



Appendix I. Noise Technical Report



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FINAL

**Noise Technical Report
for the
Marja Acres Community Plan
Carlsbad, California**

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1 INTRODUCTION AND SUMMARY

This technical noise report evaluates the potential noise impacts during construction and operation of the proposed Marja Acres Community Plan project (proposed project). The proposed project would be located on the south side of El Camino Real in the City of Carlsbad, California (Figure 1).

The Marja Acres development plan proposes a total number of 298 dwelling units consisting of 236 townhomes within the R-15 General Plan designated area, and 46 age restricted senior apartment housing units, 16 Townhomes, a 4,000 square foot restaurant pad and a 6,000 square foot retail pad area within the GC General Plan designated area. The proposed project has been designed to emphasize superior architecture, views, privacy, walkability, internal connectivity and recreational amenities.

The project also proposes to utilize the opportunities provided by the Residential Density Bonus and Incentives or Concession section of the Zoning ordinance (CMC 21.86). This allows an increase in the number of units beyond the maximum General Plan density calculations. Section 21.86 is fully intended to implement the Housing Element of the General Plan and provide additional housing for lower and moderate income households.

Based upon the noise analysis, the proposed project would result in less than significant noise or vibration impacts with incorporation of provided Applicant Proposed Measures and Mitigation Measures.

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2 REGULATORY SETTING

The proposed project is located in the City of Carlsbad. The following guidance relating to noise is relevant to the proposed project.

City of Carlsbad Noise Guidelines Manual

The City's Noise Guidelines Manual is primarily intended to address community noise issues related to land use. The City's General Plan Noise Element policies are summarized, the science of noise is summarized, procedures for the processing of a project are explained, preferred methods for the mitigation of noise are listed, and a preferred noise report format is presented. Additionally, typical conditions of approval are listed. The Noise Guidelines Manual does not address noise issues such as animal noise, noise from parties and loud gatherings, motor vehicle noise, or general nuisance noise, for which the best resource is the Carlsbad Municipal Code Noise Ordinance (Carlsbad Municipal Code, Chapter 8.48).

City of Carlsbad Municipal Code

Carlsbad Municipal Code Chapter 8.48 outlines regulations for limitation of hours for construction (i.e., the erection, demolition, alteration, or repair of any building or structure or the grading or excavation of land) that creates disturbing, excessive, or offensive noise. Construction can occur Monday through Friday from 7:00 a.m. to 6:00 p.m. and Saturday 8:00 a.m. to 6:00 p.m.; no work shall be conducted on Sundays or on federal holidays. Carlsbad Municipal Code Chapter 8.48 also outlines exceptions that may be granted by the City for circumstances such as emergency repairs required to protect the health and safety of the community.

Carlsbad Municipal Code Section 21.34.090 specifies that the maximum allowable exterior noise level of any industrial use shall not exceed 65 dBA day/night average sound level (L_{dn}) as measured at the property line. If the industrial use occupies a building with more than one use, the noise level shall not be in excess of 45 dBA L_{dn} as measured within the interior space of the neighboring establishment. Similarly, the noise levels in the loading areas and docks of shopping centers should not exceed 65 dBA CNEL at the shopping center's property line, according to Carlsbad Municipal Code Section 21.31.080, Development Standards. No signs in the city shall make noise, as outlined in Carlsbad Municipal Code Section 21.41.030.

City of Carlsbad General Plan Noise Standards

The Draft Noise Element of the City's General Plan Update (City of Carlsbad 2013) includes several standards for noise.

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Community Noise Exposure

Table 1 (reproduced from City of Carlsbad 2013, Table 3.10-2) presents the community noise exposure matrix, establishing criteria the City shall use to evaluate land use compatibility based on noise emanating from all sources.

Allowable Noise Exposure

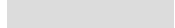



Table 2 (reproduced from City of Carlsbad 2013, Table 5-2) presents acceptable limits of noise for various land uses for both exterior and interior environments from transportation sources. Although Table 1 establishes standards to help the City establish the appropriateness of locating specific uses in noise-sensitive environments, Table 2 provides standards that development shall attain through noise attenuation measures. These limits are based on guidelines provided by the California Office of Planning and Research. As shown in Table 2, the allowable noise exposure for residential land uses is 60 dBA CNEL in outdoor activity areas, and 45 dBA CNEL in habitable interior spaces (i.e., living rooms, bedrooms, etc.); for mixed-use projects, the allowable noise exposure for residential land uses is 65 dBA CNEL in outdoor activity areas. For this project, the 65 dBA CNEL outdoor activity area standard would be applicable to the residential uses within the portion of the project site designated as “Commercial Zone” in Figure 2, while the 60 dBA CNEL outdoor activity area standard would be applicable to the residential uses within the remainder of the project site.

Similarly, Table 3 provides City standards for noise from non-transportation noise sources such as industrial facilities, equipment yards, automotive servicing, and on-site equipment and machinery such as heating, ventilation, and air conditioning (HVAC) equipment. These standards apply to the noise sources themselves, as measured at the edge of the property line; noise caused by motor vehicles traveling to and from the site is exempt from this standard.

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Table 1
Land Use Compatibility for Community Noise Environments

Land Use Category	Exterior Day/Night Noise Levels DNL or Ldn , dB						INTERPRETATION
	55	60	65	70	75	80	
Residential– Single Family							 <p>Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements</p>
Residential– Multiple Family							
Transient Lodging– Motels, Hotels							
Schools, Libraries, Churches, Hospitals*, Nursing Homes							 <p>Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design.</p>
Auditoriums, Concert Halls, Amphitheaters							
Sports Arena, Outdoor Spectator Sports							
Playgrounds, Parks							 <p>Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.</p>
Golf Courses, Riding Stables, Water Recreation, Cemeteries							
Office Buildings, Business Commercial and Professional							
Industrial, Manufacturing,							 <p>Clearly Unacceptable: New construction or development clearly should not be undertaken.</p>

Source: Office of Planning and Research, State of California General Plan Guidelines, Appendix A: Guidelines for the Preparation and Content of the Noise Element of the General Plan, 1998.

*Because hospitals are often designed and constructed with high noise insulation properties, it is possible for them to be satisfactorily located in noisier areas.

Source: City of Carlsbad 2013, Table 5-1.

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Table 2
Allowable Noise Exposure¹

Land Use	Outdoor Activity ^{2,3} Areas (dBA CNEL)	Interior Spaces (dBA CNEL)
Residential	60 ⁴	45
Motels, Hotels	65	45
Hospitals, Residential Care Facilities, Schools, Libraries, Museums, Churches, Day Care Facilities	65	45
Playgrounds, Parks, Recreation Uses	65	50
Commercial and Office Uses	65	50
Industrial Uses	70	65

Notes:

- ¹ Development proposed within the McClellan-Palomar Airport Area of Influence shall also be subject to the noise compatibility policies contained in the ALUCP.
- ² For non-residential uses, where an outdoor activity area is not proposed, the standard does not apply. Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving use.
- ³ Where it is not possible to reduce noise in outdoor activity areas to the allowable maximum, levels up to 5 dB higher may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.
- ⁴ An exterior noise exposure level of 65 dBA CNEL is allowable for residential uses in a mixed-use project and for residential uses within the McClellan-Palomar Airport Area of Influence, pursuant to the noise compatibility policies contained in the ALUCP.

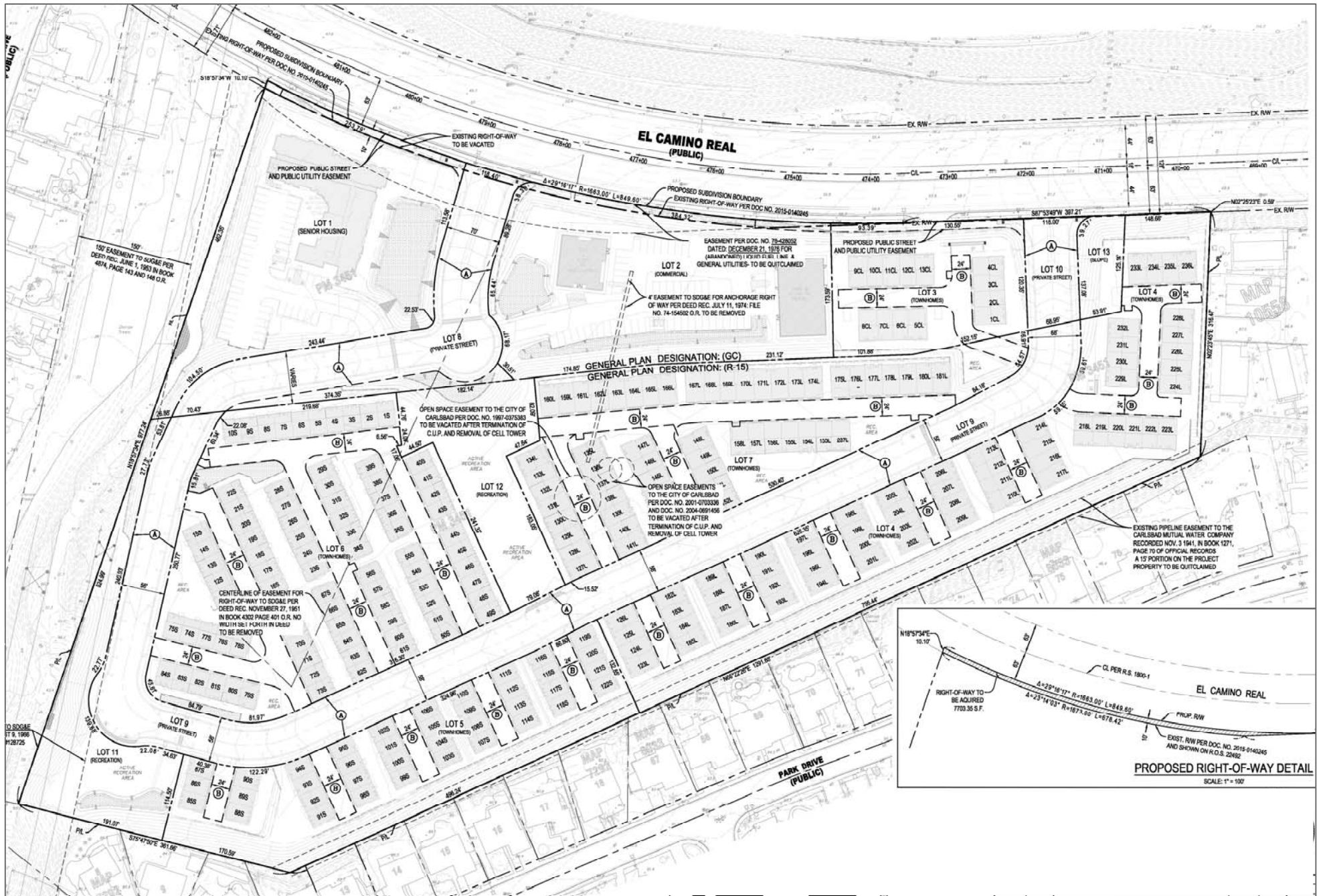
Source: City of Carlsbad 2013, Table 5-2.

Table 3
Performance Standards for Non-Transportation Sources
(As Measured at Property Line of Source/Sensitive Use)

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
Maximum Level, dB	75	65

Note: Each of the noise levels specified above shall be lowered by 5 dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises.

Source: City of Carlsbad 2013, Table 5-3.



SOURCE: HowesWeiler&Associates 2018

DUDEK

0 100 200 Feet

FIGURE 2

Site Plan

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3 EXISTING CONDITIONS

Noise Definitions and Criteria

Sound is mechanical energy transmitted by pressure waves in a compressible medium, such as air. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired. The sound-pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level. The unit of measurement of sound pressure is a decibel (dB). Under controlled conditions in an acoustics laboratory, the trained, healthy human ear is able to discern changes in sound levels of 1 dB when exposed to steady, single-frequency signals in the mid-frequency range. Outside such controlled conditions, the trained ear can detect changes of 2 dB in normal environmental noise. It is widely accepted that the average healthy ear, however, can barely perceive noise level changes of 3 dB. A change of 5 dB is readily perceptible, and a change of 10 dB is perceived as twice or half as loud. A doubling of sound energy results in a 3 dB increase in sound, which means that a doubling of sound energy (e.g., doubling the volume of traffic on a road) would result in a barely perceptible change in sound level.

Since the human ear is not equally sensitive to all sound frequencies within the entire spectrum, noise levels at maximum human sensitivity are factored more heavily into sound descriptions in a process called “A-weighting,” the measurement of which is expressed as dBA. Hourly average noise levels are usually expressed as dBA L_{eq} or the equivalent noise level over that period of time. Therefore, all sound levels discussed in this section are A-weighted. Because community receptors are more sensitive to noise intrusion during the evening and at night, state law requires that an artificial dBA increment be added to quiet-time noise levels in 24-hour noise metrics such as the Community Noise Equivalent Level or CNEL or day-night noise level (L_{dn}).

Existing Conditions

Currently, the site is developed with an existing 12,370-square-foot retail/commercial center that includes a convenience market/liquor store, specialty retail, and a sit-down, high-turnover restaurant. Existing land uses surrounding Marja Acres consist of the Robertson Ranch mixed-use (residential and commercial) development to the north (under construction), existing single-family residential to the west and south, and a mobile home park to the east.

Noise measurements were conducted on and near the project site in December 2017 to characterize the existing noise environment. The daytime, short-term (1 hour or less) attended sound level measurements were taken with a Rion NL-52 sound-level meter. This sound-level meter meets the current American National Standards Institute (ANSI) standard for a Type 1 precision sound-level meter. The calibration of the sound level meter was verified before and after the measurements

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were taken, and the measurements were conducted with the microphone positioned approximately five feet above the ground.

Six noise measurement locations (ST1–ST6) which represent key potential sensitive receptors or sensitive land uses were selected on, adjacent to, or near the project site. The measurement locations are shown in Figure 3 (Noise Measurement and Modeling Locations), and the measured average noise levels and measurement locations are provided in Table 4 (Measured Noise Levels). Noise measurement data is also included in Appendix A. The primary noise sources at the measurement locations consisted of traffic along the adjacent roads and existing construction noise.

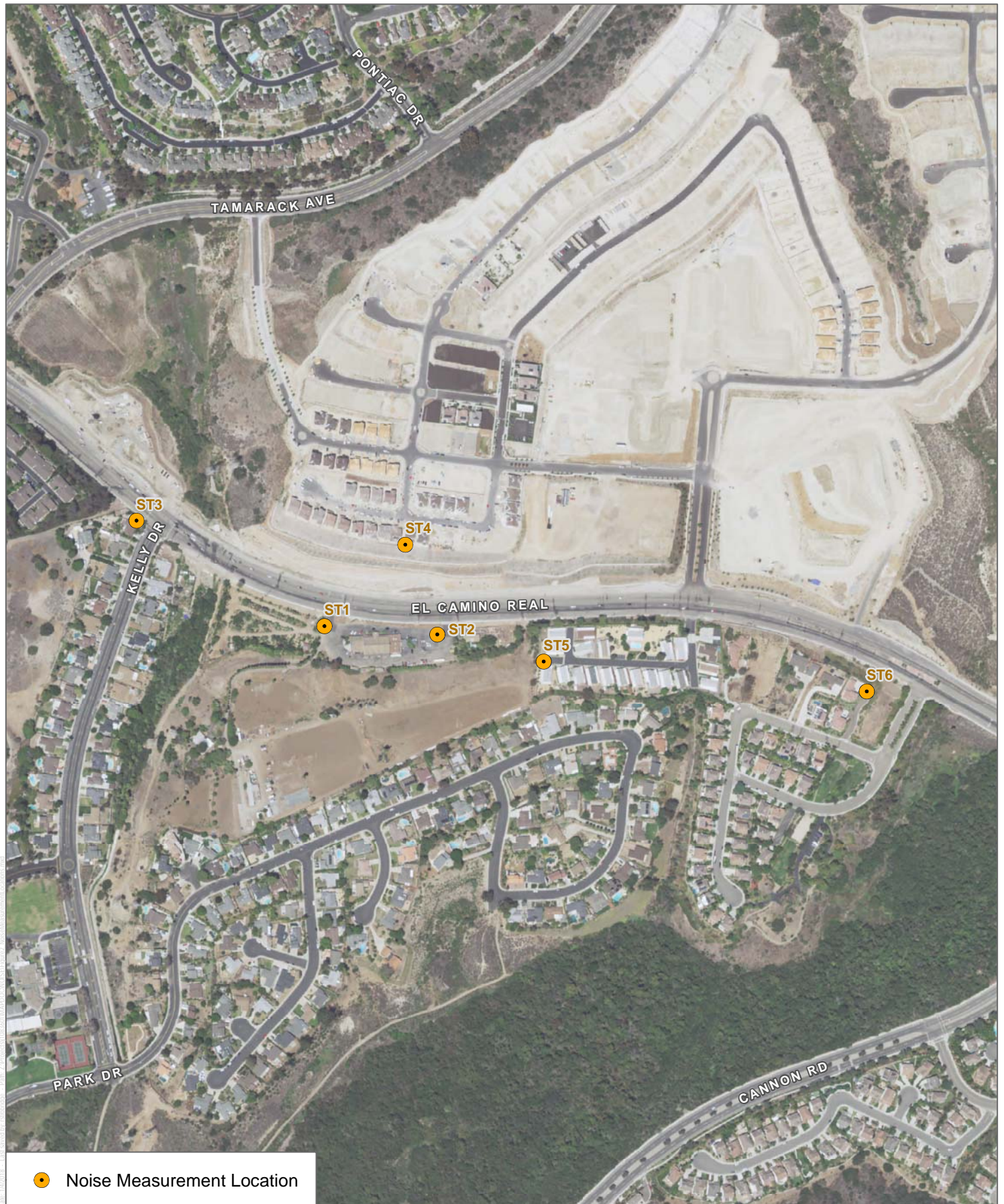
Table 4
Measured Noise Levels

Receptors	Location/Address	Date	Time	Leq ¹ (dBA)	L _{max} ² (dBA)
ST1	100 feet west of Country Wine & Spirits Carlsbad	December 20, 2017	10:19 a.m.–10:29 a.m.	55.6	62.1
ST2	100 feet west of Plant Play	December 20, 2017	10:34 a.m.–10:44 a.m.	59.9	75.9
ST3	4805 Kelly Dr Carlsbad, California 92008	December 20, 2017	10:04 a.m.–10:14 a.m.	61.6	73.9
ST4	Residents south of La Paz Court, Carlsbad.	December 20, 2017	11:04 a.m.–11:14 a.m.	53.6	66.4
ST5	2282 Julie Pl Carlsbad, California 92008	December 20, 2017	10:49 a.m.–10:59 a.m.	51.9	68.5
ST6	4998 Eucalyptus Ln Carlsbad, California 92008	December 20, 2017	11:34 a.m.–11:44 a.m.	58.7	64.6

Notes:

¹ Equivalent Continuous Sound Level (Time-Average Sound Level)

² Maximum noise level



SOURCE: USDA NAIP Imagery (2016); SANGIS

FIGURE 3

Noise Measurement Locations

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4 THRESHOLDS OF SIGNIFICANCE

The following significance criteria are based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines (14 CCR 15000 et seq.) and will be used to determine the significance of potential noise impacts. Impacts to noise would be significant if the proposed project would:

- A. Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies
- B. Expose persons to or generate excessive groundborne vibration or groundborne noise levels
- C. Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project
- D. Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project
- E. Expose people residing or working in the project area to excessive noise levels (for a project located within an airport land use plan, or where such a plan has not been adopted, within 2 miles of a public airport or public use airport)
- F. Expose people residing or working in the project area to excessive noise levels (for a project within the vicinity of a private airstrip)

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5 IMPACT DISCUSSION

A. Would the project expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less Than Significant Impact with Mitigation Provided. Implementation of the proposed project would result in two primary types of potential noise impacts: short-term (i.e., temporary) noise during construction, and long-term noise during operation of the residential project.

Short-Term Construction Noise

The construction activities for the proposed project would include demolition of existing structures, clearing and grubbing, mass excavation of soils, utilizes installation, grading and trenching of the project site, building construction, paving, and application of architectural coatings. Noise impacts from construction activities associated with the proposed project would be a function of the noise generated by construction equipment, locations of equipment and of nearby land uses, and the timing and duration of the construction activities. The nearest sensitive receptors to the project site are single-family homes located to the east of the project site. Other residential land uses are located slightly further to the north, west and south of the project site.

Construction noise is difficult to quantify because of the many variables involved, including the specific equipment types, size of equipment used, percentage of time, condition of each piece of equipment, and number of pieces of equipment that will actually operate on site. The range of maximum noise levels for various types of construction equipment at a distance of 50 feet is depicted in Table 5 (Construction Equipment Noise Levels). The noise values represent maximum noise generation, or full-power operation of the equipment. As an example, a loader and two dozers, all operating at full power and relatively close together, would generate a maximum sound level of approximately 90 A-weighted decibels (dBA) at 50 feet from their operations. As one increases the distance between equipment, and/or the separation of areas with simultaneous construction activity, dispersion and distance attenuation reduce the effects of separation noise sources added together. In addition, typical operating cycles may involve two minutes of full-power operation, followed by three or four minutes at lower levels. The average noise level during construction activity is generally lower, since maximum noise generation may only occur up to 50% of the time. Noise levels from construction operations decrease at a rate of approximately 6 dBA per doubling of distance from the source.

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**Table 5
Construction Equipment Noise Emission Levels**

Equipment	Typical Sound Level (dBA) 50 Feet from Source
Roller	74
Concrete vibrator	76
Pump	76
Saw	76
Backhoe	80
Air compressor	81
Generator	81
Compactor	82
Concrete pump	82
Crane, mobile	83
Concrete mixer	85
Dozer	85
Grader	85
Impact wrench	85
Loader	85
Pneumatic tool	85
Jackhammer	88
Truck	88
Paver	89

Source: DOT 2006

The nearest point of major construction activities (i.e., excavation, utilities work, building construction) to the closest noise-sensitive receivers (single-family residences located to the east) would be approximately 50 feet and the furthest would be approximately 1,200 feet. The nearest noise-sensitive receivers are located approximately 250 feet away from the acoustic center of major construction activity (the idealized point from which the energy sum of all construction activity noise near and far would be centered). Thus, the distance to the nearest major construction activities would be approximately 50 feet, but construction would typically occur approximately 250 feet or more away from the closest noise-sensitive receivers. The Federal Highway Administration's Roadway Construction Noise Model (RCNM) (FHWA 2008) was used to estimate construction noise levels at these noise-sensitive land uses. Although the model was funded and promulgated by the FHWA, the RCNM is often used for non-roadway projects, because the same types of construction equipment used for roadway projects are also used for other project types. Input variables for the RCNM consist of the receiver/land use types, the equipment type and number of each (e.g., two graders, a loader, a tractor), the duty cycle for each piece of equipment (e.g., percentage of hours the equipment typically works per day), and the distance from the noise-sensitive receiver. No topographical or structural shielding was assumed in the modeling of construction

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noise. The noise levels from the proposed construction activities are summarized in Table 6 (Construction Noise Model Results Summary). The complete set of RCNM input and output data for construction noise is provided in Appendix B. As shown, at the nearest residences, noise levels would range from approximately 63 to 84 dBA L_{eq} when construction would take place at or near the project boundary. More typical construction noise levels at the adjacent residences would range from approximately 54 to 72 dBA L_{eq} .

**Table 6
Construction Noise Model Results Summary**

Construction Phase	Construction Noise at Representative Receiver Distances (L_{eq} (dBA))	
	Nearest Construction Work	Typical Construction Work
Demo Structures and Improvements	69	61
Haul Off Demo Debris	63	55
Clear and Grub	83	68
Remedial and Mass Excavation	84	72
Export Excavation	78	67
Wet Utilities	82	70
Dry Utilities	78	68
Street Improvements – Balancing, Aggregate	76	64
Street Improvements – Curb and Gutter	67	55
Street Improvements – Asphalt Paving	75	63
Street Improvements – Concrete Flatwork	69	57
Building Construction – 1	76	64
Building Construction – 2	68	54
Building Construction – 3	68	54
Architectural Coatings	77	65

Notes: dBA = A-weighted decibels; L_{eq} = equivalent sound level; n/a – not applicable to this phase.

The City regulates construction noise by restricting the allowable hours of construction. Construction can occur Monday through Friday from 7:00 a.m. to 6:00 p.m. and Saturday 8:00 a.m. to 6:00 p.m.; no work shall be conducted on Sundays or on federal holidays. Through adherence to the limitation of allowable construction times, as well as the implementation of Applicant-Proposed Measures (APM-NOI-1 and APM-NOI-2), as detailed in Section 6 below, construction-related noise levels would not exceed any standards and would not be substantially higher than existing ambient daytime noise levels (as shown in Table 4). Therefore, temporary construction-related noise impacts would be **less than significant**. No mitigation is required.

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Long-Term Operational Noise

The proposed project would result in the creation of additional vehicle trips on local arterial roadways (i.e., El Camino Real), which could result in increased traffic noise levels at adjacent noise-sensitive land uses. Additionally, the proposed senior apartment housing units and townhomes would be adjacent to or otherwise exposed to noise from traffic on El Camino Real, which could result in noise levels in excess of City standards. The proposed senior apartment housing units, and both types of townhome products (large and small) are proposed to have balconies and/or patios with a direct exposure of El Camino Real. Additionally, some of the large townhomes are proposed to have optional rooftop decks. These private exterior use areas could have traffic noise exposures in excess of applicable City standards. The outdoor common recreational areas could similarly exceed City standards for exterior use areas. In addition, the interior residential uses could be exposed to traffic noise levels exceeding City and state noise standards for habitable rooms (45 dBA CNEL). In addition to potential traffic noise impacts, noise from on-site heating, ventilation and air conditioning (HVAC) equipment has the potential to exceed applicable noise standards.

Off-Site Traffic Noise. Potential noise effects from vehicular traffic were assessed using the Federal Highway Administration's Traffic Noise Model (TNM) version 2.5 (FHWA 2004). Information used in the model included the site geometry, existing, existing plus project, existing plus cumulative, and existing plus cumulative plus project traffic volumes (provided in the project's Traffic Impact Analysis (Linscott, Law & Greenspan 2018) and posted traffic speeds. Noise levels were modeled at representative noise-sensitive receivers ST3 through ST6, as shown in Figure 3. The receivers were modeled to be five feet above the local ground elevation. The noise model results are summarized in Table 7 (Traffic Noise Modeling Results). The input and output files for the project are provided in Appendix C. The City does not have a specific noise criterion for evaluating off-site noise impacts to residences or noise-sensitive areas from project-related traffic. For the purposes of this noise analysis, such impacts are considered significant when they cause an increase of five dB from existing noise levels or cause an exceedance of the 60 dBA CNEL noise threshold. An increase or decrease in noise level of at least five dB is required before any noticeable change in community response would be expected (Caltrans 2013a).

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**Table 7
Off-Site Traffic Noise Modeling Results**

Modeled Receiver # – Description	Existing Noise Level (dBA CNEL)	Existing with Project Noise Level (dBA CNEL)	Existing plus Cumulative without Project Noise Level (dBA CNEL)	Existing plus Cumulative plus Project Noise Level (dBA CNEL)	Maximum Noise Level Increase (dB)
ST3 – Off-Site Residential	63	63	63	63	0
ST4– Off-Site Residential	54	54	54	54	0
ST5– Off-Site Residential	55	53	56	54	-2
ST6– Off-Site Residential	60	60	60	60	0

Table 7 (Off-Site Traffic Noise Modeling Results) shows that the maximum noise level increase would be 0 dB (when rounded to whole numbers). There would be no measurable or audible change, and the impact is, therefore, less than significant. At ST5, the predicted noise levels would decrease with the proposed project. This is because of the acoustical shielding provided from traffic noise at this location by the intervening project structures to the west. Based upon these results, off-site traffic noise impacts would be **less than significant**. No mitigation is required.

On-Site Traffic Noise. As discussed above, the proposed residences located within the portion of the project site designated as “Commercial Zone” is considered mixed-use and is subject to the noise standard for mixed-use residential of 65 dBA CNEL. The remainder of the residences and associated exterior uses are subject to the noise standard of 60 dBA CNEL. On-site traffic noise with the proposed project was assessed using the TNM noise model. The modeled on-site receiver locations (shown in Figure 4) consisted of the proposed common recreation areas, the three levels of the project’s exterior residential structures (consisting of senior apartment housing units and townhomes), and the optional rooftop decks which are proposed for some of the large townhomes. The results of the noise analysis for traffic noise levels at proposed on-site receivers is provided in Table 8 (On-Site Existing plus Cumulative plus Project Traffic Noise Modeling Results).

**Table 8
On-Site Existing plus Cumulative plus Project Traffic Noise Modeling Results**

Modeled Receiver # – Description	Applicable Exterior Noise Standard (60 dBA CNEL or 65 dBA CNEL)	Traffic Noise Level (dBA CNEL)			
		1st Level	2nd Level	3rd Level	Rooftop Deck
M1 - Common Rec Area 1	65	54	n/a	n/a	n/a
M2 - Common Rec Area 2	65	48	n/a	n/a	n/a
M3 - Common Rec Area 3	65	49	n/a	n/a	n/a

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Table 8
On-Site Existing plus Cumulative plus Project Traffic Noise Modeling Results

Modeled Receiver # – Description	Applicable Exterior Noise Standard (60 dBA CNEL or 65 dBA CNEL)	Traffic Noise Level (dBA CNEL)			
		1st Level	2nd Level	3rd Level	Rooftop Deck
M4 - Common Rec Area 4	65	51	n/a	n/a	n/a
M5 - Common Rec Area 5	65	49	n/a	n/a	n/a
M6 - Common Rec Area 6	65	50	n/a	n/a	n/a
M7 - Common Rec Area 7	65	58	n/a	n/a	n/a
M8 - Senior Apartment Housing	65	70	71	70	n/a
M9 - Senior Apartment Housing	65	70	71	71	n/a
M10 - Senior Apartment Housing	65	70	71	71	n/a
M11 - Senior Apartment Housing	65	65	65	66	n/a
M12 - Senior Apartment Housing	65	63	64	65	n/a
M13 - Senior Apartment Housing	65	61	62	63	n/a
M14 - Senior Apartment Housing	65	40	42	46	n/a
M15 - Senior Apartment Housing	65	35	39	40	n/a
M16 - Senior Apartment Housing	65	39	41	44	n/a
M17 - Senior Apartment Housing	65	58	59	59	n/a
M18 - Small Townhomes	65	70	71	71	n/a
M19 - Small Townhomes	65	70	71	71	n/a
M20 - Small Townhomes	65	70	71	71	n/a
M21 Small Townhomes	65	70	71	71	n/a
M22 Small Townhomes	65	66	67	67	n/a
M23 Small Townhomes	65	65	65	66	n/a
M24 Small Townhomes	65	63	64	65	n/a
M25 Small Townhomes	65	n/a	58	59	n/a
M26 Small Townhomes	65	n/a	60	61	n/a
M27 Small Townhomes	65	42	45	46	n/a
M28 Small Townhomes	65	38	42	44	n/a
M29 Large Townhomes	60	66	67	67	n/a
M30 Large Townhomes	60	70	71	71	n/a
M31 Large Townhomes	60	70	70	71	n/a
M32 Large Townhomes	60	n/a	55	56	n/a
M33 Rooftop Deck	60	n/a	n/a	n/a	70
M34 Large Townhomes	60	63	65	65	n/a
M35 Large Townhomes	60	n/a	56	56	n/a
M36 Large Townhomes	60	61	62	62	n/a
M37 Rooftop Deck	60	n/a	n/a	n/a	65
M38 Large Townhomes	60	n/a	60	65	n/a
M39 Large Townhomes	60	57	57	60	n/a
M40 Rooftop Deck	60	n/a	n/a	n/a	63

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Table 8
On-Site Existing plus Cumulative plus Project Traffic Noise Modeling Results

Modeled Receiver # – Description	Applicable Exterior Noise Standard (60 dBA CNEL or 65 dBA CNEL)	Traffic Noise Level (dBA CNEL)			
		1st Level	2nd Level	3rd Level	Rooftop Deck
M41 Large Townhomes	60	n/a	59	60	n/a
M42 Large Townhomes	60	41	45	46	n/a
M43 Rooftop Deck	60	n/a	n/a	n/a	60
M44 Large Townhomes	60	52	53	56	n/a
M45 Large Townhomes	60	44	50	57	n/a
M46 Large Townhomes	60	56	58	61	n/a
M47 Large Townhomes	60	56	63	63	n/a
M48 Large Townhomes	60	n/a	49	49	n/a
M49 Rooftop Deck	60	n/a	n/a	n/a	61
M50 Rooftop Deck	60	n/a	n/a	n/a	63
M51 Rooftop Deck	60	n/a	n/a	n/a	64
M52 Large Townhomes	60	57	61	63	n/a
M53 Large Townhomes	60	58	60	62	n/a
M54 Large Townhomes	60	n/a	38	41	n/a
M55 Rooftop Deck	60	n/a	n/a	n/a	63
M56 Rooftop Deck	60	n/a	n/a	n/a	63
M57 Small Townhomes	60	58	59	60	n/a
M58 Small Townhomes	60	59	59	60	n/a
M59 Small Townhomes	60	57	58	59	n/a
M60 Small Townhomes	60	n/a	42	49	n/a
M61 Large Townhomes	60	n/a	42	43	n/a
M62 Large Townhomes	60	n/a	38	41	n/a
M63 Large Townhomes	60	50	50	50	n/a
M64 Rooftop Deck	60	n/a	n/a	n/a	52
M65 Large Townhomes	60	45	45	45	n/a
M66 Large Townhomes	60	40	40	42	n/a
M67 Large Townhomes	60	44	44	45	n/a
M68 Large Townhomes	60	46	46	47	n/a
M69 Rooftop Deck	60	n/a	n/a	n/a	53
M70 Large Townhomes	60	n/a	38	41	n/a
M71 Large Townhomes	60	36	37	40	n/a
M72 Large Townhomes	60	38	38	40	n/a
M73 Rooftop Deck	60	n/a	n/a	n/a	53
M74 Large Townhomes	60	36	37	41	n/a
M75 Large Townhomes	60	37	37	40	n/a
M76 Large Townhomes	60	42	42	43	n/a
M77 Large Townhomes	60	n/a	45	48	n/a

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Table 8
On-Site Existing plus Cumulative plus Project Traffic Noise Modeling Results

Modeled Receiver # – Description	Applicable Exterior Noise Standard (60 dBA CNEL or 65 dBA CNEL)	Traffic Noise Level (dBA CNEL)			
		1st Level	2nd Level	3rd Level	Rooftop Deck
M78 Large Townhomes	60	n/a	45	46	n/a
M79 Rooftop Deck	60	n/a	n/a	n/a	52
M80 Large Townhomes	60	n/a	54	55	n/a
M81 Large Townhomes	60	54	55	56	n/a
M82 Rooftop Deck	60	n/a	n/a	n/a	58
M83 Small Townhomes	60	55	57	57	n/a
M84 Small Townhomes	60	50	55	55	n/a
M85 Small Townhomes	60	46	52	54	n/a
M86 Small Townhomes	60	n/a	53	54	n/a
M87 Small Townhomes	60	34	37	39	n/a
M88 Small Townhomes	60	40	45	46	n/a
M89 Small Townhomes	60	42	42	43	n/a
M90 Small Townhomes	60	41	45	46	n/a
M91 Small Townhomes	60	51	55	55	n/a
M92 Small Townhomes	60	49	52	53	n/a
M93 Small Townhomes	60	49	52	53	n/a
M94 Large Townhomes	60	59	60	60	n/a
M95 Rooftop Deck	60	n/a	n/a	n/a	61
M96 Large Townhomes	60	n/a	59	59	n/a
M97 Large Townhomes	60	n/a	53	54	n/a
M98 Large Townhomes	60	49	50	51	n/a
M99 Rooftop Deck	60	n/a	n/a	n/a	60
M100 Large Townhomes	60	55	57	57	n/a
M101 Large Townhomes	60	n/a	49	49	n/a
M102 Large Townhomes	60	n/a	54	55	n/a
M103 Rooftop Deck	60	n/a	n/a	n/a	57
M104 Large Townhomes	60	50	50	50	n/a
M105 Rooftop Deck	60	n/a	n/a	n/a	54
M106 Large Townhomes	60	52	51	51	n/a
M107 Large Townhomes	60	51	50	50	n/a
M108 Rooftop Deck	60	n/a	n/a	n/a	51
M109 Large Townhomes	60	48	48	47	n/a
M110 Large Townhomes	60	49	50	50	n/a
M111 Rooftop Deck	60	n/a	n/a	n/a	51
M112 Small Townhomes	60	49	50	50	n/a
M113 Small Townhomes	60	49	49	49	n/a
M114 - Small Townhomes	60	51	51	51	n/a

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Table 8
On-Site Existing plus Cumulative plus Project Traffic Noise Modeling Results

Modeled Receiver # – Description	Applicable Exterior Noise Standard (60 dBA CNEL or 65 dBA CNEL)	Traffic Noise Level (dBA CNEL)			
		1st Level	2nd Level	3rd Level	Rooftop Deck
M115 - Small Townhomes	60	51	51	51	n/a
M116 - Small Townhomes	60	50	50	50	n/a
M117 - Small Townhomes	60	49	49	51	n/a

Bolded numbers represent interior receiver locations exceeding 60 dBA CNEL; these guest rooms will require subsequent interior noise analysis to verify compliance with the 45 dBA CNEL noise standard for habitable rooms.

Shaded numbers represent residential receiver locations with planned balconies, optional rooftop decks or patios with an exposure to El Camino Real exceeding 65 dBA CNEL in the portions of the project site designated as “commercial zone,” or 60 dBA CNEL in the portions of the project site designated “residential zone,” these locations will require noise barriers to comply with the applicable noise standard (65 / 60 dBA CNEL) for outdoor areas.

n/a – Not applicable. Balconies/patios/rooftop decks not proposed at this location, or 1st-floor exposure is a garage, not a habitable room.

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As shown in Table 8, the results of the noise modeling indicate that on-site noise levels would range from approximately 34 dBA CNEL (at receiver M87) to approximately 71 dBA CNEL (at receivers M8 - M10, M18 - M21, M30 and M31). At the proposed exterior common recreation areas (receivers M1–M7) noise levels are estimated to range from approximately 48 to 58 dBA CNEL, and thus would not exceed City noise standards.

At the senior apartment housing and townhome façade locations, exterior noise levels would generally exceed the applicable City noise standards for exterior use areas along the first, second and third rows with an unobstructed exposure to El Camino Real. If usable private outdoor areas (i.e., patios, balconies or rooftop decks) are constructed at these locations, a noise-attenuating barrier would be required to comply with the City’s exterior noise standard of 65 dBA CNEL for the commercial zone or 60 dBA CNEL for the residential zone (as denoted by shading in Table 8 and as shown in Figure 5). Similarly, for many of the rooftop deck locations, the City’s 60 dBA CNEL exterior noise standard would be exceeded. This would be considered a **potentially significant noise impact**. In order to achieve the desired noise reduction (a minimum of 1 dB to 2 dB reduction up to approximately 11 dB, at receivers M30 and M31) noise barriers with a minimum height of 5 feet and a maximum height of 7 feet¹ would be constructed along the lengths of the patio or balcony areas. The noise barriers may be constructed of a material such as tempered glass, acrylic glass (or similar material), masonry material, or manufactured lumber (or a combination of these) with a surface density of at least three pounds per square foot. The noise barriers should have no openings or cracks. With the implementation of mitigation measure MM-NOI-1, as detailed in Section 6, the resultant noise levels would meet the City’s noise standard of 65 dBA CNEL for the commercial zone or 60 dBA CNEL for the residential zone, as shown in Table 9. Thus, impacts would be **less than significant with mitigation incorporated**.

Table 9
On-Site Existing plus Cumulative plus Project Traffic Noise Modeling Results - with Noise Barriers

Modeled Receiver # – Description	Applicable Exterior Noise Standard (60 dBA CNEL or 65 dBA CNEL)	Traffic Noise Level (dBA CNEL)			
		1st Level	2nd Level	3rd Level	Rooftop Deck
M8 - Senior Apartment Housing	65	62	61	59	n/a
M9 - Senior Apartment Housing	65	62	61	60	n/a

¹ Based upon the relative distances and elevations of the receivers, noise sources and intervening barrier, shielding attenuation calculations (Beranek 1971) were performed. The input and output sheets for these calculations are provided in Appendix D.

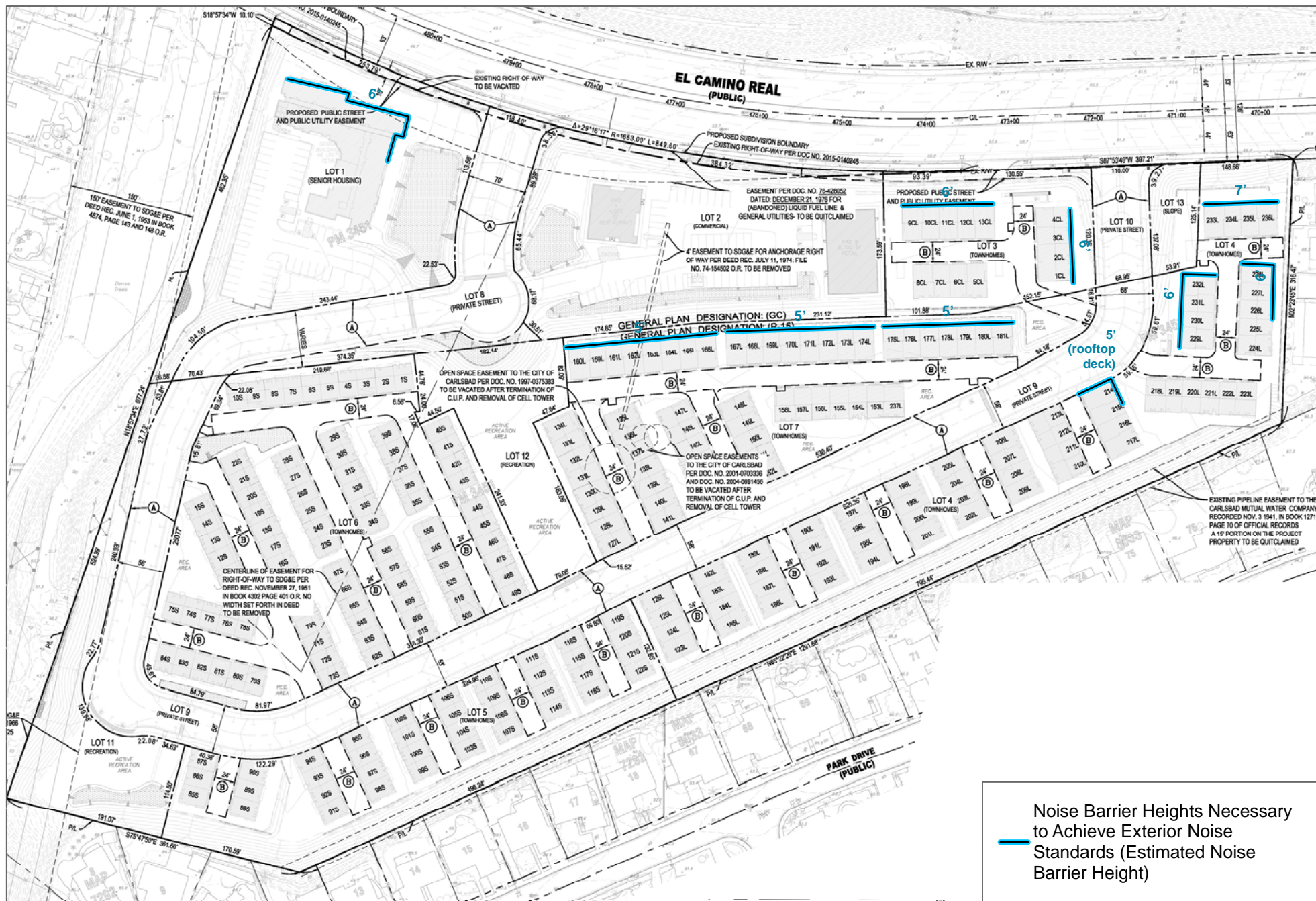
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Table 9
On-Site Existing plus Cumulative plus Project Traffic Noise Modeling Results - with Noise Barriers

Modeled Receiver # – Description	Applicable Exterior Noise Standard (60 dBA CNEL or 65 dBA CNEL)	Traffic Noise Level (dBA CNEL)			
		1st Level	2nd Level	3rd Level	Rooftop Deck
M10 - Senior Apartment Housing	65	62	61	60	n/a
M11 - Senior Apartment Housing	65	n/a	n/a	55	n/a
M18 - Small Townhomes	65	61	61	61	n/a
M19 - Small Townhomes	65	60	61	61	n/a
M20 - Small Townhomes	65	62	62	61	n/a
M21 Small Townhomes	65	62	62	61	n/a
M22 Small Townhomes	65	58	57	57	n/a
M23 Small Townhomes	65	n/a	n/a	57	n/a
M29 Large Townhomes	60	56	55	55	n/a
M30 Large Townhomes	60	60	59	59	n/a
M31 Large Townhomes	60	60	59	59	n/a
M33 Rooftop Deck	60	n/a	n/a	n/a	56
M34 Large Townhomes	60	56	57	56	n/a
M36 Large Townhomes	60	54	54	53	n/a
M37 Rooftop Deck	60	n/a	n/a	n/a	55
M38 Large Townhomes	60	n/a	n/a	56	n/a
M40 Rooftop Deck	60	n/a	n/a	n/a	53
M46 Large Townhomes	60	n/a	n/a	55	n/a
M47 Large Townhomes	60	n/a	57	57	n/a
M49 Rooftop Deck	60	n/a	n/a	n/a	55
M50 Rooftop Deck	60	n/a	n/a	n/a	57
M51 Rooftop Deck	60	n/a	n/a	n/a	58
M52 Large Townhomes	60	n/a	56	57	n/a
M53 Large Townhomes	60	n/a	n/a	56	n/a
M55 Rooftop Deck	60	n/a	n/a	n/a	57
M56 Rooftop Deck	60	n/a	n/a	n/a	57
M95 Rooftop Deck	60	n/a	n/a	n/a	55

n/a – Not applicable. No noise barrier necessary or proposed at this location.



SOURCE: HowesWeiler&Associates 2018

DUDEK



FIGURE 5

Noise Barrier Heights Necessary to Achieve Exterior Noise Standards

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On-Site Interior Traffic Noise. The City and State require that interior noise levels not exceed a CNEL or L_{dn} of 45 dBA within the habitable rooms of residences. Typically, with the windows open, building shells provide approximately 15 dB of noise reduction. Therefore, rooms exposed to an exterior CNEL greater than 60 dBA could result in an interior CNEL greater than 45 dB. The State Building Code recognizes this relationship and, therefore, requires interior noise studies when the exterior noise level is projected to exceed 60 dBA CNEL or L_{dn} .

The data shown in Table 8 indicate that the future noise levels would range up to 71 dBA CNEL at the north- and northeast-facing sides of the senior apartment housing units and townhomes with a view of El Camino Real. Thus, the unmitigated interior noise level within the habitable rooms of these locations (as shown in Figure 6 and denoted by bolded numbers in Table 8) would exceed the 45 dBA CNEL noise criterion. Detailed project plans have not yet been created, and thus are not available for review. As a Mitigation Measure, a subsequent interior noise analysis will be required for these units. With the implementation of mitigation measure MM-NOI-2 as detailed in Section 6, the resultant interior noise levels would meet the State and City interior noise standard of 45 dBA CNEL/ L_{dn} , and thus, impacts would be **less than significant** with mitigation incorporated.

On-Site Mechanical Noise. Mechanical noise from HVAC equipment would occur as a result of the proposed project. The details regarding the specific locations, quantity or make/model of HVAC equipment have not yet been developed and thus are not available for analysis. Based upon information provided by the applicant, the residential structures will have HVAC systems located at ground-floor level, and the commercial structures will likely have roof-mounted systems. The noise levels generated by HVAC equipment vary, but typically range from approximately 50 dBA to 65 dBA at a distance of 50 feet (City of Santa Ana 2010). For a single point source such as a piece of mechanical equipment, the sound level normally decreases by about 6 dBA for each doubling of distance from the source. The HVAC noise levels have the potential to exceed the City of Carlsbad noise standard for stationary source noise at residential uses (55 dBA Leq from 7 a.m. to 10 p.m., 45 dBA Leq from 10 p.m. to 7 a.m.) at the nearest existing noise-sensitive receivers. In accordance with mitigation measure MM-NOI-3 as detailed in Section 6, a subsequent acoustical analysis will be required prior to approval of final occupancy permits, ensuring that noise from HVAC equipment is in compliance with the City of Carlsbad Municipal Code noise standards.

On-Site Roof-Top Deck Noise. Potential noise impacts at adjacent existing residential land uses from the proposed rooftop decks (shown in Figure 7) were assessed, using conservative estimates and assumptions regarding the usage of the decks and standard acoustical calculations for noise propagation, insertion loss (the reduction of noise from shielding by building structures, terrain or other noise barriers) and the addition of noise sources.

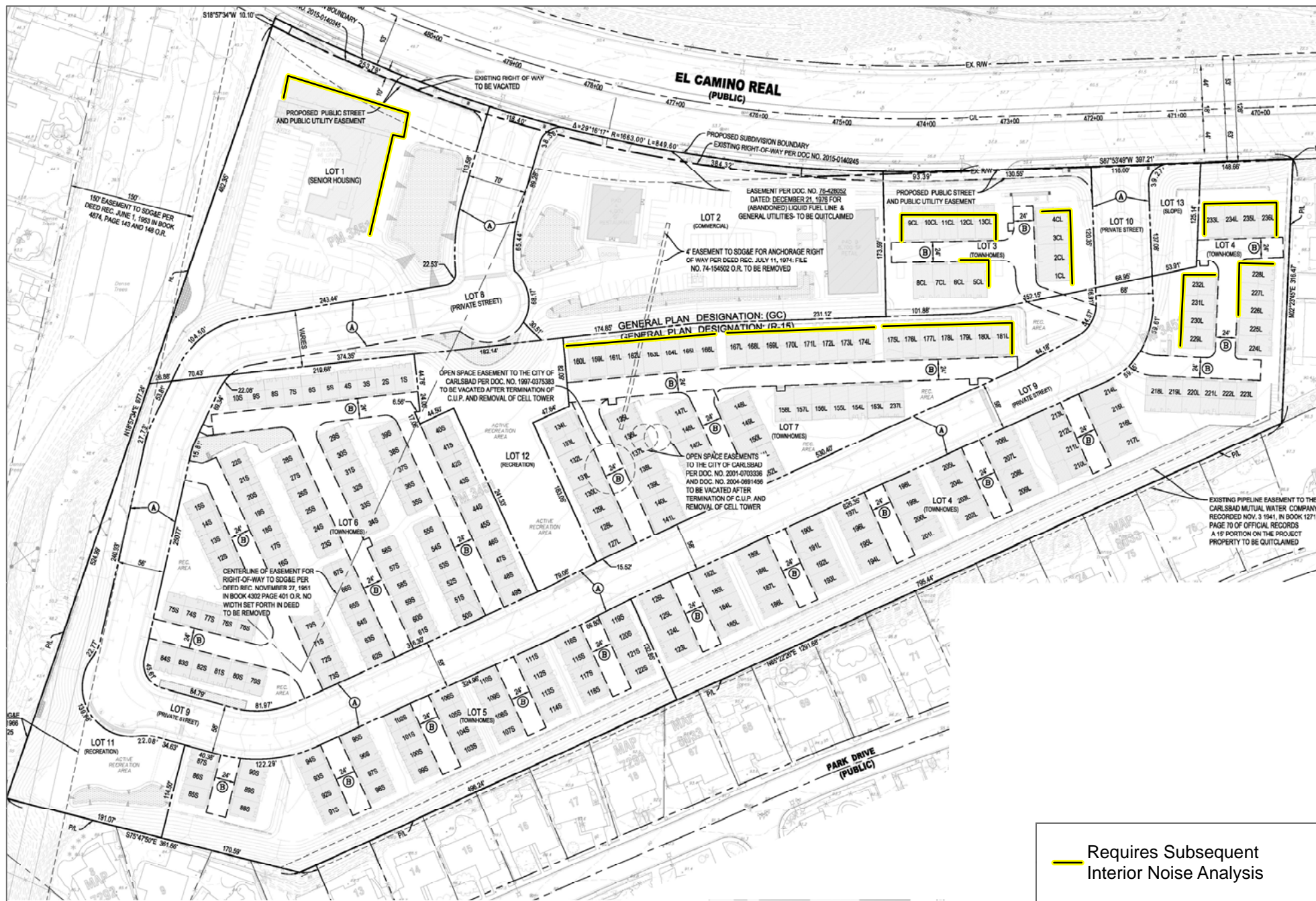
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It was assumed based upon observations of similar residential designs and community behavior that of the 117 proposed rooftop decks, a maximum of 20% would be occupied at any one time. This equates to 24 occupied decks. It was also assumed that because the maximum occupancy of the rooftop decks would be 10 persons, a very conservative average of 8 persons would be using each of the occupied decks. Of the 8 persons per deck, it was further assumed that 50 percent (i.e., 4 persons) would be speaking with a raised voice, and that this would be continuous throughout a full one-hour period of time. Generally, a random distribution of the occupied decks would take place, but to be conservative it was assumed that 2 -3 of the decks nearest the nearest off-site residences is occupied. The rest would be distributed around the site (the portion of the site with decks).

Amplified music would be limited to a reasonable level - specifically, the volume of amplified music permitted would be limited to below a level that would be readily audible at adjacent units. This would be codified in the Codes, Covenants and Restrictions (CC&Rs). It was conservatively assumed that this would be equivalent to 2 persons speaking with a raised voice, continually. Additionally, readily audible noise generated on the rooftop deck would not be permitted after 10 p.m. This would also be codified in the CC&Rs. Thus, the applicable noise standard would be the non-transportation noise source threshold for daytime (7 A.M. to 10 P.M) noise from Table 5-3 of the City of Carlsbad's General Plan Noise Element, provided in this report as Table 3. As shown in Table 3, the daytime noise standard is 55 dBA L_{eq} , which is reduced by 5 dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. Because the rooftop deck noise would consist primarily of speech or music, the applicable standard for the purposes of this analysis would be 50 dBA L_{eq} .

The results of the rooftop decks activities noise analysis are summarized in Table 10, and the detailed calculation spreadsheet is contained in Appendix E. As shown in Table 10, the estimated noise levels from rooftop deck activities would be approximately 43 dBA L_{eq} at the residential property line to the east, and approximately 44 dBA L_{eq} at the residential property line to the south. It should be noted that the direct line-of-sight between the existing residential land uses and the proposed rooftop decks would be interrupted in most cases by the proposed building structures. This is because the elevations of the rooftop decks would be higher than the surrounding existing residences, and in most cases the rooftop decks would be set back from the sides of the proposed buildings facing the east and south. This structural shielding was accounted for in the analysis, and is included in Appendix E. In the instance of the two proposed rooftop decks in the southeastern corner of the project (Units 222L and 223L), the rooftop decks would not be set back from the edge of the buildings facing south and east. Thus, unless noise mitigation is provided, the noise level at the southeasterly property line would exceed 50 dBA L_{eq} . As shown in Table 10 however, with noise mitigation in the form of 5-foot high noise barriers (as detailed in mitigation measure MM NOI-4), the resultant noise level from rooftop deck activities would be reduced to approximately 46 dBA L_{eq} .



— Requires Subsequent Interior Noise Analysis

SOURCE: DUDEK 2018

DUDEK

0 100 200 Feet

FIGURE 6

Units Requiring Subsequent Interior Noise Analysis

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SOURCE: ktgy 2018

DUDEK

FIGURE 7

Rooftop Deck Locations

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With the project as-designed and with implementation of MM NOI-4, the rooftop deck noise would range from approximately 43 to 46 dBA L_{eq} . The noise levels would not exceed the City of Carlsbad noise standard for non-transportation noise consisting largely human speech or music. Furthermore, the estimated noise levels would be well below the measured ambient noise levels shown in Table 4, which ranged from 52 to 62 dBA L_{eq} ; at measurement location ST5, representative of the residences immediately to the east of the project site, the measured noise level was 52 dBA L_{eq} . As Table 10 shows, when combined with the existing ambient noise levels the noise from the rooftop deck noise would result in an increase of 0 to 1 dB above the existing ambient noise level. In the context of community noise, a change in noise level of 1 dBA or less is considered to be inaudible; a change of 3 dBA or less is considered barely perceptible, while an increase of 5 dBA is considered to be readily perceptible. Thus, the project's rooftop deck noise is not anticipated to be readily audible, would not result in a significant noise increase above existing levels, nor would the onsite noise exceed the City's 50 dBA noise standard. The noise from rooftop deck noise would be **less than significant**.

**Table 10
Rooftop Deck Activities Noise Data Summary**

Receiver Description	Total Rooftop Deck Noise Level (dBA L_{eq})	Applicable Daytime Standard ¹ (50 dBA L_{eq}) Exceeded?	Measured Existing Ambient Noise Level (ST5) (dBA L_{eq})	Combined Rooftop Deck Noise plus Existing Ambient (dBA L_{eq})	Resultant Increase above Existing Ambient Noise Level (dBA)	Significant Increase ?
1. Nearest Residential property line (east of project site)	43	No	52	52	0	No
2. 2nd Nearest Residential property line (south of project site)	44	No	52	53	1	No
3. SE Corner Residential property line (southeast of project site)	54	Yes	52	n/a	n/a	n/a

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**Table 10
Rooftop Deck Activities Noise Data Summary**

Receiver Description	Total Rooftop Deck Noise Level (dBA Leq)	Applicable Daytime Standard ¹ (50 dBA Leq) Exceeded?	Measured Existing Ambient Noise Level (ST5) (dBA Leq)	Combined Rooftop Deck Noise plus Existing Ambient (dBA Leq)	Resultant Increase above Existing Ambient Noise Level (dBA)	Significant Increase ?
4. SE Corner Residential property line (southeast of project site) - with 5' high barriers north, south and east	46	No	52	53	1	No

¹ City of Carlsbad daytime standard of 55 dBA Leq, adjusted downward by 5 dBA because rooftop deck noise would consist of human speech and/or music.

n/a – not applicable; the rooftop decks in the southeast corner would be constructed with noise barriers as detailed in MM NOI-4. The resulting mitigated noise level is shown below (Receiver Description 4)

B. Would the project expose persons to or generate excessive groundborne vibration or groundborne noise levels?

Less Than Significant Impact. Construction activities that might expose persons to excessive groundborne vibration or groundborne noise could cause a potentially significant impact. Groundborne vibration information related to construction activities has been collected by Caltrans (Caltrans 2013b). Information from Caltrans indicates that transient vibrations (such as construction activity) with a peak particle velocity (PPV) of approximately 0.035 inch per second may be characterized as barely perceptible, and vibration levels of 0.24 inch per second PPV may be characterized as distinctly perceptible.

Groundborne vibration is typically attenuated over short distances. The heavier pieces of construction equipment, such as bulldozers, would have peak particle velocities of approximately 0.089 inch per second or less at a distance of 25 feet (DOT 2006). At the distance from the nearest residence to major construction activities (approximately 50 feet) and with the anticipated construction equipment, the peak particle velocity would be approximately 0.031 inch/second. This vibration level would be just below the level considered barely perceptible, and well below the level considered distinctly perceptible.

The major concern with regards to construction vibration is related to building damage. Construction vibration as a result of the proposed project would not result in structural building damage, which

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typically occurs at vibration levels of 0.5 inch/second or greater for buildings of reinforced-concrete, steel or timber construction. The heavier pieces of construction equipment used would include typical construction equipment for this type project such as excavators, graders, dump trucks and vendor trucks. Pile driving, blasting, or other special construction techniques will not to be used for construction of the proposed project; therefore, excessive ground-borne vibration and ground-borne noise would not be generated. Ground-borne vibration would not be associated with the proposed project following construction activities. Impacts related to ground-borne vibration are considered to be **less than significant**. No mitigation is required.

The on-going operation of the proposed project would not include the operation of any known vibration sources. Therefore, a **less than significant** vibration impact is anticipated from operation of the proposed project. No mitigation is required.

C. Would the project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Less Than Significant Impact with Mitigation Incorporated. As discussed under item (A), long-term operational noise would result from the various project components including off-site traffic noise along adjacent roadways, and mechanical noise. As discussed under item (A), mitigation measures are identified to ensure that operation of the proposed project would not exceed applicable noise standards or otherwise result in a substantial permanent increase in ambient noise levels. Upon implementation of project design features **MM-NOI-1** through **MM-NOI-4**, operational noise impacts would be **less than significant with mitigation incorporated**.

D. Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Less Than Significant Impact. As discussed under item (A), the proposed project would result in temporary noise increases during the project construction period. The temporary increases in ambient noise levels would vary depending on the location of the construction activities and the type of equipment being used. The estimated construction noise levels at nearby noise-sensitive land uses are summarized in Table 6 (Construction Noise Model Results Summary). Temporary noise increases at adjacent existing and future noise-sensitive land uses from construction activities are considered potentially significant; however, with the implementation of applicant-proposed measures **APM-NOI-1** and **APM-NOI-2**, temporary noise impacts from construction activities would be **less than significant**. No mitigation is required.

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E. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Less than Significant Impact. The nearest airport is McClellan-Palomar Airport, located approximately 1.9 miles north of the project site. Based upon the McClellan-Palomar Airport Land Use Compatibility Plan (San Diego County Airport Land Use Commission 2010), the proposed project site is located approximately 1.0 mile outside of the airport's 60 dB CNEL noise contour. As such, **less than significant** impacts from airport/aircraft noise would occur. No mitigation is required.

F. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. There are no private airstrips within the vicinity of the project site. No impacts would occur.

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6 APPLICANT-PROPOSED MEASURES AND MITIGATION MEASURES

The following Applicant-Proposed Measures (APMs) and Mitigation Measures (MMs) would ensure that construction and operation-related noise levels created by the proposed project are less than significant.

Construction

APM-NOI-1 Construction activities shall take place during the permitted time and day per Carlsbad Municipal Code Chapter 8.48. The applicant shall ensure that construction activities for the proposed project are limited to the hours from 7:00 a.m. to 6:00 p.m. Monday through Friday, and 8:00 a.m. to 6:00 p.m. on Saturdays; no work shall be conducted on Sundays or on federal holidays. This condition shall be listed on the project's final design to the satisfaction of the City of Carlsbad Engineering Services Department.

APM-NOI-2 The City of Carlsbad shall require the applicant to adhere to the following measures for all construction phases of the proposed project as a condition of approving the grading permit:

- The project contractor shall, to the extent feasible, schedule construction activities to avoid the simultaneous operation of construction equipment so as to minimize noise levels resulting from operating several pieces of high noise level emitting equipment.
- All construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers. Enforcement shall be accomplished by random field inspections by applicant personnel during construction activities, to the satisfaction of the City of Carlsbad Engineering Services Department.
- Construction noise reduction methods such as shutting off idling equipment, construction of a temporary noise barrier, maximizing the distance between construction equipment staging areas and adjacent residences, and use of electric air compressors and similar power tools, rather than diesel equipment, shall be used where feasible.
- During construction, stationary construction equipment shall be placed such that emitted noise is directed away from or shielded from sensitive receptors.
- Construction hours, allowable workdays, and the phone number of the job superintendent shall be clearly posted at all construction entrances to allow

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surrounding property owners to contact the job superintendent if necessary. In the event the City of Carlsbad receives a complaint, appropriate corrective actions shall be implemented and a report of the action provided to the reporting party.

Operation

MM--NOI-1 If designed with usable outdoor patio, balcony areas or rooftop decks, the residential structures shown in Figure 5 with a direct, unobstructed view of El Camino Real would require a noise barrier with a heights ranging from 5 to 8 feet (indicated in Figure 5). The noise barriers may be constructed of a material such as tempered glass, acrylic glass (or similar material), masonry material, or manufactured lumber (or a combination of these), with a surface density of at least three pounds per square foot. The noise barriers should have no openings, gaps or cracks.

MM--NOI-2 The habitable (i.e., bedrooms, living rooms, etc.) residential rooms indicated in Figure 6 will likely require mechanical ventilation systems or air conditioning systems in order to ensure that windows and doors can remain closed while maintaining a comfortable environment. Additionally, sound-rated windows may be necessary. An interior noise analysis shall be required for the proposed project after construction-level plans have been completed and prior to issuance of building permits. Installation of these systems (i.e., HVAC and sound-rated windows) shall be required if the interior noise analysis shows that impacts are above the State and City's 45 dBA CNEL interior standard. The interior noise analysis shall substantiate that with the required mitigation, the resulting interior noise levels will be less than the noise standard.

MM--NOI-3 Because heating, ventilation, and air conditioning (HVAC) equipment and other mechanical equipment can generate noise that could affect surrounding sensitive receptors and because the details, specifications, and locations of this equipment is not yet known, the Project applicant shall retain an acoustical specialist to review project construction-level plans to ensure that the equipment specifications and plans for HVAC and other outdoor mechanical equipment incorporate measures, such as the specification of quieter equipment or provision of acoustical enclosures, that will not exceed relevant noise standards at nearby noise-sensitive land uses (e.g., residential). Prior to the commencement of construction, the acoustical specialist shall certify in writing to the City that the equipment specifications and plans incorporate measures that will achieve the relevant noise limits.

Noise Technical Report Marja Acres Community Plan

MM--NOI-4 The rooftop decks atop units 222L and 223L would require noise barriers along the northern, southern, and eastern sides 5 feet in height (indicated in Figure 7). The noise barriers may be constructed of a material such as tempered glass, acrylic glass (or similar material), masonry material, or manufactured lumber (or a combination of these), with a surface density of at least three pounds per square foot. The noise barriers should have no openings, gaps or cracks.

Level of Significance after Implementation of Applicant-Proposed Measures and Project Design Features

Effectiveness of the APMs and MMs would vary from several decibels (which in general is a relatively small change) to ten or more decibels (which subjectively would be perceived as a substantial change), depending upon the specific equipment and the original condition of that equipment, and the specific locations of the noise sources and the receivers. Installation of a noise barrier, for example, would vary in effectiveness depending upon the degree to which the line-of-sight between the source and receiver is broken, and typically ranges from 5 to 10 dB. Installation of more effective silencers on construction equipment could range from several decibels to well over 10 decibels. Reduction of idling construction equipment could reduce overall noise levels from barely any reduction to several decibels. Cumulatively, however, these measures would result in substantial decreases in noise from construction and operation. With the implementation of APM-NOI-1, APM-NOI-2, and MM-NOI-1 through MM-NOI-3, noise impacts from project-related construction and operation would be **less than significant**. No further mitigation is required.

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Marja Acres Community Plan

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7 SUMMARY OF FINDINGS

A noise and vibration study was conducted for the proposed Marja Acres Community Plan Project. The results indicate that with implementation of Applicant Proposed Measures and Mitigation Measures, potential impacts during construction and operation would **be less than significant**. No further mitigation is required.

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Noise Technical Report
Marja Acres Community Plan

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APPENDIX A

Noise Measurement Field Data

Field Noise Measurement Data

Record: 836

Project Name	Carlsbad.
Observer(s)	Connor Burke
Date	2017-12-20
autoemail	cburke@dudek.com

Meteorological Conditions

Temp (F)	60
Humidity % (R.H.)	61
Wind	Calm
Wind Speed (MPH)	3
Wind Direction	East
Sky	Partly Cloudy

Instrument and Calibrator Information

Instrument Name List	(ENC) Rion NL-52
Instrument Name	(ENC) Rion NL-52
Instrument Name Lookup Key	(ENC) Rion NL-52
Manufacturer	Rion
Model	NL-52
Serial Number	553896
Calibrator Name	(ENC) LD CAL150
Calibrator Name	(ENC) LD CAL150
Calibrator Name Lookup Key	(ENC) LD CAL150
Calibrator Manufacturer	Larson Davis
Calibrator Model	LD CAL150
Calibrator Serial #	5152
Pre-Test (dBA SPL)	94
Post-Test (dBA SPL)	94
Windscreen	Yes
Weighting?	A-WTD
Slow/Fast?	Slow
ANSI?	Yes

Recordings


Record #	1
Site ID	ST3
Site Location	Latitude:33.152308, Longitude:-117.310337, Altitude:17.268391, Speed:0.000000, Horizontal Accuracy:5.000000, Vertical Accuracy:3.000000, Time:9:40:36 AM PST
Begin (Time)	10:04:00
End (Time)	10:14:00
Leq	61.6
Lmax	73.9
Lmin	42.7
Other Lx?	L90, L50, L10
L90	50.8
L50	57.7
L10	64.9
Primary Noise Source	Traffic
Other Noise Sources (Background)	Birds, Distant Traffic

Is the same instrument and calibrator being used as previously notated?	Yes
Are the meteorological conditions the same as previously notated?	Yes

Source Info and Traffic Counts	
Distance to Roadway (feet)	45
Distance to Roadway - Centerline/Edge of Pavement	Centerline
Estimated Vehicle Speed (MPH)	50
Count Duration (Min)	10

Traffic Counts	
Counting Both Directions?	Yes
Autos	1
Number of Vehicles - Autos	210
Medium Trucks	1
Number of Vehicles - Medium Trucks	6
Motorcycles	1
Number of Vehicles - Motorcycles	1

Description / Photos

Site Photos	
Photo	
Comments / Description	Facing east.

Recordings	
Record #	2
Site ID	ST1
Site Location	Latitude:33.151227, Longitude:-117.308084, Altitude:19.388447, Speed:0.000000, Horizontal Accuracy:10.000000, Vertical Accuracy:4.000000, Time:9:50:14 AM PST
Begin (Time)	10:19:00
End (Time)	10:29:00
Leq	55.6
Lmax	62.1
Lmin	44.3
Other Lx?	L90, L50, L10
L90	47.2
L50	53.7
L10	59.8
Primary Noise Source	Traffic
Other Noise Sources (Background)	Birds, Distant Conversations / Yelling, Distant Gardener / Landscape Noise, Rustling Leaves
Other Noise Sources Additional Description	HVAC
Is the same instrument and calibrator being used as previously notated?	Yes
Are the meteorological conditions the same as previously notated?	Yes

Source Info and Traffic Counts	
Distance to Roadway (feet)	60
Distance to Roadway - Centerline/Edge of Pavement	Centerline
Estimated Vehicle Speed (MPH)	50
Count Duration (Min)	10

Traffic Counts	
Counting Both Directions?	Yes
Autos	1
Number of Vehicles - Autos	198
Medium Trucks	1
Number of Vehicles - Medium Trucks	6
Motorcycles	1
Number of Vehicles - Motorcycles	2

Description / Photos

Site Photos

Photo



Comments / Description

Facing east towards El Camino.

Recordings

Record #	3
Site ID	ST2
Site Location	Latitude:33.151309, Longitude:-117.306792, Altitude:17.999836, Speed:0.000000, Horizontal Accuracy:5.000000, Vertical Accuracy:4.000000, Time:9:57:29 AM PST
Begin (Time)	10:34:00
End (Time)	10:44:00
Leq	59.9
Lmax	75.9
Lmin	44.5
Other Lx?	L90, L50, L10
L90	48.7
L50	54.2
L10	62.3
Primary Noise Source	Traffic
Other Noise Sources (Background)	Birds, Distant Conversations / Yelling, Distant Traffic, Rustling Leaves
Is the same instrument and calibrator being used as previously notated?	Yes
Are the meteorological conditions the same as previously notated?	Yes

Source Info and Traffic Counts


Distance to Roadway (feet)	40
Distance to Roadway - Centerline/Edge of Pavement	Centerline
Estimated Vehicle Speed (MPH)	50
Count Duration (Min)	10

Traffic Counts

Counting Both Directions?	Yes
Autos	1
Number of Vehicles - Autos	203
Medium Trucks	1
Number of Vehicles - Medium Trucks	4


Description / Photos

Site Photos

Photo	
Comments / Description	Facing east.


Recordings	
Record #	4
Site ID	ST5
Site Location	Latitude:33.150981, Longitude:-117.305297, Altitude:28.475546, Speed:0.000000, Horizontal Accuracy:5.000000, Vertical Accuracy:3.000000, Time:10:10:27 AM PST
Begin (Time)	10:49:00
End (Time)	10:59:00
Leq	51.9
Lmax	68.5
Lmin	38.3
Other Lx?	L90, L50, L10
L90	42.5
L50	48.9
L10	53.6
Primary Noise Source	Traffic
Other Noise Sources (Background)	Birds, Distant Conversations / Yelling, Distant Dog Barking, Rustling Leaves
Other Noise Sources Additional Description	Construction noise. Hammering. Backup alarms.
Is the same instrument and calibrator being used as previously notated?	Yes
Are the meteorological conditions the same as previously notated?	Yes

Description / Photos

Site Photos	
Photo	
Comments / Description	Facing northeast.

Recordings	
Record #	5
Site ID	ST4
Site Location	Latitude:33.152151, Longitude:-117.306633, Altitude:40.618855, Speed:0.000000, Horizontal Accuracy:10.000000, Vertical Accuracy:8.000000, Time:10:21:12 AM PST
Begin (Time)	11:04:00
End (Time)	11:14:00
Leq	53.6
Lmax	66.4
Lmin	48.8
Other Lx?	L90, L50, L10
L90	50.1
L50	51.9
L10	56.1
Primary Noise Source	Other
Primary Noise Source Other	Construction noise.
Other Noise Sources (Background)	Distant Gardener / Landscape Noise, Distant Traffic
Other Noise Sources Additional Description	Construction hauls
Is the same instrument and calibrator being used as previously notated?	Yes
Are the meteorological conditions the same as previously notated?	Yes

Description / Photos

Site Photos	
Photo	
Comments / Description	Facing west.

Recordings	
Record #	6
Site ID	ST6
Site Location	Latitude:33.150690, Longitude:-117.301227, Altitude:40.317493, Speed:0.000000, Horizontal Accuracy:5.000000, Vertical Accuracy:3.000000, Time:10:32:31 AM PST
Begin (Time)	11:34:00
End (Time)	11:44:00
Leq	58.7
Lmax	64.6
Lmin	50.4
Other Lx?	L90, L50, L10
L90	52.7
L50	57
L10	61.9
Other (Specify Metric)	
Primary Noise Source	Traffic
Other Noise Sources (Background)	Birds, Distant Gardener / Landscape Noise, Distant Traffic
Is the same instrument and calibrator being used as previously notated?	Yes
Are the meteorological conditions the same as previously notated?	Yes

Source Info and Traffic Counts	
Distance to Roadway (feet)	80
Estimated Vehicle Speed (MPH)	55
Count Duration (Min)	10

Traffic Counts	
Counting Both Directions?	Yes
Autos	1
Number of Vehicles - Autos	220
Medium Trucks	1
Number of Vehicles - Medium Trucks	3

Description / Photos

Site Photos

Photo



Comments / Description

Facing east.

APPENDIX B

Construction Noise Modeling Input and Output

Roadway Construction Noise Model (RCNM),v

Report date 5/25/2018

Case Descr Marja Acres - Street Improvements_Architectural Coatings

---- Receptor #1 ----

Description Land Use	Baselines (dBA)					
	Daytime	Evening	Night			
Nearest Re Residential	65	60	55			
Description			Equipment			
	Impact		Spec	Actual	Receptor	
	Device	Usage(%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	
Compressor (air)	No	40		77.7	50	
Concrete Mixer Truck	No	40		78.8	75	
Concrete Pump Truck	No	20		81.4	75	

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)		
			Day		Evening
	*Lmax	Leq	Lmax	Leq	Lmax
Compressor (air)	77.7	73.7	N/A	N/A	N/A
Concrete Mixer Truck	75.3	71.3	N/A	N/A	N/A
Concrete Pump Truck	77.9	70.9	N/A	N/A	N/A
Total	77.9	76.9	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description Land Use	Baselines (dBA)					
	Daytime	Evening	Night			
Typical Res Residential	65	60	55			
Description			Equipment			
	Impact		Spec	Actual	Receptor	
	Device	Usage(%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	
Compressor (air)	No	40		77.7	250	
Concrete Mixer Truck	No	40		78.8	250	
Concrete Pump Truck	No	20		81.4	250	

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)		
			Day		Evening
	*Lmax	Leq	Lmax	Leq	Lmax
Compressor (air)	63.7	59.7	N/A	N/A	N/A
Concrete Mixer Truck	64.8	60.8	N/A	N/A	N/A

Concrete Pump Truck	67.4	60.4	N/A	N/A	N/A
Total	67.4	65.1	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),V

Report date 5/25/2018

Case Descr Marja Acres - Building Construction - 1

---- Receptor #1 ----

Description Land Use	Baselines (dBA)					
	Daytime	Evening	Night			
Nearest Re Residential	65	60	55			
Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Front End Loader	No	40		79.1	50	
Backhoe	No	40		77.6	75	

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)		
	*Lmax	Leq	Day Lmax	Leq	Evening Lmax
Front End Loader	79.1	75.1	N/A	N/A	N/A
Backhoe	74	70.1	N/A	N/A	N/A
Total	79.1	76.3	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description Land Use	Baselines (dBA)					
	Daytime	Evening	Night			
Typical Res Residential	65	60	55			
Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Front End Loader	No	40		79.1	250	
Backhoe	No	40		77.6	250	

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)		
	*Lmax	Leq	Day Lmax	Leq	Evening Lmax
Front End Loader	65.1	61.2	N/A	N/A	N/A
Backhoe	63.6	59.6	N/A	N/A	N/A
Total	65.1	63.5	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),V

Report date 5/25/2018

Case Description Marja Acres - Building Construction - 2

---- Receptor #1 ----

		Baselines (dBA)					
Description Land Use		Daytime	Evening	Night			
Nearest Residential		65	60	55			
					Equipment		
					Spec	Actual	Receptor
					Lmax	Lmax	Distance
Description		Impact	Usage(%)		(dBA)	(dBA)	(feet)
Man Lift		No	20			74.7	50

Results

		Calculated (dBA)		Noise Limits (dBA)		
				Day	Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax
Man Lift		74.7	67.7	N/A	N/A	N/A
Total		74.7	67.7	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)					
Description Land Use		Daytime	Evening	Night			
Typical Residential		65	60	55			
					Equipment		
					Spec	Actual	Receptor
					Lmax	Lmax	Distance
Description		Impact	Usage(%)		(dBA)	(dBA)	(feet)
Man Lift		No	20			74.7	250

Results

		Calculated (dBA)		Noise Limits (dBA)		
				Day	Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax
Man Lift		60.7	53.7	N/A	N/A	N/A
Total		60.7	53.7	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),V

Report date 5/25/2018

Case Descr Marja Acres - Building Construction - 3

---- Receptor #1 ----

Description Land Use	Baselines (dBA)					
	Daytime	Evening	Night	Equipment Spec	Actual	Receptor
Nearest Re Residential	65	60	55	Lmax	Lmax	Distance
				(dBA)	(dBA)	(feet)
Description	Impact Device	Usage(%)				
Man Lift	No	20			74.7	50

Results

Calculated (dBA)			Noise Limits (dBA)		
			Day	Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax
Man Lift	74.7	67.7	N/A	N/A	N/A
Total	74.7	67.7	N/A	N/A	N/A
*Calculated Lmax is the Loudest value.					

---- Receptor #2 ----

Description Land Use	Baselines (dBA)					
	Daytime	Evening	Night	Equipment Spec	Actual	Receptor
Typical Res Residential	65	60	55	Lmax	Lmax	Distance
				(dBA)	(dBA)	(feet)
Description	Impact Device	Usage(%)				
Man Lift	No	20			74.7	250

Results

Calculated (dBA)			Noise Limits (dBA)		
			Day	Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax
Man Lift	60.7	53.7	N/A	N/A	N/A
Total	60.7	53.7	N/A	N/A	N/A
*Calculated Lmax is the Loudest value.					

Roadway Construction Noise Model (RCNM),v

Report date 5/24/2018
Case Descr Marja Acres - Clear and Grub

---- Receptor #1 ----

Baselines (dBA)				
Description Land Use	Daytime	Evening	Night	
Nearest Re Residential	65	60	55	

		Equipment		
		Spec	Actual	Receptor
Impact		Lmax	Lmax	Distance
Description	Device	Usage(%) (dBA)	(dBA)	(feet)
Dozer	No	40	81.7	30
Front End Loader	No	40	79.1	50
Flat Bed Truck	No	40	74.3	75
Pickup Truck	No	40	75	100

Results

Calculated (dBA)			Noise Limits (dBA)		
			Day	Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax
Dozer	86.1	82.1	N/A	N/A	N/A
Front End Loader	79.1	75.1	N/A	N/A	N/A
Flat Bed Truck	70.7	66.7	N/A	N/A	N/A
Pickup Truck	69	65	N/A	N/A	N/A
Total	86.1	83.1	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Baselines (dBA)				
Description Land Use	Daytime	Evening	Night	
Typical Res Residential	65	60	55	

		Equipment		
		Spec	Actual	Receptor
Impact		Lmax	Lmax	Distance
Description	Device	Usage(%) (dBA)	(dBA)	(feet)
Dozer	No	40	81.7	200
Front End Loader	No	40	79.1	200
Flat Bed Truck	No	40	74.3	250
Pickup Truck	No	40	75	250

Results

Calculated (dBA)			Noise Limits (dBA)	
			Day	Evening

Equipment	*Lmax	Leq	Lmax	Leq	Lmax
Dozer	69.6	65.6	N/A	N/A	N/A
Front End Loader	67.1	63.1	N/A	N/A	N/A
Flat Bed Truck	60.3	56.3	N/A	N/A	N/A
Pickup Truck	61	57	N/A	N/A	N/A
Total	69.6	68.2	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),V

Report date 5/24/2018

Case Descr Marja Acres - Demo Structures and Improvements

---- Receptor #1 ----

Description Land Use	Baselines (dBA)		
	Daytime	Evening	Night
Nearest Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment		
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)
Front End Loader	No	40		79.1	240
Front End Loader	No	40		79.1	260
Dump Truck	No	40		76.5	260
Excavator	No	40		80.7	300
Dozer	No	40		81.7	240
Flat Bed Truck	No	40		74.3	260
Pickup Truck	No	40		75	300

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)		
	*Lmax	Leq	Day Lmax	Leq	Evening Lmax
Front End Loader	65.5	61.5	N/A	N/A	N/A
Front End Loader	64.8	60.8	N/A	N/A	N/A
Dump Truck	62.1	58.2	N/A	N/A	N/A
Excavator	65.1	61.2	N/A	N/A	N/A
Dozer	68	64.1	N/A	N/A	N/A
Flat Bed Truck	59.9	56	N/A	N/A	N/A
Pickup Truck	59.4	55.5	N/A	N/A	N/A
Total	68	69	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description Land Use	Baselines (dBA)		
	Daytime	Evening	Night
Typical Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment		
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)
Front End Loader	No	40		79.1	650
Front End Loader	No	40		79.1	650

Dump Truck	No	40	76.5	650
Excavator	No	40	80.7	650
Dozer	No	40	81.7	650
Flat Bed Truck	No	40	74.3	650
Pickup Truck	No	40	75	650

Equipment	Results				
	Calculated (dBA)			Noise Limits (dBA)	
	*Lmax	Leq	Day	Leq	Evening
			Lmax		Lmax
Front End Loader	56.8	52.9	N/A	N/A	N/A
Front End Loader	56.8	52.9	N/A	N/A	N/A
Dump Truck	54.2	50.2	N/A	N/A	N/A
Excavator	58.4	54.5	N/A	N/A	N/A
Dozer	59.4	55.4	N/A	N/A	N/A
Flat Bed Truck	52	48	N/A	N/A	N/A
Pickup Truck	52.7	48.7	N/A	N/A	N/A
Total	59.4	61	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),v

Report date 5/24/2018

Case Descr Marja Acres - Dry Utilities

---- Receptor #1 ----

Description Land Use	Baselines (dBA)					
	Daytime	Evening	Night			
Nearest Re Residential	65	60	55			
Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Flat Bed Truck	No	40		74.3	50	
Flat Bed Truck	No	40	84		150	
Front End Loader	No	40		79.1	75	
Front End Loader	No	40		79.1	300	
Backhoe	No	40		77.6	50	
Backhoe	No	40		77.6	150	
Pickup Truck	No	40		75	150	
Pickup Truck	No	40		75	100	

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)		
	*Lmax	Leq	Day Lmax	Leq	Evening Lmax
Flat Bed Truck	74.3	70.3	N/A	N/A	N/A
Flat Bed Truck	74.5	70.5	N/A	N/A	N/A
Front End Loader	75.6	71.6	N/A	N/A	N/A
Front End Loader	63.5	59.6	N/A	N/A	N/A
Backhoe	77.6	73.6	N/A	N/A	N/A
Backhoe	68	64	N/A	N/A	N/A
Pickup Truck	65.5	61.5	N/A	N/A	N/A
Pickup Truck	69	65	N/A	N/A	N/A
Total	77.6	78.3	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description Land Use	Baselines (dBA)					
	Daytime	Evening	Night			
Typical Res Residential	65	60	55			
Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	
			Spec Lmax (dBA)	Actual Lmax (dBA)		

Flat Bed Truck	No	40		74.3	250
Flat Bed Truck	No	40	84		350
Front End Loader	No	40		79.1	300
Front End Loader	No	40		79.1	350
Backhoe	No	40		77.6	250
Backhoe	No	40		77.6	400
Pickup Truck	No	40		75	300
Pickup Truck	No	40		75	250

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)		
	*Lmax	Leq	Day	Leq	Evening
			Lmax		Lmax
Flat Bed Truck	60.3	56.3	N/A	N/A	N/A
Flat Bed Truck	67.1	63.1	N/A	N/A	N/A
Front End Loader	63.5	59.6	N/A	N/A	N/A
Front End Loader	62.2	58.2	N/A	N/A	N/A
Backhoe	63.6	59.6	N/A	N/A	N/A
Backhoe	59.5	55.5	N/A	N/A	N/A
Pickup Truck	59.4	55.5	N/A	N/A	N/A
Pickup Truck	61	57	N/A	N/A	N/A
Total	67.1	67.9	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),V

Report date 5/24/2018

Case Descr Marja Acres - Export Excavation

---- Receptor #1 ----

Description Land Use	Baselines (dBA)		
	Daytime	Evening	Night
Nearest Re Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment		
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)
Dump Truck	No	40		76.5	50
Front End Loader	No	40		79.1	75
Scraper	No	40		83.6	100
Flat Bed Truck	No	40		74.3	150
Pickup Truck	No	40		75	100

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)		
	*Lmax	Leq	Day Lmax	Leq	Evening Lmax
Dump Truck	76.5	72.5	N/A	N/A	N/A
Front End Loader	75.6	71.6	N/A	N/A	N/A
Scraper	77.6	73.6	N/A	N/A	N/A
Flat Bed Truck	64.7	60.7	N/A	N/A	N/A
Pickup Truck	69	65	N/A	N/A	N/A
Total	77.6	77.7	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description Land Use	Baselines (dBA)		
	Daytime	Evening	Night
Typical Res Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment		
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)
Dump Truck	No	40		76.5	250
Front End Loader	No	40		79.1	250
Scraper	No	40		83.6	300
Flat Bed Truck	No	40		74.3	350
Pickup Truck	No	40		75	300

Equipment	Calculated (dBA)		Results		Noise Limits (dBA)	
	*Lmax	Leq	Day		Evening	
			Lmax	Leq	Lmax	
Dump Truck	62.5	58.5	N/A	N/A	N/A	
Front End Loader	65.1	61.2	N/A	N/A	N/A	
Scraper	68	64	N/A	N/A	N/A	
Flat Bed Truck	57.3	53.4	N/A	N/A	N/A	
Pickup Truck	59.4	55.5	N/A	N/A	N/A	
Total	68	67.1	N/A	N/A	N/A	

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),v

Report date 5/24/2018

Case Descr Marja Acres - Demo Structures and Improvements

---- Receptor #1 ----

		Baselines (dBA)					
Description Land Use		Daytime	Evening	Night			
Nearest Re Residential		65	60	55			
					Equipment		
					Spec	Actual	Receptor
					Lmax	Lmax	Distance
Description		Impact	Usage(%)	(dBA)	(dBA)	(dBA)	(feet)
Dump Truck		No	40			76.5	240
Front End Loader		No	40			79.1	275

Results

		Calculated (dBA)		Noise Limits (dBA)		
				Day	Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax
Dump Truck		62.8	58.8	N/A	N/A	N/A
Front End Loader		64.3	60.3	N/A	N/A	N/A
Total		64.3	62.7	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)					
Description Land Use		Daytime	Evening	Night			
Typical Res Residential		65	60	55			
					Equipment		
					Spec	Actual	Receptor
					Lmax	Lmax	Distance
Description		Impact	Usage(%)	(dBA)	(dBA)	(dBA)	(feet)
Dump Truck		No	40			76.5	650
Front End Loader		No	40			79.1	650

Results

		Calculated (dBA)		Noise Limits (dBA)		
				Day	Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax
Dump Truck		54.2	50.2	N/A	N/A	N/A
Front End Loader		56.8	52.9	N/A	N/A	N/A
Total		56.8	54.7	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),V

Report date 5/24/2018

Case Descr Marja Acres - Remedial & Mass Excavation

---- Receptor #1 ----

Description Land Use	Baselines (dBA)		
	Daytime	Evening	Night
Nearest Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)
			Spec Lmax (dBA)	Actual Lmax (dBA)	
Scraper	No	40		83.6	50
Scraper	No	40		83.6	100
Scraper	No	40		83.6	75
Scraper	No	40		83.6	150
Dozer	No	40		81.7	150
Dozer	No	40		81.7	50
Flat Bed Truck	No	40		74.3	150
Flat Bed Truck	No	40		74.3	150
Pickup Truck	No	40		75	100

Results

Equipment	Calculated (dBA)			Noise Limits (dBA)	
	*Lmax	Leq	Day	Leq	Evening
			Lmax		Lmax
Scraper	83.6	79.6	N/A	N/A	N/A
Scraper	77.6	73.6	N/A	N/A	N/A
Scraper	80.1	76.1	N/A	N/A	N/A
Scraper	74	70.1	N/A	N/A	N/A
Dozer	72.1	68.1	N/A	N/A	N/A
Dozer	81.7	77.7	N/A	N/A	N/A
Flat Bed Truck	64.7	60.7	N/A	N/A	N/A
Flat Bed Truck	64.7	60.7	N/A	N/A	N/A
Pickup Truck	69	65	N/A	N/A	N/A
Total	83.6	83.7	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description Land Use	Baselines (dBA)		
	Daytime	Evening	Night
Typical Residential	65	60	55

Equipment		Receptor
Spec	Actual	

Description	Impact		Lmax	Lmax	Distance
	Device	Usage(%)	(dBA)	(dBA)	(feet)
Scraper	No	40		83.6	650
Scraper	No	40		83.6	250
Scraper	No	40		83.6	250
Scraper	No	40		83.6	300
Dozer	No	40		81.7	350
Dozer	No	40		81.7	250
Flat Bed Truck	No	40		74.3	400
Flat Bed Truck	No	40		74.3	400
Pickup Truck	No	40		75	300

Results					
Equipment	Calculated (dBA)			Noise Limits (dBA)	
	*Lmax	Leq	Day	Leq	Evening
			Lmax		Lmax
Scraper	61.3		57.3 N/A	N/A	N/A
Scraper	69.6		65.6 N/A	N/A	N/A
Scraper	69.6		65.6 N/A	N/A	N/A
Scraper	68		64 N/A	N/A	N/A
Dozer	64.8		60.8 N/A	N/A	N/A
Dozer	67.7		63.7 N/A	N/A	N/A
Flat Bed Truck	56.2		52.2 N/A	N/A	N/A
Flat Bed Truck	56.2		52.2 N/A	N/A	N/A
Pickup Truck	59.4		55.5 N/A	N/A	N/A
Total	69.6		71.6 N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date 5/24/2018

Case Descr Marja Acres - Street Improvements_Aspphalt Paving

---- Receptor #1 ----

Description Land Use	Baselines (dBA)		
	Daytime	Evening	Night
Nearest Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Scraper	No	40		83.6	150	0
Scraper	No	40		83.6	250	0
Scraper	No	40		83.6	150	0
Scraper	No	40		83.6	300	0
Paver	No	50		77.2	150	0
Paver	No	50		77.2	250	0
Roller	No	20		80	150	0
Roller	No	20		80	250	0
Pickup Truck	No	40		75	250	0

Results

Equipment	Calculated (dBA)			Noise Limits (dBA)		
	*Lmax	Leq	Day	Leq	Evening	
			Lmax		Lmax	Leq
Scraper	74	70.1	N/A	N/A	N/A	N/A
Scraper	69.6	65.6	N/A	N/A	N/A	N/A
Scraper	74	70.1	N/A	N/A	N/A	N/A
Scraper	68	64	N/A	N/A	N/A	N/A
Paver	67.7	64.7	N/A	N/A	N/A	N/A
Paver	63.2	60.2	N/A	N/A	N/A	N/A
Roller	70.5	63.5	N/A	N/A	N/A	N/A
Roller	66	59	N/A	N/A	N/A	N/A
Pickup Truck	61	57	N/A	N/A	N/A	N/A
Total	74	75.3	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description Land Use	Baselines (dBA)		
	Daytime	Evening	Night
Typical Res Residential	65	60	55

Equipment		Receptor	Estimated
Spec	Actual		

Description	Impact Device	Usage(%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Scraper	No	40		83.6	750	0
Scraper	No	40		83.6	750	0
Scraper	No	40		83.6	750	0
Scraper	No	40		83.6	850	0
Paver	No	50		77.2	750	0
Paver	No	50		77.2	850	0
Roller	No	20		80	750	0
Roller	No	20		80	850	0
Pickup Truck	No	40		75	850	0

Results

Equipment	Calculated (dBA)			Noise Limits (dBA)		
	*Lmax	Leq	Day	Leq	Evening	
			Lmax		Lmax	Leq
Scraper	60.1		56.1 N/A	N/A	N/A	N/A
Scraper	60.1		56.1 N/A	N/A	N/A	N/A
Scraper	60.1		56.1 N/A	N/A	N/A	N/A
Scraper	59		55 N/A	N/A	N/A	N/A
Paver	53.7		50.7 N/A	N/A	N/A	N/A
Paver	52.6		49.6 N/A	N/A	N/A	N/A
Roller	56.5		49.5 N/A	N/A	N/A	N/A
Roller	55.4		48.4 N/A	N/A	N/A	N/A
Pickup Truck	50.4		46.4 N/A	N/A	N/A	N/A
Total	60.1		62.9 N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date 5/24/2018

Case Descr Marja Acres - Street Improvements_Balancing, Aggregate

---- Receptor #1 ----

Description Land Use	Baselines (dBA)		
	Daytime	Evening	Night
Nearest Re Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Grader	No	40	85		150	0
Grader	No	40	85		250	0
Flat Bed Truck	No	40		74.3	150	0
Flat Bed Truck	No	40		74.3	300	0
Roller	No	20		80	150	0
Roller	No	20		80	250	0
Scraper	No	40		83.6	150	0
Scraper	No	40		83.6	250	0
Front End Loader	No	40		79.1	175	0
Front End Loader	No	40		79.1	300	0
Pickup Truck	No	40		75	250	0

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)			
	*Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq
Grader	75.5	71.5	N/A	N/A	N/A	N/A
Grader	71	67	N/A	N/A	N/A	N/A
Flat Bed Truck	64.7	60.7	N/A	N/A	N/A	N/A
Flat Bed Truck	58.7	54.7	N/A	N/A	N/A	N/A
Roller	70.5	63.5	N/A	N/A	N/A	N/A
Roller	66	59	N/A	N/A	N/A	N/A
Scraper	74	70.1	N/A	N/A	N/A	N/A
Scraper	69.6	65.6	N/A	N/A	N/A	N/A
Front End Loader	68.2	64.2	N/A	N/A	N/A	N/A
Front End Loader	63.5	59.6	N/A	N/A	N/A	N/A
Pickup Truck	61	57	N/A	N/A	N/A	N/A
Total	75.5	76.2	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description Land Use	Baselines (dBA)		
	Daytime	Evening	Night

Typical Res Residential 65 60 55

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec	Actual		
			Lmax (dBA)	Lmax (dBA)		
Grader	No	40		85	750	0
Grader	No	40		85	750	0
Flat Bed Truck	No	40		74.3	750	0
Flat Bed Truck	No	40		74.3	850	0
Roller	No	20		80	750	0
Roller	No	20		80	850	0
Scraper	No	40		83.6	750	0
Scraper	No	40		83.6	850	0
Front End Loader	No	40		79.1	750	0
Front End Loader	No	40		79.1	850	0
Pickup Truck	No	40		75	750	0

Equipment	Results					
	Calculated (dBA)			Noise Limits (dBA)		
	*Lmax	Leq	Day	Leq	Evening	Leq
			Lmax		Lmax	
Grader	61.5	57.5	N/A	N/A	N/A	N/A
Grader	61.5	57.5	N/A	N/A	N/A	N/A
Flat Bed Truck	50.7	46.7	N/A	N/A	N/A	N/A
Flat Bed Truck	49.6	45.7	N/A	N/A	N/A	N/A
Roller	56.5	49.5	N/A	N/A	N/A	N/A
Roller	55.4	48.4	N/A	N/A	N/A	N/A
Scraper	60.1	56.1	N/A	N/A	N/A	N/A
Scraper	59	55	N/A	N/A	N/A	N/A
Front End Loader	55.6	51.6	N/A	N/A	N/A	N/A
Front End Loader	54.5	50.5	N/A	N/A	N/A	N/A
Pickup Truck	51.5	47.5	N/A	N/A	N/A	N/A
Total	61.5	63.8	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),V

Report date 5/24/2018

Case Descr Marja Acres - Street Improvements_Concrete Flatwork

---- Receptor #1 ----

Description Land Use	Baselines (dBA)		
	Daytime	Evening	Night
Nearest Re Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)
			Spec Lmax (dBA)	Actual Lmax (dBA)	
Front End Loader	No	40		79.1	150
Front End Loader	No	40		79.1	200
Front End Loader	No	40		79.1	250
Pickup Truck	No	40		75	200

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)		
	*Lmax	Leq	Day Lmax	Leq	Evening Lmax
Front End Loader	69.6	65.6	N/A	N/A	N/A
Front End Loader	67.1	63.1	N/A	N/A	N/A
Front End Loader	65.1	61.2	N/A	N/A	N/A
Pickup Truck	63	59	N/A	N/A	N/A
Total	69.6	68.9	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description Land Use	Baselines (dBA)		
	Daytime	Evening	Night
Typical Res Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)
			Spec Lmax (dBA)	Actual Lmax (dBA)	
Front End Loader	No	40		79.1	750
Front End Loader	No	40		79.1	750
Front End Loader	No	40		79.1	800
Pickup Truck	No	40		75	800

Results

Calculated (dBA)	Noise Limits (dBA)	
	Day	Evening

Equipment	*Lmax	Leq	Lmax	Leq	Lmax
Front End Loader	55.6	51.6	N/A	N/A	N/A
Front End Loader	55.6	51.6	N/A	N/A	N/A
Front End Loader	55	51	N/A	N/A	N/A
Pickup Truck	50.9	46.9	N/A	N/A	N/A
Total	55.6	56.7	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),V

Report date 5/25/2018

Case Descr Marja Acres - Street Improvements_Curb & Gutter

---- Receptor #1 ----

Description Land Use	Baselines (dBA)		
	Daytime	Evening	Night
Nearest Re Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)
			Spec Lmax (dBA)	Actual Lmax (dBA)	
Paver	No	50		77.2	150
Paver	No	50		77.2	250
Pickup Truck	No	40		75	200
Pickup Truck	No	40		75	250

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)		
	*Lmax	Leq	Day	Evening	
			Lmax	Leq	Lmax
Paver	67.7	64.7	N/A	N/A	N/A
Paver	63.2	60.2	N/A	N/A	N/A
Pickup Truck	63	59	N/A	N/A	N/A
Pickup Truck	61	57	N/A	N/A	N/A
Total	67.7	67.2	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description Land Use	Baselines (dBA)		
	Daytime	Evening	Night
Typical Res Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)
			Spec Lmax (dBA)	Actual Lmax (dBA)	
Paver	No	50		77.2	750
Paver	No	50		77.2	750
Pickup Truck	No	40		75	750
Pickup Truck	No	40		75	750

Results

Calculated (dBA)	Noise Limits (dBA)	
	Day	Evening

Equipment	*Lmax	Leq	Lmax	Leq	Lmax
Paver	53.7	50.7	N/A	N/A	N/A
Paver	53.7	50.7	N/A	N/A	N/A
Pickup Truck	51.5	47.5	N/A	N/A	N/A
Pickup Truck	51.5	47.5	N/A	N/A	N/A
Total	53.7	55.4	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),V

Report date 5/24/2018

Case Descr Marja Acres - Wet Utilities

---- Receptor #1 ----

Description Land Use	Baselines (dBA)		
	Daytime	Evening	Night
Nearest Re Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)
			Spec Lmax (dBA)	Actual Lmax (dBA)	
Excavator	No	40		80.7	50
Excavator	No	40		80.7	75
Flat Bed Truck	No	40		74.3	50
Flat Bed Truck	No	40		74.3	150
Front End Loader	No	40		79.1	50
Front End Loader	No	40		79.1	100
Front End Loader	No	40		79.1	50
Front End Loader	No	40		79.1	100
Pickup Truck	No	40		75	150
Pickup Truck	No	40		75	175
Pickup Truck	No	40		75	100
Pickup Truck	No	40		75	150

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)		
	*Lmax	Leq	Day Lmax	Leq	Evening Lmax
Excavator	80.7	76.7	N/A	N/A	N/A
Excavator	77.2	73.2	N/A	N/A	N/A
Flat Bed Truck	74.3	70.3	N/A	N/A	N/A
Flat Bed Truck	64.7	60.7	N/A	N/A	N/A
Front End Loader	79.1	75.1	N/A	N/A	N/A
Front End Loader	73.1	69.1	N/A	N/A	N/A
Front End Loader	79.1	75.1	N/A	N/A	N/A
Front End Loader	73.1	69.1	N/A	N/A	N/A
Pickup Truck	65.5	61.5	N/A	N/A	N/A
Pickup Truck	64.1	60.1	N/A	N/A	N/A
Pickup Truck	69	65	N/A	N/A	N/A
Pickup Truck	65.5	61.5	N/A	N/A	N/A
Total	80.7	82.3	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description Land Use	Baselines (dBA)		
	Daytime	Evening	Night
Typical Res Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment		
			Spec	Actual	Receptor
			Lmax (dBA)	Lmax (dBA)	Distance (feet)
Excavator	No	40		80.7	250
Excavator	No	40		80.7	300
Flat Bed Truck	No	40		74.3	250
Flat Bed Truck	No	40		74.3	300
Front End Loader	No	40		79.1	250
Front End Loader	No	40		79.1	250
Front End Loader	No	40		79.1	300
Front End Loader	No	40		79.1	250
Pickup Truck	No	40		75	300
Pickup Truck	No	40		75	300
Pickup Truck	No	40		75	300
Pickup Truck	No	40		75	250

Equipment	Results				
	Calculated (dBA)		Noise Limits (dBA)		
	*Lmax	Leq	Day	Leq	Evening
			Lmax		Lmax
Excavator	66.7	62.8	N/A	N/A	N/A
Excavator	65.1	61.2	N/A	N/A	N/A
Flat Bed Truck	60.3	56.3	N/A	N/A	N/A
Flat Bed Truck	58.7	54.7	N/A	N/A	N/A
Front End Loader	65.1	61.2	N/A	N/A	N/A
Front End Loader	65.1	61.2	N/A	N/A	N/A
Front End Loader	63.5	59.6	N/A	N/A	N/A
Front End Loader	65.1	61.2	N/A	N/A	N/A
Pickup Truck	59.4	55.5	N/A	N/A	N/A
Pickup Truck	59.4	55.5	N/A	N/A	N/A
Pickup Truck	59.4	55.5	N/A	N/A	N/A
Pickup Truck	61	57	N/A	N/A	N/A
Total	66.7	70.1	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

APPENDIX C

Traffic Noise Modeling Input and Output

INPUT: ROADWAYS
10838

Dudek MG												
INPUT: ROADWAYS												
PROJECT/CONTRACT:	10838											
RUN:	Marja Acres Carlsbad - Existing - 1018											
Roadway		Points										
Name	Width	Name	No.	Coordinates (pavement)			Flow Control				Segment	
				X	Y	Z	Control	Speed	Percent	Pvmt	On	
							Device	Constraint	Vehicles	Type	Struct?	
									Affected			
	ft			ft	ft	ft		mph	%			
Kelly Drive	66.0	point33	33	1,311.1	2,129.0	34.00				Average		
		point22	22	1,387.7	2,378.3	39.00				Average		
		point23	23	1,435.8	2,524.8	42.00				Average		
		point24	24	1,468.6	2,610.1	44.00				Average		
		point25	25	1,536.4	2,715.1	46.00						
Drieway B	50.0	point35	35	2,658.3	2,371.7	59.00				Average		
		point30	30	2,658.3	2,231.7	59.00						
El Camino Real west of Kelly Dr	105.0	point37	37	791.7	3,323.6	75.00				Average		
		point5	5	1,057.3	3,143.1	70.00				Average		
		point6	6	1,220.5	3,006.0	60.00				Average		
		point7	7	1,546.8	2,738.6	46.00						
Driveway A	50.0	point39	39	2,203.4	2,402.3	53.00				Average		
		point27	27	2,181.5	2,284.2	54.00				Average		
		point28	28	2,131.2	2,188.0	55.00						
El Camino Real east of Kelly Dr	105.0	point41	41	1,546.8	2,738.6	46.00				Average		
		point8	8	1,779.4	2,578.9	49.00				Average		
		point9	9	1,928.7	2,502.6	51.00				Average		
		point10	10	2,111.0	2,443.5	52.00				Average		
		point42	42	2,207.4	2,422.7	53.00						
El Camino Real - Driveway A to B	105.0	point43	43	2,207.4	2,422.7	53.00				Average		
		point11	11	2,303.7	2,401.9	55.00				Average		
		point12	12	2,534.5	2,396.7	57.00				Average		
		point45	45	2,657.8	2,400.5	59.00						
El Camino Real - east of Driveway B	105.0	point46	46	2,657.8	2,400.5	59.00				Average		
		point13	13	3,140.3	2,412.0	76.00				Average		

INPUT: ROADWAYS**10838**

		point14	14	3,573.4	2,427.3	84.00				Average	
		point15	15	3,656.5	2,420.7	83.00				Average	
		point16	16	4,008.6	2,361.7	75.00				Average	
		point17	17	4,275.4	2,274.2	71.00				Average	
		point18	18	4,533.5	2,145.2	65.00				Average	
		point19	19	5,102.1	1,825.8	55.00				Average	
		point20	20	5,765.2	1,506.5	44.00					

INPUT: TRAFFIC FOR LAeq1h Volumes
10838

Dudek												
MG												
INPUT: TRAFFIC FOR LAeq1h Volumes												
PROJECT/CONTRACT:	10838											
RUN:	Marja Acres Carlsbad - Existing - 1018											
Roadway	Points											
Name	Name	No.	Segment									
			Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Kelly Drive	point33	33	355	25	7	25	4	25	0	0	0	0
	point22	22	355	25	7	25	4	25	0	0	0	0
	point23	23	355	25	7	25	4	25	0	0	0	0
	point24	24	355	25	7	25	4	25	0	0	0	0
	point25	25										
Drieway B	point35	35	17	15	1	15	0	0	0	0	0	0
	point30	30										
El Camino Real west of Kelly Dr	point37	37	2722	50	56	50	28	50	0	0	0	0
	point5	5	2722	50	56	50	28	50	0	0	0	0
	point6	6	2722	50	56	50	28	50	0	0	0	0
	point7	7										
Driveway A	point39	39	65	15	1	15	0	0	0	0	0	0
	point27	27	65	15	1	15	0	0	0	0	0	0
	point28	28										
El Camino Real east of Kelly Dr	point41	41	2722	50	56	50	28	50	0	0	0	0
	point8	8	2722	50	56	50	28	50	0	0	0	0
	point9	9	2722	50	56	50	28	50	0	0	0	0
	point10	10	2722	50	56	50	28	50	0	0	0	0
	point42	42										
El Camino Real - Driveway A to B	point43	43	2722	50	56	50	28	50	0	0	0	0
	point11	11	2722	50	56	50	28	50	0	0	0	0
	point12	12	2722	50	56	50	28	50	0	0	0	0
	point45	45										

INPUT: TRAFFIC FOR LAeq1h Volumes**10838**

El Camino Real - east of Driveway B	point46	46	2722	50	56	50	28	50	0	0	0	0
	point13	13	2722	50	56	50	28	50	0	0	0	0
	point14	14	2722	50	56	50	28	50	0	0	0	0
	point15	15	2722	50	56	50	28	50	0	0	0	0
	point16	16	2722	50	56	50	28	50	0	0	0	0
	point17	17	2722	50	56	50	28	50	0	0	0	0
	point18	18	2722	50	56	50	28	50	0	0	0	0
	point19	19	2722	50	56	50	28	50	0	0	0	0
	point20	20										

INPUT: RECEIVERS
10838

Dudek												
MG												
INPUT: RECEIVERS												
PROJECT/CONTRACT:	10838											
RUN:	Marja Acres Carlsbad - Existing - 1018											
Receiver												
Name	No.	#DUs	Coordinates (ground)			Height	Input Sound Levels and Criteria				Active	
			X	Y	Z	above	Existing	Impact Criteria		NR	in	
						Ground	L _{Aeq} 1h	L _{Aeq} 1h	Sub'l	Goal	Calc.	
			ft	ft	ft	ft	dBA	dBA	dB	dB		
ST1	1	1	2,105.4	2,254.8	51.00	5.00	0.00	66	10.0	8.0	Y	
ST2	2	1	2,602.1	2,248.5	55.00	5.00	0.00	66	10.0	8.0	Y	
ST3	3	1	1,430.3	2,726.3	52.00	5.00	0.00	66	10.0	8.0	Y	
ST4	4	1	2,479.8	2,643.2	135.00	5.00	0.00	66	10.0	8.0	Y	
ST5	5	1	3,033.1	2,197.1	86.00	5.00	0.00	66	10.0	8.0	Y	
ST6	6	1	4,301.5	2,103.1	88.00	5.00	0.00	66	10.0	8.0	Y	

INPUT: BARRIERS

10838

Dudek					10 October 2018														
MG					TNM 2.5														
INPUT: BARRIERS																			
PROJECT/CONTRACT:		10838																	
RUN:		Marja Acres Carlsbad - Existing - 1018																	
Barrier										Points									
Name	Type	Height		If Wall	If Berm			Add'tnl		Name	No.	Coordinates (bottom)			Height	Segment			
		Min	Max	\$ per Unit Area	\$ per Unit Vol.	Top Width	Run:Rise	\$ per Unit Length				X	Y	Z	at Point	Seg Ht	Perturbs	On	Important
		ft	ft	\$/sq ft	\$/cu yd	ft	ft:ft	\$/ft				ft	ft	ft	ft	ft	#Up	#Dn	Reflec-tions?
Barrier1	W	0.00	99.99	0.00				0.00		point1	1	2,004.9	2,783.5	135.00	6.00	0.00	0	0	
										point3	3	1,992.9	2,739.8	135.00	6.00	0.00	0	0	
										point4	4	2,133.9	2,692.7	135.00	6.00	0.00	0	0	
										point5	5	2,250.9	2,654.4	135.00	6.00	0.00	0	0	
										point6	6	2,305.6	2,642.4	135.00	6.00	0.00	0	0	
										point7	7	2,378.9	2,635.9	135.00	6.00	0.00	0	0	
										point8	8	2,567.0	2,622.8	135.00	6.00	0.00	0	0	
										point9	9	2,568.0	2,676.3	135.00	6.00				
Barrier1-2-2	W	0.00	99.99	0.00				0.00		point20	20	4,315.7	2,129.9	88.00	6.00	0.00	0	0	
										point12	12	4,316.7	2,074.6	88.00	6.00	0.00	0	0	
										point13	13	3,008.2	2,098.8	88.00	6.00	0.00	0	0	
										point14	14	3,010.9	2,328.5	88.00	6.00	0.00	0	0	
										point15	15	3,334.6	2,336.7	88.00	6.00	0.00	0	0	
										point16	16	3,573.0	2,341.0	88.00	6.00	0.00	0	0	
										point17	17	3,598.1	2,341.0	88.00	6.00				
Barrier5	W	0.00	99.99	0.00				0.00		point21	21	4,314.7	2,131.2	87.00	6.00	0.00	0	0	
										point22	22	4,257.0	2,154.9	87.00	6.00	0.00	0	0	
										point23	23	4,172.2	2,183.5	87.00	6.00				
Barrier6	W	0.00	99.99	0.00				0.00		point24	24	1,290.6	2,844.0	52.00	6.00	0.00	0	0	
										point25	25	1,452.5	2,730.3	52.00	6.00	0.00	0	0	
										point26	26	1,418.1	2,633.8	52.00	6.00				

RESULTS: SOUND LEVELS

10838

Dudek													
MG													
RESULTS: SOUND LEVELS													
PROJECT/CONTRACT:		10838											
RUN:		Marja Acres Carlsbad - Existing - 1018											
BARRIER DESIGN:		INPUT HEIGHTS											
ATMOSPHERICS:		68 deg F, 50% RH											
Receiver													
Name	No.	#DUs	Existing	No Barrier					With Barrier				
			LAeq1h	LAeq1h		Increase over existing	Type	Calculated	Noise Reduction				
				Calculated	Crit'n	Calculated	Crit'n	Impact	LAeq1h	Calculated	Goal	Calculated	
							Sub'l Inc					minus	
												Goal	
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB	
ST1	1	1	0.0	66.2	66	66.2	10	Snd Lvl	66.2	0.0	8	-8.0	
ST2	2	1	0.0	67.2	66	67.2	10	Snd Lvl	67.2	0.0	8	-8.0	
ST3	3	1	0.0	62.9	66	62.9	10	----	62.9	0.0	8	-8.0	
ST4	4	1	0.0	53.5	66	53.5	10	----	53.5	0.0	8	-8.0	
ST5	5	1	0.0	55.3	66	55.3	10	----	55.3	0.0	8	-8.0	
ST6	6	1	0.0	59.7	66	59.7	10	----	59.7	0.0	8	-8.0	
Dwelling Units		# DUs	Noise Reduction										
			Min	Avg	Max								
			dB	dB	dB								
All Selected		6	0.0	0.0	0.0								
All Impacted		2	0.0	0.0	0.0								
All that meet NR Goal		0	0.0	0.0	0.0								

INPUT: ROADWAYS
10838

Dudek MG												
INPUT: ROADWAYS												
PROJECT/CONTRACT:	10838											
RUN:	Marja Acres Carlsbad-Ex w P Rev 1018											
Roadway		Points										
Name	Width	Name	No.	Coordinates (pavement)			Flow Control				Segment	
				X	Y	Z	Control	Speed	Percent	Pvmt	On	
							Device	Constraint	Vehicles	Type	Struct?	
									Affected			
	ft			ft	ft	ft		mph	%			
Kelly Drive	66.0	point33	33	1,311.1	2,129.0	34.00				Average		
		point22	22	1,387.7	2,378.3	39.00				Average		
		point23	23	1,435.8	2,524.8	42.00				Average		
		point24	24	1,468.6	2,610.1	44.00				Average		
		point25	25	1,536.4	2,715.1	46.00						
El Camino Real - west of Kelly Drive	105.0	point67	67	791.7	3,323.6	75.00				Average		
		point69	69	1,057.3	3,143.1	70.00				Average		
		point70	70	1,220.5	3,006.0	60.00				Average		
		point71	71	1,546.8	2,738.6	46.00						
El Camino Real - east of Kelly Drive	105.0	point116	116	1,546.8	2,738.6	46.00				Average		
		point72	72	1,786.4	2,590.8	49.00				Average		
		point73	73	1,934.6	2,519.3	51.00				Average		
		point74	74	2,108.8	2,457.3	52.00						
El Camino Real - east of Proj Dwy 1	105.0	point117	117	2,108.8	2,457.3	52.00				Average		
		point75	75	2,304.1	2,408.7	55.00				Average		
		point76	76	2,534.9	2,396.6	57.00				Average		
		point115	115	3,140.3	2,412.0	76.00				Average		
		point14	14	3,573.4	2,427.3	84.00				Average		
		point15	15	3,656.5	2,420.7	83.00				Average		
		point16	16	4,008.6	2,361.7	75.00				Average		
		point17	17	4,275.4	2,274.2	71.00				Average		
		point18	18	4,533.5	2,145.2	65.00				Average		
		point19	19	5,102.1	1,825.8	55.00				Average		
		point20	20	5,765.2	1,506.5	44.00						
Project Entrance #1	24.0	point118	118	2,093.3	2,416.2	53.00				Average		

INPUT: ROADWAYS**10838**

		point119	119	2,059.4	2,306.9	60.00				Average	
		point120	120	2,049.6	2,253.3	68.00				Average	
		point121	121	2,055.1	2,184.4	72.00					
Project Entrance #2	24.0	point122	122	2,803.9	2,360.6	64.00				Average	
		point123	123	2,806.5	2,209.5	75.00				Average	
		point124	124	2,807.4	2,152.2	80.00				Average	
		point125	125	2,783.9	2,112.3	82.00				Average	
		point126	126	2,561.7	2,010.7	84.00				Average	
		point127	127	1,896.8	1,706.7	86.00				Average	
		point128	128	1,830.6	1,675.7	80.00				Average	
		point129	129	1,805.1	1,665.4	77.00				Average	
		point130	130	1,772.7	1,661.9	76.00				Average	
		point131	131	1,668.0	1,689.5	74.00					

INPUT: TRAFFIC FOR LAeq1h Volumes

10838

Dudek												
MG												
INPUT: TRAFFIC FOR LAeq1h Volumes												
PROJECT/CONTRACT:	10838											
RUN:	Marja Acres Carlsbad-Ex w P Rev 1018											
Roadway	Points											
Name	Name	No.	Segment									
			Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Kelly Drive	point33	33	355	25	7	25	4	25	0	0	0	0
	point22	22	355	25	7	25	4	25	0	0	0	0
	point23	23	355	25	7	25	4	25	0	0	0	0
	point24	24	355	25	7	25	4	25	0	0	0	0
	point25	25										
El Camino Real - west of Kelly Drive	point67	67	2812	50	58	50	29	50	0	0	0	0
	point69	69	2812	50	58	50	29	50	0	0	0	0
	point70	70	2812	50	58	50	29	50	0	0	0	0
	point71	71										
El Camino Real - east of Kelly Drive	point116	116	2923	50	60	50	30	50	0	0	0	0
	point72	72	2923	50	60	50	30	50	0	0	0	0
	point73	73	2923	50	60	50	30	50	0	0	0	0
	point74	74										
El Camino Real - east of Proj Dwy 1	point117	117	2923	50	60	50	30	50	0	0	0	0
	point75	75	2923	50	60	50	30	50	0	0	0	0
	point76	76	2923	50	60	50	30	50	0	0	0	0
	point115	115	2923	50	60	50	30	50	0	0	0	0
	point14	14	2923	50	60	50	30	50	0	0	0	0
	point15	15	2923	50	60	50	30	50	0	0	0	0
	point16	16	2923	50	60	50	30	50	0	0	0	0
	point17	17	2923	50	60	50	30	50	0	0	0	0
	point18	18	2923	50	60	50	30	50	0	0	0	0
	point19	19	2923	50	60	50	30	50	0	0	0	0

INPUT: TRAFFIC FOR LAeq1h Volumes**10838**

	point20	20										
Project Entrance #1	point118	118	148	15	3	15	2	15	0	0	0	0
	point119	119	148	15	3	15	2	15	0	0	0	0
	point120	120	148	15	3	15	2	15	0	0	0	0
	point121	121										
Project Entrance #2	point122	122	105	15	2	15	1	15	0	0	0	0
	point123	123	105	15	2	15	1	15	0	0	0	0
	point124	124	105	15	2	15	1	15	0	0	0	0
	point125	125	105	15	2	15	1	15	0	0	0	0
	point126	126	105	15	2	15	1	15	0	0	0	0
	point127	127	105	15	2	15	1	15	0	0	0	0
	point128	128	105	15	2	15	1	15	0	0	0	0
	point129	129	105	15	2	15	1	15	0	0	0	0
	point130	130	105	15	2	15	1	15	0	0	0	0
	point131	131										

INPUT: RECEIVERS
10838

Dudek						10 October 2018					
MG						TNM 2.5					
INPUT: RECEIVERS											
PROJECT/CONTRACT:		10838									
RUN:		Marja Acres Carlsbad-Ex w P Rev 1018									
Receiver											
Name	No.	#DUs	Coordinates (ground)		Z	Height	Input Sound Levels and Criteria				Active
			X	Y		above	Existing	Impact Criteria		NR	in
						Ground	LAeq1h	LAeq1h	Sub'I	Goal	Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
ST3	3	1	1,430.3	2,726.3	52.00	5.00	0.00	66	10.0	8.0	Y
ST4	4	1	2,479.8	2,643.2	135.00	5.00	0.00	66	10.0	8.0	Y
ST5	5	1	3,033.1	2,197.1	86.00	5.00	0.00	66	10.0	8.0	Y
ST6	6	1	4,301.5	2,103.1	88.00	5.00	0.00	66	10.0	8.0	Y
M1 - Common Rec Area 1	255	1	2,077.5	1,990.8	84.00	5.00	0.00	66	10.0	8.0	
M2 - Common Rec Area 2	256	1	1,551.4	1,587.1	75.00	5.00	0.00	66	10.0	8.0	
M3 - Common Rec Area 3	261	1	1,688.6	1,864.3	77.00	5.00	0.00	66	10.0	8.0	
M4 - Common Rec Area 4	262	1	1,802.6	1,706.4	78.00	5.00	0.00	66	10.0	8.0	
M5 - Common Rec Area 5	263	1	2,427.9	2,003.0	85.00	5.00	0.00	66	10.0	8.0	
M6 - Common Rec Area 6	264	1	2,588.7	2,072.8	84.00	5.00	0.00	66	10.0	8.0	
M7 - Common Rec Area 7	265	1	2,709.0	2,150.9	80.00	5.00	0.00	66	10.0	8.0	
M8 - Senior Apartment Housing 1st Flr	267	1	1,827.3	2,452.0	60.00	5.00	0.00	66	10.0	8.0	
M9 - Senior Apartment Housing 1st Flr	268	1	1,883.2	2,434.8	60.00	5.00	0.00	66	10.0	8.0	
M10 - Senior Apartment Housing 1st Flr	269	1	1,952.0	2,406.6	60.00	5.00	0.00	66	10.0	8.0	
M11 - Senior Apartment Housing 1st Flr	270	1	1,937.7	2,355.5	60.00	5.00	0.00	66	10.0	8.0	
M12 - Senior Apartment Housing 1st Flr	271	1	1,927.1	2,308.0	60.00	5.00	0.00	66	10.0	8.0	
M13 - Senior Apartment Housing 1st Flr	272	1	1,915.1	2,275.6	60.00	5.00	0.00	66	10.0	8.0	
M14 - Senior Apartment Housing 1st Flr	273	1	1,814.5	2,388.9	60.00	5.00	0.00	66	10.0	8.0	
M15 - Senior Apartment Housing 1st Flr	274	1	1,863.0	2,375.9	60.00	5.00	0.00	66	10.0	8.0	
M16 - Senior Apartment Housing 1st Flr	275	1	1,871.9	2,344.5	60.00	5.00	0.00	66	10.0	8.0	
M17 - Senior Apartment Housing 1st Flr	276	1	1,838.7	2,305.1	60.00	5.00	0.00	66	10.0	8.0	
M18 - Small Townhomes 1st Flr	277	1	2,541.1	2,293.1	72.00	5.00	0.00	66	10.0	8.0	

INPUT: RECEIVERS**10838**

M19 - Small Townhomes 1st Flr	278	1	2,653.6	2,297.4	72.00	5.00	0.00	66	10.0	8.0	
M20 - Small Townhomes 1st Flr	279	1	2,714.3	2,296.2	71.00	5.00	0.00	66	10.0	8.0	
M21 Small Townhomes 1st Flr	280	1	2,741.4	2,295.4	71.00	5.00	0.00	66	10.0	8.0	
M22 Small Townhomes 1st Flr	281	1	2,746.3	2,261.9	71.50	5.00	0.00	66	10.0	8.0	
M23 Small Townhomes 1st Flr	282	1	2,749.0	2,239.6	71.50	5.00	0.00	66	10.0	8.0	
M24 Small Townhomes 1st Flr	283	1	2,749.5	2,217.9	71.50	5.00	0.00	66	10.0	8.0	
M27 Small Townhomes 1st Flr	284	1	2,658.2	2,183.7	72.00	5.00	0.00	66	10.0	8.0	
M28 Small Townhomes 1st Flr	285	1	2,544.1	2,184.1	71.00	5.00	0.00	66	10.0	8.0	
M30 Large Townhomes 1st Flr	286	1	2,917.5	2,301.2	75.00	5.00	0.00	66	10.0	8.0	
M31 Large Townhomes 1st Flr	287	1	2,977.3	2,302.2	75.00	5.00	0.00	66	10.0	8.0	
M34 Large Townhomes 1st Flr	289	1	2,867.7	2,212.6	75.00	5.00	0.00	66	10.0	8.0	
M36 Large Townhomes 1st Flr	290	1	2,863.5	2,167.9	77.00	5.00	0.00	66	10.0	8.0	
M39 Large Townhomes 1st Flr	291	1	2,987.7	2,221.0	75.00	5.00	0.00	66	10.0	8.0	
M42 Large Townhomes 1st Flr	292	1	2,843.7	2,031.9	79.00	5.00	0.00	66	10.0	8.0	
M44 Large Townhomes 1st Flr	293	1	2,658.6	2,158.3	84.00	5.00	0.00	66	10.0	8.0	
M45 Large Townhomes 1st Flr	294	1	2,575.5	2,155.5	84.00	5.00	0.00	66	10.0	8.0	
M46 Large Townhomes 1st Flr	295	1	2,501.0	2,153.2	84.00	5.00	0.00	66	10.0	8.0	
M47 Large Townhomes 1st Flr	296	1	2,361.0	2,146.8	84.00	5.00	0.00	66	10.0	8.0	
M52 Large Townhomes 1st Flr	297	1	2,291.5	2,140.2	83.00	34.00	0.00	66	10.0	8.0	
M53 Large Townhomes 1st Flr	298	1	2,185.6	2,129.8	83.00	5.00	0.00	66	10.0	8.0	
M57 Small Townhomes 1st Flr	299	1	1,952.0	2,104.6	77.00	5.00	0.00	66	10.0	8.0	
M58 Small Townhomes 1st Flr	300	1	1,892.1	2,100.3	76.50	5.00	0.00	66	10.0	8.0	
M59 Small Townhomes 1st Flr	301	1	1,748.0	2,082.9	76.00	5.00	0.00	66	10.0	8.0	
M63 Large Townhomes 1st Flr	302	1	2,532.6	2,040.9	85.00	5.00	0.00	66	10.0	8.0	
M65 Large Townhomes 1st Flr	303	1	2,415.0	2,037.0	85.00	5.00	0.00	66	10.0	8.0	
M66 Large Townhomes 1st Flr	304	1	2,369.6	2,065.4	86.00	5.00	0.00	66	10.0	8.0	
M67 Large Townhomes 1st Flr	305	1	2,383.8	2,032.6	86.00	5.00	0.00	66	10.0	8.0	
M68 Large Townhomes 1st Flr	306	1	2,399.7	1,999.8	86.00	5.00	0.00	66	10.0	8.0	
M71 Large Townhomes 1st Flr	307	1	2,262.9	2,039.2	86.00	5.00	0.00	66	10.0	8.0	
M72 Large Townhomes 1st Flr	308	1	2,278.8	2,005.8	86.50	5.00	0.00	66	10.0	8.0	
M74 Large Townhomes 1st Flr	309	1	2,230.7	2,057.2	86.00	5.00	0.00	66	10.0	8.0	
M75 Large Townhomes 1st Flr	310	1	2,248.1	2,016.2	86.50	5.00	0.00	66	10.0	8.0	
M76 Large Townhomes 1st Flr	311	1	2,275.3	1,956.6	87.00	5.00	0.00	66	10.0	8.0	
M81 Large Townhomes 1st Flr	312	1	2,119.6	2,026.6	86.00	5.00	0.00	66	10.0	8.0	
M83 Small Townhomes 1st Flr	313	1	2,014.3	2,034.7	80.00	5.00	0.00	66	10.0	8.0	
M84 Small Townhomes 1st Flr	314	1	2,043.3	1,975.6	80.00	5.00	0.00	66	10.0	8.0	

INPUT: RECEIVERS**10838**

M85 Small Townhomes 1st Flr	315	1	2,078.0	1,901.4	80.00	5.00	0.00	66	10.0	8.0	
M87 Small Townhomes 1st Flr	316	1	1,914.4	2,015.2	79.50	5.00	0.00	66	10.0	8.0	
M88 Small Townhomes 1st Flr	317	1	1,884.9	2,029.9	79.50	5.00	0.00	66	10.0	8.0	
M89 Small Townhomes 1st Flr	318	1	1,807.2	1,960.2	80.00	5.00	0.00	66	10.0	8.0	
M90 Small Townhomes 1st Flr	319	1	1,775.5	1,985.0	79.00	5.00	0.00	66	10.0	8.0	
M91 Small Townhomes 1st Flr	320	1	1,687.3	1,935.4	78.00	5.00	0.00	66	10.0	8.0	
M92 Small Townhomes 1st Flr	321	1	1,684.5	1,830.8	78.00	5.00	0.00	66	10.0	8.0	
M93 Small Townhomes 1st Flr	322	1	1,657.9	1,767.4	77.00	5.00	0.00	66	10.0	8.0	
M94 Large Townhomes 1st Flr	323	1	2,795.2	2,083.4	84.00	5.00	0.00	66	10.0	8.0	
M98 Large Townhomes 1st Flr	324	1	2,693.9	2,033.3	84.00	5.00	0.00	66	10.0	8.0	
M100 Large Townhomes 1st Flr	325	1	2,678.1	2,027.8	85.50	5.00	0.00	66	10.0	8.0	
M104 Large Townhomes 1st Flr	326	1	2,577.4	1,981.4	85.50	5.00	0.00	66	10.0	8.0	
M106 Large Townhomes 1st Flr	327	1	2,520.9	1,959.8	87.50	5.00	0.00	66	10.0	8.0	
M107 Large Townhomes 1st Flr	328	1	2,462.8	1,931.1	87.50	5.00	0.00	66	10.0	8.0	
M109 Large Townhomes 1st Flr	329	1	2,349.9	1,872.9	88.50	5.00	0.00	66	10.0	8.0	
M110 Large Townhomes 1st Flr	330	1	2,236.8	1,821.1	89.50	5.00	0.00	66	10.0	8.0	
M112 Small Townhomes 1st Flr	331	1	2,131.8	1,774.1	88.00	5.00	0.00	66	10.0	8.0	
M113 Small Townhomes 1st Flr	332	1	2,032.9	1,730.5	87.00	5.00	0.00	66	10.0	8.0	
M114 - Small Townhomes 1st Flr	333	1	1,926.8	1,683.5	85.00	5.00	0.00	66	10.0	8.0	
M115 - Small Townhomes 1st Flr	334	1	1,819.7	1,636.4	82.00	5.00	0.00	66	10.0	8.0	
M116 - Small Townhomes 1st Flr	335	1	1,785.6	1,626.7	75.00	5.00	0.00	66	10.0	8.0	
M117 - Small Townhomes 1st Flr	336	1	1,701.5	1,641.9	75.00	5.00	0.00	66	10.0	8.0	
M8 - Senior Apartment Housing 2nd Flr	337	1	1,827.3	2,452.0	60.00	15.00	0.00	66	10.0	8.0	
M9 - Senior Apartment Housing 2nd Flr	338	1	1,883.2	2,434.8	60.00	15.00	0.00	66	10.0	8.0	
M10 - Senior Apartment Housing 2nd Flr	339	1	1,952.0	2,406.6	60.00	15.00	0.00	66	10.0	8.0	
M11 - Senior Apartment Housing 2nd Flr	340	1	1,937.7	2,355.5	60.00	15.00	0.00	66	10.0	8.0	
M12 - Senior Apartment Housing 2nd Flr	341	1	1,927.1	2,308.0	60.00	15.00	0.00	66	10.0	8.0	
M13 - Senior Apartment Housing 2nd Flr	342	1	1,915.1	2,275.6	60.00	15.00	0.00	66	10.0	8.0	
M14 - Senior Apartment Housing 2nd Flr	343	1	1,814.5	2,388.9	60.00	15.00	0.00	66	10.0	8.0	
M15 - Senior Apartment Housing 2nd Flr	344	1	1,863.0	2,375.9	60.00	15.00	0.00	66	10.0	8.0	
M16 - Senior Apartment Housing 2nd Flr	345	1	1,871.9	2,344.5	60.00	15.00	0.00	66	10.0	8.0	
M17 - Senior Apartment Housing 2nd Flr	346	1	1,838.7	2,305.1	60.00	15.00	0.00	66	10.0	8.0	
M18 - Small Townhomes 2nd Flr	347	1	2,541.1	2,293.1	72.00	15.00	0.00	66	10.0	8.0	
M19 - Small Townhomes 2nd Flr	348	1	2,653.6	2,297.4	72.00	15.00	0.00	66	10.0	8.0	
M20 - Small Townhomes 2nd Flr	349	1	2,714.3	2,296.2	71.00	15.00	0.00	66	10.0	8.0	
M21 Small Townhomes 2nd Flr	350	1	2,741.4	2,295.4	71.00	15.00	0.00	66	10.0	8.0	

INPUT: RECEIVERS**10838**

M22 Small Townhomes 2nd Flr	351	1	2,746.3	2,261.9	71.50	15.00	0.00	66	10.0	8.0	
M23 Small Townhomes 2nd Flr	352	1	2,749.0	2,239.6	71.50	15.00	0.00	66	10.0	8.0	
M24 Small Townhomes 2nd Flr	353	1	2,749.5	2,217.9	71.50	15.00	0.00	66	10.0	8.0	
M25 Small Townhomes 2nd Flr	354	1	2,542.9	2,223.0	71.00	15.00	0.00	66	10.0	8.0	
M26 Small Townhomes 2nd Flr	355	1	2,661.2	2,224.8	72.00	15.00	0.00	66	10.0	8.0	
M27 Small Townhomes 2nd Flr	356	1	2,658.2	2,183.7	72.00	15.00	0.00	66	10.0	8.0	
M28 Small Townhomes 2nd Flr	357	1	2,544.1	2,184.1	71.00	15.00	0.00	66	10.0	8.0	
M30 Large Townhomes 2nd Flr	358	1	2,917.5	2,301.2	75.00	15.00	0.00	66	10.0	8.0	
M31 Large Townhomes 2nd Flr	359	1	2,977.3	2,302.2	75.00	15.00	0.00	66	10.0	8.0	
M32 Large Townhomes 2nd Flr	360	1	2,909.2	2,253.9	75.00	15.00	0.00	66	10.0	8.0	
M34 Large Townhomes 2nd Flr	361	1	2,867.7	2,212.6	75.00	15.00	0.00	66	10.0	8.0	
M35 Large Townhomes 2nd Flr	362	1	2,913.9	2,206.5	75.00	15.00	0.00	66	10.0	8.0	
M36 Large Townhomes 2nd Flr	363	1	2,863.5	2,167.9	77.00	15.00	0.00	66	10.0	8.0	
M38 Large Townhomes 2nd Flr	364	1	2,941.6	2,217.1	75.00	15.00	0.00	66	10.0	8.0	
M39 Large Townhomes 2nd Flr	365	1	2,987.7	2,221.0	75.00	15.00	0.00	66	10.0	8.0	
M41 Large Townhomes 2nd Flr	366	1	2,842.0	2,091.1	79.00	15.00	0.00	66	10.0	8.0	
M42 Large Townhomes 2nd Flr	367	1	2,843.7	2,031.9	79.00	15.00	0.00	66	10.0	8.0	
M44 Large Townhomes 2nd Flr	368	1	2,658.6	2,158.3	84.00	15.00	0.00	66	10.0	8.0	
M45 Large Townhomes 2nd Flr	378	1	2,575.5	2,155.5	84.00	15.00	0.00	66	10.0	8.0	
M46 Large Townhomes 2nd Flr	380	1	2,501.0	2,153.2	84.00	15.00	0.00	66	10.0	8.0	
M47 Large Townhomes 2nd Flr	382	1	2,361.0	2,146.8	84.00	15.00	0.00	66	10.0	8.0	
M48 Large Townhomes 2nd Flr	383	1	2,640.6	2,112.2	84.00	15.00	0.00	66	10.0	8.0	
M52 Large Townhomes 2nd Flr	385	1	2,291.5	2,140.2	83.00	15.00	0.00	66	10.0	8.0	
M53 Large Townhomes 2nd Flr	386	1	2,185.6	2,129.8	83.00	15.00	0.00	66	10.0	8.0	
M54 Large Townhomes 2nd Flr	388	1	2,163.0	2,084.7	83.00	15.00	0.00	66	10.0	8.0	
M57 Small Townhomes 2nd Flr	389	1	1,952.0	2,104.6	77.00	15.00	0.00	66	10.0	8.0	
M58 Small Townhomes 2nd Flr	391	1	1,892.1	2,100.3	76.50	15.00	0.00	66	10.0	8.0	
M59 Small Townhomes 2nd Flr	392	1	1,748.0	2,082.9	76.00	15.00	0.00	66	10.0	8.0	
M60 Small Townhomes 2nd Flr	393	1	1,758.4	2,048.2	76.00	15.00	0.00	66	10.0	8.0	
M61 Large Townhomes 2nd Flr	394	1	2,542.4	2,081.8	85.00	15.00	0.00	66	10.0	8.0	
M62 Large Townhomes 2nd Flr	395	1	2,427.6	2,077.4	85.00	15.00	0.00	66	10.0	8.0	
M63 Large Townhomes 2nd Flr	396	1	2,532.6	2,040.9	85.00	15.00	0.00	66	10.0	8.0	
M65 Large Townhomes 2nd Flr	397	1	2,415.0	2,037.0	85.00	15.00	0.00	66	10.0	8.0	
M66 Large Townhomes 2nd Flr	398	1	2,369.6	2,065.4	86.00	15.00	0.00	66	10.0	8.0	
M67 Large Townhomes 2nd Flr	399	1	2,383.8	2,032.6	86.00	15.00	0.00	66	10.0	8.0	
M68 Large Townhomes 2nd Flr	400	1	2,399.7	1,999.8	86.00	15.00	0.00	66	10.0	8.0	

INPUT: RECEIVERS**10838**

M70 Large Townhomes 2nd Flr	401	1	2,299.9	2,061.6	86.00	15.00	0.00	66	10.0	8.0	
M71 Large Townhomes 2nd Flr	402	1	2,262.9	2,039.2	86.00	15.00	0.00	66	10.0	8.0	
M72 Large Townhomes 2nd Flr	403	1	2,278.8	2,005.8	86.50	15.00	0.00	66	10.0	8.0	
M74 Large Townhomes 2nd Flr	404	1	2,230.7	2,057.2	86.00	15.00	0.00	66	10.0	8.0	
M75 Large Townhomes 2nd Flr	405	1	2,248.1	2,016.2	86.50	15.00	0.00	66	10.0	8.0	
M76 Large Townhomes 2nd Flr	406	1	2,275.3	1,956.6	87.00	15.00	0.00	66	10.0	8.0	
M77 Large Townhomes 2nd Flr	407	1	2,188.0	2,035.3	86.00	15.00	0.00	66	10.0	8.0	
M78 Large Townhomes 2nd Flr	408	1	2,231.7	1,941.8	87.00	15.00	0.00	66	10.0	8.0	
M80 Large Townhomes 2nd Flr	409	1	2,159.9	2,050.7	86.00	15.00	0.00	66	10.0	8.0	
M81 Large Townhomes 2nd Flr	410	1	2,119.6	2,026.6	86.00	15.00	0.00	66	10.0	8.0	
M83 Small Townhomes 2nd Flr	411	1	2,014.3	2,034.7	80.00	15.00	0.00	66	10.0	8.0	
M84 Small Townhomes 2nd Flr	412	1	2,043.3	1,975.6	80.00	15.00	0.00	66	10.0	8.0	
M85 Small Townhomes 2nd Flr	413	1	2,078.0	1,901.4	80.00	15.00	0.00	66	10.0	8.0	
M86 Small Townhomes 2nd Flr	414	1	1,951.7	2,025.4	79.50	15.00	0.00	66	10.0	8.0	
M87 Small Townhomes 2nd Flr	415	1	1,914.4	2,015.2	79.50	15.00	0.00	66	10.0	8.0	
M88 Small Townhomes 2nd Flr	416	1	1,884.9	2,029.9	79.50	15.00	0.00	66	10.0	8.0	
M89 Small Townhomes 2nd Flr	417	1	1,807.2	1,960.2	80.00	15.00	0.00	66	10.0	8.0	
M90 Small Townhomes 2nd Flr	418	1	1,775.5	1,985.0	79.00	15.00	0.00	66	10.0	8.0	
M91 Small Townhomes 2nd Flr	419	1	1,687.3	1,935.4	78.00	15.00	0.00	66	10.0	8.0	
M92 Small Townhomes 2nd Flr	420	1	1,684.5	1,830.8	78.00	15.00	0.00	66	10.0	8.0	
M93 Small Townhomes 2nd Flr	421	1	1,657.9	1,767.4	77.00	15.00	0.00	66	10.0	8.0	
M94 Large Townhomes 2nd Flr	422	1	2,795.2	2,083.4	84.00	15.00	0.00	66	10.0	8.0	
M96 Large Townhomes 2nd Flr	423	1	2,733.8	2,053.6	84.00	15.00	0.00	66	10.0	8.0	
M97 Large Townhomes 2nd Flr	424	1	2,749.3	2,016.0	84.00	15.00	0.00	66	10.0	8.0	
M98 Large Townhomes 2nd Flr	425	1	2,693.9	2,033.3	84.00	15.00	0.00	66	10.0	8.0	
M100 Large Townhomes 2nd Flr	426	1	2,678.1	2,027.8	85.50	15.00	0.00	66	10.0	8.0	
M101 Large Townhomes 2nd Flr	427	1	2,640.6	2,009.5	85.50	15.00	0.00	66	10.0	8.0	
M102 Large Townhomes 2nd Flr	428	1	2,618.2	2,004.1	85.50	15.00	0.00	66	10.0	8.0	
M104 Large Townhomes 2nd Flr	429	1	2,577.4	1,981.4	85.50	15.00	0.00	66	10.0	8.0	
M106 Large Townhomes 2nd Flr	430	1	2,520.9	1,959.8	87.50	15.00	0.00	66	10.0	8.0	
M107 Large Townhomes 2nd Flr	431	1	2,462.8	1,931.1	87.50	15.00	0.00	66	10.0	8.0	
M109 Large Townhomes 2nd Flr	432	1	2,349.9	1,872.9	88.50	15.00	0.00	66	10.0	8.0	
M110 Large Townhomes 2nd Flr	433	1	2,236.8	1,821.1	89.50	15.00	0.00	66	10.0	8.0	
M112 Small Townhomes 2nd Flr	434	1	2,131.8	1,774.1	88.00	15.00	0.00	66	10.0	8.0	
M113 Small Townhomes 2nd Flr	435	1	2,032.9	1,730.5	87.00	15.00	0.00	66	10.0	8.0	
M114 - Small Townhomes 2nd Flr	436	1	1,926.8	1,683.5	85.00	15.00	0.00	66	10.0	8.0	

INPUT: RECEIVERS**10838**

M115 - Small Townhomes 2nd Flr	437	1	1,819.7	1,636.4	82.00	15.00	0.00	66	10.0	8.0	
M116 - Small Townhomes 2nd Flr	438	1	1,785.6	1,626.7	75.00	15.00	0.00	66	10.0	8.0	
M117 - Small Townhomes 2nd Flr	439	1	1,701.5	1,641.9	75.00	15.00	0.00	66	10.0	8.0	
M8 - Senior Apartment Housing 3rd Flr	440	1	1,827.3	2,452.0	60.00	25.00	0.00	66	10.0	8.0	
M9 - Senior Apartment Housing 3rd Flr	441	1	1,883.2	2,434.8	60.00	25.00	0.00	66	10.0	8.0	
M10 - Senior Apartment Housing 3rd Flr	442	1	1,952.0	2,406.6	60.00	25.00	0.00	66	10.0	8.0	
M11 - Senior Apartment Housing 3rd Flr	443	1	1,937.7	2,355.5	60.00	25.00	0.00	66	10.0	8.0	
M12 - Senior Apartment Housing 3rd Flr	444	1	1,927.1	2,308.0	60.00	25.00	0.00	66	10.0	8.0	
M13 - Senior Apartment Housing 3rd Flr	445	1	1,915.1	2,275.6	60.00	25.00	0.00	66	10.0	8.0	
M14 - Senior Apartment Housing 3rd Flr	446	1	1,814.5	2,388.9	60.00	25.00	0.00	66	10.0	8.0	
M15 - Senior Apartment Housing 3rd Flr	447	1	1,863.0	2,375.9	60.00	25.00	0.00	66	10.0	8.0	
M16 - Senior Apartment Housing 3rd Flr	448	1	1,871.9	2,344.5	60.00	25.00	0.00	66	10.0	8.0	
M17 - Senior Apartment Housing 3rd Flr	449	1	1,838.7	2,305.1	60.00	25.00	0.00	66	10.0	8.0	
M18 - Small Townhomes 3rd Flr	450	1	2,541.1	2,293.1	72.00	25.00	0.00	66	10.0	8.0	
M19 - Small Townhomes 3rd Flr	451	1	2,653.6	2,297.4	72.00	25.00	0.00	66	10.0	8.0	
M20 - Small Townhomes 3rd Flr	452	1	2,714.3	2,296.2	71.00	25.00	0.00	66	10.0	8.0	
M21 Small Townhomes 3rd Flr	453	1	2,741.4	2,295.4	71.00	25.00	0.00	66	10.0	8.0	
M22 Small Townhomes 3rd Flr	454	1	2,746.3	2,261.9	71.50	25.00	0.00	66	10.0	8.0	
M23 Small Townhomes 3rd Flr	455	1	2,749.0	2,239.6	71.50	25.00	0.00	66	10.0	8.0	
M24 Small Townhomes 3rd Flr	456	1	2,749.5	2,217.9	71.50	25.00	0.00	66	10.0	8.0	
M25 Small Townhomes 3rd Flr	457	1	2,542.9	2,223.0	71.00	25.00	0.00	66	10.0	8.0	
M26 Small Townhomes 3rd Flr	458	1	2,661.2	2,224.8	72.00	25.00	0.00	66	10.0	8.0	
M27 Small Townhomes 3rd Flr	459	1	2,658.2	2,183.7	72.00	25.00	0.00	66	10.0	8.0	
M28 Small Townhomes 3rd Flr	460	1	2,544.1	2,184.1	71.00	25.00	0.00	66	10.0	8.0	
M30 Large Townhomes 3rd Flr	461	1	2,917.5	2,301.2	75.00	25.00	0.00	66	10.0	8.0	
M31 Large Townhomes 3rd Flr	462	1	2,977.3	2,302.2	75.00	25.00	0.00	66	10.0	8.0	
M32 Large Townhomes 3rd Flr	463	1	2,909.2	2,253.9	75.00	25.00	0.00	66	10.0	8.0	
M34 Large Townhomes 3rd Flr	464	1	2,867.7	2,212.6	75.00	25.00	0.00	66	10.0	8.0	
M35 Large Townhomes 3rd Flr	465	1	2,913.9	2,206.5	75.00	25.00	0.00	66	10.0	8.0	
M36 Large Townhomes 3rd Flr	466	1	2,863.5	2,167.9	77.00	25.00	0.00	66	10.0	8.0	
M38 Large Townhomes 3rd Flr	467	1	2,941.6	2,217.1	75.00	25.00	0.00	66	10.0	8.0	
M39 Large Townhomes 3rd Flr	468	1	2,987.7	2,221.0	75.00	25.00	0.00	66	10.0	8.0	
M41 Large Townhomes 3rd Flr	469	1	2,842.0	2,091.1	79.00	25.00	0.00	66	10.0	8.0	
M42 Large Townhomes 3rd Flr	470	1	2,843.7	2,031.9	79.00	25.00	0.00	66	10.0	8.0	
M44 Large Townhomes 3rd Flr	471	1	2,658.6	2,158.3	84.00	25.00	0.00	66	10.0	8.0	
M45 Large Townhomes 3rd Flr	472	1	2,575.5	2,155.5	84.00	25.00	0.00	66	10.0	8.0	

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M46 Large Townhomes 3rd Flr	473	1	2,501.0	2,153.2	84.00	25.00	0.00	66	10.0	8.0	
M47 Large Townhomes 3rd Flr	474	1	2,361.0	2,146.8	84.00	25.00	0.00	66	10.0	8.0	
M48 Large Townhomes 3rd Flr	475	1	2,640.6	2,112.2	84.00	25.00	0.00	66	10.0	8.0	
M52 Large Townhomes 3rd Flr	476	1	2,291.5	2,140.2	83.00	25.00	0.00	66	10.0	8.0	
M53 Large Townhomes 3rd Flr	477	1	2,185.6	2,129.8	83.00	25.00	0.00	66	10.0	8.0	
M54 Large Townhomes 3rd Flr	478	1	2,163.0	2,084.7	83.00	25.00	0.00	66	10.0	8.0	
M57 Small Townhomes 3rd Flr	479	1	1,952.0	2,104.6	77.00	25.00	0.00	66	10.0	8.0	
M58 Small Townhomes 3rd Flr	480	1	1,892.1	2,100.3	76.50	25.00	0.00	66	10.0	8.0	
M59 Small Townhomes 3rd Flr	481	1	1,748.0	2,082.9	76.00	25.00	0.00	66	10.0	8.0	
M60 Small Townhomes 3rd Flr	482	1	1,758.4	2,048.2	76.00	25.00	0.00	66	10.0	8.0	
M61 Large Townhomes 3rd Flr	483	1	2,542.4	2,081.8	85.00	25.00	0.00	66	10.0	8.0	
M62 Large Townhomes 3rd Flr	484	1	2,427.6	2,077.4	85.00	25.00	0.00	66	10.0	8.0	
M63 Large Townhomes 3rd Flr	485	1	2,532.6	2,040.9	85.00	25.00	0.00	66	10.0	8.0	
M65 Large Townhomes 3rd Flr	486	1	2,415.0	2,037.0	85.00	25.00	0.00	66	10.0	8.0	
M66 Large Townhomes 3rd Flr	487	1	2,369.6	2,065.4	86.00	25.00	0.00	66	10.0	8.0	
M67 Large Townhomes 3rd Flr	488	1	2,383.8	2,032.6	86.00	25.00	0.00	66	10.0	8.0	
M68 Large Townhomes 3rd Flr	489	1	2,399.7	1,999.8	86.00	25.00	0.00	66	10.0	8.0	
M70 Large Townhomes 3rd Flr	490	1	2,299.9	2,061.6	86.00	25.00	0.00	66	10.0	8.0	
M71 Large Townhomes 3rd Flr	491	1	2,262.9	2,039.2	86.00	25.00	0.00	66	10.0	8.0	
M72 Large Townhomes 3rd Flr	492	1	2,278.8	2,005.8	86.50	25.00	0.00	66	10.0	8.0	
M74 Large Townhomes 3rd Flr	493	1	2,230.7	2,057.2	86.00	25.00	0.00	66	10.0	8.0	
M75 Large Townhomes 3rd Flr	494	1	2,248.1	2,016.2	86.50	25.00	0.00	66	10.0	8.0	
M76 Large Townhomes 3rd Flr	495	1	2,275.3	1,956.6	87.00	25.00	0.00	66	10.0	8.0	
M77 Large Townhomes 3rd Flr	496	1	2,188.0	2,035.3	86.00	25.00	0.00	66	10.0	8.0	
M78 Large Townhomes 3rd Flr	497	1	2,231.7	1,941.8	87.00	25.00	0.00	66	10.0	8.0	
M80 Large Townhomes 3rd Flr	498	1	2,159.9	2,050.7	86.00	25.00	0.00	66	10.0	8.0	
M81 Large Townhomes 3rd Flr	499	1	2,119.6	2,026.6	86.00	25.00	0.00	66	10.0	8.0	
M83 Small Townhomes 3rd Flr	500	1	2,014.3	2,034.7	80.00	25.00	0.00	66	10.0	8.0	
M84 Small Townhomes 3rd Flr	501	1	2,043.3	1,975.6	80.00	25.00	0.00	66	10.0	8.0	
M85 Small Townhomes 3rd Flr	502	1	2,078.0	1,901.4	80.00	25.00	0.00	66	10.0	8.0	
M86 Small Townhomes 3rd Flr	503	1	1,951.7	2,025.4	79.50	25.00	0.00	66	10.0	8.0	
M87 Small Townhomes 3rd Flr	504	1	1,914.4	2,015.2	79.50	25.00	0.00	66	10.0	8.0	
M88 Small Townhomes 3rd Flr	505	1	1,884.9	2,029.9	79.50	25.00	0.00	66	10.0	8.0	
M89 Small Townhomes 3rd Flr	506	1	1,807.2	1,960.2	80.00	25.00	0.00	66	10.0	8.0	
M90 Small Townhomes 3rd Flr	507	1	1,775.5	1,985.0	79.00	25.00	0.00	66	10.0	8.0	
M91 Small Townhomes 3rd Flr	508	1	1,687.3	1,935.4	78.00	25.00	0.00	66	10.0	8.0	

INPUT: RECEIVERS**10838**

M92 Small Townhomes 3rd Flr	509	1	1,684.5	1,830.8	78.00	25.00	0.00	66	10.0	8.0	
M93 Small Townhomes 3rd Flr	510	1	1,657.9	1,767.4	77.00	25.00	0.00	66	10.0	8.0	
M94 Large Townhomes 3rd Flr	511	1	2,795.2	2,083.4	84.00	25.00	0.00	66	10.0	8.0	
M96 Large Townhomes 3rd Flr	512	1	2,733.8	2,053.6	84.00	25.00	0.00	66	10.0	8.0	
M97 Large Townhomes 3rd Flr	513	1	2,749.3	2,016.0	84.00	25.00	0.00	66	10.0	8.0	
M98 Large Townhomes 3rd Flr	514	1	2,693.9	2,033.3	84.00	25.00	0.00	66	10.0	8.0	
M100 Large Townhomes 3rd Flr	515	1	2,678.1	2,027.8	85.50	25.00	0.00	66	10.0	8.0	
M101 Large Townhomes 3rd Flr	517	1	2,640.6	2,009.5	85.50	25.00	0.00	66	10.0	8.0	
M102 Large Townhomes 3rd Flr	519	1	2,618.2	2,004.1	85.50	25.00	0.00	66	10.0	8.0	
M104 Large Townhomes 3rd Flr	520	1	2,577.4	1,981.4	85.50	25.00	0.00	66	10.0	8.0	
M106 Large Townhomes 3rd Flr	521	1	2,520.9	1,959.8	87.50	25.00	0.00	66	10.0	8.0	
M107 Large Townhomes 3rd Flr	522	1	2,462.8	1,931.1	87.50	25.00	0.00	66	10.0	8.0	
M109 Large Townhomes 3rd Flr	523	1	2,349.9	1,872.9	88.50	25.00	0.00	66	10.0	8.0	
M110 Large Townhomes 3rd Flr	524	1	2,236.8	1,821.1	89.50	25.00	0.00	66	10.0	8.0	
M112 Small Townhomes 3rd Flr	525	1	2,131.8	1,774.1	88.00	25.00	0.00	66	10.0	8.0	
M113 Small Townhomes 3rd Flr	526	1	2,032.9	1,730.5	87.00	25.00	0.00	66	10.0	8.0	
M114 - Small Townhomes 3rd Flr	527	1	1,926.8	1,683.5	85.00	25.00	0.00	66	10.0	8.0	
M115 - Small Townhomes 3rd Flr	528	1	1,819.7	1,636.4	82.00	25.00	0.00	66	10.0	8.0	
M116 - Small Townhomes 3rd Flr	529	1	1,785.6	1,626.7	75.00	25.00	0.00	66	10.0	8.0	
M117 - Small Townhomes 3rd Flr	530	1	1,701.5	1,641.9	75.00	25.00	0.00	66	10.0	8.0	
M33 Rooftop Deck	531	1	2,956.8	2,288.9	75.00	34.00	0.00	66	10.0	8.0	
M37 Rooftop Deck	532	1	2,900.7	2,200.9	75.00	34.00	0.00	66	10.0	8.0	
M40 Rooftop Deck	533	1	2,957.0	2,210.7	75.00	34.00	0.00	66	10.0	8.0	
M43 Rooftop Deck	534	1	2,846.0	2,080.0	79.00	34.00	0.00	66	10.0	8.0	
M49 Rooftop Deck	535	1	2,653.1	2,141.8	84.00	34.00	0.00	66	10.0	8.0	
M50 Rooftop Deck	536	1	2,480.2	2,137.4	84.00	34.00	0.00	66	10.0	8.0	
M51 Rooftop Deck	537	1	2,344.6	2,133.1	84.00	34.00	0.00	66	10.0	8.0	
M55 Rooftop Deck	538	1	2,297.5	2,125.4	83.00	34.00	0.00	66	10.0	8.0	
M56 Rooftop Deck	539	1	2,164.1	2,114.4	83.00	34.00	0.00	66	10.0	8.0	
M64 Rooftop Deck	540	1	2,534.9	2,066.3	85.00	34.00	0.00	66	10.0	8.0	
M69 Rooftop Deck	541	1	2,356.6	2,054.3	86.00	34.00	0.00	66	10.0	8.0	
M73 Rooftop Deck	542	1	2,285.6	2,048.5	86.00	34.00	0.00	66	10.0	8.0	
M79 Rooftop Deck	543	1	2,220.9	2,038.9	86.00	34.00	0.00	66	10.0	8.0	
M82 Rooftop Deck	544	1	2,138.9	2,026.9	86.00	34.00	0.00	66	10.0	8.0	
M95 Rooftop Deck	545	1	2,787.4	2,072.9	84.00	34.00	0.00	66	10.0	8.0	
M99 Rooftop Deck	546	1	2,722.9	2,041.1	84.00	34.00	0.00	66	10.0	8.0	

INPUT: RECEIVERS**10838**

M103 Rooftop Deck	547	1	2,664.3	2,017.6	85.50	34.00	0.00	66	10.0	8.0	
M105 Rooftop Deck	548	1	2,609.3	1,988.6	85.50	34.00	0.00	66	10.0	8.0	
M108 Rooftop Deck	549	1	2,496.8	1,935.5	87.50	34.00	0.00	66	10.0	8.0	
M111 Rooftop Deck	550	1	2,249.6	1,821.7	89.50	34.00	0.00	66	10.0	8.0	

INPUT: BARRIERS

10838

Dudek					10 October 2018														
MG					TNM 2.5														
INPUT: BARRIERS																			
PROJECT/CONTRACT:		10838																	
RUN:		Marja Acres Carlsbad-Ex w P Rev 1018																	
Barrier										Points									
Name	Type	Height		If Wall	If Berm			Add'tnl		Name	No.	Coordinates	(bottom)	Height	Segment				
		Min	Max	\$ per Unit Area	\$ per Unit Vol.	Top Width	Run:Rise	\$ per Unit Length				X	Y	Z	at Point	Seg Ht	Perturbs	On	Important
		ft	ft	\$/sq ft	\$/cu yd	ft	ft:ft	\$/ft				ft	ft	ft	ft	ft	#Up	#Dn	Reflec-tions?
Barrier1	W	0.00	99.99	0.00				0.00		point1	1	2,004.9	2,783.5	135.00	6.00	0.00	0	0	
										point3	3	1,992.9	2,739.8	135.00	6.00	0.00	0	0	
										point4	4	2,133.9	2,692.7	135.00	6.00	0.00	0	0	
										point5	5	2,250.9	2,654.4	135.00	6.00	0.00	0	0	
										point6	6	2,305.6	2,642.4	135.00	6.00	0.00	0	0	
										point7	7	2,378.9	2,635.9	135.00	6.00	0.00	0	0	
										point8	8	2,567.0	2,622.8	135.00	6.00	0.00	0	0	
										point9	9	2,568.0	2,676.3	135.00	6.00				
Barrier2	W	0.00	99.99	0.00				0.00		point20	20	4,315.7	2,129.9	88.00	6.00	0.00	0	0	
										point12	12	4,316.7	2,074.6	88.00	6.00	0.00	0	0	
										point13	13	3,008.2	2,098.8	88.00	6.00	0.00	0	0	
										point14	14	3,010.9	2,328.5	88.00	6.00	0.00	0	0	
										point15	15	3,334.6	2,336.7	88.00	6.00	0.00	0	0	
										point16	16	3,573.0	2,341.0	88.00	6.00	0.00	0	0	
										point17	17	3,598.1	2,341.0	88.00	6.00				
Barrier3	W	0.00	99.99	0.00				0.00		point21	21	4,314.7	2,131.2	87.00	6.00	0.00	0	0	
										point22	22	4,257.0	2,154.9	87.00	6.00	0.00	0	0	
										point23	23	4,172.2	2,183.5	87.00	6.00				
Barrier4	W	0.00	99.99	0.00				0.00		point24	24	1,290.6	2,844.0	53.00	5.00	0.00	0	0	
										point25	25	1,452.5	2,730.3	53.00	5.00	0.00	0	0	
										point26	26	1,418.1	2,633.8	53.00	5.00				
Barrier5	W	0.00	99.99	0.00				0.00		point29	29	3,022.3	2,181.6	93.00	12.00	0.00	0	0	
										point31	31	3,023.3	2,116.5	93.00	12.00	0.00	0	0	
										point32	32	3,030.2	2,116.5	93.00	12.00	0.00	0	0	
										point33	33	3,029.5	2,109.2	93.00	12.00	0.00	0	0	
										point34	34	3,067.1	2,109.2	93.00	12.00	0.00	0	0	
										point35	35	3,066.4	2,180.2	93.00	12.00				
Barrier7	W	0.00	99.99	0.00				0.00		point329	329	1,533.8	2,590.4	50.00	24.00	0.00	0	0	
										point145	145	1,591.8	2,571.8	50.00	24.00	0.00	0	0	
										point146	146	1,573.2	2,513.8	50.00	24.00	0.00	0	0	
										point147	147	1,539.3	2,525.9	50.00	24.00	0.00	0	0	
										point148	148	1,546.9	2,549.9	50.00	24.00	0.00	0	0	
										point149	149	1,524.0	2,559.7	50.00	24.00				
Barrier8	W	0.00	99.99	0.00				0.00		point346	346	1,452.3	2,303.3	45.00	24.00	0.00	0	0	
										point175	175	1,505.7	2,286.4	45.00	24.00	0.00	0	0	

INPUT: BARRIERS

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									point176	176	1,498.1	2,263.7	45.00	24.00	0.00	0	0		
									point177	177	1,490.2	2,266.4	45.00	24.00	0.00	0	0		
									point178	178	1,484.4	2,243.4	45.00	24.00	0.00	0	0		
									point179	179	1,447.1	2,257.1	45.00	24.00	0.00	0	0		
									point180	180	1,445.8	2,251.3	45.00	24.00					
Barrier9	W	0.00	99.99	0.00				0.00	point348	348	1,462.6	2,375.2	46.00	24.00	0.00	0	0		
									point167	167	1,499.1	2,362.1	46.00	24.00	0.00	0	0		
									point168	168	1,496.3	2,355.2	46.00	24.00	0.00	0	0		
									point169	169	1,517.0	2,349.0	46.00	24.00	0.00	0	0		
									point170	170	1,500.5	2,298.7	46.00	24.00	0.00	0	0		
									point171	171	1,467.4	2,310.4	46.00	24.00	0.00	0	0		
									point172	172	1,475.0	2,339.4	46.00	24.00	0.00	0	0		
									point173	173	1,452.9	2,347.7	46.00	24.00					
Barrier10	W	0.00	99.99	0.00				0.00	point349	349	1,489.5	2,439.4	47.00	24.00	0.00	0	0		
									point159	159	1,534.4	2,424.1	47.00	24.00	0.00	0	0		
									point160	160	1,532.7	2,419.4	47.00	24.00	0.00	0	0		
									point161	161	1,542.3	2,416.1	47.00	24.00	0.00	0	0		
									point162	162	1,534.0	2,391.8	47.00	24.00	0.00	0	0		
									point163	163	1,523.4	2,395.4	47.00	24.00	0.00	0	0		
									point164	164	1,514.6	2,369.9	47.00	24.00	0.00	0	0		
									point165	165	1,470.9	2,384.8	47.00	24.00					
Barrier13	W	0.00	99.99	0.00				0.00	point432	432	3,043.1	2,323.4	82.00	12.00	0.00	0	0		
									point37	37	3,114.1	2,322.7	82.00	12.00	0.00	0	0		
									point38	38	3,114.1	2,280.0	82.00	12.00	0.00	0	0		
									point39	39	3,045.9	2,280.0	82.00	12.00					
Barrier14	W	0.00	99.99	0.00				0.00	point438	438	1,511.9	2,513.8	50.00	24.00	0.00	0	0		
									point151	151	1,592.3	2,485.9	50.00	24.00	0.00	0	0		
									point152	152	1,583.8	2,461.4	50.00	24.00	0.00	0	0		
									point153	153	1,558.3	2,470.3	50.00	24.00	0.00	0	0		
									point154	154	1,553.6	2,456.8	50.00	24.00	0.00	0	0		
									point155	155	1,549.7	2,458.1	50.00	24.00	0.00	0	0		
									point156	156	1,540.8	2,432.6	50.00	24.00	0.00	0	0		
									point157	157	1,489.9	2,450.2	50.00	24.00					
Barrier15	W	0.00	99.99	0.00				0.00	point717	717	1,949.7	2,378.4	60.00	35.00	0.00	0	0		
									point696	696	1,809.1	2,425.1	60.00	35.00	0.00	0	0		
									point697	697	1,918.2	2,386.1	60.00	35.00	0.00	0	0		
									point698	698	1,941.2	2,378.8	60.00	35.00	0.00	0	0		
									point699	699	1,909.9	2,262.5	60.00	35.00	0.00	0	0		
									point700	700	1,888.2	2,267.6	60.00	35.00	0.00	0	0		
									point701	701	1,918.2	2,385.3	60.00	35.00	0.00	0	0		
									point702	702	1,814.9	2,416.1	60.00	35.00	0.00	0	0		
									point703	703	1,909.1	2,387.9	60.00	35.00	0.00	0	0		
									point704	704	1,884.8	2,280.6	60.00	35.00	0.00	0	0		
									point705	705	1,875.2	2,282.4	60.00	35.00	0.00	0	0		
									point706	706	1,873.5	2,275.0	60.00	35.00	0.00	0	0		
									point707	707	1,836.1	2,286.3	60.00	35.00	0.00	0	0		
									point708	708	1,842.2	2,308.4	60.00	35.00	0.00	0	0		
									point709	709	1,860.9	2,302.8	60.00	35.00	0.00	0	0		
									point710	710	1,877.4	2,358.4	60.00	35.00	0.00	0	0		

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									point711	711	1,868.3	2,374.9	60.00	35.00	0.00	0	0		
									point460	460	1,811.4	2,391.3	60.00	35.00					
Barrier16	W	0.00	99.99	0.00				0.00	point718	718	1,816.9	2,451.6	60.00	35.00	0.00	0	0		
									point692	692	1,888.5	2,431.2	60.00	35.00	0.00	0	0		
									point693	693	1,886.8	2,423.4	60.00	35.00	0.00	0	0		
									point694	694	1,957.0	2,404.1	60.00	35.00	0.00	0	0		
									point695	695	1,949.7	2,378.4	60.00	35.00					
Barrier17	W	0.00	99.99	0.00				0.00	point720	720	2,172.6	2,254.9	69.00	24.00	0.00	0	0		
									point471	471	2,179.2	2,318.0	69.00	24.00	0.00	0	0		
									point472	472	2,234.5	2,314.2	69.00	24.00	0.00	0	0		
									point473	473	2,229.3	2,250.3	69.00	24.00					
Barrier18	W	0.00	99.99	0.00				0.00	point722	722	2,456.1	2,192.3	72.00	24.00	0.00	0	0		
									point475	475	2,453.9	2,286.3	72.00	24.00	0.00	0	0		
									point476	476	2,512.3	2,286.8	72.00	24.00	0.00	0	0		
									point477	477	2,514.7	2,192.3	72.00	24.00					
Barrier19	W	0.00	99.99	0.00				0.00	point724	724	2,536.3	2,291.3	72.00	24.00	0.00	0	0		
									point479	479	2,666.4	2,294.0	72.00	24.00	0.00	0	0		
									point480	480	2,666.7	2,253.6	72.00	24.00	0.00	0	0		
									point481	481	2,537.5	2,251.4	72.00	24.00					
Barrier20	W	0.00	99.99	0.00				0.00	point726	726	2,536.6	2,220.3	71.00	35.00	0.00	0	0		
									point483	483	2,666.9	2,221.8	72.00	35.00	0.00	0	0		
									point484	484	2,666.5	2,185.9	72.00	35.00	0.00	0	0		
									point485	485	2,537.9	2,185.9	71.00	35.00					
Barrier21	W	0.00	99.99	0.00				0.00	point728	728	2,709.5	2,292.2	71.00	35.00	0.00	0	0		
									point487	487	2,740.6	2,291.5	71.00	35.00	0.00	0	0		
									point488	488	2,745.8	2,202.9	71.50	35.00	0.00	0	0		
									point489	489	2,713.6	2,202.0	71.50	35.00					
Barrier22	W	0.00	99.99	0.00				0.00	point730	730	2,900.4	2,296.1	75.00	35.00	0.00	0	0		
									point491	491	2,988.1	2,298.6	75.00	35.00	0.00	0	0		
									point492	492	2,988.1	2,258.4	75.00	35.00	0.00	0	0		
									point493	493	2,901.5	2,256.3	75.00	35.00					
Barrier23	W	0.00	99.99	0.00				0.00	point732	732	2,871.7	2,212.9	75.00	35.00	0.00	0	0		
									point495	495	2,912.0	2,210.7	75.00	35.00	0.00	0	0		
									point496	496	2,911.2	2,123.5	78.00	35.00	0.00	0	0		
									point497	497	2,873.0	2,124.8	78.00	35.00					
Barrier24	W	0.00	99.99	0.00				0.00	point734	734	2,983.4	2,223.5	75.00	35.00	0.00	0	0		
									point499	499	2,981.1	2,114.3	78.00	35.00	0.00	0	0		
									point500	500	2,940.7	2,115.4	78.00	35.00	0.00	0	0		
									point501	501	2,946.1	2,224.4	75.00	35.00					
Barrier25	W	0.00	99.99	0.00				0.00	point736	736	2,833.2	2,086.6	79.00	35.00	0.00	0	0		
									point503	503	2,965.5	2,083.2	80.00	35.00	0.00	0	0		
									point504	504	2,964.1	2,040.5	80.00	35.00	0.00	0	0		
									point505	505	2,831.9	2,044.6	79.00	35.00					
Barrier26	W	0.00	99.99	0.00				0.00	point738	738	2,336.1	2,143.9	84.00	35.00	0.00	0	0		
									point507	507	2,672.0	2,153.8	84.00	35.00	0.00	0	0		
									point508	508	2,672.3	2,115.6	84.00	35.00	0.00	0	0		
									point509	509	2,335.1	2,104.2	84.00	35.00					
Barrier28	W	0.00	99.99	0.00				0.00	point740	740	2,149.8	2,124.2	83.00	35.00	0.00	0	0		
									point511	511	2,322.1	2,141.0	83.00	35.00	0.00	0	0		

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									point512	512	2,324.5	2,101.8	83.00	35.00	0.00	0	0		
									point513	513	2,150.8	2,086.0	83.00	35.00					
Barrier31	W	0.00	99.99	0.00				0.00	point742	742	1,743.6	2,079.4	76.00	35.00	0.00	0	0		
									point515	515	1,963.3	2,104.2	77.00	35.00	0.00	0	0		
									point516	516	1,966.1	2,071.8	77.00	35.00	0.00	0	0		
									point517	517	1,746.3	2,047.7	76.00	35.00					
Barrier32	W	0.00	99.99	0.00				0.00	point744	744	2,397.5	2,075.6	85.00	35.00	0.00	0	0		
									point519	519	2,550.6	2,080.2	85.00	35.00	0.00	0	0		
									point520	520	2,551.4	2,042.8	85.00	35.00	0.00	0	0		
									point521	521	2,397.9	2,037.6	85.00	35.00					
Barrier33	W	0.00	99.99	0.00				0.00	point746	746	1,976.3	2,029.8	80.00	35.00	0.00	0	0		
									point523	523	2,006.6	2,041.1	80.00	35.00	0.00	0	0		
									point524	524	2,102.1	1,831.1	85.50	35.00	0.00	0	0		
									point525	525	2,071.7	1,815.4	85.50	35.00					
Barrier34	W	0.00	99.99	0.00				0.00	point748	748	1,914.1	2,023.4	79.50	35.00	0.00	0	0		
									point527	527	1,943.1	2,036.0	79.50	35.00	0.00	0	0		
									point528	528	2,052.5	1,805.3	85.50	35.00	0.00	0	0		
									point529	529	2,019.7	1,788.9	85.50	35.00					
Barrier35	W	0.00	99.99	0.00				0.00	point750	750	1,848.9	2,019.8	79.50	35.00	0.00	0	0		
									point531	531	1,881.0	2,033.6	79.50	35.00	0.00	0	0		
									point532	532	1,998.2	1,781.0	84.00	35.00	0.00	0	0		
									point533	533	1,966.1	1,763.7	84.00	35.00					
Barrier36	W	0.00	99.99	0.00				0.00	point752	752	1,798.5	1,995.8	79.50	35.00	0.00	0	0		
									point535	535	1,826.7	2,008.4	79.50	35.00	0.00	0	0		
									point536	536	1,943.7	1,754.7	84.00	35.00	0.00	0	0		
									point537	537	1,910.9	1,739.4	84.00	35.00	0.00	0	0		
									point538	538	1,796.4	1,994.8	79.50	35.00					
Barrier37	W	0.00	99.99	0.00				0.00	point754	754	1,733.9	1,988.2	78.50	35.00	0.00	0	0		
									point540	540	1,765.6	2,003.4	78.50	35.00	0.00	0	0		
									point541	541	1,891.5	1,732.6	81.50	35.00	0.00	0	0		
									point542	542	1,858.5	1,716.9	81.50	35.00					
Barrier38	W	0.00	99.99	0.00				0.00	point756	756	1,691.2	1,944.6	78.00	35.00	0.00	0	0		
									point544	544	1,721.5	1,958.4	78.00	35.00	0.00	0	0		
									point545	545	1,776.0	1,838.5	79.00	35.00	0.00	0	0		
									point546	546	1,743.2	1,822.7	79.00	35.00					
Barrier39	W	0.00	99.99	0.00				0.00	point759	759	1,676.3	1,830.2	77.50	35.00	0.00	0	0		
									point548	548	1,782.1	1,805.0	78.50	35.00	0.00	0	0		
									point549	549	1,775.8	1,776.5	78.50	35.00	0.00	0	0		
									point550	550	1,668.1	1,801.2	77.50	35.00					
Barrier40	W	0.00	99.99	0.00				0.00	point761	761	1,655.0	1,741.7	77.00	35.00	0.00	0	0		
									point552	552	1,661.5	1,776.2	77.00	35.00	0.00	0	0		
									point553	553	1,789.8	1,743.4	78.00	35.00	0.00	0	0		
									point554	554	1,782.7	1,709.8	78.00	35.00					
Barrier41	W	0.00	99.99	0.00				0.00	point763	763	2,118.9	2,034.3	86.00	35.00	0.00	0	0		
									point555	555	2,156.7	2,053.0	86.00	35.00	0.00	0	0		
									point556	556	2,230.0	1,891.9	87.50	35.00	0.00	0	0		
									point557	557	2,192.7	1,875.0	87.50	35.00					
Barrier42	W	0.00	99.99	0.00				0.00	point765	765	2,188.1	2,041.0	86.00	35.00	0.00	0	0		
									point559	559	2,226.7	2,058.9	86.00	35.00	0.00	0	0		

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									point560	560	2,290.1	1,919.0	87.50	35.00	0.00	0	0		
									point561	561	2,252.9	1,901.1	87.50	35.00					
Barrier43	W	0.00	99.99	0.00				0.00	point767	767	2,260.6	2,050.5	86.00	35.00	0.00	0	0		
									point563	563	2,295.3	2,066.5	86.00	35.00	0.00	0	0		
									point564	564	2,350.4	1,946.7	87.00	35.00	0.00	0	0		
									point565	565	2,315.3	1,929.4	87.00	35.00					
Barrier45	W	0.00	99.99	0.00				0.00	point769	769	2,327.8	2,054.5	86.00	35.00	0.00	0	0		
									point567	567	2,365.0	2,073.1	86.00	35.00	0.00	0	0		
									point568	568	2,409.8	1,974.6	87.00	35.00	0.00	0	0		
									point569	569	2,375.3	1,957.4	87.00	35.00					
Barrier46	W	0.00	99.99	0.00				0.00	point771	771	2,757.1	2,069.8	84.00	35.00	0.00	0	0		
									point571	571	2,791.7	2,085.1	84.00	35.00	0.00	0	0		
									point572	572	2,827.2	2,004.9	84.00	35.00	0.00	0	0		
									point573	573	2,791.8	1,989.5	84.00	35.00					
Barrier47	W	0.00	99.99	0.00				0.00	point773	773	2,693.4	2,041.7	84.00	35.00	0.00	0	0		
									point575	575	2,729.9	2,056.4	84.00	35.00	0.00	0	0		
									point576	576	2,767.2	1,974.8	84.00	35.00	0.00	0	0		
									point577	577	2,729.0	1,958.3	84.00	35.00					
Barrier48	W	0.00	99.99	0.00				0.00	point775	775	2,639.6	2,015.9	85.50	35.00	0.00	0	0		
									point579	579	2,674.8	2,031.9	85.50	35.00	0.00	0	0		
									point580	580	2,713.0	1,952.5	85.50	35.00	0.00	0	0		
									point581	581	2,675.7	1,936.0	85.50	35.00					
Barrier49	W	0.00	99.99	0.00				0.00	point777	777	2,579.1	1,987.6	85.50	35.00	0.00	0	0		
									point583	583	2,615.6	2,005.0	85.50	35.00	0.00	0	0		
									point584	584	2,653.3	1,924.7	85.50	35.00	0.00	0	0		
									point585	585	2,616.8	1,908.2	85.50	35.00					
Barrier50	W	0.00	99.99	0.00				0.00	point779	779	2,522.7	1,961.6	87.50	35.00	0.00	0	0		
									point587	587	2,559.1	1,979.8	87.50	35.00	0.00	0	0		
									point588	588	2,597.8	1,899.1	87.50	35.00	0.00	0	0		
									point589	589	2,559.6	1,882.2	87.50	35.00					
Barrier51	W	0.00	99.99	0.00				0.00	point781	781	2,482.3	1,847.5	88.50	35.00	0.00	0	0		
									point595	595	2,445.0	1,926.4	88.50	35.00	0.00	0	0		
									point596	596	2,408.1	1,909.1	88.50	35.00	0.00	0	0		
									point597	597	2,445.4	1,828.8	88.50	35.00					
Barrier52	W	0.00	99.99	0.00				0.00	point783	783	2,500.5	1,854.4	87.50	35.00	0.00	0	0		
									point591	591	2,464.1	1,936.0	87.50	35.00	0.00	0	0		
									point592	592	2,501.0	1,952.1	87.50	35.00	0.00	0	0		
									point593	593	2,538.8	1,872.2	87.50	35.00					
Barrier53	W	0.00	99.99	0.00				0.00	point785	785	2,347.8	1,881.3	88.50	35.00	0.00	0	0		
									point599	599	2,384.7	1,899.5	88.50	35.00	0.00	0	0		
									point600	600	2,422.4	1,818.4	88.50	35.00	0.00	0	0		
									point601	601	2,384.7	1,800.6	88.50	35.00					
Barrier54	W	0.00	99.99	0.00				0.00	point787	787	2,293.1	1,855.7	89.50	35.00	0.00	0	0		
									point603	603	2,330.4	1,873.0	89.50	35.00	0.00	0	0		
									point604	604	2,366.9	1,793.2	89.50	35.00	0.00	0	0		
									point605	605	2,330.0	1,776.3	89.50	35.00					
Barrier55	W	0.00	99.99	0.00				0.00	point789	789	2,233.6	1,828.8	89.50	35.00	0.00	0	0		
									point607	607	2,269.7	1,845.3	89.50	35.00	0.00	0	0		
									point608	608	2,307.0	1,766.7	89.50	35.00	0.00	0	0		

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									point609	609	2,270.5	1,749.4	89.50	35.00				
Barrier56	W	0.00	99.99	0.00				0.00	point791	791	2,185.5	1,804.2	88.00	35.00	0.00	0	0	
									point611	611	2,215.0	1,817.8	88.00	35.00	0.00	0	0	
									point612	612	2,252.5	1,738.5	88.00	35.00	0.00	0	0	
									point613	613	2,222.4	1,724.0	88.00	35.00				
Barrier57	W	0.00	99.99	0.00				0.00	point793	793	2,130.9	1,779.1	88.00	35.00	0.00	0	0	
									point615	615	2,160.4	1,793.6	88.00	35.00	0.00	0	0	
									point616	616	2,197.9	1,713.5	88.00	35.00	0.00	0	0	
									point617	617	2,168.3	1,698.8	88.00	35.00				
Barrier58	W	0.00	99.99	0.00				0.00	point795	795	2,083.5	1,757.4	87.00	35.00	0.00	0	0	
									point619	619	2,113.6	1,771.9	87.00	35.00	0.00	0	0	
									point620	620	2,151.0	1,693.2	87.00	35.00	0.00	0	0	
									point621	621	2,120.7	1,678.1	87.00	35.00				
Barrier59	W	0.00	99.99	0.00				0.00	point797	797	1,982.6	1,709.7	85.00	35.00	0.00	0	0	
									point627	627	2,014.3	1,724.2	85.00	35.00	0.00	0	0	
									point628	628	2,051.8	1,644.9	85.00	35.00	0.00	0	0	
									point629	629	2,020.8	1,629.8	85.00	35.00				
Barrier60	W	0.00	99.99	0.00				0.00	point799	799	1,929.6	1,687.9	85.00	35.00	0.00	0	0	
									point631	631	1,960.2	1,701.0	85.00	35.00	0.00	0	0	
									point632	632	1,998.2	1,622.2	85.00	35.00	0.00	0	0	
									point633	633	1,967.3	1,606.4	85.00	35.00				
Barrier61	W	0.00	99.99	0.00				0.00	point801	801	2,068.7	1,654.3	87.00	35.00	0.00	0	0	
									point623	623	2,032.5	1,734.4	87.00	35.00	0.00	0	0	
									point624	624	2,063.5	1,749.1	87.00	35.00	0.00	0	0	
									point625	625	2,100.1	1,668.5	87.00	35.00				
Barrier62	W	0.00	99.99	0.00				0.00	point803	803	1,877.2	1,662.6	82.00	35.00	0.00	0	0	
									point635	635	1,906.1	1,676.0	82.00	35.00	0.00	0	0	
									point636	636	1,944.7	1,597.5	82.00	35.00	0.00	0	0	
									point637	637	1,914.8	1,583.6	82.00	35.00				
Barrier63	W	0.00	99.99	0.00				0.00	point805	805	1,822.2	1,636.1	82.00	35.00	0.00	0	0	
									point639	639	1,854.4	1,651.4	82.00	35.00	0.00	0	0	
									point640	640	1,892.2	1,571.6	82.00	35.00	0.00	0	0	
									point641	641	1,860.8	1,555.3	82.00	35.00				
Barrier64	W	0.00	99.99	0.00				0.00	point807	807	1,764.6	1,630.8	75.00	35.00	0.00	0	0	
									point643	643	1,794.8	1,622.5	75.00	35.00	0.00	0	0	
									point644	644	1,777.3	1,558.8	75.00	35.00	0.00	0	0	
									point645	645	1,747.4	1,565.2	75.00	35.00				
Barrier65	W	0.00	99.99	0.00				0.00	point809	809	1,704.6	1,645.2	75.00	35.00	0.00	0	0	
									point647	647	1,733.1	1,637.1	75.00	35.00	0.00	0	0	
									point648	648	1,717.4	1,577.3	75.00	35.00	0.00	0	0	
									point649	649	1,687.4	1,582.5	75.00	35.00				

RESULTS: SOUND LEVELS

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Dudek												
MG												
RESULTS: SOUND LEVELS												
PROJECT/CONTRACT:		10838										
RUN:		Marja Acres Carlsbad-Ex w P Rev 1018										
BARRIER DESIGN:		INPUT HEIGHTS										
ATMOSPHERICS:		68 deg F, 50% RH										
Receiver												
Name	No.	#DUs	Existing	No Barrier					With Barrier			
			LAeq1h	LAeq1h		Increase over existing	Type	Calculated	Noise Reduction			
				Calculated	Crit'n	Calculated	Crit'n	Impact	LAeq1h	Calculated	Goal	Calculated
							Sub'l Inc					minus
												Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
ST3	3	1	0.0	63.0	66	63.0	10	----	63.0	0.0	8	-8.0
ST4	4	1	0.0	53.7	66	53.7	10	----	53.7	0.0	8	-8.0
ST5	5	1	0.0	53.4	66	53.4	10	----	53.4	0.0	8	-8.0
ST6	6	1	0.0	60.0	66	60.0	10	----	60.0	0.0	8	-8.0
M1 - Common Rec Area 1	255	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M2 - Common Rec Area 2	256	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M3 - Common Rec Area 3	261	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M4 - Common Rec Area 4	262	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M5 - Common Rec Area 5	263	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M6 - Common Rec Area 6	264	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M7 - Common Rec Area 7	265	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M8 - Senior Apartment Housing 1st Flr	267	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M9 - Senior Apartment Housing 1st Flr	268	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M10 - Senior Apartment Housing 1st Flr	269	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M11 - Senior Apartment Housing 1st Flr	270	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M12 - Senior Apartment Housing 1st Flr	271	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M13 - Senior Apartment Housing 1st Flr	272	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M14 - Senior Apartment Housing 1st Flr	273	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M15 - Senior Apartment Housing 1st Flr	274	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M16 - Senior Apartment Housing 1st Flr	275	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M17 - Senior Apartment Housing 1st Flr	276	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M18 - Small Townhomes 1st Flr	277	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M19 - Small Townhomes 1st Flr	278	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M20 - Small Townhomes 1st Flr	279	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0

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M21 Small Townhomes 1st Flr	280	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M22 Small Townhomes 1st Flr	281	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M23 Small Townhomes 1st Flr	282	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M24 Small Townhomes 1st Flr	283	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M27 Small Townhomes 1st Flr	284	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M28 Small Townhomes 1st Flr	285	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M30 Large Townhomes 1st Flr	286	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M31 Large Townhomes 1st Flr	287	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M34 Large Townhomes 1st Flr	289	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M36 Large Townhomes 1st Flr	290	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M39 Large Townhomes 1st Flr	291	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M42 Large Townhomes 1st Flr	292	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M44 Large Townhomes 1st Flr	293	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M45 Large Townhomes 1st Flr	294	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M46 Large Townhomes 1st Flr	295	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M47 Large Townhomes 1st Flr	296	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M52 Large Townhomes 1st Flr	297	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M53 Large Townhomes 1st Flr	298	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M57 Small Townhomes 1st Flr	299	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M58 Small Townhomes 1st Flr	300	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M59 Small Townhomes 1st Flr	301	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M63 Large Townhomes 1st Flr	302	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M65 Large Townhomes 1st Flr	303	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M66 Large Townhomes 1st Flr	304	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M67 Large Townhomes 1st Flr	305	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M68 Large Townhomes 1st Flr	306	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M71 Large Townhomes 1st Flr	307	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M72 Large Townhomes 1st Flr	308	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M74 Large Townhomes 1st Flr	309	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M75 Large Townhomes 1st Flr	310	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M76 Large Townhomes 1st Flr	311	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M81 Large Townhomes 1st Flr	312	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M83 Small Townhomes 1st Flr	313	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M84 Small Townhomes 1st Flr	314	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M85 Small Townhomes 1st Flr	315	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M87 Small Townhomes 1st Flr	316	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M88 Small Townhomes 1st Flr	317	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M89 Small Townhomes 1st Flr	318	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M90 Small Townhomes 1st Flr	319	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M91 Small Townhomes 1st Flr	320	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M92 Small Townhomes 1st Flr	321	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0

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M93 Small Townhomes 1st Flr	322	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M94 Large Townhomes 1st Flr	323	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M98 Large Townhomes 1st Flr	324	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M100 Large Townhomes 1st Flr	325	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M104 Large Townhomes 1st Flr	326	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M106 Large Townhomes 1st Flr	327	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M107 Large Townhomes 1st Flr	328	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M109 Large Townhomes 1st Flr	329	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M110 Large Townhomes 1st Flr	330	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M112 Small Townhomes 1st Flr	331	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M113 Small Townhomes 1st Flr	332	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M114 - Small Townhomes 1st Flr	333	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M115 - Small Townhomes 1st Flr	334	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M116 - Small Townhomes 1st Flr	335	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M117 - Small Townhomes 1st Flr	336	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M8 - Senior Apartment Housing 2nd Flr	337	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M9 - Senior Apartment Housing 2nd Flr	338	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M10 - Senior Apartment Housing 2nd Flr	339	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M11 - Senior Apartment Housing 2nd Flr	340	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M12 - Senior Apartment Housing 2nd Flr	341	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M13 - Senior Apartment Housing 2nd Flr	342	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M14 - Senior Apartment Housing 2nd Flr	343	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M15 - Senior Apartment Housing 2nd Flr	344	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M16 - Senior Apartment Housing 2nd Flr	345	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M17 - Senior Apartment Housing 2nd Flr	346	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M18 - Small Townhomes 2nd Flr	347	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M19 - Small Townhomes 2nd Flr	348	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M20 - Small Townhomes 2nd Flr	349	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M21 Small Townhomes 2nd Flr	350	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M22 Small Townhomes 2nd Flr	351	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M23 Small Townhomes 2nd Flr	352	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M24 Small Townhomes 2nd Flr	353	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M25 Small Townhomes 2nd Flr	354	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M26 Small Townhomes 2nd Flr	355	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M27 Small Townhomes 2nd Flr	356	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M28 Small Townhomes 2nd Flr	357	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M30 Large Townhomes 2nd Flr	358	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M31 Large Townhomes 2nd Flr	359	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M32 Large Townhomes 2nd Flr	360	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M34 Large Townhomes 2nd Flr	361	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M35 Large Townhomes 2nd Flr	362	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0

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M36 Large Townhomes 2nd Flr	363	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M38 Large Townhomes 2nd Flr	364	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M39 Large Townhomes 2nd Flr	365	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M41 Large Townhomes 2nd Flr	366	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M42 Large Townhomes 2nd Flr	367	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M44 Large Townhomes 2nd Flr	368	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M45 Large Townhomes 2nd Flr	378	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M46 Large Townhomes 2nd Flr	380	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M47 Large Townhomes 2nd Flr	382	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M48 Large Townhomes 2nd Flr	383	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M52 Large Townhomes 2nd Flr	385	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M53 Large Townhomes 2nd Flr	386	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M54 Large Townhomes 2nd Flr	388	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M57 Small Townhomes 2nd Flr	389	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M58 Small Townhomes 2nd Flr	391	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M59 Small Townhomes 2nd Flr	392	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M60 Small Townhomes 2nd Flr	393	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M61 Large Townhomes 2nd Flr	394	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M62 Large Townhomes 2nd Flr	395	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M63 Large Townhomes 2nd Flr	396	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M65 Large Townhomes 2nd Flr	397	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M66 Large Townhomes 2nd Flr	398	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M67 Large Townhomes 2nd Flr	399	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M68 Large Townhomes 2nd Flr	400	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M70 Large Townhomes 2nd Flr	401	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M71 Large Townhomes 2nd Flr	402	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M72 Large Townhomes 2nd Flr	403	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M74 Large Townhomes 2nd Flr	404	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M75 Large Townhomes 2nd Flr	405	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M76 Large Townhomes 2nd Flr	406	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M77 Large Townhomes 2nd Flr	407	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M78 Large Townhomes 2nd Flr	408	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M80 Large Townhomes 2nd Flr	409	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M81 Large Townhomes 2nd Flr	410	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M83 Small Townhomes 2nd Flr	411	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M84 Small Townhomes 2nd Flr	412	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M85 Small Townhomes 2nd Flr	413	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M86 Small Townhomes 2nd Flr	414	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M87 Small Townhomes 2nd Flr	415	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M88 Small Townhomes 2nd Flr	416	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M89 Small Townhomes 2nd Flr	417	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0

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M90 Small Townhomes 2nd Flr	418	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M91 Small Townhomes 2nd Flr	419	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M92 Small Townhomes 2nd Flr	420	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M93 Small Townhomes 2nd Flr	421	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M94 Large Townhomes 2nd Flr	422	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M96 Large Townhomes 2nd Flr	423	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M97 Large Townhomes 2nd Flr	424	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M98 Large Townhomes 2nd Flr	425	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M100 Large Townhomes 2nd Flr	426	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M101 Large Townhomes 2nd Flr	427	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M102 Large Townhomes 2nd Flr	428	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M104 Large Townhomes 2nd Flr	429	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M106 Large Townhomes 2nd Flr	430	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M107 Large Townhomes 2nd Flr	431	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M109 Large Townhomes 2nd Flr	432	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M110 Large Townhomes 2nd Flr	433	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M112 Small Townhomes 2nd Flr	434	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M113 Small Townhomes 2nd Flr	435	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M114 - Small Townhomes 2nd Flr	436	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M115 - Small Townhomes 2nd Flr	437	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M116 - Small Townhomes 2nd Flr	438	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M117 - Small Townhomes 2nd Flr	439	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M8 - Senior Apartment Housing 3rd Flr	440	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M9 - Senior Apartment Housing 3rd Flr	441	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M10 - Senior Apartment Housing 3rd Flr	442	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M11 - Senior Apartment Housing 3rd Flr	443	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M12 - Senior Apartment Housing 3rd Flr	444	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M13 - Senior Apartment Housing 3rd Flr	445	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M14 - Senior Apartment Housing 3rd Flr	446	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M15 - Senior Apartment Housing 3rd Flr	447	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M16 - Senior Apartment Housing 3rd Flr	448	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M17 - Senior Apartment Housing 3rd Flr	449	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M18 - Small Townhomes 3rd Flr	450	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M19 - Small Townhomes 3rd Flr	451	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M20 - Small Townhomes 3rd Flr	452	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M21 Small Townhomes 3rd Flr	453	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M22 Small Townhomes 3rd Flr	454	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M23 Small Townhomes 3rd Flr	455	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M24 Small Townhomes 3rd Flr	456	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M25 Small Townhomes 3rd Flr	457	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M26 Small Townhomes 3rd Flr	458	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0

RESULTS: SOUND LEVELS
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M27 Small Townhomes 3rd Flr	459	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M28 Small Townhomes 3rd Flr	460	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M30 Large Townhomes 3rd Flr	461	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M31 Large Townhomes 3rd Flr	462	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M32 Large Townhomes 3rd Flr	463	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M34 Large Townhomes 3rd Flr	464	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M35 Large Townhomes 3rd Flr	465	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M36 Large Townhomes 3rd Flr	466	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M38 Large Townhomes 3rd Flr	467	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M39 Large Townhomes 3rd Flr	468	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M41 Large Townhomes 3rd Flr	469	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M42 Large Townhomes 3rd Flr	470	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M44 Large Townhomes 3rd Flr	471	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M45 Large Townhomes 3rd Flr	472	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M46 Large Townhomes 3rd Flr	473	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M47 Large Townhomes 3rd Flr	474	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M48 Large Townhomes 3rd Flr	475	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M52 Large Townhomes 3rd Flr	476	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M53 Large Townhomes 3rd Flr	477	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M54 Large Townhomes 3rd Flr	478	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M57 Small Townhomes 3rd Flr	479	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M58 Small Townhomes 3rd Flr	480	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M59 Small Townhomes 3rd Flr	481	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M60 Small Townhomes 3rd Flr	482	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M61 Large Townhomes 3rd Flr	483	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M62 Large Townhomes 3rd Flr	484	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M63 Large Townhomes 3rd Flr	485	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M65 Large Townhomes 3rd Flr	486	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M66 Large Townhomes 3rd Flr	487	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M67 Large Townhomes 3rd Flr	488	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M68 Large Townhomes 3rd Flr	489	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M70 Large Townhomes 3rd Flr	490	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M71 Large Townhomes 3rd Flr	491	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M72 Large Townhomes 3rd Flr	492	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M74 Large Townhomes 3rd Flr	493	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M75 Large Townhomes 3rd Flr	494	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M76 Large Townhomes 3rd Flr	495	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M77 Large Townhomes 3rd Flr	496	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M78 Large Townhomes 3rd Flr	497	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M80 Large Townhomes 3rd Flr	498	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M81 Large Townhomes 3rd Flr	499	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0

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M83 Small Townhomes 3rd Flr	500	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M84 Small Townhomes 3rd Flr	501	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M85 Small Townhomes 3rd Flr	502	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M86 Small Townhomes 3rd Flr	503	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M87 Small Townhomes 3rd Flr	504	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M88 Small Townhomes 3rd Flr	505	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M89 Small Townhomes 3rd Flr	506	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M90 Small Townhomes 3rd Flr	507	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M91 Small Townhomes 3rd Flr	508	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M92 Small Townhomes 3rd Flr	509	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M93 Small Townhomes 3rd Flr	510	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M94 Large Townhomes 3rd Flr	511	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M96 Large Townhomes 3rd Flr	512	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M97 Large Townhomes 3rd Flr	513	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M98 Large Townhomes 3rd Flr	514	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M100 Large Townhomes 3rd Flr	515	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M101 Large Townhomes 3rd Flr	517	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M102 Large Townhomes 3rd Flr	519	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M104 Large Townhomes 3rd Flr	520	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M106 Large Townhomes 3rd Flr	521	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M107 Large Townhomes 3rd Flr	522	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M109 Large Townhomes 3rd Flr	523	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M110 Large Townhomes 3rd Flr	524	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M112 Small Townhomes 3rd Flr	525	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M113 Small Townhomes 3rd Flr	526	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M114 - Small Townhomes 3rd Flr	527	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M115 - Small Townhomes 3rd Flr	528	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M116 - Small Townhomes 3rd Flr	529	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M117 - Small Townhomes 3rd Flr	530	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M33 Rooftop Deck	531	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M37 Rooftop Deck	532	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M40 Rooftop Deck	533	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M43 Rooftop Deck	534	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M49 Rooftop Deck	535	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M50 Rooftop Deck	536	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M51 Rooftop Deck	537	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M55 Rooftop Deck	538	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M56 Rooftop Deck	539	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M64 Rooftop Deck	540	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M69 Rooftop Deck	541	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M73 Rooftop Deck	542	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0

RESULTS: SOUND LEVELS
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M79 Rooftop Deck	543	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M82 Rooftop Deck	544	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M95 Rooftop Deck	545	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M99 Rooftop Deck	546	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M103 Rooftop Deck	547	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M105 Rooftop Deck	548	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M108 Rooftop Deck	549	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
M111 Rooftop Deck	550	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Dwelling Units		# DUs	Noise Reduction									
			Min	Avg	Max							
			dB	dB	dB							
All Selected		278	0.0	0.0	0.0							
All Impacted		0	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							

INPUT: ROADWAYS
10838

Dudek MG												
INPUT: ROADWAYS												
PROJECT/CONTRACT:	10838											
RUN:	Marja Acres Carlsbad - Future Rev 1018											
Roadway		Points										
Name	Width	Name	No.	Coordinates (pavement)			Flow Control				Segment	
				X	Y	Z	Control	Speed	Percent	Pvmt	On	
							Device	Constraint	Vehicles	Type	Struct?	
									Affected			
	ft			ft	ft	ft		mph	%			
Kelly Drive	66.0	point33	33	1,311.1	2,129.0	34.00				Average		
		point22	22	1,387.7	2,378.3	39.00				Average		
		point23	23	1,435.8	2,524.8	42.00				Average		
		point24	24	1,468.6	2,610.1	44.00				Average		
		point25	25	1,536.4	2,715.1	46.00						
Drieway B	50.0	point35	35	2,658.3	2,371.7	59.00				Average		
		point30	30	2,658.3	2,231.7	59.00						
El Camino Real west of Kelly Dr	105.0	point37	37	791.7	3,323.6	75.00				Average		
		point5	5	1,057.3	3,143.1	70.00				Average		
		point6	6	1,220.5	3,006.0	60.00				Average		
		point7	7	1,546.8	2,738.6	46.00						
Driveway A	50.0	point39	39	2,203.4	2,402.3	53.00				Average		
		point27	27	2,181.5	2,284.2	54.00				Average		
		point28	28	2,131.2	2,188.0	55.00						
El Camino Real east of Kelly Dr	105.0	point41	41	1,546.8	2,738.6	46.00				Average		
		point8	8	1,779.4	2,578.9	49.00				Average		
		point9	9	1,928.7	2,502.6	51.00				Average		
		point10	10	2,111.0	2,443.5	52.00				Average		
		point42	42	2,207.4	2,422.7	53.00						
El Camino Real - Driveway A to B	105.0	point43	43	2,207.4	2,422.7	53.00				Average		
		point11	11	2,303.7	2,401.9	55.00				Average		
		point12	12	2,534.5	2,396.7	57.00				Average		
		point45	45	2,657.8	2,400.5	59.00						
El Camino Real - east of Driveway B	105.0	point46	46	2,657.8	2,400.5	59.00				Average		
		point13	13	3,140.3	2,412.0	76.00				Average		

INPUT: ROADWAYS**10838**

		point14	14	3,573.4	2,427.3	84.00				Average	
		point15	15	3,656.5	2,420.7	83.00				Average	
		point16	16	4,008.6	2,361.7	75.00				Average	
		point17	17	4,275.4	2,274.2	71.00				Average	
		point18	18	4,533.5	2,145.2	65.00				Average	
		point19	19	5,102.1	1,825.8	55.00				Average	
		point20	20	5,765.2	1,506.5	44.00					

INPUT: TRAFFIC FOR LAeq1h Volumes

10838

Dudek												
MG												
INPUT: TRAFFIC FOR LAeq1h Volumes												
PROJECT/CONTRACT:	10838											
RUN:	Marja Acres Carlsbad - Future Rev 1018											
Roadway	Points											
Name	Name	No.	Segment									
			Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Kelly Drive	point33	33	611	25	13	25	6	25	0	0	0	0
	point22	22	611	25	13	25	6	25	0	0	0	0
	point23	23	611	25	13	25	6	25	0	0	0	0
	point24	24	611	25	13	25	6	25	0	0	0	0
	point25	25										
Drieway B	point35	35	15	15	0	0	0	0	0	0	0	0
	point30	30										
El Camino Real west of Kelly Dr	point37	37	2989	50	62	50	31	50	0	0	0	0
	point5	5	2989	50	62	50	31	50	0	0	0	0
	point6	6	2989	50	62	50	31	50	0	0	0	0
	point7	7										
Driveway A	point39	39	29	15	1	15	0	0	0	0	0	0
	point27	27	29	15	1	15	0	0	0	0	0	0
	point28	28										
El Camino Real east of Kelly Dr	point41	41	2929	50	60	50	30	50	0	0	0	0
	point8	8	2929	50	60	50	30	50	0	0	0	0
	point9	9	2929	50	60	50	30	50	0	0	0	0
	point10	10	2929	50	60	50	30	50	0	0	0	0
	point42	42										
El Camino Real - Driveway A to B	point43	43	2929	50	60	50	30	50	0	0	0	0
	point11	11	2929	50	60	50	30	50	0	0	0	0
	point12	12	2929	50	60	50	30	50	0	0	0	0
	point45	45										

INPUT: TRAFFIC FOR LAeq1h Volumes**10838**

El Camino Real - east of Driveway B	point46	46	2929	50	60	50	30	50	0	0	0	0
	point13	13	2929	50	60	50	30	50	0	0	0	0
	point14	14	2929	50	60	50	30	50	0	0	0	0
	point15	15	2929	50	60	50	30	50	0	0	0	0
	point16	16	2929	50	60	50	30	50	0	0	0	0
	point17	17	2929	50	60	50	30	50	0	0	0	0
	point18	18	2929	50	60	50	30	50	0	0	0	0
	point19	19	2929	50	60	50	30	50	0	0	0	0
	point20	20										

INPUT: RECEIVERS
10838

Dudek						10 October 2018					
MG						TNM 2.5					
INPUT: RECEIVERS											
PROJECT/CONTRACT:	10838										
RUN:	Marja Acres Carlsbad - Future Rev 1018										
Receiver											
Name	No.	#DUs	Coordinates (ground)			Height	Input Sound Levels and Criteria				Active
			X	Y	Z	above	Existing	Impact Criteria		NR	in
						Ground	LAeq1h	LAeq1h	Sub'I	Goal	Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
ST1	1	1	2,105.4	2,254.8	51.00	5.00	0.00	66	10.0	8.0	Y
ST2	2	1	2,602.1	2,248.5	55.00	5.00	0.00	66	10.0	8.0	Y
ST3	3	1	1,430.3	2,726.3	52.00	5.00	0.00	66	10.0	8.0	Y
ST4	4	1	2,479.8	2,643.2	135.00	5.00	0.00	66	10.0	8.0	Y
ST5	5	1	3,033.1	2,197.1	86.00	5.00	0.00	66	10.0	8.0	Y
ST6	6	1	4,301.5	2,103.1	88.00	5.00	0.00	66	10.0	8.0	Y

INPUT: BARRIERS

10838

Dudek					10 October 2018														
MG					TNM 2.5														
INPUT: BARRIERS																			
PROJECT/CONTRACT:		10838																	
RUN:		Marja Acres Carlsbad - Future Rev 1018																	
Barrier										Points									
Name	Type	Height		If Wall	If Berm			Add'tnl		Name	No.	Coordinates (bottom)			Height	Segment			
		Min	Max	\$ per Unit Area	\$ per Unit Vol.	Top Width	Run:Rise	\$ per Unit Length				X	Y	Z	at Point	Seg Ht	Perturbs	On	Important
		ft	ft	\$/sq ft	\$/cu yd	ft	ft:ft	\$/ft				ft	ft	ft	ft	ft	#Up	#Dn	Reflec-tions?
Barrier1	W	0.00	99.99	0.00				0.00		point1	1	2,004.9	2,783.5	135.00	6.00	0.00	0	0	
										point3	3	1,992.9	2,739.8	135.00	6.00	0.00	0	0	
										point4	4	2,133.9	2,692.7	135.00	6.00	0.00	0	0	
										point5	5	2,250.9	2,654.4	135.00	6.00	0.00	0	0	
										point6	6	2,305.6	2,642.4	135.00	6.00	0.00	0	0	
										point7	7	2,378.9	2,635.9	135.00	6.00	0.00	0	0	
										point8	8	2,567.0	2,622.8	135.00	6.00	0.00	0	0	
										point9	9	2,568.0	2,676.3	135.00	6.00				
Barrier1-2-2	W	0.00	99.99	0.00				0.00		point20	20	4,315.7	2,129.9	88.00	6.00	0.00	0	0	
										point12	12	4,316.7	2,074.6	88.00	6.00	0.00	0	0	
										point13	13	3,008.2	2,098.8	88.00	6.00	0.00	0	0	
										point14	14	3,010.9	2,328.5	88.00	6.00	0.00	0	0	
										point15	15	3,334.6	2,336.7	88.00	6.00	0.00	0	0	
										point16	16	3,573.0	2,341.0	88.00	6.00	0.00	0	0	
										point17	17	3,598.1	2,341.0	88.00	6.00				
Barrier5	W	0.00	99.99	0.00				0.00		point21	21	4,314.7	2,131.2	87.00	6.00	0.00	0	0	
										point22	22	4,257.0	2,154.9	87.00	6.00	0.00	0	0	
										point23	23	4,172.2	2,183.5	87.00	6.00				
Barrier6	W	0.00	99.99	0.00				0.00		point24	24	1,290.6	2,844.0	53.00	5.00	0.00	0	0	
										point25	25	1,452.5	2,730.3	53.00	5.00	0.00	0	0	
										point26	26	1,418.1	2,633.8	53.00	5.00				

RESULTS: SOUND LEVELS
10838

Dudek													
MG													
RESULTS: SOUND LEVELS													
PROJECT/CONTRACT:													
RUN:													
BARRIER DESIGN:													
ATMOSPHERICS:													
Receiver													
Name	No.	#DUs	Existing	No Barrier					With Barrier				
			LAeq1h	LAeq1h		Increase over existing		Type	Calculated	Noise Reduction			
				Calculated	Crit'n	Calculated	Crit'n	Impact	LAeq1h	Calculated	Goal	Calculated	
							Sub'l Inc					minus	
												Goal	
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB	
ST1	1	1	0.0	66.5	66	66.5	10	Snd Lvl	66.5	0.0	8	-8.0	
ST2	2	1	0.0	67.5	66	67.5	10	Snd Lvl	67.5	0.0	8	-8.0	
ST3	3	1	0.0	63.3	66	63.3	10	----	63.3	0.0	8	-8.0	
ST4	4	1	0.0	53.8	66	53.8	10	----	53.8	0.0	8	-8.0	
ST5	5	1	0.0	55.6	66	55.6	10	----	55.6	0.0	8	-8.0	
ST6	6	1	0.0	60.0	66	60.0	10	----	60.0	0.0	8	-8.0	
Dwelling Units		# DUs	Noise Reduction										
			Min	Avg	Max								
			dB	dB	dB								
All Selected		6	0.0	0.0	0.0								
All Impacted		2	0.0	0.0	0.0								
All that meet NR Goal		0	0.0	0.0	0.0								

INPUT: ROADWAYS

10838

Dudek MG												
INPUT: ROADWAYS												
PROJECT/CONTRACT:	10838											
RUN:	Marja Acres Carlsbad-FWP Rev 1018											
Roadway		Points										
Name	Width	Name	No.	Coordinates	(pavement)		Flow Control				Segment	
				X	Y	Z	Control	Speed	Percent	Pvmt	On	
							Device	Constraint	Vehicles	Type	Struct?	
									Affected			
	ft			ft	ft	ft		mph	%			
Kelly Drive	66.0	point33	33	1,311.1	2,129.0	34.00				Average		
		point22	22	1,387.7	2,378.3	39.00				Average		
		point23	23	1,435.8	2,524.8	42.00				Average		
		point24	24	1,468.6	2,610.1	44.00				Average		
		point25	25	1,536.4	2,715.1	46.00						
El Camino Real - west of Kelly Drive	105.0	point67	67	791.7	3,323.6	75.00				Average		
		point69	69	1,057.3	3,143.1	70.00				Average		
		point70	70	1,220.5	3,006.0	60.00				Average		
		point71	71	1,546.8	2,738.6	46.00						
El Camino Real - east of Kelly Drive	105.0	point116	116	1,546.8	2,738.6	46.00				Average		
		point72	72	1,786.4	2,590.8	49.00				Average		
		point73	73	1,934.6	2,519.3	51.00				Average		
		point74	74	2,108.8	2,457.3	52.00						
El Camino Real - east of Proj Dwy 1	105.0	point117	117	2,108.8	2,457.3	52.00				Average		
		point75	75	2,304.1	2,408.7	55.00				Average		
		point76	76	2,534.9	2,396.6	57.00				Average		
		point115	115	3,140.3	2,412.0	76.00				Average		
		point14	14	3,573.4	2,427.3	84.00				Average		
		point15	15	3,656.5	2,420.7	83.00				Average		
		point16	16	4,008.6	2,361.7	75.00				Average		
		point17	17	4,275.4	2,274.2	71.00				Average		
		point18	18	4,533.5	2,145.2	65.00				Average		
		point19	19	5,102.1	1,825.8	55.00				Average		
		point20	20	5,765.2	1,506.5	44.00						
Project Entrance #1	24.0	point118	118	2,093.3	2,416.2	53.00				Average		

INPUT: ROADWAYS
10838

		point119	119	2,059.4	2,306.9	60.00				Average	
		point120	120	2,049.6	2,253.3	68.00				Average	
		point121	121	2,055.1	2,184.4	72.00					
Project Entrance #2	24.0	point122	122	2,803.9	2,360.6	64.00				Average	
		point123	123	2,806.5	2,209.5	75.00				Average	
		point124	124	2,807.4	2,152.2	80.00				Average	
		point125	125	2,783.9	2,112.3	82.00				Average	
		point126	126	2,561.7	2,010.7	84.00				Average	
		point127	127	1,896.8	1,706.7	86.00				Average	
		point128	128	1,830.6	1,675.7	80.00				Average	
		point129	129	1,805.1	1,665.4	77.00				Average	
		point130	130	1,772.7	1,661.9	76.00				Average	
		point131	131	1,668.0	1,689.5	74.00					

INPUT: TRAFFIC FOR LAeq1h Volumes

10838

Dudek												
MG												
INPUT: TRAFFIC FOR LAeq1h Volumes												
PROJECT/CONTRACT:	10838											
RUN:	Marja Acres Carlsbad-FWP Rev 1018											
Roadway	Points											
Name	Name	No.	Segment									
			Autos		MTrucks		HTrucks		Buses		Motorcycles	
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
Kelly Drive	point33	33	368	25	8	25	4	25	0	0	0	0
	point22	22	368	25	8	25	4	25	0	0	0	0
	point23	23	368	25	8	25	4	25	0	0	0	0
	point24	24	368	25	8	25	4	25	0	0	0	0
	point25	25										
El Camino Real - west of Kelly Drive	point67	67	3079	50	64	50	32	50	0	0	0	0
	point69	69	3079	50	64	50	32	50	0	0	0	0
	point70	70	3079	50	64	50	32	50	0	0	0	0
	point71	71										
El Camino Real - east of Kelly Drive	point116	116	3128	50	65	50	32	50	0	0	0	0
	point72	72	3128	50	65	50	32	50	0	0	0	0
	point73	73	3128	50	65	50	32	50	0	0	0	0
	point74	74										
El Camino Real - east of Proj Dwy 1	point117	117	3128	50	65	50	32	50	0	0	0	0
	point75	75	3128	50	65	50	32	50	0	0	0	0
	point76	76	3128	50	65	50	32	50	0	0	0	0
	point115	115	3128	50	65	50	32	50	0	0	0	0
	point14	14	3128	50	65	50	32	50	0	0	0	0
	point15	15	3128	50	65	50	32	50	0	0	0	0
	point16	16	3128	50	65	50	32	50	0	0	0	0
	point17	17	3128	50	65	50	32	50	0	0	0	0
	point18	18	3128	50	65	50	32	50	0	0	0	0
	point19	19	3128	50	65	50	32	50	0	0	0	0

INPUT: TRAFFIC FOR LAeq1h Volumes**10838**

	point20	20										
Project Entrance #1	point118	118	148	15	3	15	2	15	0	0	0	0
	point119	119	148	15	3	15	2	15	0	0	0	0
	point120	120	148	15	3	15	2	15	0	0	0	0
	point121	121										
Project Entrance #2	point122	122	105	15	2	15	1	15	0	0	0	0
	point123	123	105	15	2	15	1	15	0	0	0	0
	point124	124	105	15	2	15	1	15	0	0	0	0
	point125	125	105	15	2	15	1	15	0	0	0	0
	point126	126	105	15	2	15	1	15	0	0	0	0
	point127	127	105	15	2	15	1	15	0	0	0	0
	point128	128	105	15	2	15	1	15	0	0	0	0
	point129	129	105	15	2	15	1	15	0	0	0	0
	point130	130	105	15	2	15	1	15	0	0	0	0
	point131	131										

INPUT: RECEIVERS
10838

Dudek											
MG											
INPUT: RECEIVERS											
PROJECT/CONTRACT:	10838										
RUN:	Marja Acres Carlsbad-FWP Rev 1018										
Receiver											
Name	No.	#DUs	Coordinates (ground)			Height	Input Sound Levels and Criteria				Active
			X	Y	Z	above	Existing	Impact Criteria		NR	in
						Ground	LAeq1h	LAeq1h	Sub'l	Goal	Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
ST3	3	1	1,430.3	2,726.3	52.00	5.00	0.00	66	10.0	8.0	
ST4	4	1	2,479.8	2,643.2	135.00	5.00	0.00	66	10.0	8.0	
ST5	5	1	3,033.1	2,197.1	86.00	5.00	0.00	66	10.0	8.0	
ST6	6	1	4,301.5	2,103.1	88.00	5.00	0.00	66	10.0	8.0	
M1 - Common Rec Area 1	255	1	2,077.5	1,990.8	84.00	5.00	0.00	66	10.0	8.0	Y
M2 - Common Rec Area 2	256	1	1,551.4	1,587.1	75.00	5.00	0.00	66	10.0	8.0	Y
M3 - Common Rec Area 3	261	1	1,688.6	1,864.3	77.00	5.00	0.00	66	10.0	8.0	Y
M4 - Common Rec Area 4	262	1	1,802.6	1,706.4	78.00	5.00	0.00	66	10.0	8.0	Y
M5 - Common Rec Area 5	263	1	2,427.9	2,003.0	85.00	5.00	0.00	66	10.0	8.0	Y
M6 - Common Rec Area 6	264	1	2,588.7	2,072.8	84.00	5.00	0.00	66	10.0	8.0	Y
M7 - Common Rec Area 7	265	1	2,709.0	2,150.9	80.00	5.00	0.00	66	10.0	8.0	Y
M8 - Senior Apartment Housing 1st Flr	267	1	1,827.3	2,452.0	60.00	5.00	0.00	66	10.0	8.0	Y
M9 - Senior Apartment Housing 1st Flr	268	1	1,883.2	2,434.8	60.00	5.00	0.00	66	10.0	8.0	Y
M10 - Senior Apartment Housing 1st Flr	269	1	1,952.0	2,406.6	60.00	5.00	0.00	66	10.0	8.0	Y
M11 - Senior Apartment Housing 1st Flr	270	1	1,937.7	2,355.5	60.00	5.00	0.00	66	10.0	8.0	Y
M12 - Senior Apartment Housing 1st Flr	271	1	1,927.1	2,308.0	60.00	5.00	0.00	66	10.0	8.0	Y
M13 - Senior Apartment Housing 1st Flr	272	1	1,915.1	2,275.6	60.00	5.00	0.00	66	10.0	8.0	Y
M14 - Senior Apartment Housing 1st Flr	273	1	1,814.5	2,388.9	60.00	5.00	0.00	66	10.0	8.0	Y
M15 - Senior Apartment Housing 1st Flr	274	1	1,863.0	2,375.9	60.00	5.00	0.00	66	10.0	8.0	Y
M16 - Senior Apartment Housing 1st Flr	275	1	1,871.9	2,344.5	60.00	5.00	0.00	66	10.0	8.0	Y
M17 - Senior Apartment Housing 1st Flr	276	1	1,838.7	2,305.1	60.00	5.00	0.00	66	10.0	8.0	Y
M18 - Small Townhomes 1st Flr	277	1	2,541.1	2,293.1	72.00	5.00	0.00	66	10.0	8.0	Y

INPUT: RECEIVERS**10838**

M19 - Small Townhomes 1st Flr	278	1	2,653.6	2,297.4	72.00	5.00	0.00	66	10.0	8.0	Y
M20 - Small Townhomes 1st Flr	279	1	2,714.3	2,296.2	71.00	5.00	0.00	66	10.0	8.0	Y
M21 Small Townhomes 1st Flr	280	1	2,741.4	2,295.4	71.00	5.00	0.00	66	10.0	8.0	Y
M22 Small Townhomes 1st Flr	281	1	2,746.3	2,261.9	71.50	5.00	0.00	66	10.0	8.0	Y
M23 Small Townhomes 1st Flr	282	1	2,749.0	2,239.6	71.50	5.00	0.00	66	10.0	8.0	Y
M24 Small Townhomes 1st Flr	283	1	2,749.5	2,217.9	71.50	5.00	0.00	66	10.0	8.0	Y
M27 Small Townhomes 1st Flr	284	1	2,658.2	2,183.7	72.00	5.00	0.00	66	10.0	8.0	Y
M28 Small Townhomes 1st Flr	285	1	2,544.1	2,184.1	71.00	5.00	0.00	66	10.0	8.0	Y
M29 Large Townhomes 1st Flr	286	1	2,898.9	2,278.9	75.00	5.00	0.00	66	10.0	8.0	Y
M30 Large Townhomes 1st Flr	287	1	2,917.5	2,301.2	75.00	5.00	0.00	66	10.0	8.0	Y
M31 Large Townhomes 1st Flr	289	1	2,977.3	2,302.2	75.00	5.00	0.00	66	10.0	8.0	Y
M34 Large Townhomes 1st Flr	290	1	2,867.7	2,212.6	75.00	5.00	0.00	66	10.0	8.0	Y
M36 Large Townhomes 1st Flr	291	1	2,863.5	2,167.9	77.00	5.00	0.00	66	10.0	8.0	Y
M39 Large Townhomes 1st Flr	292	1	2,987.7	2,221.0	75.00	5.00	0.00	66	10.0	8.0	Y
M42 Large Townhomes 1st Flr	293	1	2,843.7	2,031.9	79.00	5.00	0.00	66	10.0	8.0	Y
M44 Large Townhomes 1st Flr	294	1	2,658.6	2,158.3	84.00	5.00	0.00	66	10.0	8.0	Y
M45 Large Townhomes 1st Flr	295	1	2,575.5	2,155.5	84.00	5.00	0.00	66	10.0	8.0	Y
M46 Large Townhomes 1st Flr	296	1	2,501.0	2,153.2	84.00	5.00	0.00	66	10.0	8.0	Y
M47 Large Townhomes 1st Flr	297	1	2,361.0	2,146.8	84.00	5.00	0.00	66	10.0	8.0	Y
M52 Large Townhomes 1st Flr	298	1	2,291.5	2,140.2	83.00	5.00	0.00	66	10.0	8.0	Y
M53 Large Townhomes 1st Flr	299	1	2,185.6	2,129.8	83.00	5.00	0.00	66	10.0	8.0	Y
M57 Small Townhomes 1st Flr	300	1	1,952.0	2,104.6	77.00	5.00	0.00	66	10.0	8.0	Y
M58 Small Townhomes 1st Flr	301	1	1,892.1	2,100.3	76.50	5.00	0.00	66	10.0	8.0	Y
M59 Small Townhomes 1st Flr	302	1	1,748.0	2,082.9	76.00	5.00	0.00	66	10.0	8.0	Y
M63 Large Townhomes 1st Flr	303	1	2,532.6	2,040.9	85.00	5.00	0.00	66	10.0	8.0	Y
M65 Large Townhomes 1st Flr	304	1	2,415.0	2,037.0	85.00	5.00	0.00	66	10.0	8.0	Y
M66 Large Townhomes 1st Flr	305	1	2,369.6	2,065.4	86.00	5.00	0.00	66	10.0	8.0	Y
M67 Large Townhomes 1st Flr	306	1	2,383.8	2,032.6	86.00	5.00	0.00	66	10.0	8.0	Y
M68 Large Townhomes 1st Flr	307	1	2,399.7	1,999.8	86.00	5.00	0.00	66	10.0	8.0	Y
M71 Large Townhomes 1st Flr	308	1	2,262.9	2,039.2	86.00	5.00	0.00	66	10.0	8.0	Y
M72 Large Townhomes 1st Flr	309	1	2,278.8	2,005.8	86.50	5.00	0.00	66	10.0	8.0	Y
M74 Large Townhomes 1st Flr	310	1	2,230.7	2,057.2	86.00	5.00	0.00	66	10.0	8.0	Y
M75 Large Townhomes 1st Flr	311	1	2,248.1	2,016.2	86.50	5.00	0.00	66	10.0	8.0	Y
M76 Large Townhomes 1st Flr	312	1	2,275.3	1,956.6	87.00	5.00	0.00	66	10.0	8.0	Y
M81 Large Townhomes 1st Flr	313	1	2,119.6	2,026.6	86.00	5.00	0.00	66	10.0	8.0	Y
M83 Small Townhomes 1st Flr	314	1	2,014.3	2,034.7	80.00	5.00	0.00	66	10.0	8.0	Y

INPUT: RECEIVERS**10838**

M84 Small Townhomes 1st Flr	315	1	2,043.3	1,975.6	80.00	5.00	0.00	66	10.0	8.0	Y
M85 Small Townhomes 1st Flr	316	1	2,078.0	1,901.4	80.00	5.00	0.00	66	10.0	8.0	Y
M87 Small Townhomes 1st Flr	317	1	1,914.4	2,015.2	79.50	5.00	0.00	66	10.0	8.0	Y
M88 Small Townhomes 1st Flr	318	1	1,884.9	2,029.9	79.50	5.00	0.00	66	10.0	8.0	Y
M89 Small Townhomes 1st Flr	319	1	1,807.2	1,960.2	80.00	5.00	0.00	66	10.0	8.0	Y
M90 Small Townhomes 1st Flr	320	1	1,775.5	1,985.0	79.00	5.00	0.00	66	10.0	8.0	Y
M91 Small Townhomes 1st Flr	321	1	1,687.3	1,935.4	78.00	5.00	0.00	66	10.0	8.0	Y
M92 Small Townhomes 1st Flr	322	1	1,684.5	1,830.8	78.00	5.00	0.00	66	10.0	8.0	Y
M93 Small Townhomes 1st Flr	323	1	1,657.9	1,767.4	77.00	5.00	0.00	66	10.0	8.0	Y
M94 Large Townhomes 1st Flr	324	1	2,795.2	2,083.4	84.00	5.00	0.00	66	10.0	8.0	Y
M98 Large Townhomes 1st Flr	325	1	2,693.9	2,033.3	84.00	5.00	0.00	66	10.0	8.0	Y
M100 Large Townhomes 1st Flr	326	1	2,678.1	2,027.8	85.50	5.00	0.00	66	10.0	8.0	Y
M104 Large Townhomes 1st Flr	327	1	2,577.4	1,981.4	85.50	5.00	0.00	66	10.0	8.0	Y
M106 Large Townhomes 1st Flr	328	1	2,520.9	1,959.8	87.50	5.00	0.00	66	10.0	8.0	Y
M107 Large Townhomes 1st Flr	329	1	2,462.8	1,931.1	87.50	5.00	0.00	66	10.0	8.0	Y
M109 Large Townhomes 1st Flr	330	1	2,349.9	1,872.9	88.50	5.00	0.00	66	10.0	8.0	Y
M110 Large Townhomes 1st Flr	331	1	2,236.8	1,821.1	89.50	5.00	0.00	66	10.0	8.0	Y
M112 Small Townhomes 1st Flr	332	1	2,131.8	1,774.1	88.00	5.00	0.00	66	10.0	8.0	Y
M113 Small Townhomes 1st Flr	333	1	2,032.9	1,730.5	87.00	5.00	0.00	66	10.0	8.0	Y
M114 - Small Townhomes 1st Flr	334	1	1,926.8	1,683.5	85.00	5.00	0.00	66	10.0	8.0	Y
M115 - Small Townhomes 1st Flr	335	1	1,819.7	1,636.4	82.00	5.00	0.00	66	10.0	8.0	Y
M116 - Small Townhomes 1st Flr	336	1	1,785.6	1,626.7	75.00	5.00	0.00	66	10.0	8.0	Y
M117 - Small Townhomes 1st Flr	337	1	1,701.5	1,641.9	75.00	5.00	0.00	66	10.0	8.0	Y
M8 - Senior Apartment Housing 2nd Flr	338	1	1,827.3	2,452.0	60.00	15.00	0.00	66	10.0	8.0	Y
M9 - Senior Apartment Housing 2nd Flr	339	1	1,883.2	2,434.8	60.00	15.00	0.00	66	10.0	8.0	Y
M10 - Senior Apartment Housing 2nd Flr	340	1	1,952.0	2,406.6	60.00	15.00	0.00	66	10.0	8.0	Y
M11 - Senior Apartment Housing 2nd Flr	341	1	1,937.7	2,355.5	60.00	15.00	0.00	66	10.0	8.0	Y
M12 - Senior Apartment Housing 2nd Flr	342	1	1,927.1	2,308.0	60.00	15.00	0.00	66	10.0	8.0	Y
M13 - Senior Apartment Housing 2nd Flr	343	1	1,915.1	2,275.6	60.00	15.00	0.00	66	10.0	8.0	Y
M14 - Senior Apartment Housing 2nd Flr	344	1	1,814.5	2,388.9	60.00	15.00	0.00	66	10.0	8.0	Y
M15 - Senior Apartment Housing 2nd Flr	345	1	1,863.0	2,375.9	60.00	15.00	0.00	66	10.0	8.0	Y
M16 - Senior Apartment Housing 2nd Flr	346	1	1,871.9	2,344.5	60.00	15.00	0.00	66	10.0	8.0	Y
M17 - Senior Apartment Housing 2nd Flr	347	1	1,838.7	2,305.1	60.00	15.00	0.00	66	10.0	8.0	Y
M18 - Small Townhomes 2nd Flr	348	1	2,541.1	2,293.1	72.00	15.00	0.00	66	10.0	8.0	Y
M19 - Small Townhomes 2nd Flr	349	1	2,653.6	2,297.4	72.00	15.00	0.00	66	10.0	8.0	Y
M20 - Small Townhomes 2nd Flr	350	1	2,714.3	2,296.2	71.00	15.00	0.00	66	10.0	8.0	Y

INPUT: RECEIVERS**10838**

M21 Small Townhomes 2nd Flr	351	1	2,741.4	2,295.4	71.00	15.00	0.00	66	10.0	8.0	Y
M22 Small Townhomes 2nd Flr	352	1	2,746.3	2,261.9	71.50	15.00	0.00	66	10.0	8.0	Y
M23 Small Townhomes 2nd Flr	353	1	2,749.0	2,239.6	71.50	15.00	0.00	66	10.0	8.0	Y
M24 Small Townhomes 2nd Flr	354	1	2,749.5	2,217.9	71.50	15.00	0.00	66	10.0	8.0	Y
M25 Small Townhomes 2nd Flr	355	1	2,542.9	2,223.0	71.00	15.00	0.00	66	10.0	8.0	Y
M26 Small Townhomes 2nd Flr	356	1	2,661.2	2,224.8	72.00	15.00	0.00	66	10.0	8.0	Y
M27 Small Townhomes 2nd Flr	357	1	2,658.2	2,183.7	72.00	15.00	0.00	66	10.0	8.0	Y
M28 Small Townhomes 2nd Flr	358	1	2,544.1	2,184.1	71.00	15.00	0.00	66	10.0	8.0	Y
M29 Large Townhomes 2nd Flr	359	1	2,898.9	2,278.9	75.00	15.00	0.00	66	10.0	8.0	Y
M30 Large Townhomes 2nd Flr	360	1	2,917.5	2,301.2	75.00	15.00	0.00	66	10.0	8.0	Y
M31 Large Townhomes 2nd Flr	361	1	2,977.3	2,302.2	75.00	15.00	0.00	66	10.0	8.0	Y
M32 Large Townhomes 2nd Flr	362	1	2,909.2	2,253.9	75.00	15.00	0.00	66	10.0	8.0	Y
M34 Large Townhomes 2nd Flr	363	1	2,867.7	2,212.6	75.00	15.00	0.00	66	10.0	8.0	Y
M35 Large Townhomes 2nd Flr	364	1	2,913.9	2,206.5	75.00	15.00	0.00	66	10.0	8.0	Y
M36 Large Townhomes 2nd Flr	365	1	2,863.5	2,167.9	77.00	15.00	0.00	66	10.0	8.0	Y
M38 Large Townhomes 2nd Flr	366	1	2,941.6	2,217.1	75.00	15.00	0.00	66	10.0	8.0	Y
M39 Large Townhomes 2nd Flr	367	1	2,987.7	2,221.0	75.00	15.00	0.00	66	10.0	8.0	Y
M41 Large Townhomes 2nd Flr	368	1	2,842.0	2,091.1	79.00	15.00	0.00	66	10.0	8.0	Y
M42 Large Townhomes 2nd Flr	378	1	2,843.7	2,031.9	79.00	15.00	0.00	66	10.0	8.0	Y
M44 Large Townhomes 2nd Flr	380	1	2,658.6	2,158.3	84.00	15.00	0.00	66	10.0	8.0	Y
M45 Large Townhomes 2nd Flr	382	1	2,575.5	2,155.5	84.00	15.00	0.00	66	10.0	8.0	Y
M46 Large Townhomes 2nd Flr	383	1	2,501.0	2,153.2	84.00	15.00	0.00	66	10.0	8.0	Y
M47 Large Townhomes 2nd Flr	385	1	2,361.0	2,146.8	84.00	15.00	0.00	66	10.0	8.0	Y
M48 Large Townhomes 2nd Flr	386	1	2,640.6	2,112.2	84.00	15.00	0.00	66	10.0	8.0	Y
M52 Large Townhomes 2nd Flr	388	1	2,291.5	2,140.2	83.00	15.00	0.00	66	10.0	8.0	Y
M53 Large Townhomes 2nd Flr	392	1	2,185.6	2,129.8	83.00	15.00	0.00	66	10.0	8.0	Y
M54 Large Townhomes 2nd Flr	393	1	2,163.0	2,084.7	83.00	15.00	0.00	66	10.0	8.0	Y
M57 Small Townhomes 2nd Flr	394	1	1,952.0	2,104.6	77.00	15.00	0.00	66	10.0	8.0	Y
M58 Small Townhomes 2nd Flr	395	1	1,892.1	2,100.3	76.50	15.00	0.00	66	10.0	8.0	Y
M59 Small Townhomes 2nd Flr	396	1	1,748.0	2,082.9	76.00	15.00	0.00	66	10.0	8.0	Y
M60 Small Townhomes 2nd Flr	397	1	1,758.4	2,048.2	76.00	15.00	0.00	66	10.0	8.0	Y
M61 Large Townhomes 2nd Flr	398	1	2,542.4	2,081.8	85.00	15.00	0.00	66	10.0	8.0	Y
M62 Large Townhomes 2nd Flr	399	1	2,427.6	2,077.4	85.00	15.00	0.00	66	10.0	8.0	Y
M63 Large Townhomes 2nd Flr	400	1	2,532.6	2,040.9	85.00	15.00	0.00	66	10.0	8.0	Y
M65 Large Townhomes 2nd Flr	401	1	2,415.0	2,037.0	85.00	15.00	0.00	66	10.0	8.0	Y
M66 Large Townhomes 2nd Flr	402	1	2,369.6	2,065.4	86.00	15.00	0.00	66	10.0	8.0	Y

INPUT: RECEIVERS**10838**

M67 Large Townhomes 2nd Flr	403	1	2,383.8	2,032.6	86.00	15.00	0.00	66	10.0	8.0	Y
M68 Large Townhomes 2nd Flr	404	1	2,399.7	1,999.8	86.00	15.00	0.00	66	10.0	8.0	Y
M70 Large Townhomes 2nd Flr	405	1	2,299.9	2,061.6	86.00	15.00	0.00	66	10.0	8.0	Y
M71 Large Townhomes 2nd Flr	406	1	2,263.5	2,039.2	86.00	15.00	0.00	66	10.0	8.0	Y
M72 Large Townhomes 2nd Flr	407	1	2,278.3	2,005.8	86.50	15.00	0.00	66	10.0	8.0	Y
M74 Large Townhomes 2nd Flr	408	1	2,230.2	2,057.2	86.00	15.00	0.00	66	10.0	8.0	Y
M75 Large Townhomes 2nd Flr	409	1	2,248.6	2,016.2	86.50	15.00	0.00	66	10.0	8.0	Y
M76 Large Townhomes 2nd Flr	410	1	2,275.8	1,956.6	87.00	15.00	0.00	66	10.0	8.0	Y
M77 Large Townhomes 2nd Flr	411	1	2,188.0	2,035.3	86.00	15.00	0.00	66	10.0	8.0	Y
M78 Large Townhomes 2nd Flr	412	1	2,231.7	1,941.8	87.00	15.00	0.00	66	10.0	8.0	Y
M80 Large Townhomes 2nd Flr	413	1	2,159.9	2,050.7	86.00	15.00	0.00	66	10.0	8.0	Y
M81 Large Townhomes 2nd Flr	414	1	2,119.6	2,026.6	86.00	15.00	0.00	66	10.0	8.0	Y
M83 Small Townhomes 2nd Flr	415	1	2,014.3	2,034.7	80.00	15.00	0.00	66	10.0	8.0	Y
M84 Small Townhomes 2nd Flr	416	1	2,043.3	1,975.6	80.00	15.00	0.00	66	10.0	8.0	Y
M85 Small Townhomes 2nd Flr	417	1	2,078.0	1,901.4	80.00	15.00	0.00	66	10.0	8.0	Y
M86 Small Townhomes 2nd Flr	418	1	1,951.7	2,025.4	79.50	15.00	0.00	66	10.0	8.0	Y
M87 Small Townhomes 2nd Flr	419	1	1,914.4	2,015.2	79.50	15.00	0.00	66	10.0	8.0	Y
M88 Small Townhomes 2nd Flr	420	1	1,884.9	2,029.9	79.50	15.00	0.00	66	10.0	8.0	Y
M89 Small Townhomes 2nd Flr	421	1	1,807.2	1,960.2	80.00	15.00	0.00	66	10.0	8.0	Y
M90 Small Townhomes 2nd Flr	422	1	1,775.5	1,985.0	79.00	15.00	0.00	66	10.0	8.0	Y
M91 Small Townhomes 2nd Flr	423	1	1,687.3	1,935.4	78.00	15.00	0.00	66	10.0	8.0	Y
M92 Small Townhomes 2nd Flr	424	1	1,684.5	1,830.8	78.00	15.00	0.00	66	10.0	8.0	Y
M93 Small Townhomes 2nd Flr	425	1	1,657.9	1,767.4	77.00	15.00	0.00	66	10.0	8.0	Y
M94 Large Townhomes 2nd Flr	426	1	2,795.2	2,083.4	84.00	15.00	0.00	66	10.0	8.0	Y
M96 Large Townhomes 2nd Flr	427	1	2,733.8	2,053.6	84.00	15.00	0.00	66	10.0	8.0	Y
M97 Large Townhomes 2nd Flr	428	1	2,749.3	2,016.0	84.00	15.00	0.00	66	10.0	8.0	Y
M98 Large Townhomes 2nd Flr	429	1	2,693.9	2,033.3	84.00	15.00	0.00	66	10.0	8.0	Y
M100 Large Townhomes 2nd Flr	430	1	2,678.1	2,027.8	85.50	15.00	0.00	66	10.0	8.0	Y
M101 Large Townhomes 2nd Flr	431	1	2,640.6	2,009.5	85.50	15.00	0.00	66	10.0	8.0	Y
M102 Large Townhomes 2nd Flr	432	1	2,618.2	2,004.1	85.50	15.00	0.00	66	10.0	8.0	Y
M104 Large Townhomes 2nd Flr	433	1	2,577.4	1,981.4	85.50	15.00	0.00	66	10.0	8.0	Y
M106 Large Townhomes 2nd Flr	434	1	2,520.9	1,959.8	87.50	15.00	0.00	66	10.0	8.0	Y
M107 Large Townhomes 2nd Flr	435	1	2,462.8	1,931.1	87.50	15.00	0.00	66	10.0	8.0	Y
M109 Large Townhomes 2nd Flr	436	1	2,349.9	1,872.9	88.50	15.00	0.00	66	10.0	8.0	Y
M110 Large Townhomes 2nd Flr	437	1	2,236.8	1,821.1	89.50	15.00	0.00	66	10.0	8.0	Y
M112 Small Townhomes 2nd Flr	438	1	2,131.8	1,774.1	88.00	15.00	0.00	66	10.0	8.0	Y

INPUT: RECEIVERS**10838**

M113 Small Townhomes 2nd Flr	439	1	2,032.9	1,730.5	87.00	15.00	0.00	66	10.0	8.0	Y
M114 - Small Townhomes 2nd Flr	440	1	1,926.8	1,683.5	85.00	15.00	0.00	66	10.0	8.0	Y
M115 - Small Townhomes 2nd Flr	441	1	1,819.7	1,636.4	82.00	15.00	0.00	66	10.0	8.0	Y
M116 - Small Townhomes 2nd Flr	441	1	1,785.6	1,626.7	75.00	15.00	0.00	66	10.0	8.0	Y
M117 - Small Townhomes 2nd Flr	442	1	1,701.5	1,641.9	75.00	15.00	0.00	66	10.0	8.0	Y
M8 - Senior Apartment Housing 3rd Flr	443	1	1,827.3	2,452.0	60.00	25.00	0.00	66	10.0	8.0	Y
M9 - Senior Apartment Housing 3rd Flr	444	1	1,883.2	2,434.8	60.00	25.00	0.00	66	10.0	8.0	Y
M10 - Senior Apartment Housing 3rd Flr	445	1	1,952.0	2,406.6	60.00	25.00	0.00	66	10.0	8.0	Y
M11 - Senior Apartment Housing 3rd Flr	446	1	1,937.7	2,355.5	60.00	25.00	0.00	66	10.0	8.0	Y
M12 - Senior Apartment Housing 3rd Flr	447	1	1,927.1	2,308.0	60.00	25.00	0.00	66	10.0	8.0	Y
M13 - Senior Apartment Housing 3rd Flr	448	1	1,915.1	2,275.6	60.00	25.00	0.00	66	10.0	8.0	Y
M14 - Senior Apartment Housing 3rd Flr	449	1	1,814.5	2,388.9	60.00	25.00	0.00	66	10.0	8.0	Y
M15 - Senior Apartment Housing 3rd Flr	450	1	1,863.0	2,375.9	60.00	25.00	0.00	66	10.0	8.0	Y
M16 - Senior Apartment Housing 3rd Flr	451	1	1,871.9	2,344.5	60.00	25.00	0.00	66	10.0	8.0	Y
M17 - Senior Apartment Housing 3rd Flr	452	1	1,838.7	2,305.1	60.00	25.00	0.00	66	10.0	8.0	Y
M18 - Small Townhomes 3rd Flr	453	1	2,541.1	2,293.1	72.00	25.00	0.00	66	10.0	8.0	Y
M19 - Small Townhomes 3rd Flr	454	1	2,653.6	2,297.4	72.00	25.00	0.00	66	10.0	8.0	Y
M20 - Small Townhomes 3rd Flr	455	1	2,714.3	2,296.2	71.00	25.00	0.00	66	10.0	8.0	Y
M21 Small Townhomes 3rd Flr	456	1	2,741.4	2,295.4	71.00	25.00	0.00	66	10.0	8.0	Y
M22 Small Townhomes 3rd Flr	457	1	2,746.3	2,261.9	71.50	25.00	0.00	66	10.0	8.0	Y
M23 Small Townhomes 3rd Flr	458	1	2,749.0	2,239.6	71.50	25.00	0.00	66	10.0	8.0	Y
M24 Small Townhomes 3rd Flr	459	1	2,749.5	2,217.9	71.50	25.00	0.00	66	10.0	8.0	Y
M25 Small Townhomes 3rd Flr	460	1	2,542.9	2,223.0	71.00	25.00	0.00	66	10.0	8.0	Y
M26 Small Townhomes 3rd Flr	461	1	2,661.2	2,224.8	72.00	25.00	0.00	66	10.0	8.0	Y
M27 Small Townhomes 3rd Flr	462	1	2,658.2	2,183.7	72.00	25.00	0.00	66	10.0	8.0	Y
M28 Small Townhomes 3rd Flr	463	1	2,544.1	2,184.1	71.00	25.00	0.00	66	10.0	8.0	Y
M29 Large Townhomes 3rd Flr	464	1	2,898.9	2,278.9	75.00	25.00	0.00	66	10.0	8.0	Y
M30 Large Townhomes 3rd Flr	465	1	2,917.5	2,301.2	75.00	25.00	0.00	66	10.0	8.0	Y
M31 Large Townhomes 3rd Flr	466	1	2,977.3	2,302.2	75.00	25.00	0.00	66	10.0	8.0	Y
M32 Large Townhomes 3rd Flr	467	1	2,909.2	2,253.9	75.00	25.00	0.00	66	10.0	8.0	Y
M34 Large Townhomes 3rd Flr	468	1	2,867.7	2,212.6	75.00	25.00	0.00	66	10.0	8.0	Y
M35 Large Townhomes 3rd Flr	469	1	2,913.9	2,206.5	75.00	25.00	0.00	66	10.0	8.0	Y
M36 Large Townhomes 3rd Flr	470	1	2,863.5	2,167.9	77.00	25.00	0.00	66	10.0	8.0	Y
M38 Large Townhomes 3rd Flr	471	1	2,941.6	2,217.1	75.00	25.00	0.00	66	10.0	8.0	Y
M39 Large Townhomes 3rd Flr	472	1	2,987.7	2,221.0	75.00	25.00	0.00	66	10.0	8.0	Y
M41 Large Townhomes 3rd Flr	473	1	2,842.0	2,091.1	79.00	25.00	0.00	66	10.0	8.0	Y

INPUT: RECEIVERS**10838**

M42 Large Townhomes 3rd Flr	474	1	2,843.7	2,031.9	79.00	25.00	0.00	66	10.0	8.0	Y
M44 Large Townhomes 3rd Flr	475	1	2,658.6	2,158.3	84.00	25.00	0.00	66	10.0	8.0	Y
M45 Large Townhomes 3rd Flr	476	1	2,575.5	2,155.5	84.00	25.00	0.00	66	10.0	8.0	Y
M46 Large Townhomes 3rd Flr	477	1	2,501.0	2,153.2	84.00	25.00	0.00	66	10.0	8.0	Y
M47 Large Townhomes 3rd Flr	478	1	2,361.0	2,146.8	84.00	25.00	0.00	66	10.0	8.0	Y
M48 Large Townhomes 3rd Flr	479	1	2,640.6	2,112.2	84.00	25.00	0.00	66	10.0	8.0	Y
M52 Large Townhomes 3rd Flr	480	1	2,291.5	2,140.2	83.00	25.00	0.00	66	10.0	8.0	Y
M53 Large Townhomes 3rd Flr	481	1	2,185.6	2,129.8	83.00	25.00	0.00	66	10.0	8.0	Y
M54 Large Townhomes 3rd Flr	482	1	2,163.0	2,084.7	83.00	25.00	0.00	66	10.0	8.0	Y
M57 Small Townhomes 3rd Flr	483	1	1,952.0	2,104.6	77.00	25.00	0.00	66	10.0	8.0	Y
M58 Small Townhomes 3rd Flr	484	1	1,892.1	2,100.3	76.50	25.00	0.00	66	10.0	8.0	Y
M59 Small Townhomes 3rd Flr	485	1	1,748.0	2,082.9	76.00	25.00	0.00	66	10.0	8.0	Y
M60 Small Townhomes 3rd Flr	486	1	1,758.4	2,048.2	76.00	25.00	0.00	66	10.0	8.0	Y
M61 Large Townhomes 3rd Flr	487	1	2,542.4	2,081.8	85.00	25.00	0.00	66	10.0	8.0	Y
M62 Large Townhomes 3rd Flr	488	1	2,427.6	2,077.4	85.00	25.00	0.00	66	10.0	8.0	Y
M63 Large Townhomes 3rd Flr	489	1	2,532.6	2,040.9	85.00	25.00	0.00	66	10.0	8.0	Y
M65 Large Townhomes 3rd Flr	490	1	2,415.0	2,037.0	85.00	25.00	0.00	66	10.0	8.0	Y
M66 Large Townhomes 3rd Flr	490	1	2,369.6	2,065.4	86.00	25.00	0.00	66	10.0	8.0	Y
M67 Large Townhomes 3rd Flr	491	1	2,383.8	2,032.6	86.00	25.00	0.00	66	10.0	8.0	Y
M68 Large Townhomes 3rd Flr	492	1	2,399.7	1,999.8	86.00	25.00	0.00	66	10.0	8.0	Y
M70 Large Townhomes 3rd Flr	493	1	2,299.9	2,061.6	86.00	25.00	0.00	66	10.0	8.0	Y
M71 Large Townhomes 3rd Flr	494	1	2,263.9	2,039.2	86.50	25.00	0.00	66	10.0	8.0	Y
M72 Large Townhomes 3rd Flr	495	1	2,279.8	2,005.8	86.00	25.00	0.00	66	10.0	8.0	Y
M74 Large Townhomes 3rd Flr	496	1	2,231.7	2,057.2	86.50	25.00	0.00	66	10.0	8.0	Y
M75 Large Townhomes 3rd Flr	497	1	2,249.1	2,016.2	87.00	25.00	0.00	66	10.0	8.0	Y
M76 Large Townhomes 3rd Flr	498	1	2,276.3	1,956.6	86.00	25.00	0.00	66	10.0	8.0	Y
M77 Large Townhomes 3rd Flr	499	1	2,188.0	2,035.3	86.00	25.00	0.00	66	10.0	8.0	Y
M78 Large Townhomes 3rd Flr	500	1	2,231.7	1,941.8	87.00	25.00	0.00	66	10.0	8.0	Y
M80 Large Townhomes 3rd Flr	501	1	2,159.9	2,050.7	86.00	25.00	0.00	66	10.0	8.0	Y
M81 Large Townhomes 3rd Flr	502	1	2,119.6	2,026.6	86.00	25.00	0.00	66	10.0	8.0	Y
M83 Small Townhomes 3rd Flr	503	1	2,014.3	2,034.7	80.00	25.00	0.00	66	10.0	8.0	Y
M84 Small Townhomes 3rd Flr	504	1	2,043.3	1,975.6	80.00	25.00	0.00	66	10.0	8.0	Y
M85 Small Townhomes 3rd Flr	505	1	2,078.0	1,901.4	80.00	25.00	0.00	66	10.0	8.0	Y
M86 Small Townhomes 3rd Flr	506	1	1,951.7	2,025.4	79.50	25.00	0.00	66	10.0	8.0	Y
M87 Small Townhomes 3rd Flr	507	1	1,914.4	2,015.2	79.50	25.00	0.00	66	10.0	8.0	Y
M88 Small Townhomes 3rd Flr	508	1	1,884.9	2,029.9	79.50	25.00	0.00	66	10.0	8.0	Y

INPUT: RECEIVERS**10838**

M89 Small Townhomes 3rd Flr	509	1	1,807.2	1,960.2	80.00	25.00	0.00	66	10.0	8.0	Y
M90 Small Townhomes 3rd Flr	510	1	1,775.5	1,985.0	79.00	25.00	0.00	66	10.0	8.0	Y
M91 Small Townhomes 3rd Flr	511	1	1,687.3	1,935.4	78.00	25.00	0.00	66	10.0	8.0	Y
M92 Small Townhomes 3rd Flr	512	1	1,684.5	1,830.8	78.00	25.00	0.00	66	10.0	8.0	Y
M93 Small Townhomes 3rd Flr	513	1	1,657.9	1,767.4	77.00	25.00	0.00	66	10.0	8.0	Y
M94 Large Townhomes 3rd Flr	514	1	2,795.2	2,083.4	84.00	25.00	0.00	66	10.0	8.0	Y
M96 Large Townhomes 3rd Flr	515	1	2,733.8	2,053.6	84.00	25.00	0.00	66	10.0	8.0	Y
M97 Large Townhomes 3rd Flr	517	1	2,749.3	2,016.0	84.00	25.00	0.00	66	10.0	8.0	Y
M98 Large Townhomes 3rd Flr	519	1	2,693.9	2,033.3	84.00	25.00	0.00	66	10.0	8.0	Y
M100 Large Townhomes 3rd Flr	520	1	2,678.1	2,027.8	85.50	25.00	0.00	66	10.0	8.0	Y
M101 Large Townhomes 3rd Flr	521	1	2,640.6	2,009.5	85.50	25.00	0.00	66	10.0	8.0	Y
M102 Large Townhomes 3rd Flr	522	1	2,618.2	2,004.1	85.50	25.00	0.00	66	10.0	8.0	Y
M104 Large Townhomes 3rd Flr	523	1	2,577.4	1,981.4	85.50	25.00	0.00	66	10.0	8.0	Y
M106 Large Townhomes 3rd Flr	524	1	2,520.9	1,959.8	87.50	25.00	0.00	66	10.0	8.0	Y
M107 Large Townhomes 3rd Flr	525	1	2,462.8	1,931.1	87.50	25.00	0.00	66	10.0	8.0	Y
M109 Large Townhomes 3rd Flr	526	1	2,349.9	1,872.9	88.50	25.00	0.00	66	10.0	8.0	Y
M110 Large Townhomes 3rd Flr	527	1	2,236.8	1,821.1	89.50	25.00	0.00	66	10.0	8.0	Y
M112 Small Townhomes 3rd Flr	528	1	2,131.8	1,774.1	88.00	25.00	0.00	66	10.0	8.0	Y
M113 Small Townhomes 3rd Flr	529	1	2,032.9	1,730.5	87.00	25.00	0.00	66	10.0	8.0	Y
M114 - Small Townhomes 3rd Flr	530	1	1,926.8	1,683.5	85.00	25.00	0.00	66	10.0	8.0	Y
M115 - Small Townhomes 3rd Flr	531	1	1,819.7	1,636.4	82.00	25.00	0.00	66	10.0	8.0	Y
M116 - Small Townhomes 3rd Flr	532	1	1,785.1	1,626.7	75.00	25.00	0.00	66	10.0	8.0	Y
M117 - Small Townhomes 3rd Flr	533	1	1,701.5	1,641.9	75.00	39.00	0.00	66	10.0	8.0	Y
M33 Rooftop Deck	534	1	2,956.8	2,288.9	75.00	39.00	0.00	66	10.0	8.0	Y
M37 Rooftop Deck	535	1	2,900.7	2,200.9	75.00	39.00	0.00	66	10.0	8.0	Y
M40 Rooftop Deck	536	1	2,957.0	2,210.7	75.00	39.00	0.00	66	10.0	8.0	Y
M43 Rooftop Deck	537	1	2,846.0	2,080.0	79.00	39.00	0.00	66	10.0	8.0	Y
M49 Rooftop Deck	538	1	2,653.1	2,141.8	84.00	39.00	0.00	66	10.0	8.0	Y
M50 Rooftop Deck	539	1	2,480.2	2,137.4	84.00	39.00	0.00	66	10.0	8.0	Y
M51 Rooftop Deck	540	1	2,344.6	2,133.1	84.00	39.00	0.00	66	10.0	8.0	Y
M55 Rooftop Deck	541	1	2,297.5	2,125.4	83.00	39.00	0.00	66	10.0	8.0	Y
M56 Rooftop Deck	542	1	2,164.1	2,114.4	83.00	39.00	0.00	66	10.0	8.0	Y
M64 Rooftop Deck	543	1	2,534.9	2,066.3	85.00	39.00	0.00	66	10.0	8.0	Y
M69 Rooftop Deck	544	1	2,356.6	2,054.3	86.00	39.00	0.00	66	10.0	8.0	Y
M73 Rooftop Deck	545	1	2,285.6	2,048.5	86.00	39.00	0.00	66	10.0	8.0	Y
M79 Rooftop Deck	546	1	2,220.9	2,038.9	86.00	39.00	0.00	66	10.0	8.0	Y

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M82 Rooftop Deck	547	1	2,138.9	2,026.9	86.00	39.00	0.00	66	10.0	8.0	Y
M95 Rooftop Deck	548	1	2,787.4	2,072.9	84.00	39.00	0.00	66	10.0	8.0	Y
M99 Rooftop Deck	549	1	2,722.9	2,041.1	84.00	39.00	0.00	66	10.0	8.0	Y
M103 Rooftop Deck	550	1	2,664.3	2,017.6	85.50	39.00	0.00	66	10.0	8.0	Y
M105 Rooftop Deck	553	1	2,609.3	1,988.6	85.50	39.00	0.00	66	10.0	8.0	Y
M108 Rooftop Deck	555	1	2,496.8	1,935.5	87.50	39.00	0.00	66	10.0	8.0	Y
M111 Rooftop Deck	556	1	2,249.6	1,821.7	89.50	39.00	0.00	66	10.0	8.0	Y

INPUT: BARRIERS

10838

Dudek					10 October 2018														
MG					TNM 2.5														
INPUT: BARRIERS																			
PROJECT/CONTRACT:		10838																	
RUN:		Marja Acres Carlsbad-FWP Rev 1018																	
Barrier										Points									
Name	Type	Height		If Wall	If Berm			Add'tnl		Name	No.	Coordinates (bottom)			Height	Segment			
		Min	Max	\$ per Unit Area	\$ per Unit Vol.	Top Width	Run:Rise	\$ per Unit Length				X	Y	Z	at Point	Seg Ht	Perturbs	On	Important
		ft	ft	\$/sq ft	\$/cu yd	ft	ft:ft	\$/ft				ft	ft	ft	ft	ft	#Up	#Dn	Reflec-tions?
Barrier1	W	0.00	99.99	0.00				0.00		point1	1	2,004.9	2,783.5	135.00	6.00	0.00	0	0	
										point3	3	1,992.9	2,739.8	135.00	6.00	0.00	0	0	
										point4	4	2,133.9	2,692.7	135.00	6.00	0.00	0	0	
										point5	5	2,250.9	2,654.4	135.00	6.00	0.00	0	0	
										point6	6	2,305.6	2,642.4	135.00	6.00	0.00	0	0	
										point7	7	2,378.9	2,635.9	135.00	6.00	0.00	0	0	
										point8	8	2,567.0	2,622.8	135.00	6.00	0.00	0	0	
										point9	9	2,568.0	2,676.3	135.00	6.00				
Barrier2	W	0.00	99.99	0.00				0.00		point20	20	4,315.7	2,129.9	88.00	6.00	0.00	0	0	
										point12	12	4,316.7	2,074.6	88.00	6.00	0.00	0	0	
										point13	13	3,008.2	2,098.8	88.00	6.00	0.00	0	0	
										point14	14	3,010.9	2,328.5	88.00	6.00	0.00	0	0	
										point15	15	3,334.6	2,336.7	88.00	6.00	0.00	0	0	
										point16	16	3,573.0	2,341.0	88.00	6.00	0.00	0	0	
										point17	17	3,598.1	2,341.0	88.00	6.00				
Barrier3	W	0.00	99.99	0.00				0.00		point21	21	4,314.7	2,131.2	87.00	6.00	0.00	0	0	
										point22	22	4,257.0	2,154.9	87.00	6.00	0.00	0	0	
										point23	23	4,172.2	2,183.5	87.00	6.00				
Barrier4	W	0.00	99.99	0.00				0.00		point24	24	1,290.6	2,844.0	53.00	5.00	0.00	0	0	
										point25	25	1,452.5	2,730.3	53.00	5.00	0.00	0	0	
										point26	26	1,418.1	2,633.8	53.00	5.00				
Barrier5	W	0.00	99.99	0.00				0.00		point29	29	3,022.3	2,181.6	93.00	12.00	0.00	0	0	
										point31	31	3,023.3	2,116.5	93.00	12.00	0.00	0	0	
										point32	32	3,030.2	2,116.5	93.00	12.00	0.00	0	0	
										point33	33	3,029.5	2,109.2	93.00	12.00	0.00	0	0	
										point34	34	3,067.1	2,109.2	93.00	12.00	0.00	0	0	
										point35	35	3,066.4	2,180.2	93.00	12.00				
Barrier7	W	0.00	99.99	0.00				0.00		point329	329	1,533.8	2,590.4	50.00	24.00	0.00	0	0	
										point145	145	1,591.8	2,571.8	50.00	24.00	0.00	0	0	
										point146	146	1,573.2	2,513.8	50.00	24.00	0.00	0	0	
										point147	147	1,539.3	2,525.9	50.00	24.00	0.00	0	0	
										point148	148	1,546.9	2,549.9	50.00	24.00	0.00	0	0	
										point149	149	1,524.0	2,559.7	50.00	24.00				
Barrier8	W	0.00	99.99	0.00				0.00		point346	346	1,452.3	2,303.3	45.00	24.00	0.00	0	0	
										point175	175	1,505.7	2,286.4	45.00	24.00	0.00	0	0	

INPUT: BARRIERS

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									point176	176	1,498.1	2,263.7	45.00	24.00	0.00	0	0		
									point177	177	1,490.2	2,266.4	45.00	24.00	0.00	0	0		
									point178	178	1,484.4	2,243.4	45.00	24.00	0.00	0	0		
									point179	179	1,447.1	2,257.1	45.00	24.00	0.00	0	0		
									point180	180	1,445.8	2,251.3	45.00	24.00					
Barrier9	W	0.00	99.99	0.00				0.00	point348	348	1,462.6	2,375.2	46.00	24.00	0.00	0	0		
									point167	167	1,499.1	2,362.1	46.00	24.00	0.00	0	0		
									point168	168	1,496.3	2,355.2	46.00	24.00	0.00	0	0		
									point169	169	1,517.0	2,349.0	46.00	24.00	0.00	0	0		
									point170	170	1,500.5	2,298.7	46.00	24.00	0.00	0	0		
									point171	171	1,467.4	2,310.4	46.00	24.00	0.00	0	0		
									point172	172	1,475.0	2,339.4	46.00	24.00	0.00	0	0		
									point173	173	1,452.9	2,347.7	46.00	24.00					
Barrier10	W	0.00	99.99	0.00				0.00	point349	349	1,489.5	2,439.4	47.00	24.00	0.00	0	0		
									point159	159	1,534.4	2,424.1	47.00	24.00	0.00	0	0		
									point160	160	1,532.7	2,419.4	47.00	24.00	0.00	0	0		
									point161	161	1,542.3	2,416.1	47.00	24.00	0.00	0	0		
									point162	162	1,534.0	2,391.8	47.00	24.00	0.00	0	0		
									point163	163	1,523.4	2,395.4	47.00	24.00	0.00	0	0		
									point164	164	1,514.6	2,369.9	47.00	24.00	0.00	0	0		
									point165	165	1,470.9	2,384.8	47.00	24.00					
Barrier13	W	0.00	99.99	0.00				0.00	point432	432	3,043.1	2,323.4	82.00	12.00	0.00	0	0		
									point37	37	3,114.1	2,322.7	82.00	12.00	0.00	0	0		
									point38	38	3,114.1	2,280.0	82.00	12.00	0.00	0	0		
									point39	39	3,045.9	2,280.0	82.00	12.00					
Barrier14	W	0.00	99.99	0.00				0.00	point438	438	1,511.9	2,513.8	50.00	24.00	0.00	0	0		
									point151	151	1,592.3	2,485.9	50.00	24.00	0.00	0	0		
									point152	152	1,583.8	2,461.4	50.00	24.00	0.00	0	0		
									point153	153	1,558.3	2,470.3	50.00	24.00	0.00	0	0		
									point154	154	1,553.6	2,456.8	50.00	24.00	0.00	0	0		
									point155	155	1,549.7	2,458.1	50.00	24.00	0.00	0	0		
									point156	156	1,540.8	2,432.6	50.00	24.00	0.00	0	0		
									point157	157	1,489.9	2,450.2	50.00	24.00					
Barrier15	W	0.00	99.99	0.00				0.00	point717	717	1,949.7	2,378.4	60.00	35.00	0.00	0	0		
									point696	696	1,809.1	2,425.1	60.00	35.00	0.00	0	0		
									point697	697	1,918.2	2,386.1	60.00	35.00	0.00	0	0		
									point698	698	1,941.2	2,378.8	60.00	35.00	0.00	0	0		
									point699	699	1,909.9	2,262.5	60.00	35.00	0.00	0	0		
									point700	700	1,888.2	2,267.6	60.00	35.00	0.00	0	0		
									point701	701	1,918.2	2,385.3	60.00	35.00	0.00	0	0		
									point702	702	1,814.9	2,416.1	60.00	35.00	0.00	0	0		
									point703	703	1,909.1	2,387.9	60.00	35.00	0.00	0	0		
									point704	704	1,884.8	2,280.6	60.00	35.00	0.00	0	0		
									point705	705	1,875.2	2,282.4	60.00	35.00	0.00	0	0		
									point706	706	1,873.5	2,275.0	60.00	35.00	0.00	0	0		
									point707	707	1,836.1	2,286.3	60.00	35.00	0.00	0	0		
									point708	708	1,842.2	2,308.4	60.00	35.00	0.00	0	0		
									point709	709	1,860.9	2,302.8	60.00	35.00	0.00	0	0		
									point710	710	1,877.4	2,358.4	60.00	35.00	0.00	0	0		

INPUT: BARRIERS

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									point711	711	1,868.3	2,374.9	60.00	35.00	0.00	0	0		
									point460	460	1,811.4	2,391.3	60.00	35.00					
Barrier16	W	0.00	99.99	0.00				0.00	point718	718	1,816.9	2,451.6	60.00	35.00	0.00	0	0		
									point692	692	1,888.5	2,431.2	60.00	35.00	0.00	0	0		
									point693	693	1,886.8	2,423.4	60.00	35.00	0.00	0	0		
									point694	694	1,957.0	2,404.1	60.00	35.00	0.00	0	0		
									point695	695	1,949.7	2,378.4	60.00	35.00					
Barrier17	W	0.00	99.99	0.00				0.00	point720	720	2,172.6	2,254.9	69.00	24.00	0.00	0	0		
									point471	471	2,179.2	2,318.0	69.00	24.00	0.00	0	0		
									point472	472	2,234.5	2,314.2	69.00	24.00	0.00	0	0		
									point473	473	2,229.3	2,250.3	69.00	24.00					
Barrier18	W	0.00	99.99	0.00				0.00	point722	722	2,456.1	2,192.3	72.00	24.00	0.00	0	0		
									point475	475	2,453.9	2,286.3	72.00	24.00	0.00	0	0		
									point476	476	2,512.3	2,286.8	72.00	24.00	0.00	0	0		
									point477	477	2,514.7	2,192.3	72.00	24.00					
Barrier19	W	0.00	99.99	0.00				0.00	point724	724	2,536.3	2,291.3	72.00	24.00	0.00	0	0		
									point479	479	2,666.4	2,294.0	72.00	24.00	0.00	0	0		
									point480	480	2,666.7	2,253.6	72.00	24.00	0.00	0	0		
									point481	481	2,537.5	2,251.4	72.00	24.00					
Barrier20	W	0.00	99.99	0.00				0.00	point726	726	2,536.6	2,220.3	71.00	35.00	0.00	0	0		
									point483	483	2,666.9	2,221.8	72.00	35.00	0.00	0	0		
									point484	484	2,666.5	2,185.9	72.00	35.00	0.00	0	0		
									point485	485	2,537.9	2,185.9	71.00	35.00					
Barrier21	W	0.00	99.99	0.00				0.00	point728	728	2,709.5	2,292.2	71.00	35.00	0.00	0	0		
									point487	487	2,740.6	2,291.5	71.00	35.00	0.00	0	0		
									point488	488	2,745.8	2,202.9	71.50	35.00	0.00	0	0		
									point489	489	2,713.6	2,202.0	71.50	35.00					
Barrier22	W	0.00	99.99	0.00				0.00	point730	730	2,900.4	2,296.1	75.00	35.00	0.00	0	0		
									point491	491	2,988.1	2,298.6	75.00	35.00	0.00	0	0		
									point492	492	2,988.1	2,258.4	75.00	35.00	0.00	0	0		
									point493	493	2,901.5	2,256.3	75.00	35.00					
Barrier23	W	0.00	99.99	0.00				0.00	point732	732	2,871.7	2,212.9	75.00	35.00	0.00	0	0		
									point495	495	2,912.0	2,210.7	75.00	35.00	0.00	0	0		
									point496	496	2,911.2	2,123.5	78.00	35.00	0.00	0	0		
									point497	497	2,873.0	2,124.8	78.00	35.00					
Barrier24	W	0.00	99.99	0.00				0.00	point734	734	2,983.4	2,223.5	75.00	35.00	0.00	0	0		
									point499	499	2,981.1	2,114.3	78.00	35.00	0.00	0	0		
									point500	500	2,940.7	2,115.4	78.00	35.00	0.00	0	0		
									point501	501	2,946.1	2,224.4	75.00	35.00					
Barrier25	W	0.00	99.99	0.00				0.00	point736	736	2,833.2	2,086.6	79.00	35.00	0.00	0	0		
									point503	503	2,965.5	2,083.2	80.00	35.00	0.00	0	0		
									point504	504	2,964.1	2,040.5	80.00	35.00	0.00	0	0		
									point505	505	2,831.9	2,044.6	79.00	35.00					
Barrier26	W	0.00	99.99	0.00				0.00	point738	738	2,336.1	2,143.9	84.00	35.00	0.00	0	0		
									point507	507	2,672.0	2,153.8	84.00	35.00	0.00	0	0		
									point508	508	2,672.3	2,115.6	84.00	35.00	0.00	0	0		
									point509	509	2,335.1	2,104.2	84.00	35.00					
Barrier28	W	0.00	99.99	0.00				0.00	point740	740	2,149.8	2,124.2	83.00	35.00	0.00	0	0		
									point511	511	2,322.1	2,141.0	83.00	35.00	0.00	0	0		

INPUT: BARRIERS

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									point512	512	2,324.5	2,101.8	83.00	35.00	0.00	0	0		
									point513	513	2,150.8	2,086.0	83.00	35.00					
Barrier31	W	0.00	99.99	0.00				0.00	point742	742	1,743.6	2,079.4	76.00	35.00	0.00	0	0		
									point515	515	1,963.3	2,104.2	77.00	35.00	0.00	0	0		
									point516	516	1,966.1	2,071.8	77.00	35.00	0.00	0	0		
									point517	517	1,746.3	2,047.7	76.00	35.00					
Barrier32	W	0.00	99.99	0.00				0.00	point744	744	2,397.5	2,075.6	85.00	35.00	0.00	0	0		
									point519	519	2,550.6	2,080.2	85.00	35.00	0.00	0	0		
									point520	520	2,551.4	2,042.8	85.00	35.00	0.00	0	0		
									point521	521	2,397.9	2,037.6	85.00	35.00					
Barrier33	W	0.00	99.99	0.00				0.00	point746	746	1,976.3	2,029.8	80.00	35.00	0.00	0	0		
									point523	523	2,006.6	2,041.1	80.00	35.00	0.00	0	0		
									point524	524	2,102.1	1,831.1	85.50	35.00	0.00	0	0		
									point525	525	2,071.7	1,815.4	85.50	35.00					
Barrier34	W	0.00	99.99	0.00				0.00	point748	748	1,914.1	2,023.4	79.50	35.00	0.00	0	0		
									point527	527	1,943.1	2,036.0	79.50	35.00	0.00	0	0		
									point528	528	2,052.5	1,805.3	85.50	35.00	0.00	0	0		
									point529	529	2,019.7	1,788.9	85.50	35.00					
Barrier35	W	0.00	99.99	0.00				0.00	point750	750	1,848.9	2,019.8	79.50	35.00	0.00	0	0		
									point531	531	1,881.0	2,033.6	79.50	35.00	0.00	0	0		
									point532	532	1,998.2	1,781.0	84.00	35.00	0.00	0	0		
									point533	533	1,966.1	1,763.7	84.00	35.00					
Barrier36	W	0.00	99.99	0.00				0.00	point752	752	1,798.5	1,995.8	79.50	35.00	0.00	0	0		
									point535	535	1,826.7	2,008.4	79.50	35.00	0.00	0	0		
									point536	536	1,943.7	1,754.7	84.00	35.00	0.00	0	0		
									point537	537	1,910.9	1,739.4	84.00	35.00	0.00	0	0		
									point538	538	1,796.4	1,994.8	79.50	35.00					
Barrier37	W	0.00	99.99	0.00				0.00	point754	754	1,733.9	1,988.2	78.50	35.00	0.00	0	0		
									point540	540	1,765.6	2,003.4	78.50	35.00	0.00	0	0		
									point541	541	1,891.5	1,732.6	81.50	35.00	0.00	0	0		
									point542	542	1,858.5	1,716.9	81.50	35.00					
Barrier38	W	0.00	99.99	0.00				0.00	point756	756	1,691.2	1,944.6	78.00	35.00	0.00	0	0		
									point544	544	1,721.5	1,958.4	78.00	35.00	0.00	0	0		
									point545	545	1,776.0	1,838.5	79.00	35.00	0.00	0	0		
									point546	546	1,743.2	1,822.7	79.00	35.00					
Barrier39	W	0.00	99.99	0.00				0.00	point759	759	1,676.3	1,830.2	77.50	35.00	0.00	0	0		
									point548	548	1,782.1	1,805.0	78.50	35.00	0.00	0	0		
									point549	549	1,775.8	1,776.5	78.50	35.00	0.00	0	0		
									point550	550	1,668.1	1,801.2	77.50	35.00					
Barrier40	W	0.00	99.99	0.00				0.00	point761	761	1,655.0	1,741.7	77.00	35.00	0.00	0	0		
									point552	552	1,661.5	1,776.2	77.00	35.00	0.00	0	0		
									point553	553	1,789.8	1,743.4	78.00	35.00	0.00	0	0		
									point554	554	1,782.7	1,709.8	78.00	35.00					
Barrier41	W	0.00	99.99	0.00				0.00	point763	763	2,118.9	2,034.3	86.00	35.00	0.00	0	0		
									point555	555	2,156.7	2,053.0	86.00	35.00	0.00	0	0		
									point556	556	2,230.0	1,891.9	87.50	35.00	0.00	0	0		
									point557	557	2,192.7	1,875.0	87.50	35.00					
Barrier42	W	0.00	99.99	0.00				0.00	point765	765	2,188.1	2,041.0	86.00	35.00	0.00	0	0		
									point559	559	2,226.7	2,058.9	86.00	35.00	0.00	0	0		

INPUT: BARRIERS

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									point560	560	2,290.1	1,919.0	87.50	35.00	0.00	0	0		
									point561	561	2,252.9	1,901.1	87.50	35.00					
Barrier43	W	0.00	99.99	0.00				0.00	point767	767	2,260.6	2,050.5	86.00	35.00	0.00	0	0		
									point563	563	2,295.3	2,066.5	86.00	35.00	0.00	0	0		
									point564	564	2,350.4	1,946.7	87.00	35.00	0.00	0	0		
									point565	565	2,315.3	1,929.4	87.00	35.00					
Barrier45	W	0.00	99.99	0.00				0.00	point769	769	2,327.8	2,054.5	86.00	35.00	0.00	0	0		
									point567	567	2,365.0	2,073.1	86.00	35.00	0.00	0	0		
									point568	568	2,409.8	1,974.6	87.00	35.00	0.00	0	0		
									point569	569	2,375.3	1,957.4	87.00	35.00					
Barrier46	W	0.00	99.99	0.00				0.00	point771	771	2,757.1	2,069.8	84.00	35.00	0.00	0	0		
									point571	571	2,791.7	2,085.1	84.00	35.00	0.00	0	0		
									point572	572	2,827.2	2,004.9	84.00	35.00	0.00	0	0		
									point573	573	2,791.8	1,989.5	84.00	35.00					
Barrier47	W	0.00	99.99	0.00				0.00	point773	773	2,693.4	2,041.7	84.00	35.00	0.00	0	0		
									point575	575	2,729.9	2,056.4	84.00	35.00	0.00	0	0		
									point576	576	2,767.2	1,974.8	84.00	35.00	0.00	0	0		
									point577	577	2,729.0	1,958.3	84.00	35.00					
Barrier48	W	0.00	99.99	0.00				0.00	point775	775	2,639.6	2,015.9	85.50	35.00	0.00	0	0		
									point579	579	2,674.8	2,031.9	85.50	35.00	0.00	0	0		
									point580	580	2,713.0	1,952.5	85.50	35.00	0.00	0	0		
									point581	581	2,675.7	1,936.0	85.50	35.00					
Barrier49	W	0.00	99.99	0.00				0.00	point777	777	2,579.1	1,987.6	85.50	35.00	0.00	0	0		
									point583	583	2,615.6	2,005.0	85.50	35.00	0.00	0	0		
									point584	584	2,653.3	1,924.7	85.50	35.00	0.00	0	0		
									point585	585	2,616.8	1,908.2	85.50	35.00					
Barrier50	W	0.00	99.99	0.00				0.00	point779	779	2,522.7	1,961.6	87.50	35.00	0.00	0	0		
									point587	587	2,559.1	1,979.8	87.50	35.00	0.00	0	0		
									point588	588	2,597.8	1,899.1	87.50	35.00	0.00	0	0		
									point589	589	2,559.6	1,882.2	87.50	35.00					
Barrier51	W	0.00	99.99	0.00				0.00	point781	781	2,482.3	1,847.5	88.50	35.00	0.00	0	0		
									point595	595	2,445.0	1,926.4	88.50	35.00	0.00	0	0		
									point596	596	2,408.1	1,909.1	88.50	35.00	0.00	0	0		
									point597	597	2,445.4	1,828.8	88.50	35.00					
Barrier52	W	0.00	99.99	0.00				0.00	point783	783	2,500.5	1,854.4	87.50	35.00	0.00	0	0		
									point591	591	2,464.1	1,936.0	87.50	35.00	0.00	0	0		
									point592	592	2,501.0	1,952.1	87.50	35.00	0.00	0	0		
									point593	593	2,538.8	1,872.2	87.50	35.00					
Barrier53	W	0.00	99.99	0.00				0.00	point785	785	2,347.8	1,881.3	88.50	35.00	0.00	0	0		
									point599	599	2,384.7	1,899.5	88.50	35.00	0.00	0	0		
									point600	600	2,422.4	1,818.4	88.50	35.00	0.00	0	0		
									point601	601	2,384.7	1,800.6	88.50	35.00					
Barrier54	W	0.00	99.99	0.00				0.00	point787	787	2,293.1	1,855.7	89.50	35.00	0.00	0	0		
									point603	603	2,330.4	1,873.0	89.50	35.00	0.00	0	0		
									point604	604	2,366.9	1,793.2	89.50	35.00	0.00	0	0		
									point605	605	2,330.0	1,776.3	89.50	35.00					
Barrier55	W	0.00	99.99	0.00				0.00	point789	789	2,233.6	1,828.8	89.50	35.00	0.00	0	0		
									point607	607	2,269.7	1,845.3	89.50	35.00	0.00	0	0		
									point608	608	2,307.0	1,766.7	89.50	35.00	0.00	0	0		

INPUT: BARRIERS
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									point609	609	2,270.5	1,749.4	89.50	35.00				
Barrier56	W	0.00	99.99	0.00				0.00	point791	791	2,185.5	1,804.2	88.00	35.00	0.00	0	0	
									point611	611	2,215.0	1,817.8	88.00	35.00	0.00	0	0	
									point612	612	2,252.5	1,738.5	88.00	35.00	0.00	0	0	
									point613	613	2,222.4	1,724.0	88.00	35.00				
Barrier57	W	0.00	99.99	0.00				0.00	point793	793	2,130.9	1,779.1	88.00	35.00	0.00	0	0	
									point615	615	2,160.4	1,793.6	88.00	35.00	0.00	0	0	
									point616	616	2,197.9	1,713.5	88.00	35.00	0.00	0	0	
									point617	617	2,168.3	1,698.8	88.00	35.00				
Barrier58	W	0.00	99.99	0.00				0.00	point795	795	2,083.5	1,757.4	87.00	35.00	0.00	0	0	
									point619	619	2,113.6	1,771.9	87.00	35.00	0.00	0	0	
									point620	620	2,151.0	1,693.2	87.00	35.00	0.00	0	0	
									point621	621	2,120.7	1,678.1	87.00	35.00				
Barrier59	W	0.00	99.99	0.00				0.00	point797	797	1,982.6	1,709.7	85.00	35.00	0.00	0	0	
									point627	627	2,014.3	1,724.2	85.00	35.00	0.00	0	0	
									point628	628	2,051.8	1,644.9	85.00	35.00	0.00	0	0	
									point629	629	2,020.8	1,629.8	85.00	35.00				
Barrier60	W	0.00	99.99	0.00				0.00	point799	799	1,929.6	1,687.9	85.00	35.00	0.00	0	0	
									point631	631	1,960.2	1,701.0	85.00	35.00	0.00	0	0	
									point632	632	1,998.2	1,622.2	85.00	35.00	0.00	0	0	
									point633	633	1,967.3	1,606.4	85.00	35.00				
Barrier61	W	0.00	99.99	0.00				0.00	point801	801	2,068.7	1,654.3	87.00	35.00	0.00	0	0	
									point623	623	2,032.5	1,734.4	87.00	35.00	0.00	0	0	
									point624	624	2,063.5	1,749.1	87.00	35.00	0.00	0	0	
									point625	625	2,100.1	1,668.5	87.00	35.00				
Barrier62	W	0.00	99.99	0.00				0.00	point803	803	1,877.2	1,662.6	82.00	35.00	0.00	0	0	
									point635	635	1,906.1	1,676.0	82.00	35.00	0.00	0	0	
									point636	636	1,944.7	1,597.5	82.00	35.00	0.00	0	0	
									point637	637	1,914.8	1,583.6	82.00	35.00				
Barrier63	W	0.00	99.99	0.00				0.00	point805	805	1,822.2	1,636.1	82.00	35.00	0.00	0	0	
									point639	639	1,854.4	1,651.4	82.00	35.00	0.00	0	0	
									point640	640	1,892.2	1,571.6	82.00	35.00	0.00	0	0	
									point641	641	1,860.8	1,555.3	82.00	35.00				
Barrier64	W	0.00	99.99	0.00				0.00	point807	807	1,764.6	1,630.8	75.00	35.00	0.00	0	0	
									point643	643	1,794.8	1,622.5	75.00	35.00	0.00	0	0	
									point644	644	1,777.3	1,558.8	75.00	35.00	0.00	0	0	
									point645	645	1,747.4	1,565.2	75.00	35.00				
Barrier65	W	0.00	99.99	0.00				0.00	point809	809	1,704.6	1,645.2	75.00	35.00	0.00	0	0	
									point647	647	1,733.1	1,637.1	75.00	35.00	0.00	0	0	
									point648	648	1,717.4	1,577.3	75.00	35.00	0.00	0	0	
									point649	649	1,687.4	1,582.5	75.00	35.00				

RESULTS: SOUND LEVELS

10838

Dudek												
MG												
RESULTS: SOUND LEVELS												
PROJECT/CONTRACT:		10838										
RUN:		Marja Acres Carlsbad-FWP Rev 1018										
BARRIER DESIGN:		INPUT HEIGHTS										
ATMOSPHERICS:		68 deg F, 50% RH										
Receiver												
Name	No.	#DUs	Existing	No Barrier					With Barrier			
			LAeq1h	LAeq1h		Increase over existing	Type	Calculated	Noise Reduction			
				Calculated	Crit'n	Calculated	Crit'n	Impact	LAeq1h	Calculated	Goal	Calculated
							Sub'l Inc					minus
												Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
ST3	3	1	0.0	63.4	66	63.4	10	----	63.4	0.0	8	-8.0
ST4	4	1	0.0	54.0	66	54.0	10	----	54.0	0.0	8	-8.0
ST5	5	1	0.0	53.7	66	53.7	10	----	53.7	0.0	8	-8.0
ST6	6	1	0.0	60.3	66	60.3	10	----	60.3	0.0	8	-8.0
M1 - Common Rec Area 1	255	1	0.0	54.4	66	54.4	10	----	54.4	0.0	8	-8.0
M2 - Common Rec Area 2	256	1	0.0	48.1	66	48.1	10	----	48.1	0.0	8	-8.0
M3 - Common Rec Area 3	261	1	0.0	49.4	66	49.4	10	----	49.4	0.0	8	-8.0
M4 - Common Rec Area 4	262	1	0.0	50.6	66	50.6	10	----	50.6	0.0	8	-8.0
M5 - Common Rec Area 5	263	1	0.0	49.0	66	49.0	10	----	49.0	0.0	8	-8.0
M6 - Common Rec Area 6	264	1	0.0	50.0	66	50.0	10	----	50.0	0.0	8	-8.0
M7 - Common Rec Area 7	265	1	0.0	58.1	66	58.1	10	----	58.1	0.0	8	-8.0
M8 - Senior Apartment Housing 1st Flr	267	1	0.0	70.0	66	70.0	10	Snd Lvl	70.0	0.0	8	-8.0
M9 - Senior Apartment Housing 1st Flr	268	1	0.0	70.4	66	70.4	10	Snd Lvl	70.4	0.0	8	-8.0
M10 - Senior Apartment Housing 1st Flr	269	1	0.0	70.4	66	70.4	10	Snd Lvl	70.4	0.0	8	-8.0
M11 - Senior Apartment Housing 1st Flr	270	1	0.0	64.8	66	64.8	10	----	64.8	0.0	8	-8.0
M12 - Senior Apartment Housing 1st Flr	271	1	0.0	62.9	66	62.9	10	----	62.9	0.0	8	-8.0
M13 - Senior Apartment Housing 1st Flr	272	1	0.0	60.8	66	60.8	10	----	60.8	0.0	8	-8.0
M14 - Senior Apartment Housing 1st Flr	273	1	0.0	40.0	66	40.0	10	----	40.0	0.0	8	-8.0
M15 - Senior Apartment Housing 1st Flr	274	1	0.0	35.4	66	35.4	10	----	35.4	0.0	8	-8.0
M16 - Senior Apartment Housing 1st Flr	275	1	0.0	39.1	66	39.1	10	----	39.1	0.0	8	-8.0
M17 - Senior Apartment Housing 1st Flr	276	1	0.0	57.7	66	57.7	10	----	57.7	0.0	8	-8.0
M18 - Small Townhomes 1st Flr	277	1	0.0	70.2	66	70.2	10	Snd Lvl	70.2	0.0	8	-8.0
M19 - Small Townhomes 1st Flr	278	1	0.0	70.4	66	70.4	10	Snd Lvl	70.4	0.0	8	-8.0
M20 - Small Townhomes 1st Flr	279	1	0.0	70.2	66	70.2	10	Snd Lvl	70.2	0.0	8	-8.0

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M21 Small Townhomes 1st Flr	280	1	0.0	70.1	66	70.1	10	Snd Lvl	70.1	0.0	8	-8.0
M22 Small Townhomes 1st Flr	281	1	0.0	66.1	66	66.1	10	Snd Lvl	66.1	0.0	8	-8.0
M23 Small Townhomes 1st Flr	282	1	0.0	64.7	66	64.7	10	----	64.7	0.0	8	-8.0
M24 Small Townhomes 1st Flr	283	1	0.0	62.7	66	62.7	10	----	62.7	0.0	8	-8.0
M27 Small Townhomes 1st Flr	284	1	0.0	42.2	66	42.2	10	----	42.2	0.0	8	-8.0
M28 Small Townhomes 1st Flr	285	1	0.0	38.3	66	38.3	10	----	38.3	0.0	8	-8.0
M29 Large Townhomes 1st Flr	286	1	0.0	66.4	66	66.4	10	Snd Lvl	66.4	0.0	8	-8.0
M30 Large Townhomes 1st Flr	287	1	0.0	70.1	66	70.1	10	Snd Lvl	70.1	0.0	8	-8.0
M31 Large Townhomes 1st Flr	289	1	0.0	69.5	66	69.5	10	Snd Lvl	69.5	0.0	8	-8.0
M34 Large Townhomes 1st Flr	290	1	0.0	62.9	66	62.9	10	----	62.9	0.0	8	-8.0
M36 Large Townhomes 1st Flr	291	1	0.0	60.6	66	60.6	10	----	60.6	0.0	8	-8.0
M39 Large Townhomes 1st Flr	292	1	0.0	56.5	66	56.5	10	----	56.5	0.0	8	-8.0
M42 Large Townhomes 1st Flr	293	1	0.0	41.1	66	41.1	10	----	41.1	0.0	8	-8.0
M44 Large Townhomes 1st Flr	294	1	0.0	52.3	66	52.3	10	----	52.3	0.0	8	-8.0
M45 Large Townhomes 1st Flr	295	1	0.0	44.1	66	44.1	10	----	44.1	0.0	8	-8.0
M46 Large Townhomes 1st Flr	296	1	0.0	56.0	66	56.0	10	----	56.0	0.0	8	-8.0
M47 Large Townhomes 1st Flr	297	1	0.0	55.8	66	55.8	10	----	55.8	0.0	8	-8.0
M52 Large Townhomes 1st Flr	298	1	0.0	57.4	66	57.4	10	----	57.4	0.0	8	-8.0
M53 Large Townhomes 1st Flr	299	1	0.0	57.8	66	57.8	10	----	57.8	0.0	8	-8.0
M57 Small Townhomes 1st Flr	300	1	0.0	58.1	66	58.1	10	----	58.1	0.0	8	-8.0
M58 Small Townhomes 1st Flr	301	1	0.0	58.6	66	58.6	10	----	58.6	0.0	8	-8.0
M59 Small Townhomes 1st Flr	302	1	0.0	57.0	66	57.0	10	----	57.0	0.0	8	-8.0
M63 Large Townhomes 1st Flr	303	1	0.0	50.3	66	50.3	10	----	50.3	0.0	8	-8.0
M65 Large Townhomes 1st Flr	304	1	0.0	45.0	66	45.0	10	----	45.0	0.0	8	-8.0
M66 Large Townhomes 1st Flr	305	1	0.0	40.3	66	40.3	10	----	40.3	0.0	8	-8.0
M67 Large Townhomes 1st Flr	306	1	0.0	43.7	66	43.7	10	----	43.7	0.0	8	-8.0
M68 Large Townhomes 1st Flr	307	1	0.0	46.3	66	46.3	10	----	46.3	0.0	8	-8.0
M71 Large Townhomes 1st Flr	308	1	0.0	35.9	66	35.9	10	----	35.9	0.0	8	-8.0
M72 Large Townhomes 1st Flr	309	1	0.0	38.0	66	38.0	10	----	38.0	0.0	8	-8.0
M74 Large Townhomes 1st Flr	310	1	0.0	36.1	66	36.1	10	----	36.1	0.0	8	-8.0
M75 Large Townhomes 1st Flr	311	1	0.0	36.5	66	36.5	10	----	36.5	0.0	8	-8.0
M76 Large Townhomes 1st Flr	312	1	0.0	41.9	66	41.9	10	----	41.9	0.0	8	-8.0
M81 Large Townhomes 1st Flr	313	1	0.0	54.0	66	54.0	10	----	54.0	0.0	8	-8.0
M83 Small Townhomes 1st Flr	314	1	0.0	55.3	66	55.3	10	----	55.3	0.0	8	-8.0
M84 Small Townhomes 1st Flr	315	1	0.0	49.9	66	49.9	10	----	49.9	0.0	8	-8.0
M85 Small Townhomes 1st Flr	316	1	0.0	45.9	66	45.9	10	----	45.9	0.0	8	-8.0
M87 Small Townhomes 1st Flr	317	1	0.0	34.1	66	34.1	10	----	34.1	0.0	8	-8.0
M88 Small Townhomes 1st Flr	318	1	0.0	39.9	66	39.9	10	----	39.9	0.0	8	-8.0
M89 Small Townhomes 1st Flr	319	1	0.0	41.5	66	41.5	10	----	41.5	0.0	8	-8.0
M90 Small Townhomes 1st Flr	320	1	0.0	41.4	66	41.4	10	----	41.4	0.0	8	-8.0
M91 Small Townhomes 1st Flr	321	1	0.0	51.3	66	51.3	10	----	51.3	0.0	8	-8.0

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M92 Small Townhomes 1st Flr	322	1	0.0	49.2	66	49.2	10	----	49.2	0.0	8	-8.0
M93 Small Townhomes 1st Flr	323	1	0.0	48.7	66	48.7	10	----	48.7	0.0	8	-8.0
M94 Large Townhomes 1st Flr	324	1	0.0	58.6	66	58.6	10	----	58.6	0.0	8	-8.0
M98 Large Townhomes 1st Flr	325	1	0.0	49.4	66	49.4	10	----	49.4	0.0	8	-8.0
M100 Large Townhomes 1st Flr	326	1	0.0	55.3	66	55.3	10	----	55.3	0.0	8	-8.0
M104 Large Townhomes 1st Flr	327	1	0.0	50.0	66	50.0	10	----	50.0	0.0	8	-8.0
M106 Large Townhomes 1st Flr	328	1	0.0	51.9	66	51.9	10	----	51.9	0.0	8	-8.0
M107 Large Townhomes 1st Flr	329	1	0.0	50.5	66	50.5	10	----	50.5	0.0	8	-8.0
M109 Large Townhomes 1st Flr	330	1	0.0	47.7	66	47.7	10	----	47.7	0.0	8	-8.0
M110 Large Townhomes 1st Flr	331	1	0.0	49.4	66	49.4	10	----	49.4	0.0	8	-8.0
M112 Small Townhomes 1st Flr	332	1	0.0	49.2	66	49.2	10	----	49.2	0.0	8	-8.0
M113 Small Townhomes 1st Flr	333	1	0.0	49.2	66	49.2	10	----	49.2	0.0	8	-8.0
M114 - Small Townhomes 1st Flr	334	1	0.0	50.6	66	50.6	10	----	50.6	0.0	8	-8.0
M115 - Small Townhomes 1st Flr	335	1	0.0	51.3	66	51.3	10	----	51.3	0.0	8	-8.0
M116 - Small Townhomes 1st Flr	336	1	0.0	50.0	66	50.0	10	----	50.0	0.0	8	-8.0
M117 - Small Townhomes 1st Flr	337	1	0.0	48.5	66	48.5	10	----	48.5	0.0	8	-8.0
M8 - Senior Apartment Housing 2nd Flr	338	1	0.0	70.5	66	70.5	10	Snd Lvl	70.5	0.0	8	-8.0
M9 - Senior Apartment Housing 2nd Flr	339	1	0.0	70.9	66	70.9	10	Snd Lvl	70.9	0.0	8	-8.0
M10 - Senior Apartment Housing 2nd Flr	340	1	0.0	70.9	66	70.9	10	Snd Lvl	70.9	0.0	8	-8.0
M11 - Senior Apartment Housing 2nd Flr	341	1	0.0	65.2	66	65.2	10	----	65.2	0.0	8	-8.0
M12 - Senior Apartment Housing 2nd Flr	342	1	0.0	63.9	66	63.9	10	----	63.9	0.0	8	-8.0
M13 - Senior Apartment Housing 2nd Flr	343	1	0.0	61.9	66	61.9	10	----	61.9	0.0	1	-8.0
M14 - Senior Apartment Housing 2nd Flr	344	1	0.0	42.2	66	42.2	10	----	42.2	0.0	8	-8.0
M15 - Senior Apartment Housing 2nd Flr	345	1	0.0	38.8	66	38.8	10	----	38.8	0.0	8	-8.0
M16 - Senior Apartment Housing 2nd Flr	346	1	0.0	41.2	66	41.2	10	----	41.2	0.0	8	-8.0
M17 - Senior Apartment Housing 2nd Flr	347	1	0.0	58.8	66	58.8	10	----	58.8	0.0	8	-8.0
M18 - Small Townhomes 2nd Flr	348	1	0.0	70.8	66	70.8	10	Snd Lvl	70.8	0.0	8	-8.0
M19 - Small Townhomes 2nd Flr	349	1	0.0	71.0	66	71.0	10	Snd Lvl	71.0	0.0	8	-8.0
M20 - Small Townhomes 2nd Flr	350	1	0.0	70.9	66	70.9	10	Snd Lvl	70.9	0.0	8	-8.0
M21 Small Townhomes 2nd Flr	351	1	0.0	70.8	66	70.8	10	Snd Lvl	70.8	0.0	8	-8.0
M22 Small Townhomes 2nd Flr	352	1	0.0	66.6	66	66.6	10	Snd Lvl	66.6	0.0	8	-8.0
M23 Small Townhomes 2nd Flr	353	1	0.0	65.4	66	65.4	10	----	65.4	0.0	8	-8.0
M24 Small Townhomes 2nd Flr	354	1	0.0	64.2	66	64.2	10	----	64.2	0.0	8	-8.0
M25 Small Townhomes 2nd Flr	355	1	0.0	57.7	66	57.7	10	----	57.7	0.0	8	-8.0
M26 Small Townhomes 2nd Flr	356	1	0.0	60.0	66	60.0	10	----	60.0	0.0	8	-8.0
M27 Small Townhomes 2nd Flr	357	1	0.0	44.8	66	44.8	10	----	44.8	0.0	8	-8.0
M28 Small Townhomes 2nd Flr	358	1	0.0	41.5	66	41.5	10	----	41.5	0.0	8	-8.0
M29 Large Townhomes 2nd Flr	359	1	0.0	67.0	66	67.0	10	Snd Lvl	67.0	0.0	8	-8.0
M30 Large Townhomes 2nd Flr	360	1	0.0	70.6	66	70.6	10	Snd Lvl	70.6	0.0	8	-8.0
M31 Large Townhomes 2nd Flr	361	1	0.0	70.0	66	70.0	10	Snd Lvl	70.0	0.0	8	-8.0
M32 Large Townhomes 2nd Flr	362	1	0.0	55.3	66	55.3	10	----	55.3	0.0	8	-8.0

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M34 Large Townhomes 2nd Flr	363	1	0.0	64.7	66	64.7	10	----	64.7	0.0	8	-8.0
M35 Large Townhomes 2nd Flr	364	1	0.0	55.5	66	55.5	10	----	55.5	0.0	8	-8.0
M36 Large Townhomes 2nd Flr	365	1	0.0	62.0	66	62.0	10	----	62.0	0.0	8	-8.0
M38 Large Townhomes 2nd Flr	366	1	0.0	59.9	66	59.9	10	----	59.9	0.0	8	-8.0
M39 Large Townhomes 2nd Flr	367	1	0.0	56.8	66	56.8	10	----	56.8	0.0	8	-8.0
M41 Large Townhomes 2nd Flr	368	1	0.0	59.2	66	59.2	10	----	59.2	0.0	8	-8.0
M42 Large Townhomes 2nd Flr	378	1	0.0	45.4	66	45.4	10	----	45.4	0.0	8	-8.0
M44 Large Townhomes 2nd Flr	380	1	0.0	53.0	66	53.0	10	----	53.0	0.0	8	-8.0
M45 Large Townhomes 2nd Flr	382	1	0.0	50.0	66	50.0	10	----	50.0	0.0	8	-8.0
M46 Large Townhomes 2nd Flr	383	1	0.0	57.8	66	57.8	10	----	57.8	0.0	8	-8.0
M47 Large Townhomes 2nd Flr	385	1	0.0	62.5	66	62.5	10	----	62.5	0.0	8	-8.0
M48 Large Townhomes 2nd Flr	386	1	0.0	48.9	66	48.9	10	----	48.9	0.0	8	-8.0
M52 Large Townhomes 2nd Flr	388	1	0.0	60.7	66	60.7	10	----	60.7	0.0	8	-8.0
M53 Large Townhomes 2nd Flr	392	1	0.0	60.4	66	60.4	10	----	60.4	0.0	8	-8.0
M54 Large Townhomes 2nd Flr	393	1	0.0	37.8	66	37.8	10	----	37.8	0.0	8	-8.0
M57 Small Townhomes 2nd Flr	394	1	0.0	59.2	66	59.2	10	----	59.2	0.0	8	-8.0
M58 Small Townhomes 2nd Flr	395	1	0.0	59.3	66	59.3	10	----	59.3	0.0	8	-8.0
M59 Small Townhomes 2nd Flr	396	1	0.0	58.0	66	58.0	10	----	58.0	0.0	8	-8.0
M60 Small Townhomes 2nd Flr	397	1	0.0	41.8	66	41.8	10	----	41.8	0.0	8	-8.0
M61 Large Townhomes 2nd Flr	398	1	0.0	41.7	66	41.7	10	----	41.7	0.0	8	-8.0
M62 Large Townhomes 2nd Flr	399	1	0.0	37.8	66	37.8	10	----	37.8	0.0	8	-8.0
M63 Large Townhomes 2nd Flr	400	1	0.0	50.3	66	50.3	10	----	50.3	0.0	8	-8.0
M65 Large Townhomes 2nd Flr	401	1	0.0	45.4	66	45.4	10	----	45.4	0.0	8	-8.0
M66 Large Townhomes 2nd Flr	402	1	0.0	39.5	66	39.5	10	----	39.5	0.0	8	-8.0
M67 Large Townhomes 2nd Flr	403	1	0.0	43.8	66	43.8	10	----	43.8	0.0	8	-8.0
M68 Large Townhomes 2nd Flr	404	1	0.0	46.2	66	46.2	10	----	46.2	0.0	8	-8.0
M70 Large Townhomes 2nd Flr	405	1	0.0	37.6	66	37.6	10	----	37.6	0.0	8	-8.0
M71 Large Townhomes 2nd Flr	406	1	0.0	37.1	66	37.1	10	----	37.1	0.0	8	-8.0
M72 Large Townhomes 2nd Flr	407	1	0.0	38.4	66	38.4	10	----	38.4	0.0	8	-8.0
M74 Large Townhomes 2nd Flr	408	1	0.0	37.3	66	37.3	10	----	37.3	0.0	8	-8.0
M75 Large Townhomes 2nd Flr	409	1	0.0	37.0	66	37.0	10	----	37.0	0.0	8	-8.0
M76 Large Townhomes 2nd Flr	410	1	0.0	42.0	66	42.0	10	----	42.0	0.0	8	-8.0
M77 Large Townhomes 2nd Flr	411	1	0.0	45.4	66	45.4	10	----	45.4	0.0	8	-8.0
M78 Large Townhomes 2nd Flr	412	1	0.0	45.3	66	45.3	10	----	45.3	0.0	8	-8.0
M80 Large Townhomes 2nd Flr	413	1	0.0	54.4	66	54.4	10	----	54.4	0.0	8	-8.0
M81 Large Townhomes 2nd Flr	414	1	0.0	54.7	66	54.7	10	----	54.7	0.0	8	-8.0
M83 Small Townhomes 2nd Flr	415	1	0.0	56.5	66	56.5	10	----	56.5	0.0	8	-8.0
M84 Small Townhomes 2nd Flr	416	1	0.0	54.5	66	54.5	10	----	54.5	0.0	8	-8.0
M85 Small Townhomes 2nd Flr	417	1	0.0	52.3	66	52.3	10	----	52.3	0.0	8	-8.0
M86 Small Townhomes 2nd Flr	418	1	0.0	53.0	66	53.0	10	----	53.0	0.0	8	-8.0
M87 Small Townhomes 2nd Flr	419	1	0.0	36.9	66	36.9	10	----	36.9	0.0	8	-8.0

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M88 Small Townhomes 2nd Flr	420	1	0.0	44.9	66	44.9	10	----	44.9	0.0	8	-8.0
M89 Small Townhomes 2nd Flr	421	1	0.0	41.9	66	41.9	10	----	41.9	0.0	8	-8.0
M90 Small Townhomes 2nd Flr	422	1	0.0	44.7	66	44.7	10	----	44.7	0.0	8	-8.0
M91 Small Townhomes 2nd Flr	423	1	0.0	54.5	66	54.5	10	----	54.5	0.0	8	-8.0
M92 Small Townhomes 2nd Flr	424	1	0.0	52.1	66	52.1	10	----	52.1	0.0	8	-8.0
M93 Small Townhomes 2nd Flr	425	1	0.0	51.6	66	51.6	10	----	51.6	0.0	8	-8.0
M94 Large Townhomes 2nd Flr	426	1	0.0	59.5	66	59.5	10	----	59.5	0.0	8	-8.0
M96 Large Townhomes 2nd Flr	427	1	0.0	58.8	66	58.8	10	----	58.8	0.0	8	-8.0
M97 Large Townhomes 2nd Flr	428	1	0.0	53.0	66	53.0	10	----	53.0	0.0	8	-8.0
M98 Large Townhomes 2nd Flr	429	1	0.0	50.3	66	50.3	10	----	50.3	0.0	8	-8.0
M100 Large Townhomes 2nd Flr	430	1	0.0	57.1	66	57.1	10	----	57.1	0.0	8	-8.0
M101 Large Townhomes 2nd Flr	431	1	0.0	48.9	66	48.9	10	----	48.9	0.0	8	-8.0
M102 Large Townhomes 2nd Flr	432	1	0.0	54.4	66	54.4	10	----	54.4	0.0	8	-8.0
M104 Large Townhomes 2nd Flr	433	1	0.0	49.6	66	49.6	10	----	49.6	0.0	8	-8.0
M106 Large Townhomes 2nd Flr	434	1	0.0	51.4	66	51.4	10	----	51.4	0.0	8	-8.0
M107 Large Townhomes 2nd Flr	435	1	0.0	50.0	66	50.0	10	----	50.0	0.0	8	-8.0
M109 Large Townhomes 2nd Flr	436	1	0.0	47.5	66	47.5	10	----	47.5	0.0	8	-8.0
M110 Large Townhomes 2nd Flr	437	1	0.0	49.6	66	49.6	10	----	49.6	0.0	8	-8.0
M112 Small Townhomes 2nd Flr	438	1	0.0	50.2	66	50.2	10	----	50.2	0.0	8	-8.0
M113 Small Townhomes 2nd Flr	439	1	0.0	49.0	66	49.0	10	----	49.0	0.0	8	-8.0
M114 - Small Townhomes 2nd Flr	440	1	0.0	50.6	66	50.6	10	----	50.6	0.0	8	-8.0
M115 - Small Townhomes 2nd Flr	441	1	0.0	51.0	66	51.0	10	----	51.0	0.0	8	-8.0
M116 - Small Townhomes 2nd Flr	441	1	0.0	50.4	66	50.4	10	----	50.4	0.0	8	-8.0
M117 - Small Townhomes 2nd Flr	442	1	0.0	48.5	66	48.5	10	----	48.5	0.0	8	-8.0
M8 - Senior Apartment Housing 3rd Flr	443	1	0.0	70.3	66	70.3	10	Snd Lvl	70.3	0.0	8	-8.0
M9 - Senior Apartment Housing 3rd Flr	444	1	0.0	70.5	66	70.5	10	Snd Lvl	70.5	0.0	8	-8.0
M10 - Senior Apartment Housing 3rd Flr	445	1	0.0	70.5	66	70.5	10	Snd Lvl	70.5	0.0	8	-8.0
M11 - Senior Apartment Housing 3rd Flr	446	1	0.0	65.6	66	65.6	10	----	65.6	0.0	8	-8.0
M12 - Senior Apartment Housing 3rd Flr	447	1	0.0	64.5	66	64.5	10	----	64.5	0.0	8	-8.0
M13 - Senior Apartment Housing 3rd Flr	448	1	0.0	63.1	66	63.1	10	----	63.1	0.0	8	-8.0
M14 - Senior Apartment Housing 3rd Flr	449	1	0.0	46.1	66	46.1	10	----	46.1	0.0	8	-8.0
M15 - Senior Apartment Housing 3rd Flr	450	1	0.0	40.4	66	40.4	10	----	40.4	0.0	8	-8.0
M16 - Senior Apartment Housing 3rd Flr	451	1	0.0	44.3	66	44.3	10	----	44.3	0.0	8	-8.0
M17 - Senior Apartment Housing 3rd Flr	452	1	0.0	59.1	66	59.1	10	----	59.1	0.0	8	-8.0
M18 - Small Townhomes 3rd Flr	453	1	0.0	70.6	66	70.6	10	Snd Lvl	70.6	0.0	8	-8.0
M19 - Small Townhomes 3rd Flr	454	1	0.0	70.7	66	70.7	10	Snd Lvl	70.7	0.0	8	-8.0
M20 - Small Townhomes 3rd Flr	455	1	0.0	70.6	66	70.6	10	Snd Lvl	70.6	0.0	8	-8.0
M21 Small Townhomes 3rd Flr	456	1	0.0	70.6	66	70.6	10	Snd Lvl	70.6	0.0	8	-8.0
M22 Small Townhomes 3rd Flr	457	1	0.0	66.9	66	66.9	10	Snd Lvl	66.9	0.0	8	-8.0
M23 Small Townhomes 3rd Flr	458	1	0.0	65.8	66	65.8	10	----	65.8	0.0	8	-8.0
M24 Small Townhomes 3rd Flr	459	1	0.0	64.6	66	64.6	10	----	64.6	0.0	8	-8.0

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M25 Small Townhomes 3rd Flr	460	1	0.0	58.7	66	58.7	10	----	58.7	0.0	8	-8.0
M26 Small Townhomes 3rd Flr	461	1	0.0	61.1	66	61.1	10	----	61.1	0.0	8	-8.0
M27 Small Townhomes 3rd Flr	462	1	0.0	46.3	66	46.3	10	----	46.3	0.0	8	-8.0
M28 Small Townhomes 3rd Flr	463	1	0.0	44.2	66	44.2	10	----	44.2	0.0	8	-8.0
M29 Large Townhomes 3rd Flr	464	1	0.0	67.4	66	67.4	10	Snd Lvl	67.4	0.0	8	-8.0
M30 Large Townhomes 3rd Flr	465	1	0.0	70.6	66	70.6	10	Snd Lvl	70.6	0.0	8	-8.0
M31 Large Townhomes 3rd Flr	466	1	0.0	70.6	66	70.6	10	Snd Lvl	70.6	0.0	8	-8.0
M32 Large Townhomes 3rd Flr	467	1	0.0	56.1	66	56.1	10	----	56.1	0.0	8	-8.0
M34 Large Townhomes 3rd Flr	468	1	0.0	65.2	66	65.2	10	----	65.2	0.0	8	-8.0
M35 Large Townhomes 3rd Flr	469	1	0.0	56.0	66	56.0	10	----	56.0	0.0	8	-8.0
M36 Large Townhomes 3rd Flr	470	1	0.0	62.2	66	62.2	10	----	62.2	0.0	8	-8.0
M38 Large Townhomes 3rd Flr	471	1	0.0	60.1	66	60.1	10	----	60.1	0.0	8	-8.0
M39 Large Townhomes 3rd Flr	472	1	0.0	59.3	66	59.3	10	----	59.3	0.0	8	-8.0
M41 Large Townhomes 3rd Flr	473	1	0.0	59.6	66	59.6	10	----	59.6	0.0	8	-8.0
M42 Large Townhomes 3rd Flr	474	1	0.0	46.2	66	46.2	10	----	46.2	0.0	8	-8.0
M44 Large Townhomes 3rd Flr	475	1	0.0	55.6	66	55.6	10	----	55.6	0.0	8	-8.0
M45 Large Townhomes 3rd Flr	476	1	0.0	56.6	66	56.6	10	----	56.6	0.0	8	-8.0
M46 Large Townhomes 3rd Flr	477	1	0.0	60.8	66	60.8	10	----	60.8	0.0	8	-8.0
M47 Large Townhomes 3rd Flr	478	1	0.0	63.2	66	63.2	10	----	63.2	0.0	8	-8.0
M48 Large Townhomes 3rd Flr	479	1	0.0	49.2	66	49.2	10	----	49.2	0.0	8	-8.0
M52 Large Townhomes 3rd Flr	480	1	0.0	63.1	66	63.1	10	----	63.1	0.0	8	-8.0
M53 Large Townhomes 3rd Flr	481	1	0.0	62.4	66	62.4	10	----	62.4	0.0	8	-8.0
M54 Large Townhomes 3rd Flr	482	1	0.0	41.1	66	41.1	10	----	41.1	0.0	8	-8.0
M57 Small Townhomes 3rd Flr	483	1	0.0	59.9	66	59.9	10	----	59.9	0.0	8	-8.0
M58 Small Townhomes 3rd Flr	484	1	0.0	59.9	66	59.9	10	----	59.9	0.0	8	-8.0
M59 Small Townhomes 3rd Flr	485	1	0.0	58.7	66	58.7	10	----	58.7	0.0	8	-8.0
M60 Small Townhomes 3rd Flr	486	1	0.0	48.8	66	48.8	10	----	48.8	0.0	8	-8.0
M61 Large Townhomes 3rd Flr	487	1	0.0	43.3	66	43.3	10	----	43.3	0.0	8	-8.0
M62 Large Townhomes 3rd Flr	488	1	0.0	40.6	66	40.6	10	----	40.6	0.0	8	-8.0
M63 Large Townhomes 3rd Flr	489	1	0.0	50.1	66	50.1	10	----	50.1	0.0	8	-8.0
M65 Large Townhomes 3rd Flr	490	1	0.0	45.3	66	45.3	10	----	45.3	0.0	8	-8.0
M66 Large Townhomes 3rd Flr	490	1	0.0	41.8	66	41.8	10	----	41.8	0.0	8	-8.0
M67 Large Townhomes 3rd Flr	491	1	0.0	44.7	66	44.7	10	----	44.7	0.0	8	-8.0
M68 Large Townhomes 3rd Flr	492	1	0.0	46.6	66	46.6	10	----	46.6	0.0	8	-8.0
M70 Large Townhomes 3rd Flr	493	1	0.0	41.1	66	41.1	10	----	41.1	0.0	8	-8.0
M71 Large Townhomes 3rd Flr	494	1	0.0	39.6	66	39.6	10	----	39.6	0.0	8	-8.0
M72 Large Townhomes 3rd Flr	495	1	0.0	39.9	66	39.9	10	----	39.9	0.0	8	-8.0
M74 Large Townhomes 3rd Flr	496	1	0.0	41.0	66	41.0	10	----	41.0	0.0	8	-8.0
M75 Large Townhomes 3rd Flr	497	1	0.0	40.4	66	40.4	10	----	40.4	0.0	8	-8.0
M76 Large Townhomes 3rd Flr	498	1	0.0	42.8	66	42.8	10	----	42.8	0.0	8	-8.0
M77 Large Townhomes 3rd Flr	499	1	0.0	48.1	66	48.1	10	----	48.1	0.0	8	-8.0

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M78 Large Townhomes 3rd Flr	500	1	0.0	45.7	66	45.7	10	----	45.7	0.0	8	-8.0
M80 Large Townhomes 3rd Flr	501	1	0.0	55.0	66	55.0	10	----	55.0	0.0	8	-8.0
M81 Large Townhomes 3rd Flr	502	1	0.0	55.5	66	55.5	10	----	55.5	0.0	8	-8.0
M83 Small Townhomes 3rd Flr	503	1	0.0	57.1	66	57.1	10	----	57.1	0.0	8	-8.0
M84 Small Townhomes 3rd Flr	504	1	0.0	54.8	66	54.8	10	----	54.8	0.0	8	-8.0
M85 Small Townhomes 3rd Flr	505	1	0.0	53.5	66	53.5	10	----	53.5	0.0	8	-8.0
M86 Small Townhomes 3rd Flr	506	1	0.0	54.3	66	54.3	10	----	54.3	0.0	8	-8.0
M87 Small Townhomes 3rd Flr	507	1	0.0	39.2	66	39.2	10	----	39.2	0.0	8	-8.0
M88 Small Townhomes 3rd Flr	508	1	0.0	46.3	66	46.3	10	----	46.3	0.0	8	-8.0
M89 Small Townhomes 3rd Flr	509	1	0.0	43.3	66	43.3	10	----	43.3	0.0	8	-8.0
M90 Small Townhomes 3rd Flr	510	1	0.0	46.2	66	46.2	10	----	46.2	0.0	8	-8.0
M91 Small Townhomes 3rd Flr	511	1	0.0	54.9	66	54.9	10	----	54.9	0.0	8	-8.0
M92 Small Townhomes 3rd Flr	512	1	0.0	52.7	66	52.7	10	----	52.7	0.0	8	-8.0
M93 Small Townhomes 3rd Flr	513	1	0.0	52.8	66	52.8	10	----	52.8	0.0	8	-8.0
M94 Large Townhomes 3rd Flr	514	1	0.0	59.9	66	59.9	10	----	59.9	0.0	8	-8.0
M96 Large Townhomes 3rd Flr	515	1	0.0	58.9	66	58.9	10	----	58.9	0.0	8	-8.0
M97 Large Townhomes 3rd Flr	517	1	0.0	54.4	66	54.4	10	----	54.4	0.0	8	-8.0
M98 Large Townhomes 3rd Flr	519	1	0.0	50.9	66	50.9	10	----	50.9	0.0	8	-8.0
M100 Large Townhomes 3rd Flr	520	1	0.0	57.3	66	57.3	10	----	57.3	0.0	8	-8.0
M101 Large Townhomes 3rd Flr	521	1	0.0	48.8	66	48.8	10	----	48.8	0.0	8	-8.0
M102 Large Townhomes 3rd Flr	522	1	0.0	54.5	66	54.5	10	----	54.5	0.0	8	-8.0
M104 Large Townhomes 3rd Flr	523	1	0.0	49.5	66	49.5	10	----	49.5	0.0	8	-8.0
M106 Large Townhomes 3rd Flr	524	1	0.0	51.3	66	51.3	10	----	51.3	0.0	8	-8.0
M107 Large Townhomes 3rd Flr	525	1	0.0	49.9	66	49.9	10	----	49.9	0.0	8	-8.0
M109 Large Townhomes 3rd Flr	526	1	0.0	47.4	66	47.4	10	----	47.4	0.0	8	-8.0
M110 Large Townhomes 3rd Flr	527	1	0.0	49.7	66	49.7	10	----	49.7	0.0	8	-8.0
M112 Small Townhomes 3rd Flr	528	1	0.0	50.2	66	50.2	10	----	50.2	0.0	8	-8.0
M113 Small Townhomes 3rd Flr	529	1	0.0	49.0	66	49.0	10	----	49.0	0.0	8	-8.0
M114 - Small Townhomes 3rd Flr	530	1	0.0	50.5	66	50.5	10	----	50.5	0.0	8	-8.0
M115 - Small Townhomes 3rd Flr	531	1	0.0	50.9	66	50.9	10	----	50.9	0.0	8	-8.0
M116 - Small Townhomes 3rd Flr	532	1	0.0	50.1	66	50.1	10	----	50.1	0.0	8	-8.0
M117 - Small Townhomes 3rd Flr	533	1	0.0	50.9	66	50.9	10	----	50.9	0.0	8	-8.0
M33 Rooftop Deck	534	1	0.0	69.7	66	69.7	10	Snd Lvl	69.7	0.0	8	-8.0
M37 Rooftop Deck	535	1	0.0	65.0	66	65.0	10	----	65.0	0.0	8	-8.0
M40 Rooftop Deck	536	1	0.0	63.1	66	63.1	10	----	63.1	0.0	8	-8.0
M43 Rooftop Deck	537	1	0.0	60.2	66	60.2	10	----	60.2	0.0	8	-8.0
M49 Rooftop Deck	538	1	0.0	61.2	66	61.2	10	----	61.2	0.0	8	-8.0
M50 Rooftop Deck	539	1	0.0	62.5	66	62.5	10	----	62.5	0.0	8	-8.0
M51 Rooftop Deck	540	1	0.0	63.8	66	63.8	10	----	63.8	0.0	8	-8.0
M55 Rooftop Deck	541	1	0.0	63.4	66	63.4	10	----	63.4	0.0	8	-8.0
M56 Rooftop Deck	542	1	0.0	62.6	66	62.6	10	----	62.6	0.0	8	-8.0

RESULTS: SOUND LEVELS
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M64 Rooftop Deck	543	1	0.0	52.1	66	52.1	10	----	52.1	0.0	8	-8.0
M69 Rooftop Deck	544	1	0.0	53.0	66	53.0	10	----	53.0	0.0	8	-8.0
M73 Rooftop Deck	545	1	0.0	52.6	66	52.6	10	----	52.6	0.0	8	-8.0
M79 Rooftop Deck	546	1	0.0	52.3	66	52.3	10	----	52.3	0.0	8	-8.0
M82 Rooftop Deck	547	1	0.0	58.1	66	58.1	10	----	58.1	0.0	8	-8.0
M95 Rooftop Deck	548	1	0.0	60.6	66	60.6	10	----	60.6	0.0	8	-8.0
M99 Rooftop Deck	549	1	0.0	59.5	66	59.5	10	----	59.5	0.0	8	-8.0
M103 Rooftop Deck	550	1	0.0	57.2	66	57.2	10	----	57.2	0.0	8	-8.0
M105 Rooftop Deck	553	1	0.0	54.3	66	54.3	10	----	54.3	0.0	8	-8.0
M108 Rooftop Deck	555	1	0.0	51.2	66	51.2	10	----	51.2	0.0	8	-8.0
M111 Rooftop Deck	556	1	0.0	50.8	66	50.8	10	----	50.8	0.0	8	-8.0
Dwelling Units		# DUs	Noise Reduction									
			Min	Avg	Max							
			dB	dB	dB							
All Selected		281	0.0	0.0	0.0							
All Impacted		34	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							

APPENDIX D

Noise Barrier Height Calculations

RAY-TRACE PROGRAM (FOR A POINT-SOURCE)

Uses the Equation: $(A_{e4})_{point} = 20 \cdot \log[(2 \cdot \pi \cdot N)^{1/2} / \tanh(2 \cdot \pi \cdot N)^{1/2}] + 5 \text{dB}$
(Ref. Pg.174, Noise and Vibration Control, L.L. Beranek Editor, 1971 Ed.

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Project: Marja Acres Mixed-Use PN 10836

Date: 10/08/18

By: MGG

Please Enter: Using English (E) units or Metric (M) units ? E

Ray Trace Number/Description	Source-Receiver Distance (ft. or m)	Source Base Elev. (ft. or m)	Source Height above Ground (ft. or m)	Receiver Base Elev. (ft. or m)	Receiver Height above Ground (ft. or m)	Horizontal Barrier Dist. (in ref. to source) (ft. or m)	Barrier Base Elev. (ft. or m)	Barrier Height (ft. or m)	Dominant Freq.(Hz)	Source-Rcvr Straight-Line Dist. (ft. or m)	Source-Top-of-Barrier Dist. (ft. or m)	Receiver-Top-of-Barrier Dist. (ft. or m)	Lambda	N _{max}	AE _(barriers) (dB)
Senior Housing	100.0	51.0	3.0	60.0	5.0	95.0	60.0	6.0	500.0	100.6	95.8	5.1	2.3	0.2	8.1
Comercial Zone Patio 1st Floor	110.0	58.0	3.0	72.0	5.0	105.0	72.0	6.0	500.0	111.2	106.4	5.1	2.3	0.3	8.6
Townhomes Commercial Zone façade Patio 1st flr/ Roadway	140.0	58.0	3.0	72.0	5.0	135.0	72.0	6.0	500.0	140.9	136.1	5.1	2.3	0.2	8.1
Townhomes Commercial Zone façade Patio 1st flr/ Roadway	110.0	70.0	3.0	75.0	5.0	105.0	75.0	7.0	500.0	110.2	105.4	5.4	2.3	0.5	10.4
Townhomes Residential Zone façade Patio 1st flr/ Roadway	180.0	70.0	3.0	75.0	5.0	175.0	75.0	6.0	500.0	180.1	175.2	5.1	2.3	0.1	7.0
Townhomes Residential Zone façade 2nd Row	220.0	70.0	3.0	79.0	5.0	215.0	79.0	5.0	500.0	220.3	215.3	5.0	2.3	0.0	5.1
Patio 1st flr/ Roadway	255.0	70.0	3.0	79.0	5.0	250.0	79.0	0.0	500.0	255.2	250.1	7.1	2.3	1.7	15.3
Townhomes Residential Zone façade 3rd Row	330.0	70.0	3.0	71.0	5.0	320.0	71.0	0.0	500.0	330.0	320.0	11.2	2.3	1.0	13.3
Patio 1st flr/ Roadway															
Senior Housing	100.0	51.0	3.0	70.0	5.0	95.0	70.0	6.0	500.0	102.2	97.5	5.1	2.3	0.4	9.6
Comercial Zone Patio 2nd Floor	110.0	58.0	3.0	82.0	5.0	105.0	82.0	6.0	500.0	113.0	108.4	5.1	2.3	0.4	10.0
Townhomes Commercial Zone façade Balcony 2nd flr/ Roadway															

Townhomes Commercial Zone façade Balcony 2nd flr/ Roadway	140.0	58.0	3.0	82.0	5.0	135.0	82.0	6.0	500.0	142.4	137.7	5.1	2.3	0.3	9.2
Townhomes Residential Zone façade Balcony 2nd flr/ Roadway	110.0	70.0	3.0	85.0	5.0	105.0	85.0	7.0	500.0	111.3	106.7	5.4	2.3	0.7	11.7
Townhomes Residential Zone façade 2nd Row Balcony 2nd flr/ Roadway	180.0	70.0	3.0	85.0	5.0	175.0	85.0	6.0	500.0	180.8	175.9	5.1	2.3	0.2	7.8
Townhomes Residential Zone façade 3rd Row Balcony 2nd flr/ Roadway	220.0	70.0	3.0	89.0	5.0	215.0	89.0	5.0	500.0	221.0	216.0	5.0	2.3	0.0	5.4
Townhomes Residential Zone façade 3rd Row Balcony 2nd flr/ Roadway	255.0	70.0	3.0	89.0	5.0	250.0	89.0	5.0	500.0	255.9	250.9	5.0	2.3	0.0	5.3
Townhomes Residential Zone façade 4th Row Balcony 2nd flr/ Roadway	330.0	70.0	3.0	81.0	5.0	320.0	81.0	0.0	500.0	330.3	320.1	11.2	2.3	0.9	12.7
Senior Housing Comercial Zone Patio 3rd Floor	100.0	51.0	3.0	80.0	5.0	95.0	80.0	6.0	500.0	104.7	100.2	5.1	2.3	0.6	11.0
Townhomes Commercial Zone façade Balcony 3rd flr/ Roadway	110.0	58.0	3.0	92.0	5.0	105.0	92.0	6.0	500.0	115.7	111.3	5.1	2.3	0.6	11.2
Townhomes Commercial Zone façade Balcony 3rd flr/ Roadway	140.0	58.0	3.0	92.0	5.0	135.0	92.0	6.0	500.0	144.6	140.0	5.1	2.3	0.5	10.2
Townhomes Residential Zone façade Balcony 3rd flr/ Roadway	110.0	70.0	3.0	95.0	5.0	105.0	95.0	7.0	500.0	113.3	108.9	5.4	2.3	0.9	12.8
Townhomes Residential Zone façade 2nd Row Balcony 3rd flr/ Roadway	180.0	70.0	3.0	95.0	5.0	175.0	95.0	6.0	500.0	182.0	177.2	5.1	2.3	0.3	8.6
Townhomes Residential Zone façade 3rd Row Balcony 3rd flr/ Roadway	220.0	70.0	3.0	99.0	5.0	215.0	99.0	5.0	500.0	222.2	217.2	5.0	2.3	0.0	5.8

Townhomes Residential Zone façade 3rd Row Balcony 3rd flr/ Roadway	255.0	70.0	3.0	99.0	5.0	250.0	99.0	5.0	500.0	256.9	251.9	5.0	2.3	0.0	5.6
Townhomes Residential Zone façade 4th Row Balcony 3rd flr/ Roadway	330.0	70.0	3.0	91.0	5.0	320.0	91.0	5.0	500.0	330.8	320.8	10.0	2.3	0.0	5.4
Townhomes Residential Zone façade 1st Row Rooftop Deck/ Roadway	110.0	70.0	3.0	109.0	5.0	105.0	109.0	7.0	500.0	117.4	113.5	5.4	2.3	1.3	14.1
Townhomes Residential Zone façade 2nd Row Rooftop Deck/ Roadway	180.0	70.0	3.0	109.0	5.0	175.0	109.0	6.0	500.0	184.6	180.0	5.1	2.3	0.4	9.8
Townhomes Residential Zone façade 3rd Row Rooftop Deck/ Roadway	220.0	70.0	3.0	109.0	5.0	215.0	109.0	5.0	500.0	223.8	218.9	5.0	2.3	0.1	6.3
Townhomes Residential Zone façade 4th Row Rooftop Deck/ Roadway	255.0	70.0	3.0	109.0	5.0	250.0	109.0	5.0	500.0	258.3	253.3	5.0	2.3	0.1	6.0

APPENDIX E

Rooftop Deck Activity Noise Calculations

Rooftop Deck Activity Noise

Primary Criteria: Daytime = 50 dBA (7 a.m. to 10 p.m.) (Adjusted downward from 55 dBA because of human voice / music); Nighttime standard not applicable (deck closed from 10 p.m. to 7 a.m.)

Raised male voice at 1 m.

65 dBA at 3.28 feet

Reference: Harris, 1979

Assumptions

1. 117 rooftop decks total
2. Maximum of 20% of the decks being used simultaneously as a conservative estimate. Thus, a maximum of 24 decks being occupied at one time.
3. Maximum occupancy of 10 persons per deck. Assuming that on average the decks would have an occupancy of 8 persons, it is assumed that an average of 4 persons would be speaking with a raised voice, and that this would be continuous.
4. Generally, a random distribution of the occupied decks would take place, but to be conservative it is assumed that 2 -3 of the decks nearest the nearest off-site residences is occupied. The rest would be distributed around the site (the portion of the site with decks).
5. Amplified music would be limited to a reasonable level - specifically, the volume of amplified music permitted would be limited to below a level that would be readily audible at adjacent units. This would be codified in the CC&Rs. It is conservatively assumed that this would be equivalent to 2 persons speaking with a raised voice, continually.
6. Audible noise generated on the rooftop deck would not be permitted after 10 p.m. This would be codified in the CC&Rs.

Receiver Description	Nearest source-receiver distance (feet)	2nd-nearest source-receiver distance (feet)	3rd-nearest source-receiver distance (feet)	4th-nearest source-receiver distance (feet)	5th-nearest source-receiver distance (feet)	6th-nearest source-receiver distance (feet)	7th-nearest source-receiver distance (feet)	8th-nearest source-receiver distance (feet)	9th-nearest source-receiver distance (feet)	10th-nearest source-receiver distance (feet)	Remaining (average) source-receiver distance (feet)
Nearest Residential P/L (east of project site)	42	74	103	103	160	295	301	338	352	470	575
2nd Nearest Residential P/L (south of project site)	68	88	130	205	220	235	295	308	323	345	355
SE Corner Resi P/L (South)- Nearest offsite resi	41	44	103	103	160	295	301	338	352	470	575
Receiver Description	Nearest source-receiver noise level (dBA L _{eq})	2nd-nearest source-receiver distance (dBA L _{eq})	3rd-nearest source-receiver distance (dBA L _{eq})	4th-nearest source-receiver distance (dBA L _{eq})	5th-nearest source-receiver distance (dBA L _{eq})	6th-nearest source-receiver distance (dBA L _{eq})	7th-nearest source-receiver distance (dBA L _{eq})	8th-nearest source-receiver distance (dBA L _{eq})	9th-nearest source-receiver distance (dBA L _{eq})	10th-nearest source-receiver distance (dBA L _{eq})	Remaining (average) source-receiver distance (dBA L _{eq})
Nearest Residential P/L (east of project site)	32.0	29.4	37.8	37.8	34.0	28.7	28.5	27.5	27.2	24.7	22.9
2nd Nearest Residential P/L (south of project site)	40.3	35.7	35.8	31.9	31.3	30.7	28.7	28.3	27.9	27.3	27.1
SE Corner Resi P/L (South)- Nearest offsite resi	50.8	50.2	35.8	31.9	31.3	30.7	28.7	28.3	27.9	27.3	27.1
SE Corner Resi P/L (South)- Nearest offsite resi - with 5' clear barriers north, south and east	42.3	40.8	35.8	31.9	31.3	30.7	28.7	28.3	27.9	27.3	27.1

Receiver Description	Total Rooftop Deck Noise Level (dBA L_{eq})	Applicable Daytime Standard ¹ (50 dBA L_{eq}) Exceeded?	Measured Existing Ambient Noise Level (dBA L_{eq})	Combined Rooftop Deck Noise plus Existing Ambient (dBA L_{eq})	Resultant Increase above Existing Ambient Noise Level (dBA)	Significant Increase ?
Nearest Residential P/L (east of project site)	43	No	52	52	0	No
2nd Nearest Residential P/L (south of project site)	44	No	52	53	1	No
SE Corner Resi P/L (South)- Nearest offsite resi	54	Yes	52	56	4	Yes
SE Corner Resi P/L (South)- Nearest offsite resi - with 5' clear barriers north, south and east	46	No	52	53	1	No

1 - City of Carlsbad daytime standard of 55 dBA L_{eq} , adjusted downward by 5 dBA because rooftop deck noise would consist of human speech and/or music.

SHIELDING ATTENUATION CALCULATIONS: RAY-TRACE PROGRAM (FOR A POINT-SOURCE)

Uses the Equation: $(A_{eq})_{point} = 20 \log[(2 \pi^2 N)^{1/2} / \tanh(2 \pi^2 N)^{1/2}] + 5 \text{ dB}$

(Ref. Pg.174, Noise and Vibration Control, L.L. Beranek Editor, 1971 Ed.

Project: Marja Acres Residential Project
Date: 19-Dec-18
By: MG

Please Enter: Using English (E) units

E

Ray Trace Number/Description	Source-Receiver Distance (ft. or m)	Source Base Elev. (ft. or m)	Source Height above Ground (ft. or m)	Receiver Base Elev. (ft. or m)	Receiver Height above Ground (ft. or m)	Horizontal Barrier Dist. (in ref. to source) (ft. or m)	Barrier Base Elev. (ft. or m)	Barrier Height (ft. or m)	Dominant Freq.(Hz)	Source-Rcvr Straight-Line Dist. (ft. or m)	Source-Top-of-Barrier Dist. (ft. or m)	Receiver-Top-of-Barrier Dist. (ft. or m)	Lambda	N _{max}	AE _(barriers) (dB)
Nearest Resi P/L (East) - Nearest offsite resi	42.0	82.0	39.0	88.0	5.0	26.0	82.0	34.0	500.0	50.5	26.5	28.0	2.3	3.6	18.5
Nearest Resi P/L (East) - 2nd- nearest offsite resi	74.0	82.0	39.0	88.0	5.0	41.0	82.0	34.0	500.0	79.1	41.3	40.2	2.3	2.1	16.3
2nd-nearest Resi P/L (South)- Nearest offsite resi	68.0	87.0	39.0	108.0	5.0	35.0	87.0	34.0	500.0	69.2	35.4	34.0	2.3	0.1	6.2
2nd-nearest Resi P/L (South)- 2nd-nearest offsite resi	88.0	87.0	39.0	108.0	5.0	15.0	87.0	34.0	500.0	89.0	15.8	73.4	2.3	0.3	8.5
SE Corner Resi P/L (South)- Nearest offsite resi - 5 ' Clear-View Barrier	41.0	82.0	39.0	107.0	5.0	10.0	82.0	39.0	500.0	42.0	10.0	32.3	2.3	0.3	8.6
SE Corner Resi P/L (South)- 2nd - nearest offsite resi - 5 ' Clear-View Barrier	44.0	82.0	39.0	107.0	5.0	20.0	82.0	38.0	500.0	44.9	20.0	25.3	2.3	0.4	9.4

