

**NOISE IMPACT ANALYSIS**  
**LAKEPOINTE APARTMENTS PROJECT**  
**CITY OF LAKE ELSINORE**

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**LEAD AGENCY:**  
CITY OF LAKE ELSINORE

**PREPARED BY:**  
VISTA ENVIRONMENTAL  
1021 DIDRIKSON WAY  
LAGUNA BEACH, CALIFORNIA 92651  
GREG TONKOVICH, INCE  
TELEPHONE (949) 510-5355  
FACSIMILE (949) 715-3629

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## ACRONYMS AND ABBREVIATIONS

ANSI	American National Standards Institute
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dB	Decibel
dBA	A-weighted decibels
DOT	Department of Transportation
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
EPA	Environmental Protection Agency
Hz	Hertz
Ldn	Day-night average noise level
Leq	Equivalent sound level
Lmax	Maximum noise level
ONAC	Federal Office of Noise Abatement and Control
OSB	Oriented Strand Board
OSHA	Occupational Safety and Health Administration
PPV	Peak particle velocity
RMS	Root mean square
SEL	Single Event Level or Sound Exposure Level
STC	Sound Transmission Class
UMTA	Federal Urban Mass Transit Administration

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## 1.0 INTRODUCTION

### ***1.1 Purpose of Analysis and Study Objectives***

This Noise Impact Analysis has been prepared to determine the noise impacts associated with the proposed Lakepointe Apartments Project (proposed project). The following is provided in this report:

- A description of the study area and the proposed project;
- Information regarding the fundamentals of noise;
- Information regarding the fundamentals of vibration;
- A description of the local noise guidelines and standards;
- An evaluation of the current noise environment;
- An analysis of the potential short-term construction-related noise impacts from the proposed project; and,
- An analysis of long-term operations-related noise impacts from the proposed project.

### ***1.2 Site Location and Study Area***

The project site is located in the western portion of the City of Lake Elsinore (City). The approximately 13.21-acre project site is currently vacant and undeveloped. The project site is bounded by commercial retail uses to the northeast, Riverside Drive and an RV Park to the southeast, Lakeside High School to the southwest, and vacant land and single-family homes to the northwest. The Project Location Map is shown in Figure 1.

### **Sensitive Receptors in Project Vicinity**

The nearest offsite sensitive receptors to the project site consist of the structures at Lakeside High School as near as 150 feet southwest of the project site, RV campsites as near as 230 feet southeast of the project site, and single-family homes as near as 350 feet northwest of the project site.

### ***1.3 Proposed Project Description***

The proposed project would consist of the development of 152 residential apartment units that would range from one to three bedrooms and would include a public common area that contains a clubhouse and pool. The proposed project would provide 152 covered and 197 uncovered parking spaces for a total of 349 parking spaces. The proposed site plan is shown in Figure 2.

### ***1.4 Standard Noise Regulatory Conditions***

The proposed project will be required to comply with the following regulatory conditions from the City of Lake Elsinore and State of California.

### **City of Lake Elsinore General Plan**

The following lists the City of Lake Elsinore General Plan Policies that are applicable to all residential development projects in the City

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## General Plan Policy 7.1 –Noise Standards

The City's General Plan Policy 7.1 requires that new multi-family residential development limit the exterior noise impacts to all proposed private patios and balconies to 60 dBA L<sub>dn</sub> and limit the interior noise levels to 45 dBA L<sub>dn</sub>. Compliance with this regulation will reduce the noise impacts to the occupants of the proposed residential units.

## **City of Lake Elsinore Municipal Code**

The following lists the City of Lake Elsinore Municipal Code regulations that are applicable to all development projects in the City.

### Section 17.176.080(F) – Construction Noise Limits

Section 17.176.080(F)(1) of the City's Municipal Code restricts construction activities from occurring between the weekday hours of 7:00 p.m. and 7:00 a.m., or at any time on weekends or holidays. Section 17.176.080(F)(2) of the City's Municipal Code limits construction noise that occurs during the allowable times for construction activities to occur to 85 dBA for mobile equipment and 70 dBA for stationary equipment, which are based on the Type III areas that are classified as semi-residential/commercial. Compliance with this regulation will reduce the construction-related noise impacts to the nearby sensitive receptors.

### Section 17.176.080(G) – Vibration Limits

Section 17.176.080(G) of the City's Municipal Code restricts the operation of any device that creates a vibration which is above the vibration threshold of any individual at or beyond the property boundary of the source. Compliance with this regulation will reduce the construction-related vibration impacts to the nearby sensitive receptors.

## **State of California Rules**

The following lists the State of California rules that are applicable to all industrial projects in the State.

### California Vehicle Code Section 27200-27207 – On-Road Vehicle Noise

California Vehicle Code Section 27200-27207 provides noise limits for vehicles operated in California. For vehicles over 10,000 pounds noise is limited to 88 dB for vehicles manufactured before 1973, 86 dB for vehicles manufactured before 1975, 83 dB for vehicles manufactured before 1988, and 80 dB for vehicles manufactured after 1987. All measurements are based at 50 feet from the vehicle. Compliance with this regulation will reduce the construction noise impacts to the nearby sensitive receptors.

### California Vehicle Section 38365-38380 – Off-Road Vehicle Noise

California Vehicle Code Section 38365-38380 provides noise limits for off-highway motor vehicles operated in California. 92 dBA for vehicles manufactured before 1973, 88 dBA for vehicles manufactured before 1975, 86 dBA for vehicles manufactured before 1986, and 82 dBA for vehicles manufactured after December 31, 1985. All measurements are based at 50 feet from the vehicle. Compliance with this regulation will reduce the construction noise impacts to the nearby sensitive receptors.

## ***1.5 Summary of Analysis Results***

The following is a summary of the proposed project's impacts with regard to the State CEQA Guidelines noise checklist questions.

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**Expose persons to noise levels in excess of standards?**

Potentially significant impact. Implementation of Mitigation Measures 1 and 2 would reduce the impact to less than significant levels.

**Expose persons to excessive groundborne vibration?**

Less than significant impact.

**Result in a substantial permanent increase in ambient noise levels above existing levels without the proposed project?**

Less than significant impact.

**Result in a substantial temporary increase in ambient noise levels above existing levels without the proposed project?**

Potentially significant impact. Implementation of Mitigation Measure 1 would reduce the impact to less than significant levels.

**Expose persons to excessive noise levels from aircraft?**

Less than significant impact.

***1.6 Mitigation Measures Required for the Proposed Project***

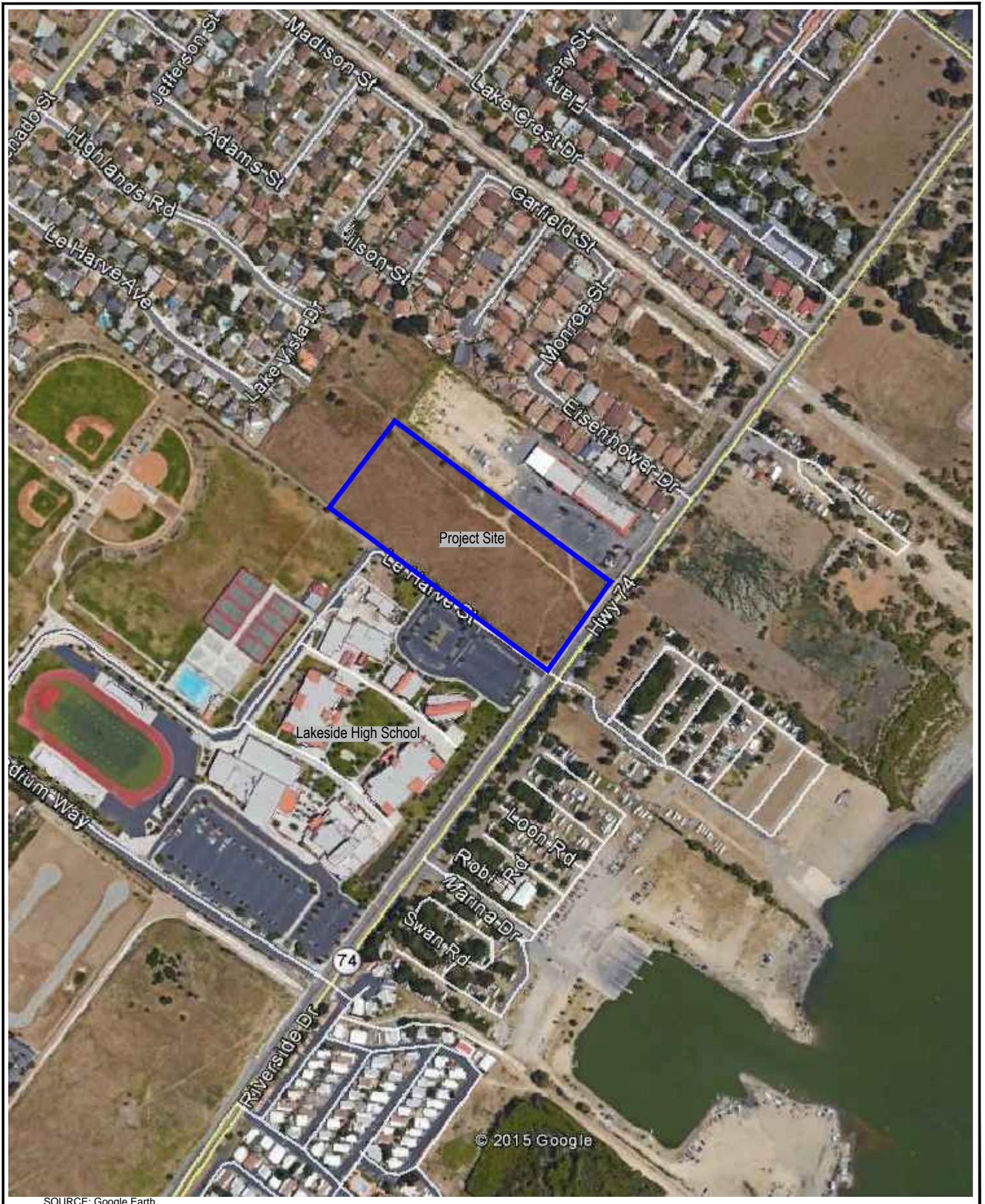
This analysis found that through adherence to the noise and vibration regulations detailed in Section 1.4 above and through implementation of the following mitigation all noise and vibration impacts would be reduced to less than significant levels.

Mitigation Measure 1:

The project applicant shall require any construction contractor that needs to use stationary construction equipment within 50 feet of the project's southwest property line to place a temporary sound barrier between the stationary equipment and Lakeside High School.

Mitigation Measure 2:

The project applicant shall construct a minimum 5.0-foot high solid wall around the perimeter of any first floor patios that are constructed on the Riverside Drive side of Building 8 and require all second floor balconies on Building 8 that face Riverside Drive to have 3.5-foot high perimeter walls that are constructed of a solid material (e.g., glass, wood or plaster) that are free of any cutouts or openings.



SOURCE: Google Earth.

**KEYNOTES:**

- 1 - GAS METER
- 2 - A/C UNIT
- 3 - ELECTRIC ROOM
- 4 - FIRE RISER ROOM

VACANT RESIDENTIAL  
PARCEL (NOT A PART)

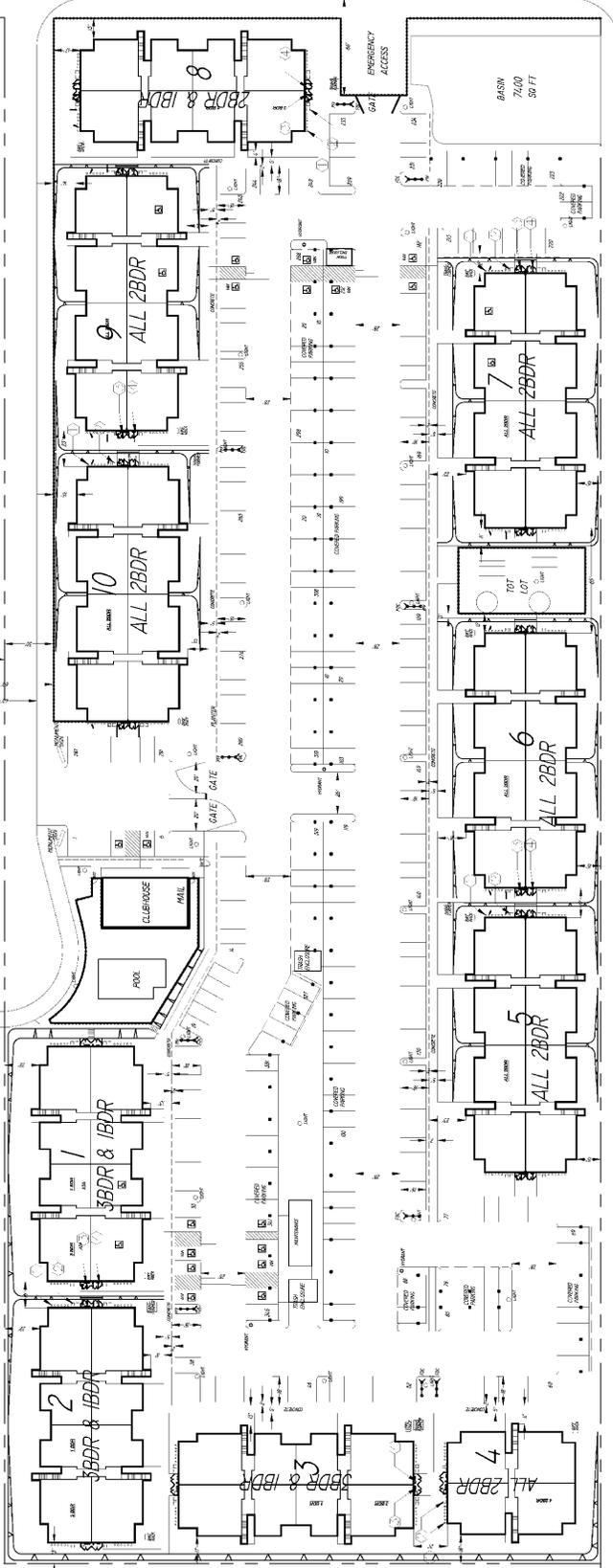
EXISTING RETAIL PARCEL  
(NOT A PART)

PROPOSED STREET

ST. HIGHWAY 74  
RIVERSIDE DRIVE

EXISTING LAKESIDE HIGH  
SCHOOL (NOT A PART)

SITE PLAN  
1" = 30'-0"



SOURCE: Deigle Architecture & Planning.

**VISTA ENVIRONMENTAL**

Figure 2  
Proposed Site Plan

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## 2.0 NOISE FUNDAMENTALS

Noise is defined as unwanted sound. Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health. Sound is produced by the vibration of sound pressure waves in the air. Sound pressure levels are used to measure the intensity of sound and are described in terms of decibels. The decibel (dB) is a logarithmic unit which expresses the ratio of the sound pressure level being measured to a standard reference level. A-weighted decibels (dBA) approximate the subjective response of the human ear to a broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies which are audible to the human ear.

### ***2.1 Noise Descriptors***

Noise Equivalent sound levels are not measured directly, but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA). The equivalent sound level (Leq) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. The peak traffic hour Leq is the noise metric used by California Department of Transportation (Caltrans) for all traffic noise impact analyses.

The Day-Night Average Level (Ldn) is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time of day corrections require the addition of ten decibels to sound levels at night between 10 p.m. and 7 a.m. While the Community Noise Equivalent Level (CNEL) is similar to the Ldn, except that it has another addition of 4.77 decibels to sound levels during the evening hours between 7 p.m. and 10 p.m. These additions are made to the sound levels at these time periods because during the evening and nighttime hours, when compared to daytime hours, there is a decrease in the ambient noise levels, which creates an increased sensitivity to sounds. For this reason the sound appears louder in the evening and nighttime hours and is weighted accordingly. The City of Lake Elsinore relies on the Ldn noise standard to assess transportation-related impacts on noise sensitive land uses.

### ***2.2 Tone Noise***

A pure tone noise is a noise produced at a single frequency and laboratory tests have shown that humans are more perceptible to changes in noise levels of a pure tone. For a noise source to contain a “pure tone,” there must be a significantly higher A-weighted sound energy in a given frequency band than in the neighboring bands, thereby causing the noise source to “stand out” against other noise sources. A pure tone occurs if the sound pressure level in the one-third octave band with the tone exceeds the average of the sound pressure levels of the two contiguous one-third octave bands by:

- 5 dB for center frequencies of 500 hertz (Hz) and above
- 8 dB for center frequencies between 160 and 400 Hz
- 15 dB for center frequencies of 125 Hz or less

### ***2.3 Noise Propagation***

From the noise source to the receiver, noise changes both in level and frequency spectrum. The most obvious is the decrease in noise as the distance from the source increases. The manner in which noise reduces with distance depends on whether the source is a point or line source as well as ground absorption, atmospheric effects and refraction, and shielding by natural and manmade features. Sound from point sources, such as air conditioning condensers, radiate uniformly outward as it travels away

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from the source in a spherical pattern. The noise drop-off rate associated with this geometric spreading is 6 dBA per each doubling of the distance (dBA/DD). Transportation noise sources such as roadways are typically analyzed as line sources, since at any given moment the receiver may be impacted by noise from multiple vehicles at various locations along the roadway. Because of the geometry of a line source, the noise drop-off rate associated with the geometric spreading of a line source is 3 dBA/DD.

#### ***2.4 Ground Absorption***

The sound drop-off rate is highly dependent on the conditions of the land between the noise source and receiver. To account for this ground-effect attenuation (absorption), two types of site conditions are commonly used in traffic noise models, soft-site and hard-site conditions. Soft-site conditions account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation. For point sources, a drop-off rate of 7.5 dBA/DD is typically observed over soft ground with landscaping, as compared with a 6.0 dBA/DD drop-off rate over hard ground such as asphalt, concrete, stone and very hard packed earth. For line sources a 4.5 dBA/DD is typically observed for soft-site conditions compared to the 3.0 dBA/DD drop-off rate for hard-site conditions. Caltrans research has shown that the use of soft-site conditions is more appropriate for the application of the Federal Highway Administration (FHWA) traffic noise prediction model used in this analysis.

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## 3.0 GROUND-BORNE VIBRATION FUNDAMENTALS

Ground-borne vibrations consist of rapidly fluctuating motions within the ground that have an average motion of zero. The effects of ground-borne vibrations typically only cause a nuisance to people, but at extreme vibration levels damage to buildings may occur. Although ground-borne vibration can be felt outdoors, it is typically only an annoyance to people indoors where the associated effects of the shaking of a building can be notable. Ground-borne noise is an effect of ground-borne vibration and only exists indoors, since it is produced from noise radiated from the motion of the walls and floors of a room and may also consist of the rattling of windows or dishes on shelves.

### 3.1 *Vibration Descriptors*

There are several different methods that are used to quantify vibration amplitude such as the maximum instantaneous peak in the vibrations velocity, which is known as the peak particle velocity (PPV) or the root mean square (rms) amplitude of the vibration velocity. Due to the typically small amplitudes of vibrations, vibration velocity is often expressed in decibels and is denoted as ( $L_v$ ) and is based on the rms velocity amplitude. A commonly used abbreviation is “VdB”, which in this text, is when  $L_v$  is based on the reference quantity of 1 micro inch per second.

### 3.2 *Vibration Perception*

Typically, developed areas are continuously affected by vibration velocities of 50 VdB or lower. These continuous vibrations are not noticeable to humans whose threshold of perception is around 65 VdB. Off-site sources that may produce perceptible vibrations are usually caused by construction equipment, steel-wheeled trains, and traffic on rough roads, while smooth roads rarely produce perceptible ground-borne noise or vibration.

### 3.3 *Vibration Propagation*

The propagation of ground-borne vibration is not as simple to model as airborne noise. This is due to the fact that noise in the air travels through a relatively uniform median, while ground-borne vibrations travel through the earth which may contain significant geological differences. There are three main types of vibration propagation; surface, compression, and shear waves. Surface waves, or Rayleigh waves, travel along the ground’s surface. These waves carry most of their energy along an expanding circular wave front, similar to ripples produced by throwing a rock into a pool of water. P-waves, or compression waves, are body waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal (i.e., in a “push-pull” fashion). P-waves are analogous to airborne sound waves. S-waves, or shear waves, are also body waves that carry energy along an expanding spherical wave front. However, unlike P-waves, the particle motion is transverse or “side-to-side and perpendicular to the direction of propagation.”

As vibration waves propagate from a source, the vibration energy decreases in a logarithmic nature and the vibration levels typically decrease by 6 VdB per doubling of the distance from the vibration source. As stated above, this drop-off rate can vary greatly depending on the soil but has been shown to be effective enough for screening purposes, in order to identify potential vibration impacts that may need to be studied through actual field tests.

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## 4.0 REGULATORY SETTING

The project site is located in the City of Lake Elsinore. Noise regulations are addressed through the efforts of various federal, state, and local government agencies. The agencies responsible for regulating noise are discussed below.

### 4.1 Federal Regulations

The adverse impact of noise was officially recognized by the federal government in the Noise Control Act of 1972, which serves three purposes:

- Promulgating noise emission standards for interstate commerce
- Assisting state and local abatement efforts
- Promoting noise education and research

The Federal Office of Noise Abatement and Control (ONAC) was initially tasked with implementing the Noise Control Act. However, the ONAC has since been eliminated, leaving the development of federal noise policies and programs to other federal agencies and interagency committees. For example, the Occupational Safety and Health Administration (OSHA) agency prohibits exposure of workers to excessive sound levels. The Department of Transportation (DOT) assumed a significant role in noise control through its various operating agencies. The Federal Aviation Administration (FAA) regulates noise of aircraft and airports. Surface transportation system noise is regulated by a host of agencies, including the Federal Transit Administration (FTA). Transit noise is regulated by the federal Urban Mass Transit Administration (UMTA), while freeways that are part of the interstate highway system are regulated by the Federal Highway Administration (FHWA). Finally, the federal government actively advocates that local jurisdictions use their land use regulatory authority to arrange new development in such a way that “noise sensitive” uses are either prohibited from being sited adjacent to a highway or, alternately that the developments are planned and constructed in such a manner that potential noise impacts are minimized.

Although the proposed project is not under the jurisdiction of the FTA, the FTA is the only agency that has defined what constitutes a significant noise impact from implementing a project. The FTA standards are based on extensive studies by the FTA and other governmental agencies on the human effects and reaction to noise and a summary of the FTA findings are provided below in Table A.

**Table A – FTA Project Effects on Cumulative Noise Exposure**

Existing Noise Exposure (dBA Leq or Ldn)	Allowable Noise Impact Exposure dBA Leq or Ldn		
	Project Only	Combined	Noise Exposure Increase
45	51	52	+7
50	53	55	+5
55	55	58	+3
60	57	62	+2
65	60	66	+1
70	64	71	+1
75	65	75	0

Source: Federal Transit Administration, 2006.

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Since the federal government has preempted the setting of standards for noise levels that can be emitted by the transportation sources, the City is restricted to regulating the noise generated by the transportation system through nuisance abatement ordinances and land use planning.

## ***4.2 State Regulations***

### **Noise Standards**

#### California Department of Health Services Office of Noise Control

Established in 1973, the California Department of Health Services Office of Noise Control (ONC) was instrumental in developing regulatory tools to control and abate noise for use by local agencies. One significant model is the “Land Use Compatibility for Community Noise Environments Matrix,” which allows the local jurisdiction to clearly delineate compatibility of sensitive uses with various incremental levels of noise.

#### California Noise Insulation Standards

Section 1092 of Title 25, Chapter 1, Subchapter 1, Article 4 of the California Administrative Code (California Noise Insulation Standards) requires noise insulation in new hotels, motels, apartment houses, and dwellings (other than single-family detached housing) that provides an annual average noise level of no more than 45 dBA CNEL. When such structures are located within a 60-dBA CNEL (or greater) noise contour, an acoustical analysis is required to ensure that interior levels do not exceed the 45-dBA CNEL annual threshold. In addition, Title 21, Chapter 6, Article 1 of the California Administrative Code requires that all habitable rooms, hospitals, convalescent homes, and places of worship shall have an interior CNEL of 45 dB or less due to aircraft noise.

#### Government Code Section 65302

Government Code Section 65302 mandates that the legislative body of each county and city in California adopt a noise element as part of its comprehensive general plan. The local noise element must recognize the land use compatibility guidelines published by the State Department of Health Services. The guidelines rank noise land use compatibility in terms of normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable.

### **Vibration Standards**

Title 14 of the California Administrative Code Section 15000 requires that all state and local agencies implement the California Environmental Quality Act (CEQA) Guidelines, which requires the analysis of exposure of persons to excessive groundborne vibration. However, no statute has been adopted by the state that quantifies the level at which excessive groundborne vibration occurs.

Caltrans issued the *Transportation- and Construction-Induced Vibration Guidance Manual* in 2004. The manual provides practical guidance to Caltrans engineers, planners, and consultants who must address vibration issues associated with the construction, operation, and maintenance of Caltrans projects. However, this manual is also used as a reference point by many lead agencies and CEQA practitioners throughout California, as it provides numeric thresholds for vibration impacts. Thresholds are established for continuous and transient sources of vibration, which found that the human response becomes distinctly perceptible at 0.25 inch per second PPV for transient sources and 0.04 inch per second PPV for continuous sources.

### 4.3 Local Regulations

The City of Lake Elsinore General Plan and Municipal Code establishes the following applicable policies related to noise and vibration.

#### City of Lake Elsinore General Plan

The following applicable goals and policies to the proposed project are from the Noise Element of the General Plan.

**Goal 7 Maintain an environment for all City residents and visitors free of unhealthy, obtrusive, or otherwise excessive noise.**

**Policies:**

7.1 Apply the noise standards set forth in the Lake Elsinore Noise and Land Use Compatibility Matrix (see Table B) and Interior and Exterior Noise Standards (see Table C) when considering all new development and redevelopment proposed within the City.

7.2 Require that mixed-use structures and areas be designed to prevent transfer of noise and vibration from commercial areas to residential areas.

**Table B – City of Lake Elsinore Noise and Land Use Compatibility Matrix**

Land Use Categories	Uses	Day-Night Noise Level (L <sub>dn</sub> )						
		<55	55-60	60-65	65-70	70-75	75-80	>80
Residential	Single-Family, Duplex, Multiple-Family	A	A	B	B	C	D	D
	Mobile Homes	A	A	B	C	C	D	D
Commercial Regional District	Hotel, Motel, Transient Lodging	A	A	B	B	C	C	D
Commercial Regional Village, District Special	Commercial, Retail, Bank, Restaurant, Movie Theatre	A	A	A	A	B	B	C
Commercial Industrial Institutional	Office Building, Research and Development, Professional Offices, City Office Building	A	A	A	B	B	C	D
Commercial Regional Institutional Civic Center	Amphitheatre, Concert Hall, Auditorium, Meeting Hall	B	B	C	C	D	D	D
Commercial Recreation	Children’s Amusement Park, Miniature Golf Course, Go-cart Track, Equestrian Center, Sports Club	A	A	A	B	B	D	D
Commercial General, Special Industrial Institutional	Automobile Service Station, Auto Dealership, Manufacturing, Warehousing, Wholesale, Utilities	A	A	A	A	B	B	B
Institutional General	Hospital, Church, Library, Schools, Classroom	A	A	B	C	C	D	D
Open Space	Parks	A	A	A	B	C	D	D

Land Use Categories	Uses	Day-Night Noise Level (L <sub>dn</sub> )						
		<55	55-60	60-65	65-70	70-75	75-80	>80
	Golf Course, Cemeteries, Nature Centers, Wildlife Reserves, Wildlife Habitat	A	A	A	A	B	C	C
Agriculture	Agriculture	A	A	A	A	A	A	A

Interpretation:

Zone A: Clearly Compatible. Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

Zone B: Normally Compatible. New construction or development should be undertaken only after detailed analysis of the noise reduction requirements are made and needed noise insulation features in the design are determined. Conventional construction, with closed windows and fresh air supply systems or air conditioning, will normally suffice.

Zone C: Normally Incompatible. New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in the design.

Zone D: Clearly Incompatible. New construction or development should generally not be undertaken.

Source: City of Lake Elsinore General Plan, 2011.

**Table C – City of Lake Elsinore Interior and Exterior Noise Standards**

Land Use Categories	Uses	Energy Average L <sub>dn</sub>	
		Interior <sup>(1)</sup>	Exterior <sup>(2)</sup>
Residential	Single-Family, Duplex, Multiple-Family	45 <sup>(3,5)</sup>	60
	Mobile Homes	--	60 <sup>(4)</sup>
Commercial, Institutional	Hotel, Motel, Transient Lodging	45 <sup>(5)</sup>	--
	Hospital, School's Classroom	45	--
	Church, Library	45	--

Interpretation:

<sup>1</sup> Indoor environment excluding: bathrooms, toilets, closets, corridors.

<sup>2</sup> Outdoor environment limited to: private yard of single-family, multi-family private patio or balcony which is served by a means of exit from inside, Mobile Home Park.

<sup>3</sup> Noise level requirement with closed windows. Mechanical ventilation system or other means of natural ventilation shall be provided as of Chapter 12, Section 1205 of UBC.

<sup>4</sup> Exterior noise level should be such that interior noise level will not exceed 45 CNEL.

<sup>5</sup> As per California Administrative Code, Title 24, Part 6, Division T25, Chapter 1, Subchapter 1, Article 4, Section T25-28.

Source: City of Lake Elsinore General Plan, 2011.

## City of Lake Elsinore Municipal Code

The Lake Elsinore Municipal Code establishes the following applicable standards related to noise.

### 17.44.050 Acoustical analysis.

Within all residential structures, noise levels from exterior sources shall be mitigated so as not to exceed an interior CNEL level of 45 dBA with windows closed. To ensure that this standard is complied with, the following requirements shall apply:

A. For projects consisting of four or more single-family dwellings or any number of multiple-family dwellings, proposed to be located in an area where the noise level from any source has the potential to

exceed a CNEL of 65 dBA, an acoustical analysis, including on-site monitoring prior to building final, shall be performed by an engineer specializing in acoustics.

**17.176.060 Exterior Noise Limits.**

A. Maximum Permissible Sound Levels by Receiving Land Use.

1. The noise standards for the various categories of land use identified by the Noise Control Office(r) as presented in Table 1 (see Table D) shall, unless otherwise specifically indicated, apply to all such property within a designated zone.
2. No person shall operate, or cause to be operated, any source of sound at any location within the incorporated City or allow the creation of any noise on property owned, leased, occupied, or otherwise controlled by such person, which causes the noise level when measured on any other property, either incorporated or unincorporated to exceed:
  - a. The noise standard for that land use as specified in Table 1 for a cumulative period of more than 30 minutes in any hour; or
  - b. The noise standard plus five dB for a cumulative period of more than 15 minutes in any hour; or
  - c. The noise standard plus 10 dB for a cumulative period of more than five minutes in any hour; or
  - d. The noise standard plus 15 dB for a cumulative period of more than one minute in any hour; or
  - e. The noise standard plus 20 dB or the maximum measured ambient level, for any period of time.
3. If the measured ambient level differs from that permissible within any of the last four noise limit categories above, the allowable noise exposure standard shall be adjusted in five dB increments in each category as appropriate to encompass or reflect said ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under this category shall be increased to reflect the maximum ambient noise level.
4. If the measurement location is on a boundary between two different zones, the noise level limit applicable to the lower noise zone plus six dB shall apply.

**Table D – City of Lake Elsinore Exterior Noise Limits**

Receiving Land Use Category	Time Period	Noise Level (dBA)
Single-Family Residential	10:00 p.m. – 7:00 a.m.	40
	7:00 a.m. – 10:00 p.m.	50
Multiple Dwelling Residential	10:00 p.m. – 7:00 a.m.	45
	7:00 a.m. – 10:00 p.m.	50
Public Space		
Limited Commercial and Office	10:00 p.m. – 7:00 a.m.	55
	7:00 a.m. – 10:00 p.m.	60
General Commercial	10:00 p.m. – 7:00 a.m.	60

Receiving Land Use Category	Time Period	Noise Level (dBA)
	7:00 a.m. – 10:00 p.m.	65
Light Industrial	Anytime	70
Heavy Industrial	Anytime	75

Source: City of Lake Elsinore Municipal Code Section 17.176.060.

### 17.176.070 Interior noise standards.

#### A. Maximum Permissible Dwelling Interior Sound Levels.

1. The interior noise standards for multifamily residential dwellings as presented in Table 2 (see Table E) shall apply, unless otherwise specifically indicated, within all such dwellings with windows in their normal seasonal configuration.

**Table E – City of Lake Elsinore Interior Noise Standards**

Noise Zone	Type of Land Use	Time Interval	Allowable Interior Noise Level (dBA)
All	Multifamily Residential	10:00 p.m. – 7:00 a.m.	35
		7:00 a.m. – 10:00 p.m.	45

Source: City of Lake Elsinore Municipal Code Section 17.176.070.

2. No person shall operate or cause to be operated within a dwelling unit, any source of sound or allow the creation of any noise which causes the noise level when measured inside a neighboring receiving dwelling unit to exceed:
  - a. The noise standard as specified in Table 2 for a cumulative period of more than five minutes in any hour; or
  - b. The noise standard plus five dB for a cumulative period of more than one minute in any hour; or
  - c. The noise standard plus 10 dB or the maximum measured ambient, for any period of time.

### 17.176.080 Prohibited acts.

No person shall unnecessarily make, continue, or cause to be made or continued, any noise disturbance. The following acts, and the causing or permitting thereof, are declared to be in violation of this chapter:

#### F. Construction/Demolition

1. Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work between weekday hours of 7:00 p.m. and 7:00 a.m., or at any time on weekends or holidays, such that the sound therefrom creates a noise disturbance across a residential or commercial real property line, except for emergency work of public service utilities or by variance issued by the City.

2. Noise Restrictions at Affected Properties. Where technically and economically feasible, construction activities shall be conducted in such a manner the maximum noise levels at affected properties will not exceed those listed in the following schedule (see Table F):

**Table F – City of Lake Elsinore Construction Noise Standards**

<b>Time Interval</b>	<b>Type I Areas Single-Family Residential</b>	<b>Type II Areas Multifamily Residential</b>	<b>Type III Areas Semi-Residential/Commercial</b>
<b>Mobile Equipment</b>			
Daily, except Sundays and Legal Holidays 7:00 a.m. to 7:00 p.m.	75 dBA	80 dBA	85 dBA
Daily, 7:00 p.m. to 7:00 a.m. and all day Sunday and Legal Holidays	60 dBA	65 dBA	70 dBA
<b>Stationary Equipment</b>			
Daily, except Sundays and Legal Holidays 7:00 a.m. to 7:00 p.m.	60 dBA	65 dBA	70 dBA
Daily, 7:00 p.m. to 7:00 a.m. and all day Sunday and Legal Holidays	50 dBA	55 dBA	60 dBA

Source: City of Lake Elsinore Municipal Code Section 17.176.080.

3. All mobile or stationary internal combustion engine powered equipment or machinery shall be equipped with suitable exhaust and air intake silencers in proper working order.

G. Operating or permitting the operation of any device that creates a vibration which is above the vibration perception threshold of any individual at or beyond the property boundary of the source if on private property or at 150 feet (46 meters) from the source if on public space or public right-of-way.

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## 5.0 EXISTING NOISE CONDITIONS

To determine the existing noise level environment noise measurements have been taken in the vicinity of the project site. The field survey noted that noise within the proposed project area is generally characterized by vehicular traffic on Riverside Drive. The following describes the measurement procedures, measurement locations, noise measurement results, and the modeling of the existing noise environment.

### ***5.1 Noise Measurement Equipment***

The noise measurements were taken using two Extech Model 407780 Type 2 integrating sound level meters programmed in “slow” mode to record the sound pressure level at 3-second intervals for approximately 24 hours in “A” weighted form. In addition, the  $L_{eq}$  averaged over the entire measuring time and  $L_{max}$  were recorded. The sound level meters and microphones were mounted on a tree and power pole approximately six feet above the ground and were equipped with a windscreen. The sound level meters were calibrated before and after the monitoring using an Extech calibrator, Model 407766. The noise level measurement equipment meets American National Standards Institute specifications for sound level meters (S1.4-1983 identified in Chapter 19.68.020.AA).

### **Noise Measurement Location**

The noise monitoring locations were selected in order to obtain noise measurements of the current noise levels on the project site. The noise measurement sites were selected to provide a representative sampling of the noise levels created by nearby noise sources. Descriptions of the noise monitoring sites are provided below in Table G. Appendix A includes a photo index of the study area and noise level measurement locations.

### **Noise Measurement Timing and Climate**

The noise measurements were recorded between 2:41 p.m. on Tuesday November 3, 2015 and 2:45 p.m. on Wednesday, November 4, 2015. When the noise measurements were started the sky was partly cloudy, the temperature was 61 degrees Fahrenheit, the humidity was 46 percent, barometric pressure was 28.44 inches of mercury, and the wind was blowing around six miles per hour. Overnight the sky was partly cloudy and the temperature dropped to 51 degrees Fahrenheit. At the conclusion of the noise measurements, the sky was partly cloudy, the temperature was 65 degrees Fahrenheit, the humidity was 33 percent, barometric pressure was 28.64 inches of mercury, and the wind was blowing around eight miles per hour.

### ***5.2 Noise Measurement Results***

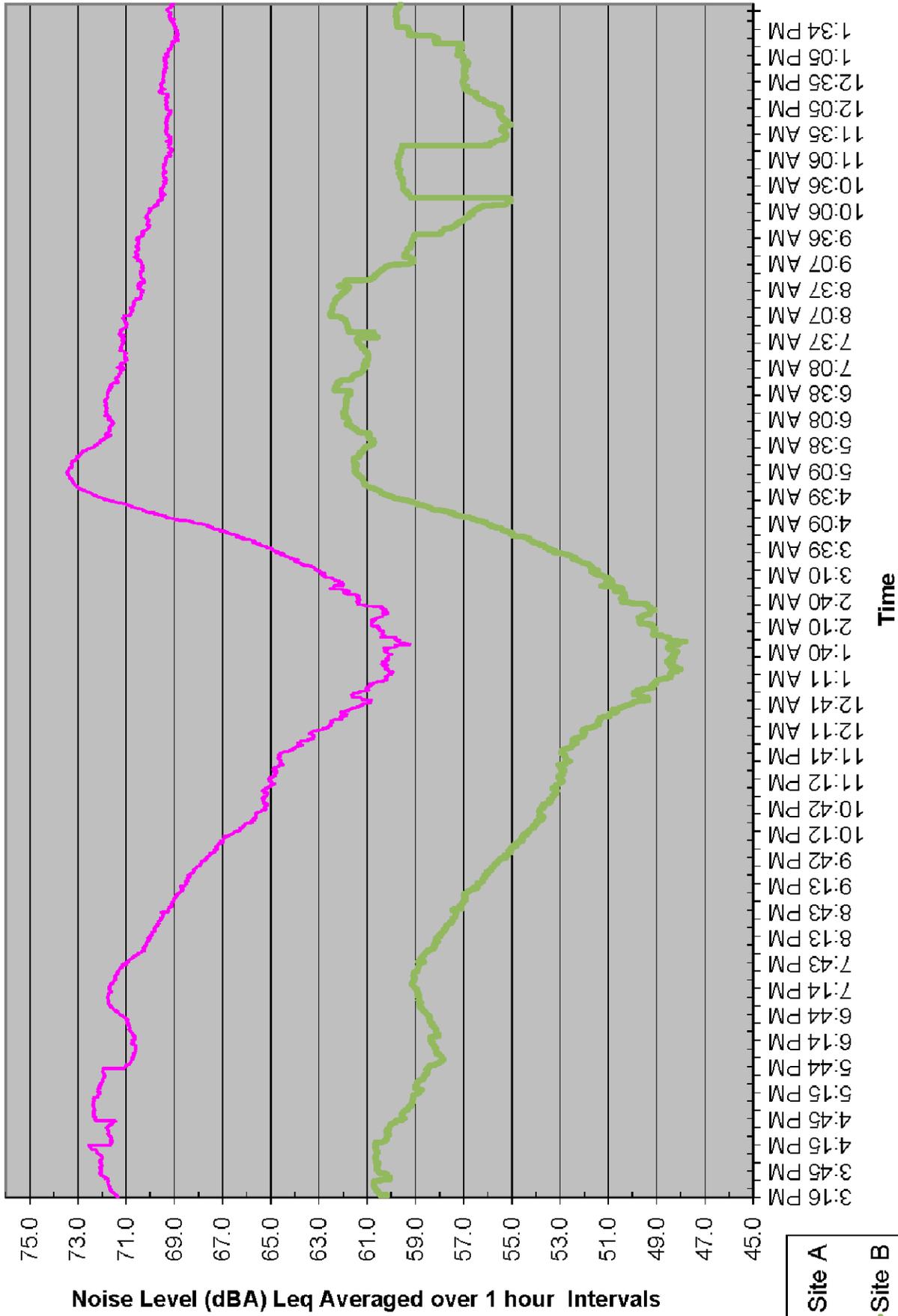
The results of the noise level measurements are presented in Table G. The measured sound pressure levels in dBA have been used to calculate the minimum and maximum  $L_{eq}$  averaged over 1-hour intervals. Table G also shows the  $L_{eq}$ ,  $L_{max}$ , and  $L_{dn}$ , based on the entire measurement time. The noise monitoring data printouts are included in Appendix B. Figure 4 shows a graph of the 24-hour noise measurements.

**Table G – Existing (Ambient) Noise Level Measurements**

<b>Site No.</b>	<b>Site Description</b>	<b>Average (dBA L<sub>eq</sub>)</b>	<b>Maximum (dBA L<sub>max</sub>)</b>	<b>Min. 1-Hour Interval (dBA L<sub>eq</sub>/Time)</b>	<b>Max. 1-Hour Interval (dBA L<sub>eq</sub>/Time)</b>	<b>Average (dBA L<sub>dn</sub>)</b>
A	Located near the southeast side of the project site on a tree, approximately 40 feet from edge of Riverside Drive.	69.7	95.4	59.2 1:53 AM	73.5 5:10 AM	74.9
B	Located near the southwest side of the project site on a power pole, approximately 233 feet from edge of Riverside Drive and 15 feet from edge of Lakeside High School Road.	58.4	86.3	47.8 1:53 AM	62.6 8:08 AM	63.7

Source: Noise measurements taken with two Extech Model 407780 Type 2 integrating sound level meters between Tuesday November 3, 2015 and Wednesday November 4, 2015.

Table G shows that Site A currently exceeds the City exterior residential noise standard of 65 dBA L<sub>dn</sub>.



SOURCE: Extech Model 407780 Type 2 Integrated Sound Level Meters.

Figure 3  
Field Noise Measurements Graph

## 6.0 MODELING PARAMETERS AND ASSUMPTIONS

### 6.1 Construction Noise

The noise impacts from construction of the proposed project have been analyzed through use of the FHWA’s Roadway Construction Noise Model (RCNM). The FHWA compiled noise measurement data regarding the noise generating characteristics of several different types of construction equipment used during the Central Artery/Tunnel project in Boston. Table H below provides a list of the construction equipment anticipated to be used for each phase of construction as detailed in *Air Quality and Greenhouse Gas Emissions Impact Analysis Lakepointe Apartments Project*, prepared by Vista Environmental, November 19, 2015.

**Table H – Construction Equipment Noise Emissions and Usage Factors**

Equipment Description	Number of Equipment	Acoustical Use Factor <sup>1</sup> (percent)	Spec 721.560 Lmax at 50 feet <sup>2</sup> (dBA, slow <sup>3</sup> )	Actual Measured Lmax at 50 feet <sup>4</sup> (dBA, slow <sup>3</sup> )
<b>Site Preparation</b>				
Dozer	3	40	85	82
Tractor, Loader or Backhoe <sup>5</sup>	4	40	84	N/A
<b>Grading</b>				
Excavator	2	40	85	81
Grader	1	40	85	83
Dozer	1	40	85	82
Tractor, Loader or Backhoe <sup>5</sup>	3	40	84	N/A
<b>Building Construction</b>				
Crane	1	16	85	81
Forklift (Gradall)	3	40	85	83
Generator	1	50	82	81
Welder	1	40	73	74
Tractor, Loader or Backhoe <sup>5</sup>	3	40	84	N/A
<b>Paving</b>				
Paver	2	50	85	77
Paving Equipment	2	50	85	77
Roller	2	20	85	80
<b>Architectural Coating</b>				
Air Compressor	1	40	80	78

Notes:

<sup>1</sup> Acoustical use factor is the percentage of time each piece of equipment is operational during a typical workday.

<sup>2</sup> Spec 721.560 is the equipment noise level utilized by the RCNM program.

<sup>3</sup> The “slow” response averages sound levels over 1-second increments. A “fast” response averages sound levels over 0.125-second increments.

<sup>4</sup> Actual Measured is the average noise level measured of each piece of equipment during the Central Artery/Tunnel project in Boston, Massachusetts primarily during the 1990s.

<sup>5</sup> For the tractor/loader/backhoe, the tractor noise level was utilized, since it is the loudest of the three types of equipment.

Source: Federal Highway Administration, 2006 and CalEEMod default equipment mix.

Table H also shows the associated measured noise emissions for each piece of equipment from the RCNM model and measured percentage of typical equipment use per day. Construction noise impacts to the nearby sensitive receptors have been calculated according to the equipment noise levels and usage factors listed in Table H and through use of the RCNM. For each phase of construction, the nearest piece of equipment was placed at the shortest distance of the proposed activity to the nearest home and each subsequent piece of equipment was placed an additional 50 feet away

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## 6.2 Operations-Related Noise

The proposed project would result in increases in traffic noise to the nearby roadways as well as introduce new sensitive receptors to the project site. The project impacts to the offsite roadways and onsite noise impacts to the proposed residential units were analyzed through use of the FHWA Traffic Noise Prediction Model - FHWA-RD-77-108 (FHWA Model). The following section provides a discussion of the software and modeling input parameters used in this analysis and a discussion of the resultant existing noise model.

### FHWA Model Methodology

In order to quantify the potential noise impacts created and received by the proposed project and compare them to the existing noise levels, the existing roadway noise environment was modeled using the FHWA Model. The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). Adjustments are then made to the reference energy mean emission level to account for: the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway), the total average daily traffic (ADT) and the percentage of ADT which flows during the day, evening and night, the travel speed, the vehicle mix on the roadway, which is a percentage of the volume of automobiles, medium trucks and heavy trucks, the roadway grade, the angle of view of the observer exposed to the roadway and site conditions ("hard" or "soft" relates to the absorption of the ground, pavement or landscaping). The following section provides a discussion of the software and modeling input parameters used in this analysis and a discussion of the resultant existing noise model.

### FHWA Model Traffic Noise Prediction Model Inputs

The roadway parameters used for this study are presented in Table I. The roadway classifications are based on the City's General Plan Circulation Element. The roadway speeds are based on the posted speed limits. The distance to the nearest sensitive receptor was determined by measuring the distance from the roadway centerline to the nearest residence. Since the study area is located in a rural to suburban environment and landscaping or natural vegetation exists along the sides of all analyzed roadways, soft site conditions were modeled.

**Table I – FHWA Model Roadway Parameters**

Roadway	Segment	General Plan Classification	Vehicle Speed (MPH)	Distance to Nearest Receptor (feet)
Riverside Drive	North of Lakeshore Drive	Urban Arterial	40	55
Riverside Drive	North of Lincoln Street	Urban Arterial	40	110
Riverside Drive	North of La Harve Street	Urban Arterial	40	55
Riverside Drive	South of La Harve Street	Urban Arterial	40	75

Source: Infrastructure Group, Inc., 2015; and City of Lake Elsinore, 2011.

The average daily traffic (ADT) volumes on the study area roadways were obtained from the *Traffic Impact Analysis Lakeshore Pointe Lake Elsinore, California* (Traffic Impact Analysis), prepared by Infrastructure Group, Inc., October 22, 2015. The ADT volumes have been provided for both without project and with project conditions for the existing year, opening year 2017, and year 2017 plus cumulative projects scenarios. The ADT volumes used in this analysis are shown in Table J.

**Table J – Average Daily Traffic Volumes**

Roadway	Segment	Average Daily Traffic Volumes					
		Existing	Existing + Project	2017 No Project	2017 + Project	Cumulative No Project	Cumulative + Project
Riverside Drive	North of Lakeshore Drive	22,453	23,155	23,369	24,071	25,293	25,546
Riverside Drive	North of Lincoln Street	25,689	26,606	26,737	27,654	29,589	29,993
Riverside Drive	North of La Harve Street	21,410	22,445	22,284	23,319	25,234	25,841
Riverside Drive	South of La Harve Street	18,088	18,854	18,826	19,592	21,710	22,114
Riverside Drive	South of Lakeside HS Stadium Way	18,288	19,038	19,034	19,784	21,922	22,306
Lakeshore Drive	West of Riverside Drive	17,387	17,836	18,096	18,545	18,928	19,029

Source: Infrastructure Group, Inc., 2015.

The vehicle mixes used in the FHWA-RD-77-108 Model are shown in Table K. The local and major arterial distributions were obtained from the County of Riverside General Plan (Riverside County, 2003) and the State Route 74 distribution was obtained from Caltrans (Caltrans, 2015). The vehicle mix provides the hourly distribution percentages of automobiles, medium trucks, and heavy trucks for input into the FHWA model.

**Table K – Roadway Vehicle Mix**

Vehicle Type	Traffic Flow Distributions			Overall
	Day (7 a.m. to 7 p.m.)	Evening (7 p.m. to 10 p.m.)	Night (10 p.m. to 7 a.m.)	
<b>Local</b>				
Automobiles	73.60%	13.60%	10.22%	97.42%
Medium Trucks	0.90%	0.90%	0.04%	1.84%
Heavy Trucks	0.35%	0.04%	0.35%	0.74%
<b>Major Arterials</b>				
Automobiles	69.50%	12.90%	9.60%	92.00%
Medium Trucks	1.44%	0.06%	1.50%	3.00%
Heavy Trucks	2.40%	0.10%	2.50%	5.00%
<b>State Route 74</b>				
Automobiles	63.75%	13.07%	15.28%	92.10%
Medium Trucks	3.53%	0.64%	1.79%	5.96%
Heavy Trucks	1.06%	0.10%	0.77%	1.94%

Source: Riverside County, 2003; Caltrans, 2015.

### FHWA Model Source Assumptions

To assess the roadway noise generation in a uniform manner, all vehicles are analyzed at the single lane equivalent acoustic center of the roadway being analyzed. In order to determine the height above the road

grade where the noise is being emitted from, each type of vehicle has been analyzed independently with autos at road grade, medium trucks at 2.3 feet above road grade, and heavy trucks at 8 feet above road grade. These elevations were determined through a noise-weighted average of the elevation of the exhaust pipe, tires and mechanical parts in the engine, which are the primary noise emitters from a vehicle.

### 6.3 Vibration

Construction activity can result in varying degrees of ground vibration, depending on the equipment used on the site. Operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Buildings in the vicinity of the construction site respond to these vibrations with varying results ranging from no perceptible effects at the low levels to slight damage at the highest levels. Table L gives approximate vibration levels for particular construction activities. The data in Table L provides a reasonable estimate for a wide range of soil conditions.

**Table L – Vibration Source Levels for Construction Equipment**

<b>Equipment</b>		<b>Peak Particle Velocity (inches/second)</b>	<b>Approximate Vibration Level (L<sub>v</sub>)at 25 feet</b>
Pile driver (impact)	Upper range	1.518	112
	typical	0.644	104
Pile driver (sonic)	Upper range	0.734	105
	typical	0.170	93
Clam shovel drop (slurry wall)		0.202	94
Vibratory Roller		0.210	94
Hoe Ram		0.089	87
Large bulldozer		0.089	87
Caisson drill		0.089	87
Loaded trucks		0.076	86
Jackhammer		0.035	79
Small bulldozer		0.003	58

Source: Federal Transit Administration, May 2006.

The construction-related and operational vibration impacts have been calculated through the vibration levels shown above in Table L and through typical vibration propagation rates. The equipment assumptions were based on the equipment lists provided above in Table H.

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## 7.0 IMPACT ANALYSIS

### *7.1 CEQA Thresholds of Significance*

Consistent with the California Environmental Quality Act (CEQA) and the State CEQA Guidelines, a significant impact related to noise would occur if a proposed project is determined to result in:

- Exposure of persons to or generation of noise levels in excess of standards established in the local General Plan or noise ordinance, or applicable standards of other agencies;
- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;
- A substantial permanent increase in ambient noise levels in the project vicinity above existing levels without the proposed project;
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above noise levels existing without the proposed project; or
- Exposure of persons residing or working in the project area to excessive noise levels from aircraft.

### *7.2 Generation of Noise Levels in Excess of Standards*

The proposed project would not expose persons to or generate noise levels in excess of standards established in the General Plan or Noise Ordinance or applicable standards of other agencies. The following section calculates the potential noise emissions associated with the construction and operations of the proposed project and compares the noise levels to the City standards.

#### **Construction-Related Noise**

The construction activities for the proposed project are anticipated to include site preparation and grading of the 6-acre project site, building construction of the 152 apartment units, paving of the onsite roads and parking areas, 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, equipment location, sensitivity of nearby land uses, and the timing and duration of the construction activities. The nearest sensitive receptors to the project site consist of the structures at Lakeside High School as near as 150 feet southwest of the project site, RV campsites as near as 230 feet southeast of the project site, and single-family homes as near as 350 feet northwest of the project site.

Section 17.176.080(F)(1) of the City's Municipal Code restricts construction activities from occurring between the weekday hours of 7:00 p.m. and 7:00 a.m., or at any time on weekends or holidays. Section 17.176.080(F)(2) of the City's Municipal Code limits construction noise that occurs during the allowable times for construction activities to occur to 85 dBA for mobile equipment and 70 dBA for stationary equipment, which are based on the Type III areas that are classified as semi-residential/commercial.

Construction noise impacts to the nearby sensitive receptors have been calculated through use of the RCNM and the parameters and assumptions detailed in Section 6.1 of this report including Table H – Construction Equipment Noise Emissions and Usage Factors. The results are shown below in Table M and the RCNM printouts are provided in Appendix C.

**Table M – Worst-Case Construction Noise Levels at Nearest Receptors**

Construction Phase	Nearest Classroom		Nearest RV Site		Nearest Home	
	Distance (feet)	Noise Level (dBA Leq)	Distance (feet)	Noise Level (dBA Leq)	Distance (feet)	Noise Level (dBA Leq)
Site Preparation	150	73	230	70	350	68
Grading	150	73	230	70	350	68
Building Construction	165	73	245	70	365	68
Paving	155	68	230	66	440	61
Painting	165	63	245	60	365	56
<b>City’s Mobile Equipment Threshold<sup>1</sup></b>		<b>85</b>		<b>85</b>		<b>85</b>
<b>City’s Stationary Equipment Threshold<sup>1</sup></b>		<b>70</b>		<b>70</b>		<b>70</b>

Notes:

<sup>1</sup> City construction noise threshold from Section 17.176.080(F)(2) of the Municipal Code for Type III Areas.

Source: RCNM, Federal Highway Administration, 2006

Table M shows that greatest noise impacts would occur during the site preparation, grading and building construction phases of construction, with a noise level as high as 73 dBA Leq at the nearest classroom at Lakeside High School. Table M also shows that none of the construction phases would exceed the City’s mobile equipment threshold, however the site preparation, grading, and building construction phases would have the potential to exceed the City’s stationary equipment threshold. This would be considered a significant impact.

Mitigation Measure 1 is provided that would require any stationary construction equipment that is used within 50 feet of the project’s southwest property line to place a temporary sound barrier between the stationary equipment and Lakeside High School. With implementation of Mitigation Measure 1, construction-related noise impacts would be reduced to within the City noise standards.

### **Operational-Related Noise**

The proposed project would consist of the development of 152 residential apartment units. The proposed development would be adjacent to Riverside Drive, which may create noise levels in excess of City standards at the proposed residential uses.

The City’s General Plan Policy 7.1 requires that new multi-family residential development limit the exterior noise impacts to all proposed private patios and balconies to 60 dBA L<sub>dn</sub> and limit the interior noise levels to 45 dBA L<sub>dn</sub>. The exterior and interior noise impacts to the proposed apartment units have been analyzed separately below.

#### Exterior Patio and Balcony Noise

All residential buildings are anticipated to have either a private patio or balcony. These private patios and balconies have the potential to exceed the City’s 60 dB L<sub>dn</sub> noise standard. The anticipated noise levels have been calculated for the nearest patios and balconies on proposed Building 8 to Riverside Drive. This analysis has been limited to Building 8 as that is the only building where the balconies and patios have an unobstructed view of Riverside Drive. The noise levels were calculated three feet in from the proposed walls and five feet above ground level for the patios and 3 feet above floor level for the balconies. A summary of the results are shown below in Table N and the FHWA model printouts of the proposed patio/balcony noise calculations are provided in Appendix D.

**Table N – Proposed Exterior Patio/Balcony Noise Levels Prior to Mitigation**

<b>Building Number</b>	<b>Floor</b>	<b>Patio/Balcony Noise Levels (dBA L<sub>dn</sub>)</b>	<b>Sound Wall Height (feet)</b>
8	First	<b>64</b>	3.5
	Second	59	3.5

Notes:  
 Exceedance of City’s 60 dBA L<sub>dn</sub> noise standard shown in bold.  
 Source: FHWA RD-77-108 Model.

Table N shows that the proposed first floor patios on Building 8 that face Riverside Drive would exceed the City’s 60 dBA L<sub>dn</sub> residential exterior noise standard. Table N also shows that the second floor balconies on Building 8 that face Riverside Drive would be within the City’s 60 dBA L<sub>dn</sub> residential exterior standard, provided that the proposed 3.5-foot high balcony wall is made of a solid material that is free of any cutouts or openings. This would result in a significant impact.

Mitigation Measure 2 is provided that would require the applicant to construct a minimum 5.0-foot high solid wall around the perimeter of any first floor patios that are constructed on the Riverside Drive side of Building 8 and require all second floor balconies on Building 8 that face Riverside Drive to have 3.5-foot high perimeter walls that are constructed of a solid material (e.g., glass, wood or plaster) that are free of any cutouts or openings.

The exterior patio and balcony noise levels have been recalculated based on construction of the 5.0-foot high solid walls for the first floor patios detailed in Mitigation Measure 1 and the results are shown in Table O.

**Table O – Proposed Mitigated Exterior Patio/Balcony Noise Levels**

<b>Building Number</b>	<b>Floor</b>	<b>Patio/Balcony Noise Levels (dBA L<sub>dn</sub>)</b>	<b>Sound Wall Height (feet)<sup>1</sup></b>
7	First	60	5.0
	Second	59	3.5

Notes:  
<sup>1</sup> Calculated noise levels based on the wall heights detailed in Mitigation Measure 1.  
 Source: FHWA RD-77-108 Model.

Table O shows that with application of the proposed 5.0-foot high first floor patio sound walls specified in Mitigation Measure 2, the noise levels at the proposed patios and balconies would be reduced to within the City’s exterior residential noise standard. Impacts would be less than significant after implementation of the recommended mitigation.

Interior Noise

To assess the interior noise levels related to the compliance with the City’s 45 dBA L<sub>dn</sub> criteria, the exterior to interior attenuation rates of the units facing Riverside Drive were calculated and compared to the calculated exterior noise levels at the first and second floor building facades in order to calculate the interior noise levels within the future on-site residential units.

The architectural plans were utilized to calculate the exterior to interior attenuation rates of each style interior room that is anticipated to face Meniffee Road. For each room the floor area covered by carpet or linoleum was calculated along with the total square footage of the ceilings and walls, in order to determine the sound absorption rate of the room. The area of exterior walls, windows, and exterior doors

were also calculated in order to determine the exterior transmission levels. The windows were based on standard dual pane windows that have a 26 STC Rating, standard doors that have a 26 STC Rating, and standard stucco walls that have a 46 STC Rating. Dual pane windows and doors are required due to California’s Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations Title 24, Part 6). The exterior to interior noise reduction was then determined by combining the calculated room absorption rate to the exterior to interior transmission calculations. Table P below and Appendix E shows the calculated exterior to interior noise reduction rates for standard dual pane windows and doors.

**Table P – Exterior to Interior Noise Reduction Rates**

<b>Building</b>	<b>Floor Plan</b>	<b>Room</b>	<b>Exterior to Interior Noise Reduction (dBA)<sup>1</sup></b>
2 and 1 BR	A1	Living Room	33
2 and 1 BR	A1	Bedroom 1	31
2 and 1 BR	A1	Bedroom 2	33
2 and 1 BR	G1	Living Room	34
2 and 1 BR	G1	Bedroom	33
<b>Minimum Exterior to Interior Noise Reduction</b>			<b>31</b>

Notes:

<sup>1</sup> Based on standard dual pane windows and doors with a 26 STC rating, which are required per Title 24 energy saving requirements.

Source: FHWA RD-77-108 Model.

Table P above shows that the minimum exterior to interior attenuation rate with standard dual pane windows would be 31 dBA. According to Table N, above the exterior noise levels at the facades of the proposed structures that face Riverside Drive would be as high as 64 dBA L<sub>dn</sub>. Based on a 31 dBA attenuation rate, this would result in an interior noise level of 33 dBA L<sub>dn</sub> and would be within the City’s 45 dBA L<sub>dn</sub> interior residential standard. Impacts would be less than significant.

### **Level of Significance Before Mitigation**

Potentially significant impact.

### **Mitigation Measures**

#### Mitigation Measure 1:

The project applicant shall require any construction contractor that needs to use stationary construction equipment within 50 feet of the project’s southwest property line to place a temporary sound barrier between the stationary equipment and Lakeside High School.

#### Mitigation Measure 2:

The project applicant shall construct a minimum 5.0-foot high solid wall around the perimeter of any first floor patios that are constructed on the Riverside Drive side of Building 8 and require all second floor balconies on Building 8 that face Riverside Drive to have 3.5-foot high perimeter walls that are constructed of a solid material (e.g., glass, wood or plaster) that are free of any cutouts or openings.

### **Level of Significance After Mitigation**

Less than significant impact.

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### ***7.3 Generation of Excessive Groundborne Vibration***

The proposed project would not expose persons to or generation of excessive groundborne vibration or groundborne noise levels. The following section analyzes the potential vibration impacts associated with the construction and operations of the proposed project.

#### **Construction-Related Vibration Impacts**

The construction activities for the proposed project are anticipated to include site preparation and grading of the 6-acre project site, building construction of the 152 apartment units, paving of the onsite roads and parking areas, and application of architectural coatings. The nearest sensitive receptors to the project site consist of the structures at Lakeside High School as near as 150 feet southwest of the project site, RV campsites as near as 230 feet southeast of the project site, and single-family homes as near as 350 feet northwest of the project site.

Section 17.176.080(G) of the City's Municipal Code restricts the operation of any device that creates a vibration which is above the vibration threshold of any individual at or beyond the property boundary of the source. Since the City's Municipal does not provide a quantifiable vibration level, Caltrans guidance that is detailed above in Section 4.2 has been utilized, which defines the threshold of perception from transient sources at 0.25 inch per second PPV.

The primary source of vibration during construction would be from the operation of a bulldozer. From Table L above a large bulldozer would create a vibration level of 0.089 inch per second PPV at 25 feet. Based on typical propagation rates, the vibration level at the nearest offsite receptor (150 feet away) would be 0.01 inch per second PPV. The vibration level at the nearest offsite receptor would be within the 0.25 inch per second PPV threshold detailed above. Impacts would be less than significant.

#### **Operations-Related Vibration Impacts**

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 the operation of the proposed project.

#### **Level of Significance**

Less than significant impact.

### ***7.4 Permanent Noise Level Increase***

The ongoing operation of the proposed project may result in a potential substantial permanent increase in ambient noise levels in the project vicinity above existing levels without the proposed project. Potential noise impacts associated with the operations of the proposed project would be from project-generated vehicular traffic on the project vicinity roadways.

Vehicle noise is a combination of the noise produced by the engine, exhaust and tires. The level of traffic noise depends on three primary factors (1) the volume of traffic, (2) the speed of traffic, and (3) the number of trucks in the flow of traffic. The proposed project does not propose any uses that would require a substantial number of truck trips and the proposed project would not alter the speed limit on any existing roadway so the proposed project's potential offsite noise impacts have been focused on the noise impacts associated with the change of volume of traffic that would occur with development of the proposed project.

Neither the General Plan nor the CEQA Guidelines define what constitutes a “substantial permanent increase to ambient noise levels”, as such, this impact analysis has utilized guidance from the Federal Transit Administration for a moderate impact that has been detailed above in Table A.

The potential offsite traffic noise impacts created by the on-going operations of the proposed project have been analyzed through utilization of the FHWA model and parameters described above in Section 6.2 and the FHWA model noise calculation spreadsheets are provided in Appendix F. The proposed project’s potential offsite noise impacts have been calculated through a comparison of the without project scenario to the with project scenarios for existing year, opening year 2017, and year 2017 with cumulative projects conditions. The results of this comparison are shown in Table Q.

**Table Q – Project-Related Traffic Noise Contributions**

Roadway	Segment	dBA CNEL at Nearest Receptor <sup>1</sup>			Increase Threshold <sup>2</sup>
		No Project	With Project	Project Increase	
<b>Existing Conditions</b>					
Riverside Drive	North of Lakeshore Drive	68.1	68.2	0.1	+1 dBA
Riverside Drive	North of Lincoln Street	63.9	64.0	0.2	+2 dBA
Riverside Drive	North of La Harve Street	69.4	69.6	0.2	+1 dBA
Riverside Drive	South of La Harve Street	65.4	65.6	0.2	+1 dBA
Riverside Drive	South of Lakeside HS Stadium Way	63.1	63.3	0.2	+2 dBA
Lakeshore Drive	West of Riverside Drive	69.4	69.5	0.1	+1 dBA
<b>Opening Year 2017 Conditions</b>					
Riverside Drive	North of Lakeshore Drive	68.3	68.4	0.1	+1 dBA
Riverside Drive	North of Lincoln Street	64.0	64.2	0.1	+2 dBA
Riverside Drive	North of La Harve Street	69.6	69.8	0.2	+1 dBA
Riverside Drive	South of La Harve Street	65.6	65.8	0.2	+1 dBA
Riverside Drive	South of Lakeside HS Stadium Way	63.3	63.5	0.2	+2 dBA
Lakeshore Drive	West of Riverside Drive	69.6	69.7	0.1	+1 dBA
<b>Year 2017 With Cumulative Project Conditions</b>					
Riverside Drive	North of Lakeshore Drive	68.6	68.7	0.1	+1 dBA
Riverside Drive	North of Lincoln Street	64.5	64.5	0.0	+2 dBA
Riverside Drive	North of La Harve Street	70.1	70.2	0.1	+1 dBA
Riverside Drive	South of La Harve Street	66.2	66.3	0.1	+1 dBA
Riverside Drive	South of Lakeside HS Stadium Way	63.9	64.0	0.1	+2 dBA
Lakeshore Drive	West of Riverside Drive	69.8	69.8	0.0	+1 dBA

Notes:

<sup>1</sup> Distance to nearest residential use shown in Table I, does not take into account existing noise barriers.

Source: FHWA Traffic Noise Prediction Model FHWA-RD-77-108.

Table Q shows that for all scenarios analyzed, the proposed project’s permanent noise increases to the nearby homes from the generation of additional vehicular traffic would not exceed the increase thresholds detailed above. Therefore, the proposed project would not result in a substantial permanent increase in ambient noise levels. Impacts would be less than significant.

### Level of Significance

Less than significant impact.

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## ***7.5 Temporary Noise Level Increase***

The proposed project may create a substantial temporary or periodic increase in ambient noise levels in the project vicinity above noise levels existing without the proposed project. The construction activities for the proposed project are anticipated to include site preparation and grading of the 6-acre project site, building construction of the 152 apartment units, paving of the onsite roads and parking areas, 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, equipment location, sensitivity of nearby land uses, and the timing and duration of the construction activities. The nearest sensitive receptors to the project site consist of the structures at Lakeside High School as near as 150 feet southwest of the project site, RV campsites as near as 230 feet southeast of the project site, and single-family homes as near as 350 feet northwest of the project site.

The construction noise impacts to the nearby sensitive receptors has been previously analyzed above in Section 7.2, which found that that greatest noise impacts would occur during the site preparation, grading and building construction phases of construction, with a noise level as high as 73 dBA Leq at the nearest classroom at Lakeside High School. The analysis in Section 7.2 also found that none of the construction phases would exceed the City's mobile equipment threshold, however the site preparation, grading, and building construction phases would have the potential to exceed the City's stationary equipment threshold. This would be considered a significant impact.

Mitigation Measure 1 is provided that would require any stationary construction equipment that is used within 50 feet of the project's southwest property line to place a temporary sound barrier between the stationary equipment and Lakeside High School. With implementation of Mitigation Measure 1, the proposed project would not create a substantial temporary or periodic increase in ambient noise levels.

### **Level of Significance Before Mitigation**

Potentially significant impact.

### **Mitigation Measures**

Mitigation Measure 1 provided above in Section 7.2.

### **Level of Significance After Mitigation**

Less than significant impact.

## ***7.6 Aircraft Noise***

The proposed project would not expose people residing or working in the project area to excessive noise levels from aircraft. The nearest airport is Skylark Airport, located approximately five miles southeast of the project site. The project site is located outside of the 60 dBA CNEL noise contours of this airport and the site observations during the noise measurements found that although aircraft noise is occasionally audible at the project site, the noise created by the aircraft is not loud enough to measurably increase the ambient noise levels, which is primarily created by Riverside Drive. Impacts would be less than significant.

### **Level of Significance**

Less than significant impact.

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## 8.0 REFERENCES

California Department of Transportation, *2012 Annual Average Daily Truck Traffic on the California State Highway System*, 2014.

California Department of Transportation (Caltrans), *Technical Noise Supplement*, November 2009.

California Department of Transportation, *Transportation- and Construction-Induced Vibration Guidance Manual*, June, 2004

City of Lake Elsinore, *City of Lake Elsinore General Plan*, December 13, 2011.

City of Lake Elsinore, *Lake Elsinore Municipal Code*, February 24, 2015.

Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, May 2006.

Harris, Cyril M., *Noise Control in Buildings*, 1994.

Infrastructure Group, Inc., *Traffic Impact Analysis Lakeshore Pointe Lake Elsinore, California*, October 22, 2015

Kinsler, Lawrence E., *Fundamentals of Acoustics 4<sup>th</sup> Edition*, 2000.

U.S. Department of Transportation, *FHWA Roadway Construction Noise Model User's Guide*, January, 2006.

Vista Environmental, *Air Quality and Greenhouse Gas Emissions Impact Analysis Lakepointe Apartments Project City of Lake Elsinore*, November 19, 2015.

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**APPENDIX A**

Study Area Photo Index



Noise Measurement Site A - looking north



Noise Measurement Site A - looking northeast



Noise Measurement Site A - looking east



Noise Measurement Site A - looking southeast



Noise Measurement Site A - looking south



Noise Measurement Site A - looking southwest



Noise Measurement Site A - looking west



Noise Measurement Site A - looking northwest



Noise Measurement Site B - looking north



Noise Measurement Site B - looking northwest



Noise Measurement Site B - looking east



Noise Measurement Site B - looking southeast



Noise Measurement Site B - looking south



Noise Measurement Site B - looking southwest



Noise Measurement Site B - looking west



Noise Measurement Site B - looking northwest

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**APPENDIX B**

Field Noise Measurement Printouts

Site A - On Project Site Near Riverside Drive					
Date	Time=11/03/15	2:41:00 PM			
Sampling	Time=3	Weighting=A			
Record Num=	29200	Weighting=Slow	CNEL(24hr)=	75.3	
Leq	69.7 SEL	Value=119.1	Ldn(24hr)=	74.9	
MAX	95.4	Min Leq1hr =	59.2	1:53 AM	
MIN	33.3	Max Leqhr =	73.5	5:10 AM	

Site B - On Project Site Near Lakeside High School					
Date	Time=11/03/15	2:46:00 PM			
Sampling	Time=3	Freq	Weighting=A		
Record Num=	29200	Weighting=Slow	CNEL(24hr)=	64.0	
Leq	58.4 SEL	Value=107.9	Ldn(24hr)=	63.7	
MAX	86.3	Min Leq1hr =	47.8	1:53 AM	
MIN	33.9	Max Leqhr =	62.6	8:08 AM	

Site A - On Project Site Near Riverside Drive					
SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL	
69	14:41:00		69	69	
70.7	14:41:03		70.7	70.7	
66.3	14:41:06		66.3	66.3	
64.8	14:41:09		64.8	64.8	
68.9	14:41:12		68.9	68.9	
65.4	14:41:15		65.4	65.4	
61.7	14:41:18		61.7	61.7	
63.5	14:41:21		63.5	63.5	
68.1	14:41:24		68.1	68.1	
68.4	14:41:27		68.4	68.4	
64.3	14:41:30		64.3	64.3	
68.6	14:41:33		68.6	68.6	
65.2	14:41:36		65.2	65.2	
63.2	14:41:39		63.2	63.2	
63.3	14:41:42		63.3	63.3	
63.4	14:41:45		63.4	63.4	
69.2	14:41:48		69.2	69.2	
70	14:41:51		70	70	
70.2	14:41:54		70.2	70.2	
72.2	14:41:57		72.2	72.2	
66.6	14:42:00		66.6	66.6	
65.5	14:42:03		65.5	65.5	
72.2	14:42:06		72.2	72.2	
71.1	14:42:09		71.1	71.1	
72.7	14:42:12		72.7	72.7	
70	14:42:15		70	70	
71.3	14:42:18		71.3	71.3	
68.4	14:42:21		68.4	68.4	
72.2	14:42:24		72.2	72.2	
70.7	14:42:27		70.7	70.7	
68.7	14:42:30		68.7	68.7	
65.6	14:42:33		65.6	65.6	
72.4	14:42:36		72.4	72.4	
66.8	14:42:39		66.8	66.8	
66.4	14:42:42		66.4	66.4	
71.5	14:42:45		71.5	71.5	
68.2	14:42:48		68.2	68.2	
63.4	14:42:51		63.4	63.4	
67	14:42:54		67	67	
69.3	14:42:57		69.3	69.3	
66	14:43:00		66	66	
73.1	14:43:03		73.1	73.1	
67.1	14:43:06		67.1	67.1	
63.6	14:43:09		63.6	63.6	
62.7	14:43:12		62.7	62.7	
62.7	14:43:15		62.7	62.7	
62.6	14:43:18		62.6	62.6	
61.8	14:43:21		61.8	61.8	
59.8	14:43:24		59.8	59.8	
59.3	14:43:27		59.3	59.3	
66.8	14:43:30		66.8	66.8	
60.1	14:43:33		60.1	60.1	
61.4	14:43:36		61.4	61.4	
60.9	14:43:39		60.9	60.9	
58.1	14:43:42		58.1	58.1	
58.2	14:43:45		58.2	58.2	
58.9	14:43:48		58.9	58.9	
59	14:43:51		59	59	
56.2	14:43:54		56.2	56.2	
56.4	14:43:57		56.4	56.4	
57.3	14:44:00		57.3	57.3	
64.8	14:44:03		64.8	64.8	
65.4	14:44:06		65.4	65.4	
65.2	14:44:09		65.2	65.2	
65.9	14:44:12		65.9	65.9	
64.8	14:44:15		64.8	64.8	
64.6	14:44:18		64.6	64.6	
62.9	14:44:21		62.9	62.9	
61.2	14:44:24		61.2	61.2	
63.1	14:44:27		63.1	63.1	
65.6	14:44:30		65.6	65.6	
64.1	14:44:33		64.1	64.1	
62.6	14:44:36		62.6	62.6	
63	14:44:39		63	63	
62.7	14:44:42		62.7	62.7	
60.4	14:44:45		60.4	60.4	
59.2	14:44:48		59.2	59.2	
57.2	14:44:51		57.2	57.2	
59	14:44:54		59	59	
60.8	14:44:57		60.8	60.8	
59.6	14:45:00		59.6	59.6	
63.2	14:45:03		63.2	63.2	
68.6	14:45:06		68.6	68.6	
66.9	14:45:09		66.9	66.9	
66.6	14:45:12		66.6	66.6	
65.7	14:45:15		65.7	65.7	
65.6	14:45:18		65.6	65.6	
65.4	14:45:21		65.4	65.4	
66.9	14:45:24		66.9	66.9	
66.8	14:45:27		66.8	66.8	
70	14:45:30		70	70	
64.1	14:45:33		64.1	64.1	
63	14:45:36		63	63	
62.6	14:45:39		62.6	62.6	
64.1	14:45:42		64.1	64.1	
60.9	14:45:45		60.9	60.9	
64.3	14:45:48		64.3	64.3	
66.9	14:45:51		66.9	66.9	
64.6	14:45:54		64.6	64.6	
62.3	14:45:57		62.3	62.3	
57.4	14:46:00		57.4	57.4	
61.8	14:46:03		61.8	61.8	
61.6	14:46:06		61.6	61.6	
58.5	14:46:09		58.5	58.5	
59	14:46:12		59	59	
58.6	14:46:15		58.6	58.6	
61.1	14:46:18		61.1	61.1	
59.9	14:46:21		59.9	59.9	
60.7	14:46:24		60.7	60.7	
62.4	14:46:27		62.4	62.4	
62.4	14:46:30		62.4	62.4	
66	14:46:33		66	66	
71.3	14:46:36		71.3	71.3	
67.6	14:46:39		67.6	67.6	
68.1	14:46:42		68.1	68.1	
74.5	14:46:45		74.5	74.5	
74.4	14:46:48		74.4	74.4	
66.6	14:46:51		66.6	66.6	
68	14:46:54		68	68	
64	14:46:57		64	64	
63.1	14:47:00		63.1	63.1	
61.7	14:47:03		61.7	61.7	
61.9	14:47:06		61.9	61.9	
63.7	14:47:09		63.7	63.7	
62.1	14:47:12		62.1	62.1	
64.3	14:47:15		64.3	64.3	
61.8	14:47:18		61.8	61.8	
66.3	14:47:21		66.3	66.3	
64.7	14:47:24		64.7	64.7	
62.2	14:47:27		62.2	62.2	
63.4	14:47:30		63.4	63.4	
66	14:47:33		66	66	

Site B - On Project Site Near Lakeside High School					
SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL	
56.1	14:46:00		56.1	56.1	
66.7	14:46:03		66.7	66.7	
69	14:46:06		69	69	
58.5	14:46:09		58.5	58.5	
69.6	14:46:12		69.6	69.6	
61.2	14:46:15		61.2	61.2	
60.3	14:46:18		60.3	60.3	
65.9	14:46:21		65.9	65.9	
60.5	14:46:24		60.5	60.5	
62.4	14:46:27		62.4	62.4	
62.9	14:46:30		62.9	62.9	
66.1	14:46:33		66.1	66.1	
66.2	14:46:36		66.2	66.2	
66.6	14:46:39		66.6	66.6	
69.6	14:46:42		69.6	69.6	
66.1	14:46:45		66.1	66.1	
60.2	14:46:48		60.2	60.2	
61.6	14:46:51		61.6	61.6	
63.8	14:46:54		63.8	63.8	
66.6	14:46:57		66.6	66.6	
61.1	14:47:00		61.1	61.1	
63	14:47:03		63	63	
66.6	14:47:06		66.6	66.6	
62.9	14:47:09		62.9	62.9	
59	14:47:12		59	59	
59	14:47:15		59	59	
64.4	14:47:18		64.4	64.4	
64.1	14:47:21		64.1	64.1	
63.6	14:47:24		63.6	63.6	
60.1	14:47:27		60.1	60.1	
60.8	14:47:30		60.8	60.8	
60.4	14:47:33		60.4	60.4	
58.2	14:47:36		58.2	58.2	
60.4	14:47:39		60.4	60.4	
60.3	14:47:42		60.3	60.3	
66.3	14:47:45		66.3	66.3	
67	14:47:48		67	67	
62.4	14:47:51		62.4	62.4	
62.2	14:47:54		62.2	62.2	
57.4	14:47:57		57.4	57.4	
60.4	14:48:00		60.4	60.4	
59.8	14:48:03		59.8	59.8	
64	14:48:06		64	64	
56.9	14:48:09		56.9	56.9	
52.4	14:48:12		52.4	52.4	
52.5	14:48:15		52.5	52.5	
53.9	14:48:18		53.9	53.9	
57.7	14:48:21		57.7	57.7	
54.7	14:48:24		54.7	54.7	
56	14:48:27		56	56	
57.8	14:48:30		57.8	57.8	
58.2	14:48:33		58.2	58.2	
61.3	14:48:36		61.3	61.3	
63.6	14:48:39		63.6	63.6	
62.7	14:48:42		62.7	62.7	
62.6	14:48:45		62.6	62.6	
59.5	14:48:48		59.5	59.5	
58.7	14:48:51		58.7	58.7	
59.4	14:48:54		59.4	59.4	
60.2	14:48:57		60.2	60.2	
63	14:49:00		63	63	
59.4	14:49:03		59.4	59.4	
57.7	14:49:06		57.7	57.7	
58.2	14:49:09		58.2	58.2	
57.7	14:49:12		57.7	57.7	
56.7	14:49:15		56.7	56.7	
56	14:49:18		56	56	
54.4	14:49:21		54.4	54.4	
56.4	14:49:24		56.4	56.4	
60.9	14:49:27		60.9	60.9	
58.6	14:49:30		58.6	58.6	
59.3	14:49:33		59.3	59.3	
62.2	14:49:36		62.2	62.2	
66.3	14:49:39		66.3	66.3	
66.1	14:49:42		66.1	66.1	
63	14:49:45		63	63	
57.8	14:49:48		57.8	57.8	
56.6	14:49:51		56.6	56.6	
56.1	14:49:54		56.1	56.1	
56.5	14:49:57		56.5	56.5	
59.1	14:50:00		59.1	59.1	
60.6	14:50:03		60.6	60.6	
60.1	14:50:06		60.1	60.1	
59.2	14:50:09		59.2		

Site A - On Project Site Near Riverside Drive				Site B - On Project Site Near Lakeside High School			
SPL	Time	Leq (1 hour Avg.)	Ldn CNEL	SPL	Time	Leq (1 hour Avg.)	Ldn CNEL
68.9	14:47:36		68.9	68.9	14:52:36		58.9
68.8	14:47:39		68.8	60	14:52:39		60
73.3	14:47:42		73.3	58.4	14:52:42		58.4
72.5	14:47:45		72.5	55.8	14:52:45		55.8
69.6	14:47:48		69.6	55.4	14:52:48		55.4
67.8	14:47:51		67.8	57.1	14:52:51		57.1
67.7	14:47:54		67.7	61.5	14:52:54		61.5
65	14:47:57		65	65.4	14:52:57		65.4
66.2	14:48:00		66.2	64.1	14:53:00		64.1
61	14:48:03		61	55.9	14:53:03		55.9
59.3	14:48:06		59.3	55.1	14:53:06		55.1
60.3	14:48:09		60.3	58.5	14:53:09		58.5
60	14:48:12		60	61.2	14:53:12		61.2
63.1	14:48:15		63.1	57.2	14:53:15		57.2
64.5	14:48:18		64.5	52.9	14:53:18		52.9
62.4	14:48:21		62.4	56	14:53:21		56
67.4	14:48:24		67.4	58	14:53:24		58
70.6	14:48:27		70.6	59	14:53:27		59
73.3	14:48:30		73.3	59.8	14:53:30		59.8
72.9	14:48:33		72.9	59	14:53:33		59
74.9	14:48:36		74.9	57.9	14:53:36		57.9
69.6	14:48:39		69.6	55	14:53:39		55
70.1	14:48:42		70.1	54	14:53:42		54
70.6	14:48:45		70.6	53.5	14:53:45		53.5
72.6	14:48:48		72.6	53.2	14:53:48		53.2
72	14:48:51		72	53.6	14:53:51		53.6
73.4	14:48:54		73.4	53.8	14:53:54		53.8
72.4	14:48:57		72.4	55.4	14:53:57		55.4
70.6	14:49:00		70.6	57.4	14:54:00		57.4
71.4	14:49:03		71.4	59.8	14:54:03		59.8
71.5	14:49:06		71.5	58.4	14:54:06		58.4
64	14:49:09		64	61.7	14:54:09		61.7
62.3	14:49:12		62.3	64	14:54:12		64
60.5	14:49:15		60.5	60.2	14:54:15		60.2
65.4	14:49:18		65.4	59.7	14:54:18		59.7
67.7	14:49:21		67.7	60.6	14:54:21		60.6
66	14:49:24		66	57.8	14:54:24		57.8
65.4	14:49:27		65.4	56.4	14:54:27		56.4
71.6	14:49:30		71.6	57.4	14:54:30		57.4
80.4	14:49:33		80.4	57	14:54:33		57
74	14:49:36		74	54.9	14:54:36		54.9
68.4	14:49:39		68.4	54.9	14:54:39		54.9
68.1	14:49:42		68.1	56.2	14:54:42		56.2
69	14:49:45		69	59.4	14:54:45		59.4
70.9	14:49:48		70.9	58.4	14:54:48		58.4
69.6	14:49:51		69.6	58.9	14:54:51		58.9
73.6	14:49:54		73.6	56.8	14:54:54		56.8
70.7	14:49:57		70.7	56.7	14:54:57		56.7
73.1	14:50:00		73.1	58.6	14:55:00		58.6
74.2	14:50:03		74.2	59.5	14:55:03		59.5
72.8	14:50:06		72.8	60.8	14:55:06		60.8
73	14:50:09		73	59.8	14:55:09		59.8
71	14:50:12		71	58.6	14:55:12		58.6
69.9	14:50:15		69.9	58.3	14:55:15		58.3
73	14:50:18		73	55.3	14:55:18		55.3
70.1	14:50:21		70.1	54.7	14:55:21		54.7
62.6	14:50:24		62.6	56.6	14:55:24		56.6
61.9	14:50:27		61.9	52.6	14:55:27		52.6
68.1	14:50:30		68.1	51.1	14:55:30		51.1
65	14:50:33		65	53.1	14:55:33		53.1
66.5	14:50:36		66.5	53.1	14:55:36		53.1
65.3	14:50:39		65.3	52.2	14:55:39		52.2
64.1	14:50:42		64.1	55.3	14:55:42		55.3
62.3	14:50:45		62.3	55	14:55:45		55
62.7	14:50:48		62.7	51.2	14:55:48		51.2
67.7	14:50:51		67.7	51.7	14:55:51		51.7
70.5	14:50:54		70.5	54.9	14:55:54		54.9
71.4	14:50:57		71.4	55.3	14:55:57		55.3
72.4	14:51:00		72.4	56.4	14:56:00		56.4
70	14:51:03		70	58.5	14:56:03		58.5
69.2	14:51:06		69.2	60	14:56:06		60
67.6	14:51:09		67.6	59.1	14:56:09		59.1
65.7	14:51:12		65.7	59.2	14:56:12		59.2
61.5	14:51:15		61.5	58.3	14:56:15		58.3
60.1	14:51:18		60.1	58.6	14:56:18		58.6
69.7	14:51:21		69.7	58.3	14:56:21		58.3
64.8	14:51:24		64.8	62.7	14:56:24		62.7
64.2	14:51:27		64.2	55.8	14:56:27		55.8
59	14:51:30		59	54.1	14:56:30		54.1
58.7	14:51:33		58.7	54.5	14:56:33		54.5
61.6	14:51:36		61.6	57.3	14:56:36		57.3
62.6	14:51:39		62.6	56.8	14:56:39		56.8
66	14:51:42		66	62.2	14:56:42		62.2
66.8	14:51:45		66.8	59.1	14:56:45		59.1
72.5	14:51:48		72.5	66	14:56:48		66
71.7	14:51:51		71.7	56.7	14:56:51		56.7
68.7	14:51:54		68.7	54.4	14:56:54		54.4
69.7	14:51:57		69.7	54.9	14:56:57		54.9
71.3	14:52:00		71.3	62.2	14:57:00		62.2
71.4	14:52:03		71.4	58.9	14:57:03		58.9
69.5	14:52:06		69.5	54.1	14:57:06		54.1
68.1	14:52:09		68.1	54.3	14:57:09		54.3
73.4	14:52:12		73.4	55.8	14:57:12		55.8
72.4	14:52:15		72.4	50.8	14:57:15		50.8
68.2	14:52:18		68.2	53.1	14:57:18		53.1
70.4	14:52:21		70.4	56.7	14:57:21		56.7
68.6	14:52:24		68.6	61.9	14:57:24		61.9
70	14:52:27		70	61.3	14:57:27		61.3
69	14:52:30		69	62	14:57:30		62
72.5	14:52:33		72.5	57	14:57:33		57
70.2	14:52:36		70.2	54	14:57:36		54
68.3	14:52:39		68.3	55.8	14:57:39		55.8
61	14:52:42		61	56.5	14:57:42		56.5
60.2	14:52:45		60.2	58.2	14:57:45		58.2
63.9	14:52:48		63.9	59.7	14:57:48		59.7
62.4	14:52:51		62.4	61.4	14:57:51		61.4
60.4	14:52:54		60.4	59.3	14:57:54		59.3
58	14:52:57		58	54.9	14:57:57		54.9
66	14:53:00		66	52.9	14:58:00		52.9
64.4	14:53:03		64.4	52.4	14:58:03		52.4
63.9	14:53:06		63.9	60.2	14:58:06		60.2
61.7	14:53:09		61.7	54.7	14:58:09		54.7
57.2	14:53:12		57.2	52.4	14:58:12		52.4
62.6	14:53:15		62.6	52.6	14:58:15		52.6
67.2	14:53:18		67.2	52.7	14:58:18		52.7
68.8	14:53:21		68.8	54.5	14:58:21		54.5
73.4	14:53:24		73.4	55.5	14:58:24		55.5
73	14:53:27		73	56.1	14:58:27		56.1
68.4	14:53:30		68.4	55.5	14:58:30		55.5
65.4	14:53:33		65.4	57.1	14:58:33		57.1
64.6	14:53:36		64.6	58.5	14:58:36		58.5
65.3	14:53:39		65.3	56.9	14:58:39		56.9
65.6	14:53:42		65.6	60.6	14:58:42		60.6
62.7	14:53:45		62.7	56.2	14:58:45		56.2
61.6	14:53:48		61.6	53.9	14:58:48		53.9
63.7	14:53:51		63.7	55	14:58:51		55
67	14:53:54		67	59	14:58:54		59
65.4	14:53:57		65.4	57.4	14:58:57		57.4
67.4	14:54:00		67.4	60.2	14:59:00		60.2
67.7	14:54:03		67.7	59.3	14:59:03		59.3
68.5	14:54:06		68.5	61.1	14:59:06		61.1
66.7	14:54:09		66.7	57.4	14:59:09		57.4
70.5	14:54:12		70.5	57.1	14:59:12		57.1
68.1	14:54:15		68.1	54.4	14:59:15		54.4
66.2	14:54:18		66.2	54.3	14:59:18		54.3
72.8	14:54:21		72.8	56.9	14:59:21		56.9
72.9	14:54:24		72.9	57.3	14:59:24		57.3
70	14:54:27		70	55.4	14:59:27		55.4
63.1	14:54:30		63.1	58.1	14:59:30		58.1
56.6	14:54:33		56.6	54.9	14:59:33		54.9
56.1	14:54:36		56.1	55.6	14:59:36		55.6
58.6	14:54:39		58.6	56.8	14:59:39		56.8
63.6	14:54:42		63.6	55.1	14:59:42		55.1

Site A - On Project Site Near Riverside Drive			
SPL	Time	Leq (1 hour Avg.)	Ldn CNEL
88.8	14:54:45	68.8	68.8
84.1	14:54:48	64.1	64.1
63.3	14:54:51	63.3	63.3
69.7	14:54:54	69.7	69.7
70.3	14:54:57	70.3	70.3
74.6	14:55:00	74.6	74.6
74.2	14:55:03	74.2	74.2
70.6	14:55:06	70.6	70.6
84.8	14:55:09	84.8	84.8
61.7	14:55:12	61.7	61.7
55.8	14:55:15	55.8	55.8
53.9	14:55:18	53.9	53.9
55.3	14:55:21	55.3	55.3
53.8	14:55:24	53.8	53.8
56.3	14:55:27	56.3	56.3
58.4	14:55:30	58.4	58.4
65.2	14:55:33	65.2	65.2
65.5	14:55:36	65.5	65.5
62.9	14:55:39	62.9	62.9
60.6	14:55:42	60.6	60.6
59	14:55:45	59	59
61.1	14:55:48	61.1	61.1
61.8	14:55:51	61.8	61.8
63.2	14:55:54	63.2	63.2
67.2	14:55:57	67.2	67.2
70.9	14:56:00	70.9	70.9
71.1	14:56:03	71.1	71.1
73.1	14:56:06	73.1	73.1
71.4	14:56:09	71.4	71.4
72.8	14:56:12	72.8	72.8
75.2	14:56:15	75.2	75.2
73.4	14:56:18	73.4	73.4
67.6	14:56:21	67.6	67.6
67	14:56:24	67	67
68.1	14:56:27	68.1	68.1
63.5	14:56:30	63.5	63.5
64.5	14:56:33	64.5	64.5
64.9	14:56:36	64.9	64.9
67.6	14:56:39	67.6	67.6
69.5	14:56:42	69.5	69.5
70.6	14:56:45	70.6	70.6
70.7	14:56:48	70.7	70.7
72.4	14:56:51	72.4	72.4
66.1	14:56:54	66.1	66.1
62.1	14:56:57	62.1	62.1
58.4	14:57:00	58.4	58.4
64.3	14:57:03	64.3	64.3
64.7	14:57:06	64.7	64.7
63.4	14:57:09	63.4	63.4
61.9	14:57:12	61.9	61.9
66.6	14:57:15	66.6	66.6
77.6	14:57:18	77.6	77.6
74	14:57:21	74	74
69.4	14:57:24	69.4	69.4
71.6	14:57:27	71.6	71.6
68	14:57:30	68	68
70.8	14:57:33	70.8	70.8
71.2	14:57:36	71.2	71.2
72.1	14:57:39	72.1	72.1
70.9	14:57:42	70.9	70.9
71.1	14:57:45	71.1	71.1
67.3	14:57:48	67.3	67.3
63.4	14:57:51	63.4	63.4
64.3	14:57:54	64.3	64.3
59.8	14:57:57	59.8	59.8
64.7	14:58:00	64.7	64.7
61.4	14:58:03	61.4	61.4
62.9	14:58:06	62.9	62.9
65	14:58:09	65	65
63.2	14:58:12	63.2	63.2
65.2	14:58:15	65.2	65.2
68.5	14:58:18	68.5	68.5
69.4	14:58:21	69.4	69.4
67.3	14:58:24	67.3	67.3
71.3	14:58:27	71.3	71.3
71.5	14:58:30	71.5	71.5
68.7	14:58:33	68.7	68.7
62.6	14:58:36	62.6	62.6
68.4	14:58:39	68.4	68.4
66.3	14:58:42	66.3	66.3
61.3	14:58:45	61.3	61.3
64.7	14:58:48	64.7	64.7
69.2	14:58:51	69.2	69.2
70.1	14:58:54	70.1	70.1
66.5	14:58:57	66.5	66.5
68.4	14:59:00	68.4	68.4
74.1	14:59:03	74.1	74.1
71.4	14:59:06	71.4	71.4
67	14:59:09	67	67
65.5	14:59:12	65.5	65.5
67.8	14:59:15	67.8	67.8
63.7	14:59:18	63.7	63.7
57.8	14:59:21	57.8	57.8
59.4	14:59:24	59.4	59.4
65.1	14:59:27	65.1	65.1
64.5	14:59:30	64.5	64.5
64.1	14:59:33	64.1	64.1
67.9	14:59:36	67.9	67.9
72.8	14:59:39	72.8	72.8
67.3	14:59:42	67.3	67.3
65.7	14:59:45	65.7	65.7
69.7	14:59:48	69.7	69.7
73.2	14:59:51	73.2	73.2
72.8	14:59:54	72.8	72.8
68.4	14:59:57	68.4	68.4
69.2	15:00:00	69.2	69.2
65.9	15:00:03	65.9	65.9
61.8	15:00:06	61.8	61.8
61.8	15:00:09	61.8	61.8
64	15:00:12	64	64
62.9	15:00:15	62.9	62.9
65.7	15:00:18	65.7	65.7
63.2	15:00:21	63.2	63.2
67	15:00:24	67	67
69.3	15:00:27	69.3	69.3
69.2	15:00:30	69.2	69.2
65.2	15:00:33	65.2	65.2
65.9	15:00:36	65.9	65.9
63.4	15:00:39	63.4	63.4
63.2	15:00:42	63.2	63.2
56	15:00:45	56	56
60.1	15:00:48	60.1	60.1
64.7	15:00:51	64.7	64.7
65.4	15:00:54	65.4	65.4
63.8	15:00:57	63.8	63.8
63.4	15:01:00	63.4	63.4
63.6	15:01:03	63.6	63.6
68.6	15:01:06	68.6	68.6
70.1	15:01:09	70.1	70.1
69.4	15:01:12	69.4	69.4
72	15:01:15	72	72
72.5	15:01:18	72.5	72.5
75.5	15:01:21	75.5	75.5
75.4	15:01:24	75.4	75.4
75.6	15:01:27	75.6	75.6
75	15:01:30	75	75
73.8	15:01:33	73.8	73.8
75.3	15:01:36	75.3	75.3
74.6	15:01:39	74.6	74.6
74.4	15:01:42	74.4	74.4
72.1	15:01:45	72.1	72.1
70.4	15:01:48	70.4	70.4
68.6	15:01:51	68.6	68.6

Site B - On Project Site Near Lakeside High School				
SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
56	14:59:45	56	56	56
56.9	14:59:48	56.9	56.9	56.9
57.7	14:59:51	57.7	57.7	57.7
56.8	14:59:54	56.8	56.8	56.8
57.2	14:59:57	57.2	57.2	57.2
56.3	15:00:00	56.3	56.3	56.3
56	15:00:03	56	56	56
57.7	15:00:06	57.7	57.7	57.7
61.1	15:00:09	61.1	61.1	61.1
55.9	15:00:12	55.9	55.9	55.9
56.7	15:00:15	56.7	56.7	56.7
56.3	15:00:18	56.3	56.3	56.3
57.7	15:00:21	57.7	57.7	57.7
56.2	15:00:24	56.2	56.2	56.2
59.6	15:00:27	59.6	59.6	59.6
60.7	15:00:30	60.7	60.7	60.7
58.2	15:00:33	58.2	58.2	58.2
58.7	15:00:36	58.7	58.7	58.7
60.3	15:00:39	60.3	60.3	60.3
56.9	15:00:42	56.9	56.9	56.9
62.5	15:00:45	62.5	62.5	62.5
57.3	15:00:48	57.3	57.3	57.3
52.5	15:00:51	52.5	52.5	52.5
51.5	15:00:54	51.5	51.5	51.5
52.4	15:00:57	52.4	52.4	52.4
52.5	15:01:00	52.5	52.5	52.5
58	15:01:03	58	58	58
56.5	15:01:06	56.5	56.5	56.5
55.5	15:01:09	55.5	55.5	55.5
56.1	15:01:12	56.1	56.1	56.1
57.2	15:01:15	57.2	57.2	57.2
59.5	15:01:18	59.5	59.5	59.5
65.7	15:01:21	65.7	65.7	65.7
64.4	15:01:24	64.4	64.4	64.4
63.4	15:01:27	63.4	63.4	63.4
62.6	15:01:30	62.6	62.6	62.6
62.5	15:01:33	62.5	62.5	62.5
64.5	15:01:36	64.5	64.5	64.5
62.8	15:01:39	62.8	62.8	62.8
62.2	15:01:42	62.2	62.2	62.2
61.3	15:01:45	61.3	61.3	61.3
60.8	15:01:48	60.8	60.8	60.8
61.3	15:01:51	61.3	61.3	61.3
61.3	15:01:54	61.3	61.3	61.3
59	15:01:57	59	59	59
58	15:02:00	58	58	58
58.4	15:02:03	58.4	58.4	58.4
57.4	15:02:06	57.4	57.4	57.4
55.8	15:02:09	55.8	55.8	55.8
55.3	15:02:12	55.3	55.3	55.3
58.2	15:02:15	58.2	58.2	58.2
57.6	15:02:18	57.6	57.6	57.6
56.7	15:02:21	56.7	56.7	56.7
58.7	15:02:24	58.7	58.7	58.7
57.7	15:02:27	57.7	57.7	57.7
60	15:02:30	60	60	60
61.8	15:02:33	61.8	61.8	61.8
63.9	15:02:36	63.9	63.9	63.9
65.8	15:02:39	65.8	65.8	65.8
65.4	15:02:42	65.4	65.4	65.4
65.2	15:02:45	65.2	65.2	65.2
63.9	15:02:48	63.9	63.9	63.9
63	15:02:51	63	63	63
61.8	15:02:54	61.8	61.8	61.8
61.4	15:02:57	61.4	61.4	61.4
61.1	15:03:00	61.1	61.1	61.1
60.8	15:03:03	60.8	60.8	60.8
58.5	15:03:06	58.5	58.5	58.5
59.7	15:03:09	59.7	59.7	59.7
58.6	15:03:12	58.6	58.6	58.6
56.8	15:03:15	56.8	56.8	56.8
56.2	15:03:18	56.2	56.2	56.2
54.6	15:03:21	54.6	54.6	54.6
55	15:03:24	55	55	55
59	15:03:27	59	59	59
58.1	15:03:30	58.1	58.1	58.1
58.7	15:03:33	58.7	58.7	58.7
60.4	15:03:36	60.4	60.4	60.4
61	15:03:39	61	61	61
60.6	15:03:42	60.6	60.6	60.6
62.4	15:03:45	62.4	62.4	62.4
62.2	15:03:48	62.2	62.2	62.2
58.4	15:03:51	58.4	58.4	58.4
57.5	15:03:54	57.5	57.5	57.5
58.7	15:03:57	58.7	58.7	58.7
58.6	15:04:00	58.6	58.6	58.6
58.7	15:04:03	58.7	58.7	58.7
58.5	15:04:06	58.5	58.5	58.5
55.9	15:04:09	55.9	55.9	55.9
54.2	15:04:12	54.2	54.2	54.2
54.4	15:04:15	54.4	54.4	54.4
55.7	15:04:18	55.7	55.7	55.7
57.3	15:04:21	57.3	57.3	57.3
60.6	15:04:24	60.6	60.6	60.6
60.5	15:04:27	60.5	60.5	60.5
66.3	15:04:30	66.3	66.3	66.3
61.9	15:04:33	61.9	61.9	61.9
66.5	15:04:36	66.5	66.5	66.5
69.9	15:04:39	69.9	69.9	69.9
67.2	15:04:42	67.2	67.2	67.2
69.4	15:04:45	69.4	69.4	69.4
72.2	15:04:48	72.2	72.2	72.2
73.7	15:04:51	73.7	73.7	73.7
73.4	15:04:54	73.4	73.4	73.4
70.9	15:04:57	70.9	70.9	70.9
66.4	15:05:00	66.4	66.4	66.4
63	15:05:03	63	63	63
66.3	15:05:06	66.3	66.3	66.3
62	15:05:09	62		

Site A - On Project Site Near Riverside Drive			
SPL	Time	Leq (1 hour Avg.)	Ldn CNEL
64.6	15:01:54	64.6	64.6
69.3	15:01:57	69.3	69.3
71.6	15:02:00	71.6	71.6
71.9	15:02:03	71.9	71.9
65.7	15:02:06	65.7	65.7
67.9	15:02:09	67.9	67.9
65.8	15:02:12	65.8	65.8
65.8	15:02:15	65.8	65.8
63	15:02:18	63	63
61.7	15:02:21	61.7	61.7
62.6	15:02:24	62.6	62.6
70	15:02:27	70	70
73.8	15:02:30	73.8	73.8
73.4	15:02:33	73.4	73.4
75.2	15:02:36	75.2	75.2
75.4	15:02:39	75.4	75.4
73.2	15:02:42	73.2	73.2
74.4	15:02:45	74.4	74.4
74.2	15:02:48	74.2	74.2
72.6	15:02:51	72.6	72.6
67.4	15:02:54	67.4	67.4
68.2	15:02:57	68.2	68.2
63.4	15:03:00	63.4	63.4
57.7	15:03:03	57.7	57.7
55.1	15:03:06	55.1	55.1
62.5	15:03:09	62.5	62.5
62.8	15:03:12	62.8	62.8
62.3	15:03:15	62.3	62.3
63.2	15:03:18	63.2	63.2
62.1	15:03:21	62.1	62.1
65.6	15:03:24	65.6	65.6
68.2	15:03:27	68.2	68.2
70.7	15:03:30	70.7	70.7
73.8	15:03:33	73.8	73.8
73	15:03:36	73	73
68.6	15:03:39	68.6	68.6
66.1	15:03:42	66.1	66.1
65.9	15:03:45	65.9	65.9
67.3	15:03:48	67.3	67.3
69.1	15:03:51	69.1	69.1
70.1	15:03:54	70.1	70.1
70.4	15:03:57	70.4	70.4
68.1	15:04:00	68.1	68.1
61.6	15:04:03	61.6	61.6
58.5	15:04:06	58.5	58.5
57.7	15:04:09	57.7	57.7
63.6	15:04:12	63.6	63.6
64.1	15:04:15	64.1	64.1
71.2	15:04:18	71.2	71.2
67.6	15:04:21	67.6	67.6
63.5	15:04:24	63.5	63.5
64.3	15:04:27	64.3	64.3
66.5	15:04:30	66.5	66.5
69	15:04:33	69	69
70.3	15:04:36	70.3	70.3
74.1	15:04:39	74.1	74.1
74.1	15:04:42	74.1	74.1
76.6	15:04:45	76.6	76.6
74.6	15:04:48	74.6	74.6
68.8	15:04:51	68.8	68.8
70.1	15:04:54	70.1	70.1
64.3	15:04:57	64.3	64.3
63.6	15:05:00	63.6	63.6
62.8	15:05:03	62.8	62.8
65.6	15:05:06	65.6	65.6
67.5	15:05:09	67.5	67.5
67.5	15:05:12	67.5	67.5
68.6	15:05:15	68.6	68.6
68.6	15:05:18	68.6	68.6
72.8	15:05:21	72.8	72.8
72.3	15:05:24	72.3	72.3
71.6	15:05:27	71.6	71.6
70.4	15:05:30	70.4	70.4
68.5	15:05:33	68.5	68.5
67.8	15:05:36	67.8	67.8
67.3	15:05:39	67.3	67.3
65.5	15:05:42	65.5	65.5
66.5	15:05:45	66.5	66.5
66.5	15:05:48	66.5	66.5
66.1	15:05:51	66.1	66.1
66.1	15:05:54	66.1	66.1
61.6	15:05:57	61.6	61.6
64.4	15:06:00	64.4	64.4
65.7	15:06:03	65.7	65.7
65.2	15:06:06	65.2	65.2
71.5	15:06:09	71.5	71.5
73.6	15:06:12	73.6	73.6
69.8	15:06:15	69.8	69.8
67.2	15:06:18	67.2	67.2
66.2	15:06:21	66.2	66.2
66.9	15:06:24	66.9	66.9
69.2	15:06:27	69.2	69.2
72.9	15:06:30	72.9	72.9
69	15:06:33	69	69
63.4	15:06:36	63.4	63.4
63.6	15:06:39	63.6	63.6
62.3	15:06:42	62.3	62.3
67.9	15:06:45	67.9	67.9
60	15:06:48	60	60
61.6	15:06:51	61.6	61.6
66.4	15:06:54	66.4	66.4
71.8	15:07:00	71.8	71.8
74.6	15:07:03	74.6	74.6
79.8	15:07:06	79.8	79.8
74	15:07:09	74	74
74.7	15:07:12	74.7	74.7
72.8	15:07:15	72.8	72.8
71	15:07:18	71	71
73.6	15:07:21	73.6	73.6
74.2	15:07:24	74.2	74.2
74.4	15:07:27	74.4	74.4
74	15:07:30	74	74
73.2	15:07:33	73.2	73.2
73.3	15:07:36	73.3	73.3
70.4	15:07:39	70.4	70.4
72.9	15:07:42	72.9	72.9
71.1	15:07:45	71.1	71.1
67.4	15:07:48	67.4	67.4
63.2	15:07:51	63.2	63.2
64.3	15:07:54	64.3	64.3
72.3	15:07:57	72.3	72.3
72.6	15:08:00	72.6	72.6
69.8	15:08:03	69.8	69.8
74.4	15:08:06	74.4	74.4
71	15:08:09	71	71
70.6	15:08:12	70.6	70.6
69.4	15:08:15	69.4	69.4
69.2	15:08:18	69.2	69.2
69	15:08:21	69	69
74.4	15:08:24	74.4	74.4
69.1	15:08:27	69.1	69.1
70.1	15:08:30	70.1	70.1
73.4	15:08:33	73.4	73.4
73.6	15:08:36	73.6	73.6
69.6	15:08:39	69.6	69.6
71	15:08:42	71	71
66.3	15:08:45	66.3	66.3
58.6	15:08:48	58.6	58.6
60.6	15:08:51	60.6	60.6
64.8	15:08:54	64.8	64.8
67.6	15:08:57	67.6	67.6
66.5	15:09:00	66.5	66.5
65.8	15:09:03	65.8	65.8
64.5	15:09:06	64.5	64.5
66.7	15:09:09	66.7	66.7
65.8	15:09:12	65.8	65.8
64.5	15:09:15	64.5	64.5
66.9	15:09:18	66.9	66.9
68.4	15:09:21	68.4	68.4
70.6	15:09:24	70.6	70.6
70.9	15:09:27	70.9	70.9
68.6	15:09:30	68.6	68.6
66.4	15:09:33	66.4	66.4
67.9	15:09:36	67.9	67.9
68.2	15:09:39	68.2	68.2

Site B - On Project Site Near Lakeside High School			
SPL	Time	Leq (1 hour Avg.)	Ldn CNEL
52.6	15:06:54	52.6	52.6
52.6	15:06:57	52.6	52.6
57.2	15:07:00	57.2	57.2
58.4	15:07:03	58.4	58.4
64.7	15:07:06	64.7	64.7
62.3	15:07:09	62.3	62.3
64.8	15:07:12	64.8	64.8
61.5	15:07:15	61.5	61.5
60	15:07:18	60	60
60.8	15:07:21	60.8	60.8
59.4	15:07:24	59.4	59.4
59.1	15:07:27	59.1	59.1
59	15:07:30	59	59
59.7	15:07:33	59.7	59.7
59.6	15:07:36	59.6	59.6
58.7	15:07:39	58.7	58.7
59	15:07:42	59	59
61.2	15:07:45	61.2	61.2
58.5	15:07:48	58.5	58.5
61.3	15:07:51	61.3	61.3
61.5	15:07:54	61.5	61.5
59.7	15:07:57	59.7	59.7
56.7	15:08:00	56.7	56.7
58.1	15:08:03	58.1	58.1
60.6	15:08:06	60.6	60.6
57.6	15:08:09	57.6	57.6
58.1	15:08:12	58.1	58.1
60.8	15:08:15	60.8	60.8
64.4	15:08:18	64.4	64.4
66.8	15:08:21	66.8	66.8
69.2	15:08:24	69.2	69.2
66	15:08:27	66	66
61.5	15:08:30	61.5	61.5
61.4	15:08:33	61.4	61.4
60	15:08:36	60	60
58.7	15:08:39	58.7	58.7
57.1	15:08:42	57.1	57.1
56.1	15:08:45	56.1	56.1
55	15:08:48	55	55
53.3	15:08:51	53.3	53.3
53.1	15:08:54	53.1	53.1
52.4	15:08:57	52.4	52.4
54.3	15:09:00	54.3	54.3
54.8	15:09:03	54.8	54.8
54.5	15:09:06	54.5	54.5
55.4	15:09:09	55.4	55.4
56.1	15:09:12	56.1	56.1
56.3	15:09:15	56.3	56.3
56.4	15:09:18	56.4	56.4
55.2	15:09:21	55.2	55.2
57.2	15:09:24	57.2	57.2
59	15:09:27	59	59
59.7	15:09:30	59.7	59.7
60.7	15:09:33	60.7	60.7
59.9	15:09:36	59.9	59.9
58.5	15:09:39	58.5	58.5
58.3	15:09:42	58.3	58.3
57.9	15:09:45	57.9	57.9
58.2	15:09:48	58.2	58.2
56.6	15:09:51	56.6	56.6
57	15:09:54	57	57
56.3	15:09:57	56.3	56.3
55.1	15:10:00	55.1	55.1
54.6	15:10:03	54.6	54.6
53.5	15:10:06	53.5	53.5
51.5	15:10:09	51.5	51.5
51	15:10:12	51	51
50.9	15:10:15	50.9	50.9
51.3	15:10:18	51.3	51.3
56.5	15:10:21	56.5	56.5
57.4	15:10:24	57.4	57.4
52.2	15:10:27	52.2	52.2
51.6	15:10:30	51.6	51.6
52.8	15:10:33	52.8	52.8
52.9	15:10:36	52.9	52.9
53.5	15:10:39	53.5	53.5
55.8	15:10:42	55.8	55.8
62.6	15:10:45	62.6	62.6
55.6	15:10:48	55.6	55.6
56.1	15:10:51	56.1	56.1
55.3	15:10:54	55.3	55.3
55.9	15:10:57	55.9	55.9
56.4	15:11:00	56.4	56.4
59.4	15:11:03	59.4	59.4
60.6	15:11:06	60.6	60.6
64	15:11:09	64	64
66.1	15:11:12	66.1	66.1
61.2	15:11:15	61.2	61.2
61.2	15:11:18	61.2	61.2
61.1	15:11:21	61.1	61.1
61.2	15:11:24	61.2	61.2
62	15:11:27	62	62
63.7	15:11:30	63.7	63.7
63.3	15:11:33	63.3	63.3
62	15:11:36	62	62
59.7	15:11:39	59.7	59.7
58	15:11:42	58	58
55.2	15:11:45	55.2	55.2
52.5	15:11:48	52.5	52.5
52.5	15:11:51	52.5	52.5
52.5	15:11:54	52.5	52.5
51.5	15:11:57	51.5	51.5
51.8	15:12:00	51.8	51.8
54.3	15:12:03	54.3	54.3
56.7	15:12:06	56.7	56.7
56.4	15:12:09	56.4	56.4
56.9	15:12:12	56.9	56.9
57.2	15:12:15	57.2	57.2
60.9	15:12:18	60.9	60.9
57.4	15:12:21	57.4	57.4
60.3	15:12:24	60.3	60.3
56	15:12:27	56	56
54.5	15:12:30	54.5	54.5
57	15:12:33	57	57
59.4	15:12:36	59.4	59.4
57.3	15:12:39	57.3	57.3
59.3	15:12:42	59.3	59.3
59.8	15:12:45	59.8	59.8
59.1	15:12:48		

Site A - On Project Site Near Riverside Drive

SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
67	15:09:42		67	67
67.5	15:09:45		67.5	67.5
66.5	15:09:48		66.5	66.5
67	15:09:51		67	67
66.5	15:09:54		66.5	66.5
67.0	15:09:57		67.0	67.0
63.5	15:10:00		63.5	63.5
57.1	15:10:03		57.1	57.1
56.9	15:10:06		56.9	56.9
56.1	15:10:09		56.1	56.1
60.0	15:10:12		60.0	60.0
63.3	15:10:15		63.3	63.3
58.7	15:10:18		58.7	58.7
63.7	15:10:21		63.7	63.7
62	15:10:24		62	62
62.5	15:10:27		62.5	62.5
63.1	15:10:30		63.1	63.1
61.8	15:10:33		61.8	61.8
62	15:10:36		62	62
59.6	15:10:39		59.6	59.6
58.1	15:10:42		58.1	58.1
62.8	15:10:45		62.8	62.8
66.2	15:10:48		66.2	66.2
66	15:10:51		66	66
67.5	15:10:54		67.5	67.5
71.8	15:10:57		71.8	71.8
76.8	15:11:00	70.0	76.8	76.8
75.5	15:11:03	70.0	75.5	75.5
74.9	15:11:06	70.0	74.9	74.9
74.2	15:11:09	70.0	74.2	74.2
71	15:11:12	70.0	71	71
68.9	15:11:15	70.0	68.9	68.9
66.8	15:11:18	70.0	66.8	66.8
70.1	15:11:21	70.0	70.1	70.1
71.4	15:11:24	70.0	71.4	71.4
70.1	15:11:27	70.0	70.1	70.1
72.7	15:11:30	70.0	72.7	72.7
70.8	15:11:33	70.0	70.8	70.8
68.3	15:11:36	70.0	68.3	68.3
64.3	15:11:39	70.0	64.3	64.3
60	15:11:42	70.0	60	60
58.2	15:11:45	70.0	58.2	58.2
63.9	15:11:48	70.0	63.9	63.9
64.6	15:11:51	70.0	64.6	64.6
61	15:11:54	70.0	61	61
70.8	15:11:57	70.0	70.8	70.8
71.4	15:12:00	70.0	71.4	71.4
73.7	15:12:03	70.0	73.7	73.7
69.1	15:12:06	70.0	69.1	69.1
70.7	15:12:09	70.0	70.7	70.7
71.2	15:12:12	70.0	71.2	71.2
69.2	15:12:15	70.0	69.2	69.2
70.9	15:12:18	69.9	70.9	70.9
69.6	15:12:21	69.9	69.6	69.6
71.2	15:12:24	69.9	71.2	71.2
69	15:12:27	69.9	69	69
69	15:12:30	69.9	69	69
73.3	15:12:33	69.9	73.3	73.3
73.9	15:12:36	69.9	73.9	73.9
71.0	15:12:39	69.9	71.0	71.0
71.2	15:12:42	69.9	71.2	71.2
73.9	15:12:45	69.9	73.9	73.9
71.2	15:12:48	69.9	71.2	71.2
72.3	15:12:51	69.9	72.3	72.3
70.3	15:12:54	69.9	70.3	70.3
67	15:12:57	69.9	67	67
68.9	15:13:00	69.9	68.9	68.9
68.6	15:13:03	69.9	68.6	68.6
72.4	15:13:06	69.9	72.4	72.4
63.7	15:13:09	69.9	63.7	63.7
56.4	15:13:12	69.9	56.4	56.4
61.8	15:13:15	69.9	61.8	61.8
68	15:13:18	69.9	68	68
65.5	15:13:21	69.9	65.5	65.5
63.3	15:13:24	70.0	63.3	63.3
66.2	15:13:27	70.0	66.2	66.2
68.8	15:13:30	70.0	68.8	68.8
65.6	15:13:33	70.0	65.6	65.6
66	15:13:36	70.0	66	66
68.8	15:13:39	70.0	68.8	68.8
70.1	15:13:42	70.0	70.1	70.1
69.1	15:13:45	70.0	69.1	69.1
71.2	15:13:48	70.0	71.2	71.2
70.6	15:13:51	70.0	70.6	70.6
72.2	15:13:54	70.0	72.2	72.2
73.9	15:13:57	70.0	73.9	73.9
72	15:14:00	70.0	72	72
73.1	15:14:03	70.0	73.1	73.1
70.3	15:14:06	70.0	70.3	70.3
69	15:14:09	70.0	69	69
63.1	15:14:12	70.0	63.1	63.1
56.9	15:14:15	70.0	56.9	56.9
53.9	15:14:18	70.0	53.9	53.9
56.8	15:14:21	70.0	56.8	56.8
61.9	15:14:24	70.0	61.9	61.9
62.3	15:14:27	70.0	62.3	62.3
69	15:14:30	70.0	69	69
71.7	15:14:33	70.0	71.7	71.7
69.9	15:14:36	70.0	69.9	69.9
68.7	15:14:39	70.0	68.7	68.7
69.8	15:14:42	70.0	69.8	69.8
69.8	15:14:45	70.0	69.8	69.8
69.2	15:14:48	70.0	69.2	69.2
72.4	15:14:51	70.0	72.4	72.4
73.9	15:14:54	70.0	73.9	73.9
74.9	15:14:57	70.0	74.9	74.9
71.1	15:15:00	70.0	71.1	71.1
68.8	15:15:03	70.0	68.8	68.8
70.5	15:15:06	70.0	70.5	70.5
71.4	15:15:09	70.0	71.4	71.4
71.0	15:15:12	70.0	71.0	71.0
69.5	15:15:15	70.0	69.5	69.5
68.6	15:15:18	70.0	68.6	68.6
61.9	15:15:21	70.0	61.9	61.9
64	15:15:24	70.0	64	64
63.3	15:15:27	70.0	63.3	63.3
58.7	15:15:30	70.1	58.7	58.7
58.3	15:15:33	70.1	58.3	58.3
61.3	15:15:36	70.1	61.3	61.3
65.1	15:15:39	70.1	65.1	65.1
71.2	15:15:42	70.1	71.2	71.2
70.1	15:15:45	70.1	70.1	70.1
69.1	15:15:48	70.1	69.1	69.1
72.1	15:15:51	70.1	72.1	72.1
69.5	15:15:54	70.1	69.5	69.5
67.9	15:15:57	70.1	67.9	67.9
67.9	15:16:00	70.1	67.9	67.9
64.9	15:16:03	70.1	64.9	64.9
58.0	15:16:06	70.1	58.0	58.0
66.4	15:16:09	70.1	66.4	66.4
66.5	15:16:12	70.1	66.5	66.5
65.2	15:16:15	70.1	65.2	65.2
74.4	15:16:18	70.1	74.4	74.4
73.8	15:16:21	70.1	73.8	73.8
73	15:16:24	70.1	73	73
72.9	15:16:27	70.1	72.9	72.9
74.4	15:16:30	70.1	74.4	74.4
75.5	15:16:33	70.1	75.5	75.5
70.9	15:16:36	70.1	70.9	70.9
72.2	15:16:39	70.1	72.2	72.2
71.4	15:16:42	70.1	71.4	71.4
73.3	15:16:45	70.1	73.3	73.3
73.4	15:16:48	70.1	73.4	73.4
74.3	15:16:51	70.1	74.3	74.3
73.9	15:16:54	70.1	73.9	73.9
73.5	15:16:57	70.1	73.5	73.5
72.7	15:17:00	70.1	72.7	72.7
71.2	15:17:03	70.1	71.2	71.2
70	15:17:06	70.1	70	70
64.8	15:17:09	70.1	64.8	64.8
68	15:17:12	70.1	68	68
71.2	15:17:15	70.1	71.2	71.2
71.8	15:17:18	70.1	71.8	71.8
71.8	15:17:21	70.2	71.8	71.8
69.9	15:17:24	70.2	69.9	69.9
69.4	15:17:27	70.2	69.4	69.4
72.5	15:17:30	70.2	72.5	72.5
74.7	15:17:33	70.2	74.7	74.7
78.7	15:17:36	70.2	78.7	78.7
77.2	15:17:39	70.2	77.2	77.2
75.0	15:17:42	70.2	75.0	75.0
74.4	15:17:45	70.2	74.4	74.4
72.2	15:17:48	70.2	72.2	72.2
73.3	15:17:51	70.2	73.3	73.3
71.3	15:17:54	70.2	71.3	71.3
71.0	15:17:57	70.2	71.0	71.0

Site B - On Project Site Near Lakeside High School

SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
57.7	15:14:42		57.7	57.7
56	15:14:45		56	56
55.7	15:14:48		55.7	55.7
56.5	15:14:51		56.5	56.5
58.1	15:14:54		58.1	58.1
63.6	15:14:57		63.6	63.6
63.4	15:15:00		63.4	63.4
60.6	15:15:03		60.6	60.6
61.6	15:15:06		61.6	61.6
61.1	15:15:09		61.1	61.1
57.7	15:15:12		57.7	57.7
56.3	15:15:15		56.3	56.3
56	15:15:18		56	56
57.6	15:15:21		57.6	57.6
56.5	15:15:24		56.5	56.5
54.1	15:15:27		54.1	54.1
53.9	15:15:30		53.9	53.9
53.7	15:15:33		53.7	53.7
51.9	15:15:36		51.9	51.9
51.9	15:15:39		51.9	51.9
52.6	15:15:42		52.6	52.6
55.2	15:15:45		55.2	55.2
63.6	15:15:48		63.6	63.6
60.2	15:15:51		60.2	60.2
60.2	15:15:54		60.2	60.2
60	15:15:57		60	60
60.1	15:16:00	60.4	60.1	60.1
55.6	15:16:03	60.4	55.6	55.6
53.2	15:16:06	60.4	53.2	53.2
51.7	15:16:09	60.4	51.7	51.7
51.5	15:16:12	60.4	51.5	51.5
55.9	15:16:15	60.4	55.9	55.9
59	15:16:18	60.4	59	59
57.6	15:16:21	60.4	57.6	57.6
59	15:16:24	60.3	59	59
59.4	15:16:27	60.3	59.4	59.4
59.1	15:16:30	60.3	59.1	59.1
59.8	15:16:33	60.3	59.8	59.8
58.9	15:16:36	60.3	58.9	58.9
58.4	15:16:39	60.3	58.4	58.4
60.9	15:16:42	60.3	60.9	60.9
57.5	15:16:45	60.3	57.5	57.5
59.2	15:16:48	60.3	59.2	59.2
59.5	15:16:51	60.3	59.5	59.5
59.1	15:16:54	60.3	59.1	59.1
60.2	15:16:57	60.2	60.2	60.2
60.8	15:17:00	60.2	60.8	60.8
60.3	15:17:03	60.2	60.3	60.3
62.3	15:17:06	60.2	62.3	62.3
61	15:17:09	60.2	61	61
57.4	15:17:12	60.2	57.4	57.4
60.2	15:17:15	60.2	60.2	60.2
60.6	15:17:18	60.2	60.6	60.6
63.3	15:17:21	60.2	63.3	63.3
60.8	15:17:24	60.2	60.8	60.8
62.9	15:17:27	60.2	62.9	62.9
62.9	15:17:30	60.2	62.9	62.9
62.4	15:17:33	60.2	62.4	62.4
64.4	15:17:36	60.2	64.4	64.4
64.6	15:17:39	60.2	64.6	64.6
63.4	15:17:42	60.2	63.4	63.4
62.5	15:17:45	60.2	62.5	62.5
61.2	15:17:48	60.2	61.2	61.2
61.6	15:17:51	60.2	61.6	61.6
60.9	15:17:54	60.2	60.9	60.9
60.8	15:17:57	60.2	6	

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**APPENDIX C**

RCNM Model Construction Noise Calculations

**Roadway Construction Noise Model (RCNM), Version 1.1**

Report date: 11/24/2015  
 Case Description: LakePointe - Site Preparation

---- Receptor #1 ----

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Nearest Classroom	Residential	58.4	58.4	58.4

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Dozer	No	40		81.7	150	0
Dozer	No	40		81.7	200	0
Dozer	No	40		81.7	250	0
Tractor	No	40	84		300	0
Tractor	No	40	84		350	0
Tractor	No	40	84		400	0
Tractor	No	40	84		450	0

Equipment	Calculated (dBA)		Results			
	*Lmax	Leq	Day		Evening	
			Lmax	Leq	Lmax	Leq
Dozer	72.1	68.1	N/A	N/A	N/A	N/A
Dozer	69.6	65.6	N/A	N/A	N/A	N/A
Dozer	67.7	63.7	N/A	N/A	N/A	N/A
Tractor	68.4	64.5	N/A	N/A	N/A	N/A
Tractor	67.1	63.1	N/A	N/A	N/A	N/A
Tractor	65.9	62.0	N/A	N/A	N/A	N/A
Tractor	64.9	60.9	N/A	N/A	N/A	N/A
<b>Total</b>	<b>72</b>	<b>73</b>	N/A	N/A	N/A	N/A

\*Calculated Lmax is the Loudest value.

**---- Receptor #2 ----**

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Nearest RV Site	Residential	69.7	69.7	69.7

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Dozer	No	40		81.7	230	0
Dozer	No	40		81.7	280	0
Dozer	No	40		81.7	330	0
Tractor	No	40	84		380	0
Tractor	No	40	84		430	0
Tractor	No	40	84		480	0
Tractor	No	40	84		530	0

Equipment	Calculated (dBA)		Results			
	*Lmax	Leq	Day		Evening	
			Lmax	Leq	Lmax	Leq
Dozer	68.4	64.4	N/A	N/A	N/A	N/A
Dozer	66.7	62.7	N/A	N/A	N/A	N/A
Dozer	65.3	61.3	N/A	N/A	N/A	N/A
Tractor	66.4	62.4	N/A	N/A	N/A	N/A
Tractor	65.3	61.3	N/A	N/A	N/A	N/A
Tractor	64.4	60.4	N/A	N/A	N/A	N/A
Tractor	63.5	59.5	N/A	N/A	N/A	N/A
<b>Total</b>	<b>68</b>	<b>70</b>	N/A	N/A	N/A	N/A

\*Calculated Lmax is the Loudest value.

**---- Receptor #3 ----**

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Nearest Home	Residential	50	50	50

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Dozer	No	40		81.7	350	0
Dozer	No	40		81.7	400	0
Dozer	No	40		81.7	450	0
Tractor	No	40	84		500	0
Tractor	No	40	84		550	0
Tractor	No	40	84		600	0
Tractor	No	40	84		650	0

Equipment	Results					
	Calculated (dBA)		Noise Limits (dBA)			
	*Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq
Dozer	64.8	60.8	N/A	N/A	N/A	N/A
Dozer	63.6	59.6	N/A	N/A	N/A	N/A
Dozer	62.6	58.6	N/A	N/A	N/A	N/A
Tractor	64.0	60.0	N/A	N/A	N/A	N/A
Tractor	63.2	59.2	N/A	N/A	N/A	N/A
Tractor	62.4	58.4	N/A	N/A	N/A	N/A
Tractor	61.7	57.7	N/A	N/A	N/A	N/A
<b>Total</b>	<b>65</b>	<b>68</b>	N/A	N/A	N/A	N/A

\*Calculated Lmax is the Loudest value.

**Roadway Construction Noise Model (RCNM), Version 1.1**

Report date: 11/24/2015  
 Case Description: LakePointe - Grading

---- Receptor #1 ----

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Nearest Classroom	Residential	58.4	58.4	58.4

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Excavator	No	40		80.7	150	0
Excavator	No	40		80.7	200	0
Grader	No	40	85		250	0
Dozer	No	40		81.7	300	0
Tractor	No	40	84		350	0
Tractor	No	40	84		400	0
Tractor	No	40	84		450	0

Equipment	Results						
	Calculated (dBA)			Noise Limits (dBA)			
	*Lmax	Leq	Day Lmax	Leq	Evening Lmax	Leq	
Excavator	71.2	67.2	N/A	N/A	N/A	N/A	
Excavator	68.7	64.7	N/A	N/A	N/A	N/A	
Grader	71.0	67.0	N/A	N/A	N/A	N/A	
Dozer	66.1	62.1	N/A	N/A	N/A	N/A	
Tractor	67.1	63.1	N/A	N/A	N/A	N/A	
Tractor	65.9	62.0	N/A	N/A	N/A	N/A	
Tractor	64.9	60.9	N/A	N/A	N/A	N/A	
<b>Total</b>	<b>71</b>	<b>73</b>	N/A	N/A	N/A	N/A	

\*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Nearest RV Site	Residential	69.7	69.7	69.7

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Excavator	No	40		80.7	230	0
Excavator	No	40		80.7	280	0
Grader	No	40	85		330	0
Dozer	No	40		81.7	380	0
Tractor	No	40	84		430	0
Tractor	No	40	84		480	0
Tractor	No	40	84		530	0

Equipment	Results						
	Calculated (dBA)			Noise Limits (dBA)			
	*Lmax	Leq	Day Lmax	Leq	Evening Lmax	Leq	
Excavator	67.5	63.5	N/A	N/A	N/A	N/A	
Excavator	65.7	61.8	N/A	N/A	N/A	N/A	
Grader	68.6	64.6	N/A	N/A	N/A	N/A	
Dozer	64.1	60.1	N/A	N/A	N/A	N/A	
Tractor	65.3	61.3	N/A	N/A	N/A	N/A	
Tractor	64.4	60.4	N/A	N/A	N/A	N/A	
Tractor	63.5	59.5	N/A	N/A	N/A	N/A	
<b>Total</b>	<b>69</b>	<b>70</b>	N/A	N/A	N/A	N/A	

\*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Nearest Home	Residential	50	50	50

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Excavator	No	40		80.7	350	0
Excavator	No	40		80.7	400	0
Grader	No	40	85		450	0
Dozer	No	40		81.7	500	0
Tractor	No	40	84		550	0
Tractor	No	40	84		600	0
Tractor	No	40	84		650	0

Equipment	Results					
	Calculated (dBA)			Noise Limits (dBA)		
	*Lmax	Leq	Day Lmax	Leq	Evening Lmax	Leq
Excavator	63.8	59.8	N/A	N/A	N/A	N/A
Excavator	62.6	58.7	N/A	N/A	N/A	N/A
Grader	65.9	61.9	N/A	N/A	N/A	N/A
Dozer	61.7	57.7	N/A	N/A	N/A	N/A
Tractor	63.2	59.2	N/A	N/A	N/A	N/A
Tractor	62.4	58.4	N/A	N/A	N/A	N/A
Tractor	61.7	57.7	N/A	N/A	N/A	N/A
<b>Total</b>	<b>66</b>	<b>68</b>	N/A	N/A	N/A	N/A

\*Calculated Lmax is the Loudest value.

**Roadway Construction Noise Model (RCNM), Version 1.1**

Report date: 11/24/2015  
 Case Description: LakePointe - Building

**---- Receptor #1 ----**

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Nearest Classroom	Residential	58.4	58.4	58.4

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Crane	No	16		80.6	150	0
Gradall	No	40		83.4	200	0
Gradall	No	40		83.4	250	0
Gradall	No	40		83.4	300	0
Tractor	No	40	84		350	0
Tractor	No	40	84		400	0
Tractor	No	40	84		450	0
Generator	No	50		80.6	500	0
Welder / Torch	No	40		74	550	0

Equipment	Results				Noise Limits (dBA)	
	Calculated (dBA)		Day		Evening	
	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	71.0	63.0	N/A	N/A	N/A	N/A
Gradall	71.4	67.4	N/A	N/A	N/A	N/A
Gradall	69.4	65.4	N/A	N/A	N/A	N/A
Gradall	67.8	63.9	N/A	N/A	N/A	N/A
Tractor	67.1	63.1	N/A	N/A	N/A	N/A
Tractor	65.9	62.0	N/A	N/A	N/A	N/A
Tractor	64.9	60.9	N/A	N/A	N/A	N/A
Generator	60.6	57.6	N/A	N/A	N/A	N/A
Welder / Torch	53.2	49.2	N/A	N/A	N/A	N/A
<b>Total</b>	<b>71</b>	<b>73</b>	N/A	N/A	N/A	N/A

\*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Nearest RV Site	Residential	69.7	69.7	69.7

Description	Impact Device	Usage(%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	230	0
Gradall	No	40		83.4	280	0
Gradall	No	40		83.4	330	0
Gradall	No	40		83.4	380	0
Tractor	No	40	84		430	0
Tractor	No	40	84		480	0
Tractor	No	40	84		530	0
Generator	No	50		80.6	580	0
Welder / Torch	No	40		74	630	0

Equipment	Results					
	Calculated (dBA)		Noise Limits (dBA)			
	*Lmax	Leq	Day Lmax	Leq	Evening Lmax	Leq
Crane	67.3	59.3	N/A	N/A	N/A	N/A
Gradall	68.4	64.5	N/A	N/A	N/A	N/A
Gradall	67.0	63.0	N/A	N/A	N/A	N/A
Gradall	65.8	61.8	N/A	N/A	N/A	N/A
Tractor	65.3	61.3	N/A	N/A	N/A	N/A
Tractor	64.4	60.4	N/A	N/A	N/A	N/A
Tractor	63.5	59.5	N/A	N/A	N/A	N/A
Generator	59.3	56.3	N/A	N/A	N/A	N/A
Welder / Torch	52.0	48.0	N/A	N/A	N/A	N/A
<b>Total</b>	<b>68</b>	<b>70</b>	N/A	N/A	N/A	N/A

\*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Nearest Home	Residential	50	50	50

Description	Impact Device	Usage(%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	350	0
Gradall	No	40		83.4	400	0
Gradall	No	40		83.4	450	0
Gradall	No	40		83.4	500	0
Tractor	No	40	84		550	0
Tractor	No	40	84		600	0
Tractor	No	40	84		650	0
Generator	No	50		80.6	700	0
Welder / Torch	No	40		74	750	0

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)			
	*Lmax	Leq	Day		Evening	
			Lmax	Leq	Lmax	Leq
Crane	63.6	55.7	N/A	N/A	N/A	N/A
Gradall	65.3	61.4	N/A	N/A	N/A	N/A
Gradall	64.3	60.3	N/A	N/A	N/A	N/A
Gradall	63.4	59.4	N/A	N/A	N/A	N/A
Tractor	63.2	59.2	N/A	N/A	N/A	N/A
Tractor	62.4	58.4	N/A	N/A	N/A	N/A
Tractor	61.7	57.7	N/A	N/A	N/A	N/A
Generator	57.7	54.7	N/A	N/A	N/A	N/A
Welder / Torch	50.5	46.5	N/A	N/A	N/A	N/A
<b>Total</b>	<b>65</b>	<b>68</b>	N/A	N/A	N/A	N/A

\*Calculated Lmax is the Loudest value.

**Roadway Construction Noise Model (RCNM), Version 1.1**

Report date: 11/24/2015  
 Case Description: LakePointe - Paving

---- Receptor #1 ----

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Nearest Classroom	Residential	58.4	58.4	58.4

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Paver	No	50		77.2	155	0
Paver	No	50		77.2	205	0
Paver	No	50		77.2	255	0
Paver	No	50		77.2	305	0
Roller	No	20		80	355	0
Roller	No	20		80	405	0

Equipment	Calculated (dBA)		Results			
	*Lmax	Leq	Day		Evening	
			Lmax	Leq	Lmax	Leq
Paver	67.4	64.4	N/A	N/A	N/A	N/A
Paver	65.0	62.0	N/A	N/A	N/A	N/A
Paver	63.1	60.1	N/A	N/A	N/A	N/A
Paver	61.5	58.5	N/A	N/A	N/A	N/A
Roller	63.0	56.0	N/A	N/A	N/A	N/A
Roller	61.8	54.8	N/A	N/A	N/A	N/A
<b>Total</b>	<b>67</b>	<b>68</b>	N/A	N/A	N/A	N/A

\*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Nearest RV Site	Residential	70	70	69.7

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Paver	No	50		77.2	230	0
Paver	No	50		77.2	280	0
Paver	No	50		77.2	330	0
Paver	No	50		77.2	380	0
Roller	No	20		80	430	0
Roller	No	20		80	480	0

Equipment	Results					
	Calculated (dBA)			Noise Limits (dBA)		
	*Lmax	Leq	Day Lmax	Leq	Evening Lmax	Leq
Paver	64.0	61.0	N/A	N/A	N/A	N/A
Paver	62.3	59.2	N/A	N/A	N/A	N/A
Paver	60.8	57.8	N/A	N/A	N/A	N/A
Paver	59.6	56.6	N/A	N/A	N/A	N/A
Roller	61.3	54.3	N/A	N/A	N/A	N/A
Roller	60.4	53.4	N/A	N/A	N/A	N/A
<b>Total</b>	<b>64</b>	<b>66</b>	N/A	N/A	N/A	N/A

\*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Nearest Home	Residential	50	50	50

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Paver	No	50		77.2	440	0
Paver	No	50		77.2	490	0
Paver	No	50		77.2	540	0
Paver	No	50		77.2	590	0
Roller	No	20		80	640	0
Roller	No	20		80	690	0

Equipment	Results					
	Calculated (dBA)			Noise Limits (dBA)		
	*Lmax	Leq	Day Lmax	Leq	Evening Lmax	Leq
Paver	58.3	55.3	N/A	N/A	N/A	N/A
Paver	57.4	54.4	N/A	N/A	N/A	N/A
Paver	56.6	53.5	N/A	N/A	N/A	N/A
Paver	55.8	52.8	N/A	N/A	N/A	N/A
Roller	57.9	50.9	N/A	N/A	N/A	N/A
Roller	57.2	50.2	N/A	N/A	N/A	N/A
<b>Total</b>	<b>58</b>	<b>61</b>	N/A	N/A	N/A	N/A

\*Calculated Lmax is the Loudest value.

**Roadway Construction Noise Model (RCNM), Version 1.1**

Report date: 11/24/2015  
 Case Description: LakePointe - Painting

**---- Receptor #1 ----**

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Nearest Classroom	Residential	58.4	58.4	58.4

Description	Impact Device	Usage(%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	165	0

Equipment	Total	Results					
		Calculated (dBA)		Noise Limits (dBA)			
		*Lmax	Leq	Day Lmax	Leq	Evening Lmax	Leq
Compressor (air)		67.3	63.3	N/A	N/A	N/A	N/A
	<b>Total</b>	<b>67</b>	<b>63</b>	N/A	N/A	N/A	N/A

\*Calculated Lmax is the Loudest value.

**---- Receptor #2 ----**

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Nearest RV Site	Residential	70	70	69.7

Description	Impact Device	Usage(%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	245	0

Equipment	Total	Results					
		Calculated (dBA)		Noise Limits (dBA)			
		*Lmax	Leq	Day Lmax	Leq	Evening Lmax	Leq
Compressor (air)		64	60	N/A	N/A	N/A	N/A
	<b>Total</b>	<b>64</b>	<b>60</b>	N/A	N/A	N/A	N/A

\*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Nearest Home	Residential	50	50	50

Description	Impact Device	Usage(%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	365	0

Equipment	Calculated (dBA)	Results				
		Day		Noise Limits (dBA)		
		*Lmax	Leq	Lmax	Leq	Evening Lmax
Compressor (air)	60	56	N/A	N/A	N/A	N/A
<b>Total</b>	<b>60</b>	<b>56</b>	N/A	N/A	N/A	N/A

\*Calculated Lmax is the Loudest value.

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**APPENDIX D**

FHWA Model Proposed Patio/Balcony Noise Calculations

## FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Road Name: Riverside Drive  
Building No: 8

Project Name: LakePointe  
Job Number: 15066

### NOISE MODEL INPUTS

Highway Data		Vehicle Mix				
Average Daily Traffic:	25,841 vehicles	Day	Evening	Night	Daily	
Peak Hour Volume:	2,584 vehicles	Autos:	63.8%	13.1%	15.3%	92.1%
Vehicle Speed:	40 mph	Medium Trucks:	3.5%	0.6%	1.8%	6.0%
Near/Far Lane Distance:	78 feet	Heavy Trucks:	1.1%	0.1%	0.8%	1.9%
Site Data		Elevations				
<b>Barrier Height Unmitigated:</b>	<b>3.5 feet</b>	Barrier Base Elevation:	0.0 feet			
<b>Barrier Height Mitigated:</b>	<b>5 feet</b>	Road Elevation:	0.0 feet			
Barrier Type(Wall/Berm):	Wall	Noise Source Elevation above Road				
Site Conditions(Hard/Soft):	Soft	Autos:	0 feet			
Centerline (C.L.) Dist. to Barrier:	65 feet	Med Trucks:	2.3 feet			
C.L. Dist. To Observer (Patio):	68 feet	Hvy Trucks:	8 feet			
Barrier Dist. To Observer (Patio):	3 feet	Pad Elevation:	0.0 feet			
C.L. Dist. To Observer (Balcony):	68 feet	Observer Heights Above Pad Elevation				
Barrier Dist. To Observer (Balcony):	3 feet	Exterior:	5 feet			
Road Grade:	0.00 %	First Floor:	5.5 feet			
Left View:	-90 degrees	Second Floor:	14 feet			
Right View:	0 degrees					

### FHWA NOISE MODEL CALCULATIONS

	REMEL	Traffic Flow	Distance	Finite Road	Grade	Barrier Attenuation		
						Exterior	1st Flr	2nd Flr
Autos:	67.36	2.44	-0.83	-4.20	0.00	-5.1	-4.6	-6
Med Trucks:	76.31	-9.45	-0.83	-4.20	0.00	-4.9	-4.2	-5.8
Hvy Trucks:	81.16	-14.33	-0.83	-4.20	0.00	-4.9	-2.3	-5.1

#### UNMITIGATED NOISE LEVELS (with topographical and existing barrier attenuation)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.3	61.5	60.7	56.6	64.1	64.6
Med Trucks:	61.5	46.2	44.8	44.5	51.1	51.4
Hvy Trucks:	61.6	41.1	36.9	40.9	47.3	47.4
<b>Traffic Noise:</b>	<b>67.4</b>	<b>61.7</b>	<b>60.8</b>	<b>57.0</b>	<b>64</b>	<b>65</b>

#### MITIGATED NOISE LEVELS (Patio)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.7	56.9	56.1	52.0	59.5	60.0
Med Trucks:	56.9	41.6	40.2	39.9	46.6	46.8
Hvy Trucks:	56.9	36.4	32.2	36.2	42.6	42.7
<b>Traffic Noise:</b>	<b>62.8</b>	<b>57.1</b>	<b>56.2</b>	<b>52.3</b>	<b>60</b>	<b>60</b>

#### MITIGATED NOISE LEVELS (Second Floor Balcony)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.6	55.9	55.0	50.9	58.4	58.9
Med Trucks:	55.9	40.6	39.2	38.9	45.5	45.8
Hvy Trucks:	56.6	36.0	31.9	35.9	42.3	42.4
<b>Traffic Noise:</b>	<b>62.0</b>	<b>56.1</b>	<b>55.2</b>	<b>51.3</b>	<b>59</b>	<b>59</b>

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**APPENDIX E**

Proposed Residential Units Exterior to Interior Attenuation Calculations

## Interior Noise Calculations

Project Name: [LakePointe](#)      Building: [2 and 1 BR](#)      Floor Plan: [A1](#)      Room: [Living Room](#)

### Room Absorption

Type of Surface	Area (Sq ft)	Sound Absorption Coefficient, Hz				Sound Absorption (Sabins)							
		125	250	500	1000	2000	4000	125	250	500	1000	2000	4000
Floor - Carpet*	288	0.1	0.4	0.62	0.7	0.63	0.88	28.8	115.2	178.56	201.6	181.44	253.44
Floor - Linoleum	0	0.02	0.03	0.03	0.03	0.02	0.02	0	0	0	0	0	0
Ceiling - Gypsum Board	288	0.29	0.1	0.05	0.04	0.07	0.09	83.52	28.8	14.4	11.52	20.16	25.92
Wall - Gypsum board	390	0.29	0.1	0.05	0.04	0.07	0.09	113.1	39	19.5	15.6	27.3	35.1
<b>Total</b>	<b>966</b>							<b>225.42</b>	<b>183</b>	<b>212.46</b>	<b>228.72</b>	<b>228.9</b>	<b>314.46</b>

$10 \cdot \log(S/A)$  S=Exterior wall area, A= Sound Absorption  
 Sound Source Adjustment Factor      -1.77      -0.86      -1.51      -1.83      -1.84      -3.21  
 Correction Factor for A-Weighted Sound Levels      -6.00      -6.00      -6.00      -6.00      -6.00      -6.00  
 A-Weighted Sound Absorption Level      -16.10      -8.60      -3.20      0.00      1.20      1.00  
 dBA Noise Absorption Level      -23.87      -15.46      -10.71      -7.83      -6.64      -8.21  
**-1.9**

### Exterior-Interior Transmission Calculations

Type of Surface	Area (Sq ft)	STC Rating	Fractional Area (Area/10*(STC/10))
Stucco Wall	108	46	0.0027
Window	0	26	0
Door	42	26	0.1055
<b>Total</b>	<b>150</b>		<b>0.0007</b>

26 STC = Standard dual panel window/door

**Exterior-Interior Noise Reduction**  
 (Transmission Loss - Sound Absorption Level)  
**33 dBA**

\*Carpet analyzed consisted of 3/8" Loop Pile with Pad  
 Sources:  
*Fundamentals of Acoustics 4th Edition*, Lawrence E. Kinsler, 2000.  
*Noise Control in Buildings*, Cyril M. Harris, 1994.

## Interior Noise Calculations

Project Name: [LakePointe](#)    Building: [and 1 BR](#)    Floor Plan: [A1](#)    Room: [Bedroom 1](#)

### Room Absorption

Type of Surface	Area (Sq ft)	Sound Absorption Coefficient, Hz				Sound Absorption (Sabins)							
		125	250	500	1000	2000	4000	125	250	500	1000	2000	4000
Floor - Carpet*	154	0.1	0.4	0.62	0.7	0.63	0.88	15.4	61.6	95.48	107.8	97.02	135.52
Floor - Linoleum	0	0.02	0.03	0.03	0.03	0.02	0.02	0	0	0	0	0	0
Ceiling - Gypsum Board	154	0.29	0.1	0.05	0.04	0.07	0.09	44.66	15.4	7.7	6.16	10.78	13.86
Wall - Gypsum board	437	0.29	0.1	0.05	0.04	0.07	0.09	126.73	43.7	21.85	17.48	30.59	39.33
<b>Total</b>	<b>745</b>							<b>186.79</b>	<b>120.7</b>	<b>125.03</b>	<b>131.44</b>	<b>138.39</b>	<b>188.71</b>

$10 \cdot \log(S/A)$  S=Exterior wall area, A= Sound Absorption  
 Sound Source Adjustment Factor    -6.00    -6.00    -6.00    -6.00    -6.00  
 Correction Factor for A-Weighted Sound Levels    -16.10    -8.60    -3.20    0.00    1.20    1.00  
 A-Weighted Sound Absorption Level    -21.38    -11.98    -6.74    -3.75    -2.78    -4.32  
 dBA Noise Absorption Level    **2.0**

### Exterior-Interior Transmission Calculations

Type of Surface	Area (Sq ft)	STC Rating	Fractional Area (Area/10*(STC/10))
Stucco Wall	181	46	0.0045
Window	40	26	0.1005
Door	0	26	0
<b>Total</b>	<b>221</b>		<b>0.0005</b>

Transmission Loss    **33.2**    26 STC = Standard dual panel window/door

**Exterior-Interior Noise Reduction**  
 (Transmission Loss - Sound Absorption Level)  
**31 dBA**

\*Carpet analyzed consisted of 3/8" Loop Pile with Pad  
 Sources:  
*Fundamentals of Acoustics 4th Edition* , Lawrence E. Kinsler, 2000.  
*Noise Control in Buildings* , Cyril M. Harris, 1994.

## Interior Noise Calculations

Project Name: [LakePointe](#)      Building: [2 and 1 BR](#)      Floor Plan: [A1](#)      Room: [Bedroom 2](#)

### Room Absorption

Type of Surface	Area (Sq ft)	Sound Absorption Coefficient, Hz					Sound Absorption (Sabins)						
		125	250	500	1000	2000	4000	125	250	500	1000	2000	4000
Floor - Carpet*	138	0.1	0.4	0.62	0.7	0.63	0.88	13.75	55	85.25	96.25	86.625	121
Floor - Linoleum	0	0.02	0.03	0.03	0.03	0.02	0.02	0	0	0	0	0	0
Ceiling - Gypsum Board	138	0.29	0.1	0.05	0.04	0.07	0.09	39.875	13.75	6.875	5.5	9.625	12.375
Wall - Gypsum board	390	0.29	0.1	0.05	0.04	0.07	0.09	113.1	39	19.5	15.6	27.3	35.1
<b>Total</b>	<b>665</b>							<b>166.73</b>	<b>107.75</b>	<b>111.63</b>	<b>117.35</b>	<b>123.55</b>	<b>168.48</b>

$10 \cdot \log(S/A)$  S=Exterior wall area, A= Sound Absorption

Sound Source Adjustment Factor      -6.00      -6.00      -6.00      -6.00      -6.00

Correction Factor for A-Weighted Sound Levels      -16.10      -8.60      -3.20      0.00      1.20      1.00

A-Weighted Sound Absorption Level      -20.98      -11.58      -6.33      -3.35      -2.37      -3.92

dBA Noise Absorption Level      **2.4**

### Exterior-Interior Transmission Calculations

Type of Surface	Area (Sq ft)	STC Rating	Fractional Area (Area/10 <sup>4</sup> (STC/10))
Stucco Wall	192	46	0.0048
Window	24	26	0.0603
Door	0	26	0
<b>Total</b>	<b>216</b>		<b>0.0003</b>

Transmission Loss      **35.2**

26 STC = Standard dual panel window/door

**Exterior-Interior Noise Reduction**  
(Transmission Loss - Sound Absorption Level)  
**33 dBA**

\*Carpet analyzed consisted of 3/8" Loop Pile with Pad  
Sources:  
*Fundamentals of Acoustics 4th Edition* , Lawrence E. Kinsler, 2000.  
*Noise Control in Buildings* , Cyril M. Harris, 1994.

## Interior Noise Calculations

Project Name: [LakePointe](#)

Building: [2 and 1 BR](#)

Floor Plan: [G1](#)

Room: [Living Room](#)

### Room Absorption

Type of Surface	Area (Sq ft)	Sound Absorption Coefficient, Hz				Sound Absorption (Sabins)							
		125	250	500	1000	2000	4000	125	250	500	1000	2000	4000
Floor - Carpet*	336	0.1	0.4	0.62	0.7	0.63	0.88	33.6	134.4	208.32	235.2	211.68	295.68
Floor - Linoleum	0	0.02	0.03	0.03	0.03	0.02	0.02	0	0	0	0	0	0
Ceiling - Gypsum Board	336	0.29	0.1	0.05	0.04	0.07	0.09	97.44	33.6	16.8	13.44	23.52	30.24
Wall - Gypsum board	435	0.29	0.1	0.05	0.04	0.07	0.09	126.15	43.5	21.75	17.4	30.45	39.15
Total	1107							257.19	211.5	246.87	266.04	265.65	365.07

$$10 \cdot \log(S/A) = \text{Exterior wall area, } A = \text{Sound Absorption}$$

Sound Source Adjustment Factor

Correction Factor for A-Weighted Sound Levels

A-Weighted Sound Absorption Level

dBA Noise Absorption Level

**-0.4**

### Exterior-Interior Transmission Calculations

Type of Surface	Area (Sq ft)	STC Rating	Fractional Area (Area/10*(STC/10))
Stucco Wall	201	46	0.005
Window	42	26	0.1055
Door	0	26	0
Total	243		0.0005

26 STC = Standard dual panel window/door

Transmission Loss **33.4**

### Exterior-Interior Noise Reduction

(Transmission Loss - Sound Absorption Level)

**34 dBA**

\*Carpet analyzed consisted of 3/8" Loop Pile with Pad

Sources:

*Fundamentals of Acoustics 4th Edition*, Lawrence E. Kinsler, 2000.

*Noise Control in Buildings*, Cyril M. Harris, 1994.

## Interior Noise Calculations

Project Name: [LakePointe](#)      Building: [2 and 1 BR](#)      Floor Plan: [G1](#)      Room: [Bedroom](#)

### Room Absorption

Type of Surface	Area (Sq ft)	Sound Absorption Coefficient, Hz				Sound Absorption (Sabins)							
		125	250	500	1000	2000	4000	125	250	500	1000	2000	4000
Floor - Carpet*	137	0.1	0.4	0.62	0.7	0.63	0.88	13.65	54.6	84.63	95.55	85.995	120.12
Floor - Linoleum	0	0.02	0.03	0.03	0.03	0.02	0.02	0	0	0	0	0	0
Ceiling - Gypsum Board	137	0.29	0.1	0.05	0.04	0.07	0.09	39.585	13.65	6.825	5.46	9.555	12.285
Wall - Gypsum board	345	0.29	0.1	0.05	0.04	0.07	0.09	100.05	34.5	17.25	13.8	24.15	31.05
<b>Total</b>	<b>618</b>							<b>153.29</b>	<b>102.75</b>	<b>108.71</b>	<b>114.81</b>	<b>119.7</b>	<b>163.46</b>

$$10 \cdot \log(S/A) = \text{Exterior wall area, } A = \text{Sound Absorption}$$

Sound Source Adjustment Factor

Correction Factor for A-Weighted Sound Levels

A-Weighted Sound Absorption Level

dBA Noise Absorption Level

**-0.6**

### Exterior-Interior Transmission Calculations

Type of Surface	Area (Sq ft)	STC Rating	Fractional Area (Area/10*(STC/10))
Stucco Wall	80	46	0.002
Window	24	26	0.0603
Door	0	26	0
<b>Total</b>	<b>104</b>		<b>0.0006</b>

26 STC = Standard dual panel window/door

Transmission Loss **32.2**

### Exterior-Interior Noise Reduction

(Transmission Loss - Sound Absorption Level)

**33 dBA**

\*Carpet analyzed consisted of 3/8" Loop Pile with Pad

Sources:

*Fundamentals of Acoustics 4th Edition*, Lawrence E. Kinsler, 2000.  
*Noise Control in Buildings*, Cyril M. Harris, 1994.

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**APPENDIX F**

FHWA Model Traffic Noise Contour Calculations



## FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

**Scenario: EXISTING CONDITIONS**

Project: LakePointe Apartments  
Site Conditions: Soft

Road Name: <b>Riverside Drive</b>		Segment: <b>South of La Harve Street</b>		Roadway Classification: Urban Arterial						
Average Daily Traffic: 18088 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 3						
NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 64.06 ft)										
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels			Noise Contour (in feet)			
	RE MEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	
Automobiles	67.36	0.89	-1.72	65.3	62.6	61.7	57.6	65.1	65.6	
Medium Trucks	76.31	-11.00	-1.72	62.4	47.1	45.7	45.4	52.0	52.3	
Heavy Trucks	81.16	-15.88	-1.72	62.4	41.8	37.7	41.7	48.1	48.2	
<b>Total:</b>				<b>68.4</b>	<b>62.7</b>	<b>61.8</b>	<b>58.0</b>	<b>65.4</b>	<b>65.9</b>	<b>401</b>

Road Name: <b>Riverside Drive</b>		Segment: <b>South of Lakeside HS Stadium Way</b>		Roadway Classification: Urban Arterial						
Average Daily Traffic: 18288 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 3						
NOISE PARAMETERS AT 100 FEET FROM CENTERLINE (Equiv. Lane Dist: 92.08 ft)										
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels			Noise Contour (in feet)			
	RE MEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	
Automobiles	67.36	0.94	-4.08	63.0	60.3	59.4	55.3	62.8	63.3	
Medium Trucks	76.31	-10.95	-4.08	60.1	44.8	43.4	43.1	49.7	50.0	
Heavy Trucks	81.16	-15.84	-4.08	60.0	39.5	35.3	39.4	45.7	45.8	
<b>Total:</b>				<b>66.1</b>	<b>60.4</b>	<b>59.5</b>	<b>55.7</b>	<b>63.1</b>	<b>63.6</b>	<b>374</b>

Road Name: <b>Lakeshore Drive</b>		Segment: <b>West of Riverside Drive</b>		Roadway Classification: Urban Arterial						
Average Daily Traffic: 17387 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 2						
NOISE PARAMETERS AT 50 FEET FROM CENTERLINE (Equiv. Lane Dist: 31.29 ft)										
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels			Noise Contour (in feet)			
	RE MEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	
Automobiles	67.36	0.71	2.95	69.8	67.5	66.2	60.1	68.5	69.2	
Medium Trucks	76.31	-14.15	2.95	63.9	44.7	36.9	46.1	52.3	52.3	
Heavy Trucks	81.16	-11.93	2.95	71.0	54.0	46.2	55.4	61.6	61.6	
<b>Total:</b>				<b>73.9</b>	<b>67.7</b>	<b>66.2</b>	<b>61.5</b>	<b>69.4</b>	<b>69.9</b>	<b>496</b>

## FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

### Scenario: EXISTING WITH PROJECT CONDITIONS

Project: LakePointe Apartments  
Site Conditions: Soft

Vehicle Type	Vehicle Mix 1 (Vehicle Mix 1 (Local))			Vehicle Mix 2 (Vehicle Mix 2 (Arterial))			Vehicle Mix 3 (SR-74)			
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	
Automobiles	73.60%	13.60%	10.22%	69.50%	12.90%	9.60%	92.00%	63.75%	13.07%	15.28%
Medium Trucks	0.90%	0.90%	0.04%	1.44%	0.06%	1.50%	3.00%	3.53%	0.64%	1.79%
Heavy Trucks	0.35%	0.04%	0.35%	2.40%	0.10%	2.50%	5.00%	1.06%	0.10%	0.77%

Road Name: Riverside Drive		Segment: North of Lakeshore Drive		Roadway Classification: Urban Arterial							
Average Daily Traffic: 23155 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 3							
NOISE PARAMETERS AT 55 FEET FROM CENTERLINE (Equiv. Lane Dist: 48.99 ft)											
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels							
	REML Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		
Automobiles	67.36	1.96	0.03	-1.20	68.2	65.4	64.5	60.5	68.0	68.5	70 dBA: 42
Medium Trucks	76.31	-9.92	0.03	-1.20	65.2	49.9	48.5	48.2	54.9	55.1	65 dBA: 91
Heavy Trucks	81.16	-14.81	0.03	-1.20	65.2	44.6	40.5	44.5	50.9	51.0	60 dBA: 195
<b>Total:</b>				<b>71.2</b>	<b>65.6</b>	<b>64.7</b>	<b>60.8</b>	<b>68.2</b>	<b>68.7</b>	<b>68.7</b>	<b>55 dBA: 420</b>

Road Name: Riverside Drive		Segment: North of Lincoln Street		Roadway Classification: Urban Arterial							
Average Daily Traffic: 26606 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 3							
NOISE PARAMETERS AT 110 FEET FROM CENTERLINE (Equiv. Lane Dist: 102.85 ft)											
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels							
	REML Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		
Automobiles	67.36	2.57	-4.80	-1.20	63.9	61.2	60.3	56.2	63.7	64.2	70 dBA: 44
Medium Trucks	76.31	-9.32	-4.80	-1.20	61.0	45.7	44.3	44.0	50.6	50.9	65 dBA: 95
Heavy Trucks	81.16	-14.21	-4.80	-1.20	60.9	40.4	36.2	40.3	46.6	46.7	60 dBA: 204
<b>Total:</b>				<b>67.0</b>	<b>61.3</b>	<b>60.4</b>	<b>56.6</b>	<b>64.0</b>	<b>64.5</b>	<b>64.5</b>	<b>55 dBA: 439</b>

Road Name: Riverside Drive		Segment: North of La Harve Street		Roadway Classification: Urban Arterial							
Average Daily Traffic: 22445 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 3							
NOISE PARAMETERS AT 55 FEET FROM CENTERLINE (Equiv. Lane Dist: 38.78 ft)											
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels							
	REML Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		
Automobiles	67.36	1.83	1.55	-1.20	69.5	66.8	65.9	61.8	69.3	69.9	70 dBA: 52
Medium Trucks	76.31	-10.06	1.55	-1.20	66.6	51.3	49.9	49.6	56.2	56.5	65 dBA: 112
Heavy Trucks	81.16	-14.95	1.55	-1.20	66.6	46.0	41.9	45.9	52.3	52.4	60 dBA: 241
<b>Total:</b>				<b>72.6</b>	<b>66.9</b>	<b>66.1</b>	<b>62.2</b>	<b>69.6</b>	<b>70.1</b>	<b>70.1</b>	<b>55 dBA: 520</b>

## FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

### Scenario: EXISTING WITH PROJECT CONDITIONS

Project: LakePointe Apartments  
Site Conditions: Soft

Road Name: <b>Riverside Drive</b>		Segment: <b>South of La Harve Street</b>		Roadway Classification: <b>Urban Arterial</b>															
Average Daily Traffic: 18854 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 3															
NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 64.06 ft)																			
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels			Noise Contour (in feet)												
	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL										
Automobiles	67.36	1.07	-1.72	-1.20	65.5	62.8	61.9	57.8	65.3	65.8	70 dBA:	38	41						
Medium Trucks	76.31	-10.82	-1.72	-1.20	62.6	47.3	45.9	45.6	52.2	52.5	65 dBA:	82	89						
Heavy Trucks	81.16	-15.70	-1.72	-1.20	62.5	42.0	37.8	41.9	48.2	48.3	60 dBA:	177	191						
<b>Total:</b>											<b>68.6</b>	<b>62.9</b>	<b>62.0</b>	<b>58.2</b>	<b>65.6</b>	<b>66.1</b>	<b>55 dBA:</b>	<b>382</b>	<b>412</b>

Road Name: <b>Riverside Drive</b>		Segment: <b>South of Lakeside HS Stadium Way</b>		Roadway Classification: <b>Urban Arterial</b>															
Average Daily Traffic: 19038 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 3															
NOISE PARAMETERS AT 100 FEET FROM CENTERLINE (Equiv. Lane Dist: 92.08 ft)																			
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels			Noise Contour (in feet)												
	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL										
Automobiles	67.36	1.11	-4.08	-1.20	63.2	60.4	59.6	55.5	63.0	63.5	70 dBA:	36	38						
Medium Trucks	76.31	-10.77	-4.08	-1.20	60.3	44.9	43.6	43.2	49.9	50.2	65 dBA:	77	83						
Heavy Trucks	81.16	-15.66	-4.08	-1.20	60.2	39.7	35.5	39.6	45.9	46.0	60 dBA:	166	178						
<b>Total:</b>											<b>66.2</b>	<b>60.6</b>	<b>59.7</b>	<b>55.8</b>	<b>63.3</b>	<b>63.8</b>	<b>55 dBA:</b>	<b>357</b>	<b>385</b>

Road Name: <b>Lakeshore Drive</b>		Segment: <b>West of Riverside Drive</b>		Roadway Classification: <b>Urban Arterial</b>															
Average Daily Traffic: 17836 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 2															
NOISE PARAMETERS AT 50 FEET FROM CENTERLINE (Equiv. Lane Dist: 31.29 ft)																			
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels			Noise Contour (in feet)												
	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL										
Automobiles	67.36	0.82	2.95	-1.20	69.9	67.6	66.3	60.2	68.6	69.3	70 dBA:	46	50						
Medium Trucks	76.31	-14.04	2.95	-1.20	64.0	44.8	37.0	46.2	52.4	52.4	65 dBA:	100	109						
Heavy Trucks	81.16	-11.82	2.95	-1.20	71.1	54.1	46.3	55.5	61.7	61.7	60 dBA:	216	234						
<b>Total:</b>											<b>74.0</b>	<b>67.8</b>	<b>66.3</b>	<b>61.6</b>	<b>69.5</b>	<b>70.1</b>	<b>55 dBA:</b>	<b>465</b>	<b>504</b>

## FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: YEAR 2017 WITHOUT PROJECT

Project: LakePointe Apartments  
Site Conditions: Soft

Vehicle Type	Vehicle Mix 1 (Vehicle Mix 1 (Local))			Vehicle Mix 2 (Vehicle Mix 2 (Arterial))			Vehicle Mix 3 (SR-74)			
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	
Automobiles	73.60%	13.60%	10.22%	69.50%	12.90%	9.60%	92.00%	63.75%	13.07%	15.28%
Medium Trucks	0.90%	0.90%	0.04%	1.44%	0.06%	1.50%	3.00%	3.53%	0.64%	1.79%
Heavy Trucks	0.35%	0.04%	0.35%	2.40%	0.10%	2.50%	5.00%	1.06%	0.10%	0.77%

Road Name: Riverside Drive		Segment: North of Lakeshore Drive		Roadway Classification: Urban Arterial							
Average Daily Traffic: 23369 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 3							
NOISE PARAMETERS AT 55 FEET FROM CENTERLINE (Equiv. Lane Dist: 48.99 ft)											
Noise Adjustments			Unmitigated Noise Levels								
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		
Automobiles	67.36	2.00	0.03	-1.20	68.2	65.4	64.6	60.5	68.0	68.5	70 dBA: 42
Medium Trucks	76.31	-9.88	0.03	-1.20	65.3	50.0	48.6	48.2	54.9	55.2	65 dBA: 91
Heavy Trucks	81.16	-14.77	0.03	-1.20	65.2	44.7	40.5	44.6	50.9	51.0	60 dBA: 196
<b>Total:</b>				<b>71.2</b>	<b>65.6</b>	<b>64.7</b>	<b>60.8</b>	<b>68.3</b>	<b>68.8</b>	<b>68.8</b>	55 dBA: 423

Road Name: Riverside Drive		Segment: North of Lincoln Street		Roadway Classification: Urban Arterial							
Average Daily Traffic: 26737 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 3							
NOISE PARAMETERS AT 110 FEET FROM CENTERLINE (Equiv. Lane Dist: 102.85 ft)											
Noise Adjustments			Unmitigated Noise Levels								
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		
Automobiles	67.36	2.59	-4.80	-1.20	63.9	61.2	60.3	56.2	63.8	64.3	70 dBA: 44
Medium Trucks	76.31	-9.30	-4.80	-1.20	61.0	45.7	44.3	44.0	50.6	50.9	65 dBA: 95
Heavy Trucks	81.16	-14.19	-4.80	-1.20	61.0	40.4	36.3	40.3	46.7	46.8	60 dBA: 205
<b>Total:</b>				<b>67.0</b>	<b>61.4</b>	<b>60.5</b>	<b>56.6</b>	<b>64.0</b>	<b>64.5</b>	<b>64.5</b>	55 dBA: 441

Road Name: Riverside Drive		Segment: North of La Harve Street		Roadway Classification: Urban Arterial							
Average Daily Traffic: 22284 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 3							
NOISE PARAMETERS AT 55 FEET FROM CENTERLINE (Equiv. Lane Dist: 38.78 ft)											
Noise Adjustments			Unmitigated Noise Levels								
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		
Automobiles	67.36	1.80	1.55	-1.20	69.5	66.8	65.9	61.8	69.3	69.8	70 dBA: 52
Medium Trucks	76.31	-10.09	1.55	-1.20	66.6	51.3	49.9	49.6	56.2	56.5	65 dBA: 112
Heavy Trucks	81.16	-14.98	1.55	-1.20	66.5	46.0	41.8	45.9	52.2	52.3	60 dBA: 240
<b>Total:</b>				<b>72.5</b>	<b>66.9</b>	<b>66.0</b>	<b>62.2</b>	<b>69.6</b>	<b>70.1</b>	<b>70.1</b>	55 dBA: 518

## FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: YEAR 2017 WITHOUT PROJECT

Project: LakePointe Apartments  
Site Conditions: Soft

Road Name: Riverside Drive		Segment: South of La Harve Street		Roadway Classification: Urban Arterial															
Average Daily Traffic: 18826 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 3															
NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 64.06 ft)																			
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels			Noise Contour (in feet)												
	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL										
Automobiles	67.36	1.06	-1.72	-1.20	65.5	62.8	61.9	57.8	65.3	65.8	70 dBA:	38	41						
Medium Trucks	76.31	-10.82	-1.72	-1.20	62.6	47.3	45.9	45.6	52.2	52.5	65 dBA:	82	89						
Heavy Trucks	81.16	-15.71	-1.72	-1.20	62.5	42.0	37.8	41.9	48.2	48.3	60 dBA:	177	191						
<b>Total:</b>											<b>68.5</b>	<b>62.9</b>	<b>62.0</b>	<b>58.2</b>	<b>65.6</b>	<b>66.1</b>	<b>55 dBA:</b>	<b>382</b>	<b>411</b>

Road Name: Riverside Drive		Segment: South of Lakeside HS Stadium Way		Roadway Classification: Urban Arterial															
Average Daily Traffic: 19034 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 3															
NOISE PARAMETERS AT 100 FEET FROM CENTERLINE (Equiv. Lane Dist: 92.08 ft)																			
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels			Noise Contour (in feet)												
	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL										
Automobiles	67.36	1.11	-4.08	-1.20	63.2	60.4	59.6	55.5	63.0	63.5	70 dBA:	36	38						
Medium Trucks	76.31	-10.77	-4.08	-1.20	60.3	44.9	43.5	43.2	49.9	50.2	65 dBA:	77	83						
Heavy Trucks	81.16	-15.66	-4.08	-1.20	60.2	39.7	35.5	39.6	45.9	46.0	60 dBA:	166	178						
<b>Total:</b>											<b>66.2</b>	<b>60.6</b>	<b>59.7</b>	<b>55.8</b>	<b>63.3</b>	<b>63.8</b>	<b>55 dBA:</b>	<b>357</b>	<b>384</b>

Road Name: Lakeshore Drive		Segment: West of Riverside Drive		Roadway Classification: Urban Arterial															
Average Daily Traffic: 18096 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 2															
NOISE PARAMETERS AT 50 FEET FROM CENTERLINE (Equiv. Lane Dist: 31.29 ft)																			
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels			Noise Contour (in feet)												
	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL										
Automobiles	67.36	0.89	2.95	-1.20	70.0	67.6	66.3	60.3	68.7	69.3	70 dBA:	47	51						
Medium Trucks	76.31	-13.98	2.95	-1.20	64.1	44.9	37.1	46.3	52.5	52.5	65 dBA:	101	110						
Heavy Trucks	81.16	-11.76	2.95	-1.20	71.1	54.2	46.4	55.6	61.7	61.8	60 dBA:	218	236						
<b>Total:</b>											<b>74.1</b>	<b>67.8</b>	<b>66.4</b>	<b>61.7</b>	<b>69.6</b>	<b>70.1</b>	<b>55 dBA:</b>	<b>469</b>	<b>509</b>

## FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

### Scenario: YEAR 2017 WITH PROJECT CONDITIONS

Project: LakePointe Apartments  
Site Conditions: Soft

Vehicle Type	Vehicle Mix 1 (Vehicle Mix 1 (Local))				Vehicle Mix 2 (Vehicle Mix 2 (Arterial))				Vehicle Mix 3 (SR-74)			
	Day	Evening	Night	Daily	Day	Evening	Night	Daily	Day	Evening	Night	Daily
Automobiles	73.60%	13.60%	10.22%	97.42%	69.50%	12.90%	9.60%	92.00%	63.75%	13.07%	15.28%	92.10%
Medium Trucks	0.90%	0.90%	0.04%	1.84%	1.44%	0.06%	1.50%	3.00%	3.53%	0.64%	1.79%	5.96%
Heavy Trucks	0.35%	0.04%	0.35%	0.74%	2.40%	0.10%	2.50%	5.00%	1.06%	0.10%	0.77%	1.94%

Road Name: Riverside Drive		Segment: North of Lakeshore Drive				Roadway Classification: Urban Arterial					
Average Daily Traffic: 24071 Vehicles		Vehicle Speed: 40 MPH				Vehicle Mix: 3					
NOISE PARAMETERS AT 55 FEET FROM CENTERLINE		(Equiv. Lane Dist: 48.99 ft)				Centerline Distance to					
Noise Adjustments		Unmitigated Noise Levels				Noise Contour (in feet)					
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Ldn	CNEL
Automobiles	67.36	2.13	0.03	-1.20	68.3	65.6	64.7	60.6	68.1	68.6	70 dBA: 43
Medium Trucks	76.31	-9.76	0.03	-1.20	65.4	50.1	48.7	48.4	55.0	55.3	65 dBA: 93
Heavy Trucks	81.16	-14.64	0.03	-1.20	65.3	44.8	40.6	44.7	51.0	51.1	60 dBA: 200
<b>Total:</b>					<b>71.4</b>	<b>65.7</b>	<b>64.8</b>	<b>61.0</b>	<b>68.4</b>	<b>68.9</b>	<b>55 dBA: 431</b>

Road Name: Riverside Drive		Segment: North of Lincoln Street				Roadway Classification: Urban Arterial					
Average Daily Traffic: 27654 Vehicles		Vehicle Speed: 40 MPH				Vehicle Mix: 3					
NOISE PARAMETERS AT 110 FEET FROM CENTERLINE		(Equiv. Lane Dist: 102.85 ft)				Centerline Distance to					
Noise Adjustments		Unmitigated Noise Levels				Noise Contour (in feet)					
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Ldn	CNEL
Automobiles	67.36	2.73	-4.80	-1.20	64.1	61.3	60.5	56.4	63.9	64.4	70 dBA: 45
Medium Trucks	76.31	-9.15	-4.80	-1.20	61.2	45.8	44.5	44.1	50.8	51.1	65 dBA: 97
Heavy Trucks	81.16	-14.04	-4.80	-1.20	61.1	40.6	36.4	40.5	46.8	46.9	60 dBA: 209
<b>Total:</b>					<b>67.1</b>	<b>61.5</b>	<b>60.6</b>	<b>56.7</b>	<b>64.2</b>	<b>64.7</b>	<b>55 dBA: 451</b>

Road Name: Riverside Drive		Segment: North of La Harve Street				Roadway Classification: Urban Arterial					
Average Daily Traffic: 23319 Vehicles		Vehicle Speed: 40 MPH				Vehicle Mix: 3					
NOISE PARAMETERS AT 55 FEET FROM CENTERLINE		(Equiv. Lane Dist: 38.78 ft)				Centerline Distance to					
Noise Adjustments		Unmitigated Noise Levels				Noise Contour (in feet)					
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Ldn	CNEL
Automobiles	67.36	1.99	1.55	-1.20	69.7	67.0	66.1	62.0	69.5	70.0	70 dBA: 53
Medium Trucks	76.31	-9.89	1.55	-1.20	66.8	51.5	50.1	49.8	56.4	56.7	65 dBA: 115
Heavy Trucks	81.16	-14.78	1.55	-1.20	66.7	46.2	42.0	46.1	52.4	52.5	60 dBA: 248
<b>Total:</b>					<b>72.7</b>	<b>67.1</b>	<b>66.2</b>	<b>62.4</b>	<b>69.8</b>	<b>70.3</b>	<b>55 dBA: 533</b>

## FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: YEAR 2017 WITH PROJECT CONDITIONS

Project: LakePointe Apartments  
Site Conditions: Soft

Road Name: <b>Riverside Drive</b>		Segment: <b>South of La Harve Street</b>		Roadway Classification: <b>Urban Arterial</b>													
Average Daily Traffic: 19592 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 3													
NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 64.06 ft)																	
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels			Noise Contour (in feet)										
	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL								
Automobiles	67.36	1.24	-1.72	65.7	62.9	62.1	58.0	65.5	66.0								
Medium Trucks	76.31	-10.65	-1.72	62.7	47.4	46.0	45.7	52.4	52.6								
Heavy Trucks	81.16	-15.54	-1.72	62.7	42.2	38.0	42.1	48.4	48.5								
<b>Total:</b>									<b>68.7</b>	<b>63.1</b>	<b>62.2</b>	<b>58.3</b>	<b>65.8</b>	<b>66.3</b>	<b>70 dBA:</b>	<b>39</b>	<b>42</b>

Road Name: <b>Riverside Drive</b>		Segment: <b>South of Lakeside HS Stadium Way</b>		Roadway Classification: <b>Urban Arterial</b>													
Average Daily Traffic: 19784 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 3													
NOISE PARAMETERS AT 100 FEET FROM CENTERLINE (Equiv. Lane Dist: 92.08 ft)																	
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels			Noise Contour (in feet)										
	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL								
Automobiles	67.36	1.28	-4.08	63.4	60.6	59.7	55.7	63.2	63.7								
Medium Trucks	76.31	-10.61	-4.08	60.4	45.1	43.7	43.4	50.1	50.3								
Heavy Trucks	81.16	-15.49	-4.08	60.4	39.8	35.7	39.7	46.1	46.2								
<b>Total:</b>									<b>66.4</b>	<b>60.8</b>	<b>59.9</b>	<b>56.0</b>	<b>63.5</b>	<b>63.9</b>	<b>70 dBA:</b>	<b>37</b>	<b>39</b>

Road Name: <b>Lakeshore Drive</b>		Segment: <b>West of Riverside Drive</b>		Roadway Classification: <b>Urban Arterial</b>													
Average Daily Traffic: 18545 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 2													
NOISE PARAMETERS AT 50 FEET FROM CENTERLINE (Equiv. Lane Dist: 31.29 ft)																	
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels			Noise Contour (in feet)										
	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL								
Automobiles	67.36	0.99	2.95	70.1	67.7	66.4	60.4	68.8	69.4								
Medium Trucks	76.31	-13.87	2.95	64.2	45.0	37.2	46.4	52.6	52.6								
Heavy Trucks	81.16	-11.65	2.95	71.3	54.3	46.5	55.7	61.8	61.9								
<b>Total:</b>									<b>74.2</b>	<b>67.9</b>	<b>66.5</b>	<b>61.8</b>	<b>69.7</b>	<b>70.2</b>	<b>70 dBA:</b>	<b>48</b>	<b>52</b>

## FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: YEAR 2017 CUMULATIVE WITHOUT PROJECT

Project: LakePointe Apartments  
Site Conditions: Soft

Vehicle Type	Vehicle Mix 1 (Vehicle Mix 1 (Local))			Vehicle Mix 2 (Vehicle Mix 2 (Arterial))			Vehicle Mix 3 (SR-74)			
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	
Automobiles	73.60%	13.60%	10.22%	69.50%	12.90%	9.60%	92.00%	63.75%	13.07%	15.28%
Medium Trucks	0.90%	0.90%	0.04%	1.44%	0.06%	1.50%	3.00%	3.53%	0.64%	1.79%
Heavy Trucks	0.35%	0.04%	0.35%	2.40%	0.10%	2.50%	5.00%	1.06%	0.10%	0.77%

Road Name: Riverside Drive		Segment: North of Lakeshore Drive		Roadway Classification: Urban Arterial						
Average Daily Traffic: 25293 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 3						
NOISE PARAMETERS AT 55 FEET FROM CENTERLINE (Equiv. Lane Dist: 48.99 ft)										
Noise Adjustments			Unmitigated Noise Levels							
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)
Automobiles	67.36	2.35	0.03	-1.20	68.5	65.8	64.9	60.8	68.3	68.8
Medium Trucks	76.31	-9.54	0.03	-1.20	65.6	50.3	48.9	48.6	55.2	55.5
Heavy Trucks	81.16	-14.43	0.03	-1.20	65.6	45.0	40.9	44.9	51.3	51.4
<b>Total:</b>				<b>71.6</b>	<b>65.9</b>	<b>65.0</b>	<b>61.2</b>	<b>68.6</b>	<b>69.1</b>	

Road Name: Riverside Drive		Segment: North of Lincoln Street		Roadway Classification: Urban Arterial						
Average Daily Traffic: 29589 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 3						
NOISE PARAMETERS AT 110 FEET FROM CENTERLINE (Equiv. Lane Dist: 102.85 ft)										
Noise Adjustments			Unmitigated Noise Levels							
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)
Automobiles	67.36	3.03	-4.80	-1.20	64.4	61.6	60.8	56.7	64.2	64.7
Medium Trucks	76.31	-8.86	-4.80	-1.20	61.5	46.1	44.7	44.4	51.1	51.4
Heavy Trucks	81.16	-13.75	-4.80	-1.20	61.4	40.9	36.7	40.8	47.1	47.2
<b>Total:</b>				<b>67.4</b>	<b>61.8</b>	<b>60.9</b>	<b>57.0</b>	<b>64.5</b>	<b>65.0</b>	

Road Name: Riverside Drive		Segment: North of La Harve Street		Roadway Classification: Urban Arterial						
Average Daily Traffic: 25234 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 3						
NOISE PARAMETERS AT 55 FEET FROM CENTERLINE (Equiv. Lane Dist: 38.78 ft)										
Noise Adjustments			Unmitigated Noise Levels							
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)
Automobiles	67.36	2.34	1.55	-1.20	70.0	67.3	66.4	62.3	69.9	70.4
Medium Trucks	76.31	-9.55	1.55	-1.20	67.1	51.8	50.4	50.1	56.7	57.0
Heavy Trucks	81.16	-14.44	1.55	-1.20	67.1	46.5	42.4	46.4	52.8	52.9
<b>Total:</b>				<b>73.1</b>	<b>67.5</b>	<b>66.6</b>	<b>62.7</b>	<b>70.1</b>	<b>70.6</b>	

## FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: YEAR 2017 CUMULATIVE WITHOUT PROJECT

Project: LakePointe Apartments  
Site Conditions: Soft

Road Name: <b>Riverside Drive</b>		Segment: <b>South of La Harve Street</b>		Roadway Classification: <b>Urban Arterial</b>							
Average Daily Traffic: 21710 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 3							
NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 64.06 ft)											
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels			Noise Contour (in feet)				
	RE MEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		
Automobiles	67.36	1.68	-1.72	-1.20	66.1	63.4	62.5	58.4	65.9	66.4	70 dBA: <b>42</b>
Medium Trucks	76.31	-10.20	-1.72	-1.20	63.2	47.9	46.5	46.2	52.8	53.1	65 dBA: <b>90</b>
Heavy Trucks	81.16	-15.09	-1.72	-1.20	63.2	42.6	38.4	42.5	48.8	48.9	60 dBA: <b>195</b>
<b>Total:</b>											
<b>69.2    63.5    62.6    58.8    66.2    66.7</b>											

Road Name: <b>Riverside Drive</b>		Segment: <b>South of Lakeside HS Stadium Way</b>		Roadway Classification: <b>Urban Arterial</b>							
Average Daily Traffic: 21922 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 3							
NOISE PARAMETERS AT 100 FEET FROM CENTERLINE (Equiv. Lane Dist: 92.08 ft)											
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels			Noise Contour (in feet)				
	RE MEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		
Automobiles	67.36	1.73	-4.08	-1.20	63.8	61.1	60.2	56.1	63.6	64.1	70 dBA: <b>39</b>
Medium Trucks	76.31	-10.16	-4.08	-1.20	60.9	45.6	44.2	43.9	50.5	50.8	65 dBA: <b>84</b>
Heavy Trucks	81.16	-15.05	-4.08	-1.20	60.8	40.3	36.1	40.2	46.5	46.6	60 dBA: <b>182</b>
<b>Total:</b>											
<b>66.8    61.2    60.3    56.5    63.9    64.4</b>											

Road Name: <b>Lakeshore Drive</b>		Segment: <b>West of Riverside Drive</b>		Roadway Classification: <b>Urban Arterial</b>							
Average Daily Traffic: 18928 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 2							
NOISE PARAMETERS AT 50 FEET FROM CENTERLINE (Equiv. Lane Dist: 31.29 ft)											
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels			Noise Contour (in feet)				
	RE MEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		
Automobiles	67.36	1.08	2.95	-1.20	70.2	67.8	66.5	60.5	68.9	69.5	70 dBA: <b>48</b>
Medium Trucks	76.31	-13.78	2.95	-1.20	64.3	45.1	37.3	46.5	52.7	52.7	65 dBA: <b>104</b>
Heavy Trucks	81.16	-11.57	2.95	-1.20	71.3	54.4	46.6	55.8	61.9	62.0	60 dBA: <b>225</b>
<b>Total:</b>											
<b>74.3    68.0    66.6    61.9    69.8    70.3</b>											

## FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

### Scenario: YEAR 2017 CUMULATIVE WITH PROJECT

Project: LakePointe Apartments  
Site Conditions: Soft

Vehicle Type	Vehicle Mix 1 (Vehicle Mix 1 (Local))			Vehicle Mix 2 (Vehicle Mix 2 (Arterial))			Vehicle Mix 3 (SR-74)				
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night		
Automobiles	73.60%	13.60%	10.22%	97.42%	69.50%	12.90%	9.60%	92.00%	63.75%	13.07%	15.28%
Medium Trucks	0.90%	0.90%	0.04%	1.84%	1.44%	0.06%	1.50%	3.00%	3.53%	0.64%	1.79%
Heavy Trucks	0.35%	0.04%	0.35%	0.74%	2.40%	0.10%	2.50%	5.00%	1.06%	0.10%	0.77%

Road Name: Riverside Drive		Segment: North of Lakeshore Drive		Roadway Classification: Urban Arterial						
Average Daily Traffic: 25546 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 3						
NOISE PARAMETERS AT 55 FEET FROM CENTERLINE (Equiv. Lane Dist: 48.99 ft)										
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels			Centerline Distance to Noise Contour (in feet)			
	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	
Automobiles	67.36	2.39	0.03	-1.20	68.6	65.8	65.0	60.9	68.4	68.9
Medium Trucks	76.31	-9.50	0.03	-1.20	65.6	50.3	48.9	48.6	55.3	55.5
Heavy Trucks	81.16	-14.38	0.03	-1.20	65.6	45.1	40.9	45.0	51.3	51.4
<b>Total:</b>				<b>71.6</b>	<b>66.0</b>	<b>65.1</b>	<b>61.2</b>	<b>61.2</b>	<b>68.7</b>	<b>69.2</b>

Road Name: Riverside Drive		Segment: North of Lincoln Street		Roadway Classification: Urban Arterial						
Average Daily Traffic: 29993 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 3						
NOISE PARAMETERS AT 110 FEET FROM CENTERLINE (Equiv. Lane Dist: 102.85 ft)										
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels			Centerline Distance to Noise Contour (in feet)			
	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	
Automobiles	67.36	3.09	-4.80	-1.20	64.4	61.7	60.8	56.7	64.3	64.8
Medium Trucks	76.31	-8.80	-4.80	-1.20	61.5	46.2	44.8	44.5	51.1	51.4
Heavy Trucks	81.16	-13.69	-4.80	-1.20	61.5	40.9	36.8	40.8	47.2	47.3
<b>Total:</b>				<b>67.5</b>	<b>61.9</b>	<b>61.0</b>	<b>57.1</b>	<b>57.1</b>	<b>64.5</b>	<b>65.0</b>

Road Name: Riverside Drive		Segment: North of La Harve Street		Roadway Classification: Urban Arterial						
Average Daily Traffic: 25841 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 3						
NOISE PARAMETERS AT 55 FEET FROM CENTERLINE (Equiv. Lane Dist: 38.78 ft)										
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels			Centerline Distance to Noise Contour (in feet)			
	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	
Automobiles	67.36	2.44	1.55	-1.20	70.2	67.4	66.5	62.5	70.0	70.5
Medium Trucks	76.31	-9.45	1.55	-1.20	67.2	51.9	50.5	50.2	56.9	57.1
Heavy Trucks	81.16	-14.33	1.55	-1.20	67.2	46.6	42.5	46.5	52.9	53.0
<b>Total:</b>				<b>73.2</b>	<b>67.6</b>	<b>66.7</b>	<b>62.8</b>	<b>62.8</b>	<b>70.2</b>	<b>70.7</b>

## FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

### Scenario: YEAR 2017 CUMULATIVE WITH PROJECT

Project: LakePointe Apartments  
Site Conditions: Soft

Road Name: <b>Riverside Drive</b>		Segment: <b>South of La Harve Street</b>		Roadway Classification: <b>Urban Arterial</b>															
Average Daily Traffic: 22114 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 3															
NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 64.06 ft)																			
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels			Noise Contour (in feet)												
	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL										
Automobiles	67.36	1.76	-1.72	-1.20	66.2	63.5	62.6	58.5	66.0	66.5	70 dBA:	43	46						
Medium Trucks	76.31	-10.12	-1.72	-1.20	63.3	48.0	46.6	46.3	52.9	53.2	65 dBA:	92	99						
Heavy Trucks	81.16	-15.01	-1.72	-1.20	63.2	42.7	38.5	42.6	48.9	49.0	60 dBA:	197	213						
<b>Total:</b>											<b>69.2</b>	<b>63.6</b>	<b>62.7</b>	<b>58.9</b>	<b>66.3</b>	<b>66.8</b>	<b>55 dBA:</b>	<b>425</b>	<b>458</b>

Road Name: <b>Riverside Drive</b>		Segment: <b>South of Lakeside HS Stadium Way</b>		Roadway Classification: <b>Urban Arterial</b>															
Average Daily Traffic: 22306 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 3															
NOISE PARAMETERS AT 100 FEET FROM CENTERLINE (Equiv. Lane Dist: 92.08 ft)																			
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels			Noise Contour (in feet)												
	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL										
Automobiles	67.36	1.80	-4.08	-1.20	63.9	61.1	60.3	56.2	63.7	64.2	70 dBA:	40	43						
Medium Trucks	76.31	-10.09	-4.08	-1.20	60.9	45.6	44.2	43.9	50.6	50.8	65 dBA:	85	92						
Heavy Trucks	81.16	-14.97	-4.08	-1.20	60.9	40.4	36.2	40.3	46.6	46.7	60 dBA:	184	198						
<b>Total:</b>											<b>66.9</b>	<b>61.3</b>	<b>60.4</b>	<b>56.5</b>	<b>64.0</b>	<b>64.5</b>	<b>55 dBA:</b>	<b>397</b>	<b>427</b>

Road Name: <b>Lakeshore Drive</b>		Segment: <b>West of Riverside Drive</b>		Roadway Classification: <b>Urban Arterial</b>															
Average Daily Traffic: 19029 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 2															
NOISE PARAMETERS AT 50 FEET FROM CENTERLINE (Equiv. Lane Dist: 31.29 ft)																			
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels			Noise Contour (in feet)												
	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL										
Automobiles	67.36	1.11	2.95	-1.20	70.2	67.8	66.6	60.5	68.9	69.6	70 dBA:	49	53						
Medium Trucks	76.31	-13.76	2.95	-1.20	64.3	45.1	37.3	46.5	52.7	52.7	65 dBA:	105	113						
Heavy Trucks	81.16	-11.54	2.95	-1.20	71.4	54.4	46.6	55.8	62.0	62.0	60 dBA:	225	244						
<b>Total:</b>											<b>74.3</b>	<b>68.1</b>	<b>66.6</b>	<b>61.9</b>	<b>69.8</b>	<b>70.3</b>	<b>55 dBA:</b>	<b>485</b>	<b>526</b>