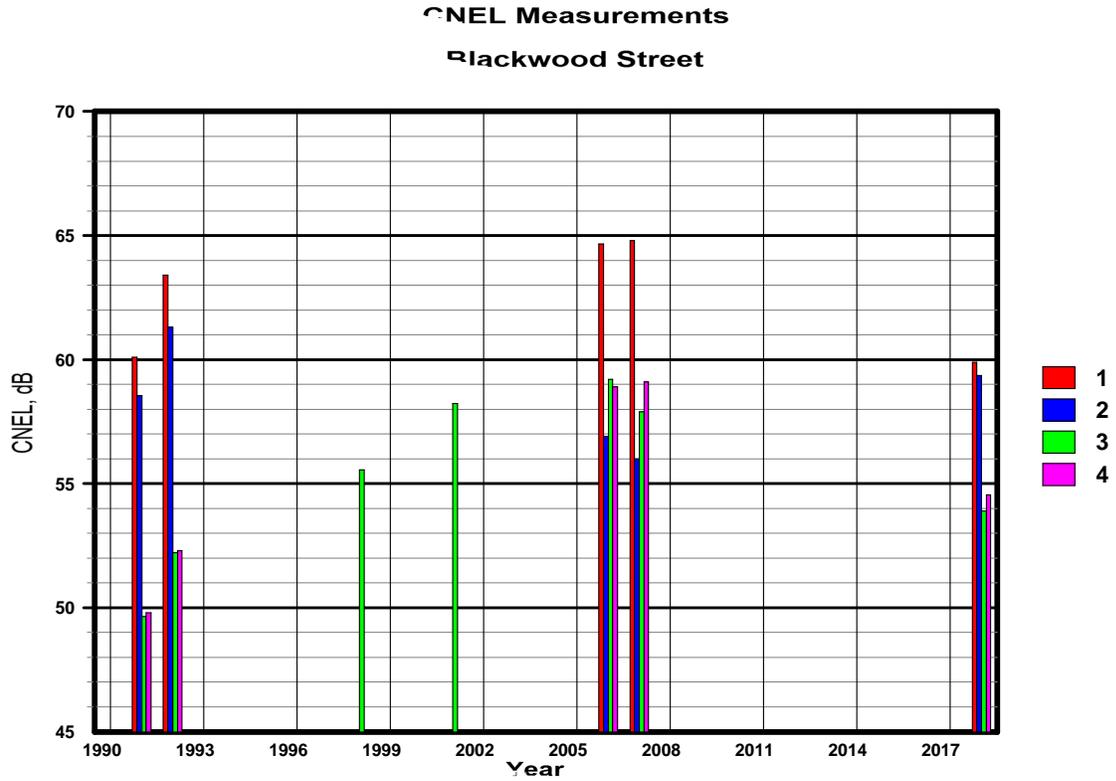


Figure 10. Summary of Historical Noise Measurements on Blackwood St