



**NOISE IMPACT ANALYSIS**

**TPM 20794 (BOYER PROPERTY)**  
**E. R. # 03-08-063**  
**SAN DIEGO COUNTY, CALIFORNIA**

**April 13, 2007**

**Prepared for:**

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**DEPARTMENT OF PLANNING  
AND LAND USE**

## NOISE SETTING

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Noise is unwanted sound. Sound is characterized by various parameters that describe the rate of oscillation of sound waves, the distance between successive troughs or crests, the speed of propagation, and the pressure level or energy content of a given sound. In particular, the sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level.

Sound pressure is expressed as a ratio of the ambient level to the lowest level detectable by a young person with good auditory acuity. The logarithm of this ratio (squared) and then multiplied by ten (10), is called a decibel (dB).

Since sound pressure can vary million-fold within the range of human hearing, the logarithmic dB scale is a progression very similar to the Richter Scale used for earthquake magnitude which keeps values within an easily manageable range. Decibels range from 20-30 dB in a very quiet bedroom to 120-140 dB at a rock concert or along a jet aircraft runway. Since the human ear is not equally sensitive to all sound frequencies within the entire auditory spectrum, human response is factored into sound descriptions by weighting sounds more heavily within the range of maximum human sensitivity in a process called "A-weighting," written as dB(A).

Time variations in noise exposure are typically expressed in terms of a steady-state noise level equal to the energy content of the time varying period (called LEQ), or alternately, as a statistical description of the sound pressure level that is exceeded over some fraction of a given observation period. Finally, because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, State law requires that, for planning purposes, an artificial dB increment be added to quiet time noise levels in a 24-hour noise descriptor called the Ldn (day-night) or the Community Noise Equivalent Level (CNEL). The CNEL metric has gradually replaced the Ldn factor, but the two descriptors are essentially identical.

An interior CNEL of 45 dB(A) has been required by the State noise insulation standards (Title 24 of the California Code of Regulations) for all multiple family dwelling units and hotel/motel rooms since 1974. In 1988, the State Building Standards Commission expanded that standard to include all habitable rooms, including single-family or low density residential uses. All development in close proximity to automotive traffic, rail or industrial noise sources with baseline levels exceeding 60 dB CNEL must undergo an analysis to verify that the 45 dB interior standard is attainable.

Exterior to interior attenuation is typically 20 dB with all windows closed, (around 10 dB for windows open). A 65 dB CNEL exterior noise exposure generally allows the interior standard to be met as long as windows can normally be closed to shut out the noise. Exterior levels of 55 dB CNEL allow interior standards to be met without having to close windows. A level of 65 dB is also the threshold where noise begins to intrude significantly into normal activities such as having a conversation. Although people may express annoyance if traffic noise levels in usable

exterior space such as yards, patios, porches, etc. are below 65 dB, the percentage of “highly-annoyed” people increases dramatically when noise exceeds 65 dB CNEL.

Noise and land use compatibility standards for various classes of land uses are generally expressed in the Noise Element of the General Plan to insure that noise exposure is considered in any development decisions. Local noise suitability criteria are typically based on state model guidelines. The state model compatibility guidelines are cumbersome because of multiple categories of acceptability and because of overlap in acceptable levels between categories. San Diego County, in Policy 4b (Noise Element Standards) has therefore established a simpler, and more clear-cut set of noise suitability guidelines. Policy 4b states that:

1. Where possible, noise sensitive uses should not experience noise levels exceeding 55 dB CNEL.
2. If future noise levels in sensitive areas might exceed 60 dB CNEL, an acoustical study is required.
3. If the study verifies levels above 60 dB CNEL:
  - a. Mitigation designed to reduce levels to below 60 dB CNEL should be used.
  - b. If mitigation of exterior noise is not feasible, interior noise must be below 45 dB CNEL and a finding of an overriding project need must be made.
4. Noise-sensitive developments in noise environments exceeding 75 dB CNEL are not approvable.

If finding 3.b above is made, a further finding must be made that there are specifically identified overriding social or economic considerations which warrant approval of the development without modifications as described in "a." above. San Diego County Department of Planning and Land Use (DPLU) staff has indicated that the inability to achieve a 60 dB CNEL exterior level constitutes a significant and non-mitigable noise impact. Staff believes that such a finding could only be made in conjunction with the preparation of an environmental impact report (EIR) for the project.

In many instances, it is not possible to mitigate traffic noise to below 60 dB CNEL on every outdoor portion of a given lot. However, the most usable exterior space can often be noise-protected with reasonable measures. Policy 4b has therefore recently been updated to establish a minimum-sized area where exterior noise is mitigated to the 60 dB CNEL General Plan policy level. For larger lot subdivisions such as those proposed for the project site, the minimum noise protected area is ten (10) percent of the net lot area.

CNEL-based standards apply to exposure from on-road traffic, aircraft, trains, etc. Local jurisdictions are preempted by State or federal agencies from directly controlling these sources. Because the County cannot regulate the noise level generated by such sources, it controls the land use decisions relative to exposure from preempted sources.

For non-preempted sources, the County Noise Ordinance establishes a variety of performance standards and/or specific prohibitions. The Ordinance limits the allowable noise level that one land use may impose upon another. The standard for the most noise sensitive uses is 50 dB (LEQ) by day, and 45 dB (LEQ) at night. The Ordinance also restricts hours of construction to less sensitive times, and establishes a 75 dB (LEQ) 8-hour average standard at off-site residences during on-site construction. If noise-sensitive, threatened or endangered avian species (gnatcatchers, etc.) are present, County policy is to maintain noise levels of 60 dB LEQ or less during construction or operation during the nesting/breeding season consistent with wildlife management agency requirements (USFWS, etc.).

Existing project area traffic noise levels were monitored in late 1999, for the nearby proposed "Oak Woodlands" and "Island Parcel" projects. These measurements are over seven years old. However, because the relationship between local traffic volumes (the primary noise generator) and noise levels is logarithmic, it requires a large change in traffic volumes to create any measurable change in noise exposures. Traffic levels have not changed enough to invalidate the local area noise measurements made in 1999.

The noise measurements in the project vicinity showed daytime noise levels of 51-53 dBA Leq, even in fairly close proximity to Mountain Meadow Road. As a worst-case, a doubling of traffic volumes since 1999 would raise noise levels to 54-56 dBA Leq.

Monitoring experience shows that 24-hour weighted CNELs are generally +2 dB higher than mid-day Leqs. Existing project site noise levels are less than the San Diego County residential standard of 60 dBA CNEL. Any possible noise constraints derive from future traffic conditions rather than from the existing semi-rural noise environment.

## **NOISE IMPACTS**

Two characteristic noise sources are typically identified with land use intensification such as that proposed for the Mountain Meadows (Boyer) project. Construction activities, especially heavy equipment, will create short-term noise near the project site. Such impacts may be important for nearby noise-sensitive receptors such as surrounding residential uses. Upon completion, vehicular traffic on streets around the development area may create a higher noise exposure beyond the noise levels currently experienced. However, the very small number of daily trips generated by three homes is miniscule compared to non-project traffic. Noise concerns focus almost exclusively from ambient noise impacting the project site rather than any project impact upon the off-site acoustic environment. On-site noise exposure is evaluated through needed buffer distances and/or propagation barriers that must be established in order to minimize the impact potential where such impacts exceed established significance thresholds.

CEQA Guidelines state that a noise impact would be considered significant if it potentially causes noise standards to be exceeded, or if it measurably contributes to an existing violation. Noise standards would include both the noise/land use compatibility criteria in the General Plan Noise Element, as well as any noise exposures specifically regulated by ordinance. The only noise ordinance standard that is likely applicable relates to construction activities. The Noise Element criterion applicable to the project is the Policy 4b standard to mitigate noise levels in usable outdoor space to 60 dBA CNEL or less.

### **CONSTRUCTION NOISE IMPACTS**

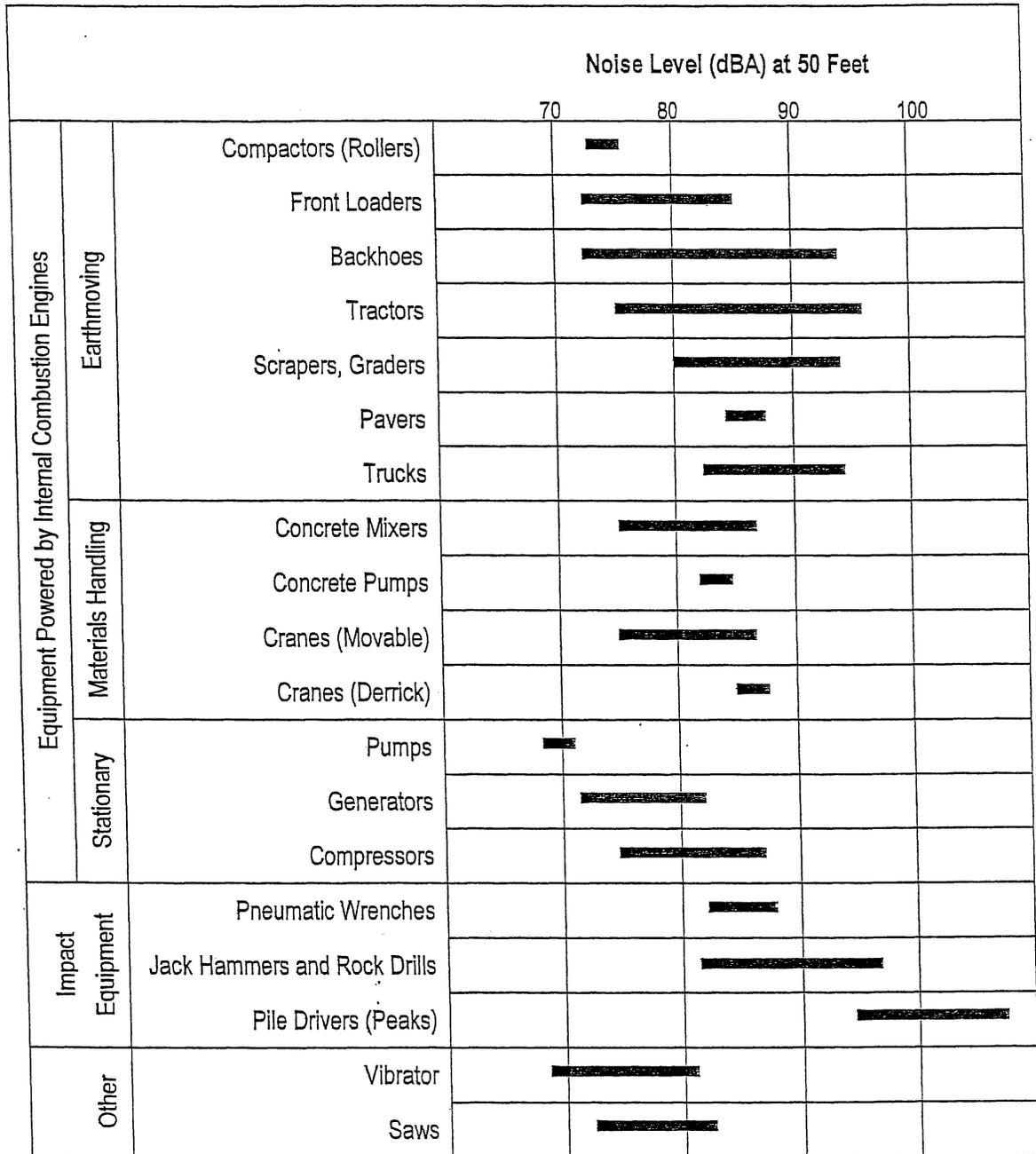
Temporary construction noise impacts vary markedly because the noise strength of construction equipment ranges widely as a function of the equipment used and its activity level. Short-term construction noise impacts tend to occur in discrete phases dominated initially by earth-moving sources, then by foundation and parking area construction, and finally for finish construction. Figure 1 shows the typical range of construction activity noise generation as a function of equipment used in various building phases.

The earth-moving sources are seen to be the noisiest with equipment noise ranging up to about 90 dB(A) at 50 feet from the source. Measurements have shown, however, that the noise generation levels shown in Figure 1 tend to be more associated with periodic events under full throttle rather than chronic (hourly or longer) noise exposure. Short-term noise generation thus tends to be on the higher end of the ranges shown in Figure 1, while longer term exposure is at the quieter end of the noise spectrum. Short-term noise peaks near 90 dB and sustained levels near 80 dB, are possible near major earth-moving operations.

Point sources of noise emissions are attenuated by spherical spreading of sound waves at a rate of 6 dB per doubling of distance, or about 20 dB in 500 feet of propagation. The loudest earth-moving noise sources will therefore sometimes be temporarily detectable above the local background beyond 1,000 feet from any individual construction area. An extensive noise impact envelope requires a clear line of sight from source to receiver. Surrounding properties are at lowered elevations, sight lines may be limited. Construction noise impacts are therefore, somewhat less than that predicted under theoretical maximum input conditions.

Figure 1

## Typical Construction Equipment Noise Generation Levels



Source: EPA PB 206717, Environmental Protection Agency, December 31, 1971, "Noise from Construction Equipment and Operations."

Creation of a noise nuisance from construction activities is regulated by Section 36.410 of the San Diego County Code. The noise ordinance limits hours of operations to less noise-sensitive periods (Monday through Saturday, 7:00 a.m. to 7:00 p.m.), and establishes a noise performance standard of 75 dB for 8 hours at the nearest residence to any construction activity.

Using the reference equipment noise level of 80 dB at 50 feet as an hourly maximum, the 75 dB performance standard could be exceeded to a distance of 90 feet from the equipment if the hourly maximum persisted for eight hours. There may be short-term encroachment of equipment near adjacent homes along the project perimeter. For most of the project site, the distance separation will be more than adequate to meet the County standard.

Noise impacts could be considered significant if “unusual” construction practice created above-average noise levels, if substantial truck volumes create violations of the County General Plan noise standard of 60 dBA CNEL in quiet areas, or if there were adjacent noise-sensitive avian habitats where construction noise could cause the 60 dBA Leq noise protection standard to be exceeded. “Unusual” in the project might be rock drilling, breaking or crushing.

There is no documented evidence of any rare or threatened bird species present on or near the project site. It is intended to balance cut and fill on-site such that construction truck traffic will be minimal. The reference noise level from one truckload of material in/out of the site is 55 dBA Leq at 50 feet from the centerline (weighted for uphill inbound traffic). It would require three truckloads per hour (six trips), or 72 loads per day to equal 60 dBA CNEL if the traffic occurs between 7:00 a.m. and 7:00 p.m. Although the exact volume of truck traffic cannot be predicted with certainty, it will be much, much smaller than 72 loads of material per day.

The site is rocky, and some rock drilling will be required. The method of rock drilling has not been determined at this time. A decision on the optimum method of establishing a flat building pad will require a soils study and test excavations. If a temporary rock crusher is used, a noise protection plan must be developed, approved, and implemented for such equipment.

## **ON-ROAD NOISE IMPACTS**

Future build-out traffic noise levels were calculated based upon vehicle mixes and travel speeds determined from San Diego County General Plan Circulation Element standards. An average daily traffic (ADT) of 20,000 vehicles per day was recommended by County staff for Mountain Meadow Road. An ADT of 4,500 is recommended for North Mountain Meadow Road.

For the traffic mix used for the adjacent projects, the reference noise level along the project perimeter roadway at 50 feet from the centerline is calculated as follows:

	<b>Mountain Meadow<sup>a</sup></b>		<b>North Mountain Meadow<sup>b</sup></b>	
<b>Source</b>	<b>VPH</b>	<b>Leq</b>	<b>VPH</b>	<b>Leq</b>
Auto	1,860	71.5	436	62.4
Medium Truck	80	65.4	9	54.4
Heavy Truck	60	68.4	5	56.7
<b>TOTAL</b>	<b>2,000</b>	<b>73.9</b>	<b>450</b>	<b>63.9</b>

<sup>a</sup> – 50 mph, 93% auto, 4% medium trucks, 3% heavy trucks

<sup>b</sup> – 40 mph, 97% auto, 2% medium trucks, 1% heavy trucks

Monitoring experience shows that peak hour Leq and CNEL are almost identical. The above Leq calculation was therefore presumed to be equivalent to CNEL. For a completely unobstructed roadway of infinite length, the 73.9 dB CNEL reference level at 50 feet from the Mountain Meadow Road centerline will decay with increasing distance at a rate of 3.0 dB (“hard site”) or 4.5 dB (“soft site”) per doubling of distance. The theoretical maximum distance from the roadway centerline to the 60 dB CNEL contour (San Diego County usable exterior space guideline) along Mountain Meadow Road is calculated as follows:

Hard Site:  $\text{INV Log } ((73.9 - 60.0)/10 + 1.7) = 1,230 \text{ feet}$

Soft Site:  $\text{INV Log } ((73.9 - 60.0)/15 + 1.7) = 420 \text{ feet}$

Along North Mountain Meadow Road, the 60 dB CNEL contour distances are smaller seen as follows:

Hard Site:  $\text{INV Log } ((63.9 - 60.0)/10 + 1.7) = 120 \text{ feet}$

Soft Site:  $\text{INV Log } ((63.9 - 60.0)/15 + 1.7) = 90 \text{ feet}$

The 60 dBA CNEL contour distance from Mountain Meadow Road covers the entire project site. A noise easement should be placed on the entire site to insure that recommended mitigation measures are implemented as a condition of development. As noted below, topographical screening and grade separation reduce the noise impact zone to much less than its theoretical maximum.

The project’s contribution to the overall noise exposure is minimal. If the project generates 36 trips per day (3 homes X 12 trips/residence), and all 36 trips head in the same direction on Mountain Meadow Road, the noise increment from 36 added vehicles to the 20,000 ADT build-out baseline is 0.01 dB CNEL. Such a change is imperceptible. Project-related noise issues therefore derive from the ambient traffic noise impact along parcel perimeters, and not from the project impacting the environment.

## EXTERIOR NOISE STANDARD COMPLIANCE

Rear and/or side yard noise exposure was evaluated on the three project parcels using the SOUND32 Caltrans computer model for the traffic mix identified previously. Calculations were made for the peak traffic hour assuming peak hour LEQ approximately equals CNEL.

Six receiver locations were selected for analysis (two locations on each parcel). Ultimately, a two-story house will likely be placed on each parcel. When homes are built on each parcel, they will function as a partial soundwall. Because the exact location and/or orientation of the house is not known, an alternative to recommend sufficient walls to achieve 60 dB CNEL in usable outdoor space was analyzed without consideration of home placement.

Calculations were initially made for no barriers at the pad perimeter. The “top of slope” at each pad was treated as a “berm” in this analysis. Receiver locations on Lots 2 and 3 will not meet County noise standards without an additional barrier. All three lots will meet the County noise standard for the assumed build-out traffic volumes on a substantial portion of usable outdoor space if walls are constructed as shown in Figure 2. The noise exposures for the two assumptions are as follows (dBA CNEL):

<b>Receiver No.</b>	<b>Terrain Only</b>	<b>With Sound Walls</b>
3A	61	60
3B	62	59
2A	62	60
2B	66	60
1A	54	54
1B	56	56
3UP	70	66
2UP	69	67
1UP	59	58

Source: SOUND32 Model-Output attached in Appendix.



## INTERIOR NOISE COMPLIANCE

The SOUND32 analysis included a calculation of building façade exposure. A prototype house location was selected for each pad. The assumed upstairs locations at each pad site are shown in Figure 2 as 1UP, 2UP, and 3UP. Second-story receivers were assumed located at 15 feet above finished pad grade. The second-story bedroom façade noise exposure is calculated as follows:

Lot 1	58 dB CNEL
Lot 2	67 dB CNEL
Lot 3	66 dB CNEL

The interior noise standard is 45 dB CNEL for the maximum exposed residences, structural noise reduction of -22 dB will be needed to meet the 45 dB CNEL interior standard. Typical noise attenuation with single-pane windows in modern frame and stucco construction is about 20 dB. Slightly enhanced structural features capable of achieving an additional 1-2 dB of noise reduction are needed for the upstairs of Lots 2 and 3. Preparation of an interior analysis for upstairs and downstairs livable space will be required for these two lots prior to the issuance of building permits.

## MECHANICAL EQUIPMENT NOISE

The San Diego County Noise Ordinance limits the noise level from mechanical equipment such as air conditioners or pool and spa pumps and filters to 45 dBA (LEQ) at any adjacent residential property line. The location of any such equipment is not known, nor is the make or model number yet specified that would allow for a precise analysis. Any noise generated by a “split unit” (air conditioner condenser outside, fan and furnace inside) will be attenuated by distance from the equipment location to the nearest adjacent residential property line.

Quiet residential condenser units have a noise rating expressed as a “sound power level” of approximately 70 dB. The distance attenuation of this near field value is calculated as follows:

<b>Distance to Unit (feet)</b>	<b>Noise Level (dB)</b>
5	58
10	52
15	49
20	46
24	45
30	43
40	40

Source: ARI Standard 275-97, Table 2.

The nocturnal County standard will be met if the condenser unit has a sound power level rating no higher than 70 dB and maintains at least 24 feet of setback from the property line. These assumptions do not take into account any effects of grade separation that may additionally reduce noise levels. The existence of traffic noise levels exceeding 45 dBA (Leq) may also reduce the full stringency of the compliance standard. Some additional leeway on the required sound rating and/or set-back distance could be accommodated when specific locations of any air conditioning units are established. Given that residential units with a 70 dB sound rating are commercially available, and a set-back distance of more than 24 feet can be readily established, the feasibility of meeting the noise ordinance standard is readily apparent.

## NOISE MITIGATION SUMMARY

1. Sound walls at the heights and locations shown in Figure 2 shall be erected to achieve the County noise exposure standard for usable outdoor space. Noise barriers may be solid masonry, or they may incorporate transparent features as long as the barrier contains no gaps, and has an average area density of 3.5 pounds per square foot.
2. To attenuate traffic noise at project perimeter units along Mountain Meadow Road to 45 dBA CNEL or less within residential interiors, use of dual-paned bedroom windows are required for the upstairs of homes on the project site. A noise analysis shall be submitted during plan check for Lots 2 and 3 to verify that adequate structural attenuation has been incorporated to meet the County interior residential standard of 45 dB CNEL.
3. Air conditioning should be a standard feature in all residences. If a make-up air duct is required, the air intake should be on the side of the house away from roadway frontage.
4. Air conditioners shall have a sound power level rating not to exceed 70 dBA, and shall be located at least 24 feet from any adjacent residential property line. Relaxation of these requirements are allowed if a supplementary noise study shows that obstructions to assumed direct line-of-sight noise propagation or elevated background levels can accommodate noisier units or smaller setbacks.

## **APPENDIX**

### **SOUND32 Model Input/Output**

- **Terrain Screening Only**
- **With Solid Sound-walls**

TITLE:  
Boyer Property - Final Configuration

1

BARRIER DATA  
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BAR ELE	BARRIER HEIGHTS							BAR ID	LENGTH	TYPE
	0	1	2	3	4	5	6			
1	-	1.*						B1 P1	86.9	
2	-	1.*						B1 P2	25.2	
3	-	1.*						B1 P3	92.3	
4	-	1.*						B1 P4	16.0	
5	-	1.*						B1 P5	100.4	
6	-	1.*						B1 P6	37.7	
7	-	1.*						B1 P7	26.8	
8	-	1.*						B1 P8	40.2	
9	-	1.*						B1 P9	47.8	
10	-	1.*						B2 P1	55.0	
11	-	1.*						B2 P2	11.2	
12	-	1.*						B2 P3	104.3	
13	-	1.*						B2 P4	54.1	
14	-	4.*						B3 P1	96.7	
15	-	6.*						B3 P2	22.4	
16	-	6.*						B3 P3	50.2	
17	-	4.*						B3 P4	40.6	
18	-	7.*						B4 P1	42.4	
19	-	5.*						B4 P2	55.9	
20	-	3.*						B4 P3	98.5	
21	-	1.*						B4 P4	55.0	
22	-	1.*						B4 P5	75.0	
23	-	1.*						B4 P6	128.1	
24	-	11.*						B5 P1	83.0	
25	-	11.*						B5 P2	145.2	
26	-	0.*						B6 P1	46.1	
27	-	0.*						B6 P2	77.6	
28	-	0.*						B6 P3	50.2	
29	-	0.*						B6 P4	71.6	
30	-	0.*						B7 P1	58.5	
31	-	0.*						B7 P2	63.2	
32	-	0.*						B7 P3	60.4	
33	-	0.*						B7 P4	58.5	
34	-	0.*						B8 P1	51.0	
35	-	0.*						B8 P2	55.9	
36	-	0.*						B8 P3	50.2	
37	-	0.*						B8 P4	60.8	
38	-	4.*						B9 P1	118.0	



Boyer Property - Final Configuration

T-Mountain Meadow Road, 1

1860 , 50 , 80 , 50 , 60 , 50

T-North Mtn. Meadow, 2

436 , 40 , 9 , 40 , 5 , 50

L-Combined Lanes, 1

N,70.,0,1436,

N,205.,330,1436,

N,590.,685,1460,

N,730.,700,1460,

N,1000.,700,1460,

L-Combined Lanes, 2

N,185.,305,1436,

N,65.,440,1430,

N,40.,520,1422,

N,20.,880,1400,

B-Noise Wall, 1 , 2 , 0 , 0

212.,160,1455,1456,

246.,240,1455,1456,

270.,243,1462,1463,

316.,323,1462,1463,

328.,330,1470,1471,

400.,400,1470,1471,

435.,386,1470,1471,

448.,404,1485,1486,

488.,400,1485,1486,

475.,446,1485,1486,

B-Noise Wall - Addl, 2 , 2 , 0 , 0

475.,446,1485,1486,

500.,495,1485,1486,

510.,495,1490,1491,

596.,554,1490,1491,

600.,500,1490,1491,

B-Top of Slope - Parcel 3, 3 , 1 , 0 , 0

50.,150,1430,1431,

85.,240,1430,1436,

75.,260,1430,1436,

25.,265,1430,1436,

-10.,245,1430,1431,

B-Top of Slope - Parcel 2, 4 , 1 , 0 , 0

60.,395,1432,1440,

90.,365,1434,1440,

115.,315,1436,1440,

25.,275,1439,1440,

-30.,275,1439,1440,

-90.,320,1439,1440,

10.,400,1439,1440,

B-Top of Slope - Parcel 1, 5 , 1 , 0 , 0

5.,500,1420,1421,

35.,425,1420,1440,

-100.,375,1420,1421,

B-House 3, 6 , 2 , 0 , 0

-15.,150,1430,1430,

30.,140,1430,1430,

50.,215,1430,1430,

0.,220,1430,1430,

-15.,150,1430,1430,

B-House 2, 7 , 2 , 0 , 0

0.,305,1440,1440,

55.,325,1440,1440,  
35.,385,1440,1440,  
-20.,360,1440,1440,  
0.,305,1440,1440,  
B-House 1, 8 , 2 , 0 , 0  
0.,435,1420,1420,  
-10.,485,1420,1420,  
-65.,475,1420,1420,  
-60.,425,1420,1420,  
0.,435,1420,1420,  
B-Wall @ Roadway Edge, 9 , 2 , 0 , 0  
5.,0,1436,1440,  
45.,111,1436,1440,  
B-Extend Pad 2, 10 , 2 , 0 , 0  
60.,395,1440,1440,  
90.,365,1440,1446,  
115.,315,1440,1448.5,  
25.,275,1440,1448,  
B-Driveway-Corner, 11 , 2 , 0 , 0  
48.,131,1436,1443,  
125.,315,1436,1443,  
R, 1 , 67 , 500  
245,198,1460.,Lot 1  
R, 2 , 67 , 500  
312,282,1467.,Lot 2  
R, 3 , 67 , 500  
375,356,1475.,Lot 3  
R, 4 , 67 , 500  
490,350,1485.,Lot 4  
R, 5 , 67 , 500  
490,450,1490.,Lot 5  
R, 6 , 67 , 500  
570,520,1495.,Lot 6  
R, 7 , 67 , 500  
-15,202,1435.,Boyer3A  
R, 8 , 67 , 500  
32,235,1435.,Boyer3B  
R, 9 , 67 , 500  
-25,325,1445.,Boyer2A  
R, 10 , 67 , 500  
40,305,1445.,Boyer2B  
R, 11 , 67 , 500  
-75,405,1425.,Boyer1A  
R, 12 , 67 , 500  
-75,440,1425.,Boyer1B  
R, 13 , 67 , 500  
51,216,1445.,Boy3UP  
R, 14 , 67 , 500  
56,324,1455.,Boy2UP  
R, 15 , 67 , 500  
1,436,1435.,Boy1UP  
C,C

TITLE:  
Boyer Property - No Barriers

1

BARRIER DATA  
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BAR ELE	BARRIER HEIGHTS							BAR ID	LENGTH	TYPE
	0	1	2	3	4	5	6			
1	-	1.*							B1 P1	86.9
2	-	1.*							B1 P2	25.2
3	-	1.*							B1 P3	92.3
4	-	1.*							B1 P4	16.0
5	-	1.*							B1 P5	100.4
6	-	1.*							B1 P6	37.7
7	-	1.*							B1 P7	26.8
8	-	1.*							B1 P8	40.2
9	-	1.*							B1 P9	47.8
10	-	1.*							B2 P1	55.0
11	-	1.*							B2 P2	11.2
12	-	1.*							B2 P3	104.3
13	-	1.*							B2 P4	54.1
14	-	4.*							B3 P1	96.7
15	-	6.*							B3 P2	22.4
16	-	6.*							B3 P3	50.2
17	-	4.*							B3 P4	40.6
18	-	7.*							B4 P1	42.4
19	-	5.*							B4 P2	55.9
20	-	3.*							B4 P3	98.5
21	-	1.*							B4 P4	55.0
22	-	1.*							B4 P5	75.0
23	-	1.*							B4 P6	128.1
24	-	11.*							B5 P1	83.0
25	-	11.*							B5 P2	145.2
26	-	0.*							B6 P1	46.1
27	-	0.*							B6 P2	77.6
28	-	0.*							B6 P3	50.2
29	-	0.*							B6 P4	71.6
30	-	0.*							B7 P1	58.5
31	-	0.*							B7 P2	63.2
32	-	0.*							B7 P3	60.4
33	-	0.*							B7 P4	58.5
34	-	0.*							B8 P1	51.0
35	-	0.*							B8 P2	55.9
36	-	0.*							B8 P3	50.2
37	-	0.*							B8 P4	60.8
38	-	0.*							B9 P1	337.1

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 0 1 2 3 4 5 6 7

1  
 REC REC ID DNL PEOPLE LEQ(CAL)

1	Lot 1	67.	500.	66.2
2	Lot 2	67.	500.	64.9
3	Lot 3	67.	500.	65.2
4	Lot 4	67.	500.	59.9
5	Lot 5	67.	500.	64.7
6	Lot 6	67.	500.	64.1
7	Boyer3A	67.	500.	61.3
8	Boyer3B	67.	500.	61.9
9	Boyer2A	67.	500.	61.7
10	Boyer2B	67.	500.	66.3
11	Boyer1A	67.	500.	53.6
12	Boyer1B	67.	500.	56.0
13	Boy3UP	67.	500.	70.1
14	Boy2UP	67.	500.	69.0
15	Boy1UP	67.	500.	58.8

BARRIER HEIGHT INDEX FOR EACH BARRIER SECTION

1  
 1 1 1 1 1 1 1 1 1 1 1 1 1

CORRESPONDING BARRIER HEIGHTS FOR EACH SECTION

1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 4. 6. 6. 4. 7. 5. 3. 1. 1. 1.11.11.  
 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.

Boyer Property - No Barriers  
T-Mountain Meadow Road, 1  
1860 , 50 , 80 , 50 , 60 , 50  
T-North Mtn. Meadow, 2  
436 , 40 , 9 , 40 , 5 , 50  
L-Combined Lanes, 1  
N,70.,0,1436,  
N,205.,330,1436,  
N,590.,685,1460,  
N,730.,700,1460,  
N,1000.,700,1460,  
L-Combined Lanes, 2  
N,185.,305,1436,  
N,65.,440,1430,  
N,40.,520,1422,  
N,20.,880,1400,  
B-Noise Wall, 1 , 2 , 0 , 0  
212.,160,1455,1456,  
246.,240,1455,1456,  
270.,243,1462,1463,  
316.,323,1462,1463,  
328.,330,1470,1471,  
400.,400,1470,1471,  
435.,386,1470,1471,  
448.,404,1485,1486,  
488.,400,1485,1486,  
475.,446,1485,1486,  
B-Noise Wall - Addl, 2 , 2 , 0 , 0  
475.,446,1485,1486,  
500.,495,1485,1486,  
510.,495,1490,1491,  
596.,554,1490,1491,  
600.,500,1490,1491,  
B-Top of Slope - Parcel 3, 3 , 1 , 0 , 0  
50.,150,1430,1431,  
85.,240,1430,1436,  
75.,260,1430,1436,  
25.,265,1430,1436,  
-10.,245,1430,1431,  
B-Top of Slope - Parcel 2, 4 , 1 , 0 , 0  
60.,395,1432,1440,  
90.,365,1434,1440,  
115.,315,1436,1440,  
25.,275,1439,1440,  
-30.,275,1439,1440,  
-90.,320,1439,1440,  
10.,400,1439,1440,  
B-Top of Slope - Parcel 1, 5 , 1 , 0 , 0  
5.,500,1420,1421,  
35.,425,1420,1440,  
-100.,375,1420,1421,  
B-House 3, 6 , 2 , 0 , 0  
-15.,150,1430,1430,  
30.,140,1430,1430,  
50.,215,1430,1430,  
0.,220,1430,1430,  
-15.,150,1430,1430,  
B-House 2, 7 , 2 , 0 , 0  
0.,305,1440,1440,

55.,325,1440,1440,  
35.,385,1440,1440,  
-20.,360,1440,1440,  
0.,305,1440,1440,  
B-House 1, 8 , 2 , 0 , 0  
0.,435,1420,1420,  
-10.,485,1420,1420,  
-65.,475,1420,1420,  
-60.,425,1420,1420,  
0.,435,1420,1420,  
B-Roadway Edge, 9 , 1 , 0 , 0  
5.,0,1436,1436,  
125.,315,1436,1436,  
R, 1 , 67 , 500  
245,198,1460.,Lot 1  
R, 2 , 67 , 500  
312,282,1467.,Lot 2  
R, 3 , 67 , 500  
375,356,1475.,Lot 3  
R, 4 , 67 , 500  
490,350,1485.,Lot 4  
R, 5 , 67 , 500  
490,450,1490.,Lot 5  
R, 6 , 67 , 500  
570,520,1495.,Lot 6  
R, 7 , 67 , 500  
-15,202,1435.,Boyer3A  
R, 8 , 67 , 500  
32,235,1435.,Boyer3B  
R, 9 , 67 , 500  
-25,325,1445.,Boyer2A  
R, 10 , 67 , 500  
40,305,1445.,Boyer2B  
R, 11 , 67 , 500  
-75,405,1425.,Boyer1A  
R, 12 , 67 , 500  
-75,440,1425.,Boyer1B  
R, 13 , 67 , 500  
51,216,1445.,Boy3UP  
R, 14 , 67 , 500  
56,324,1455.,Boy2UP  
R, 15 , 67 , 500  
1,436,1435.,BoylUP  
C,C