Noise Analysis for the College View Project San Diego, California

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Acronyms and Abbreviations

ADT	Average daily traffic
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
City	City of San Diego
CNEL	community noise equivalent level
dB	Decibel
dB(A)	A-weighted decibel
FHWA	Federal Highway Administration
HVAC	heating, ventilation, and air conditioning
L_{eq}	one-hour equivalent noise level
LOS	Level of Service
L_{pw}	sound power level
MHPA	Multi-Habitat Planning Area
MSCP	Multiple Species Conservation Program
project	College View project
SDSU	San Diego State University
SEL	sound exposure level
USFWS	U.S. Fish and Wildlife Service

Executive Summary

The College View project (project) is located at 5420-22 55th Street in the city of San Diego, California. The 2.39-acre project site is located west of 55th Street and northwest of Canyon Crest Drive adjacent to the San Diego State University campus. The project site is currently developed with a 32-unit apartment complex. The project would demolish the existing buildings on-site and construct a six-story building consisting of 90 multi-family units.

This report discusses potential noise impacts from the construction and operation of the project. As part of this assessment, noise levels due to vehicle traffic were calculated and evaluated against City of San Diego (City) Municipal Code, General Plan Noise Element, and Significance Determination Thresholds. In addition to compatibility, the potential for noise to impact adjacent receivers from future on-site sources and construction activity was assessed. Where impacts were identified, measures have been identified to comply with the City's noise standards and California Environmental Quality Act (CEQA) Significance Thresholds. A summary of the findings is provided below.

Construction Noise

Project construction noise would be generated by diesel engine-driven construction equipment. Construction noise would potentially result in short-term impacts to surrounding properties. Multi-family uses are located north, east, and south of the project site, and Multi-Habitat Planning Area (MHPA) habitat is located west of the project footprint. The construction noise level limit at residential uses is 75 A-weighted decibels [dB(A)] one-hour equivalent noise level (L_{eq}). In addition, for occupied MHPA, although no formal standards have been issued by any agencies, a precedent set over many years is that noise sources associated with projects should not result in noise levels that exceed 60 dB(A) L_{eq} or the existing ambient noise level if greater than 60 dB(A) L_{eq} during the breeding season of federally listed threatened or endangered bird species known to occupy the MHPA lands.

As calculated in this analysis, at the adjacent multi-family uses, construction noise levels would be 75 dB(A) L_{eq} or less. Although the existing adjacent uses would be exposed to construction noise levels that could be heard above ambient conditions, the exposure would be temporary. As construction activities associated with the project would comply with noise level limits from Noise Abatement and Control Ordinance Section 59.5.0404, temporary increases in noise levels from construction activities would be less than significant.

In regards to the adjacent MHPA, construction noise levels would be significant if the habitat is occupied and if, during the breeding season, construction noise levels exceed 60 dB(A) L_{eq} or existing ambient noise level if above 60 dB(A) L_{eq}. As shown in Table 7 below, construction noise levels are anticipated to exceed 60 dB(A) L_{eq}. However, based on the results of the Biological Survey Report prepared for the project (RECON 2020), coastal

California gnatcatchers are likely not present adjacent to the project site and there is low potential for the species to occur on the project site. Based on these results of the Biological Survey Report, construction noise impacts to adjacent habitat would not be significant. Additionally, as discussed in the Biological Survey Report, the project would be required to comply with all MHPA land use adjacency guidelines as a condition of project approval.

Vehicle Traffic Noise

On-site Noise Compatibility

The main source of traffic noise at the project site is vehicle traffic on 55th Street and Remington Road. According to the General Plan Noise Element, multi-family residential uses are considered "compatible" with exterior noise levels up to 60 community noise equivalent level (CNEL) and "conditionally compatible" with exterior noise levels up to 70 CNEL. The City's interior noise level standard for all residential uses is 45 CNEL.

As calculated in this analysis, noise levels due to vehicle traffic would be 55 CNEL or less across the entire project, and would not exceed the City's "compatible" noise level of 60 CNEL. Additionally, even with windows in an open position, interior noise levels would be reduced to 45 CNEL or less. The project would be compatible with the City's exterior and interior noise standards.

Off-site Vehicle Traffic Noise

The project would increase traffic volumes on local roadways. However, the project would not substantially alter the vehicle classification mix on local or regional roadways nor would the project alter the speed on an existing roadway or create a new roadway. Thus, the primary factor affecting off-site noise levels would be increased traffic volumes. A substantial noise increase is defined as an increase of 3 dB above existing conditions as stated in the City's CEQA significance standards.

As calculated in this analysis, direct off-site noise level increases due to the project would be less than 1 dB. Therefore, direct off-site noise impacts associated with the project would be less than significant. Similar to direct traffic noise impacts, a cumulative traffic noise impact occurs when the noise level would exceed the applicable standard and a substantial noise level increase compared to existing noise occurs. The total horizon (year 2035) with project increase over the existing condition would be less than 3 dB with the exception of Remington Road west of 55th Street. However, the project's contribution to the cumulative noise increase would be 0.2 decibel, which would not be a cumulatively significant contribution. Additionally, the land uses adjacent to this roadway segment include multi-family residential uses and active recreation, and overall noise levels would not exceed the City's threshold of 65 CNEL. Therefore, cumulative off-site noise impacts associated with the project would be less than significant.

On-site Generated Noise

The noise sources on the project site after completion of construction are anticipated to be those that would be typical of any residential complex, such as vehicles arriving and leaving, children at play, and landscape maintenance machinery. None of these noise sources is anticipated to violate the City's Noise Abatement and Control Ordinance or result in a substantial permanent increase in existing noise levels. However, the project would include rooftop heating, ventilation, and air conditioning (HVAC) units and a pool deck. Noise generated by these sources was modeled to determine if they would produce noise in excess of City limits. Noise levels due to these on-site noise sources were modeled at the adjacent MHPA and the adjacent properties. Noise levels would also be less than 60 dB(A) L_{eq} at the adjacent MHPA, and would be less than the applicable Noise Abatement and Control Ordinance limits at the adjacent properties as well as within the project site. Operational noise from the project (HVAC units and pool deck) also would not result in a land use incompatibility (see Table 1) at the adjacent uses or at the proposed residential uses. Therefore, on-site generated noise would be less than significant. No mitigation for on-site generated noise would be required.

Vibration

On-site construction equipment that would cause the most noise and vibration would be associated with the use of the drill rig, large bulldozers and trucks. Vibration impacts would be significant if they exceed 0.1 inch per second (in/sec) peak particle velocity (PPV). Vibration levels at the closest structures were calculated using standard vibration propagation rates. As calculated in this analysis, vibration levels at the nearest structures would not exceed 0.1 in/sec PPV. Thus, groundborne vibration impacts generated during construction would be less than significant. No mitigation would be required.

Once construction is complete, the project would not be a source of groundborne vibration during operation. Operational vibration impacts would be less than significant and no mitigation would be required.

1.0 Introduction

1.1 Project Description

The College View project (project) is located at 5420-22 55th Street in the city of San Diego, California. The 2.39-acre project site is located west of 55th Street and northwest of Canyon Crest Drive adjacent to the San Diego State University (SDSU) campus. Existing development occurs to the east and south of the site. A local canyon occurs to the west of the site along with scattered smaller developments on the ridgelines. The project site is currently developed with a 32-unit apartment complex. Figure 1 shows the regional location of the project site. Figure 2 shows an aerial photograph of the project vicinity.

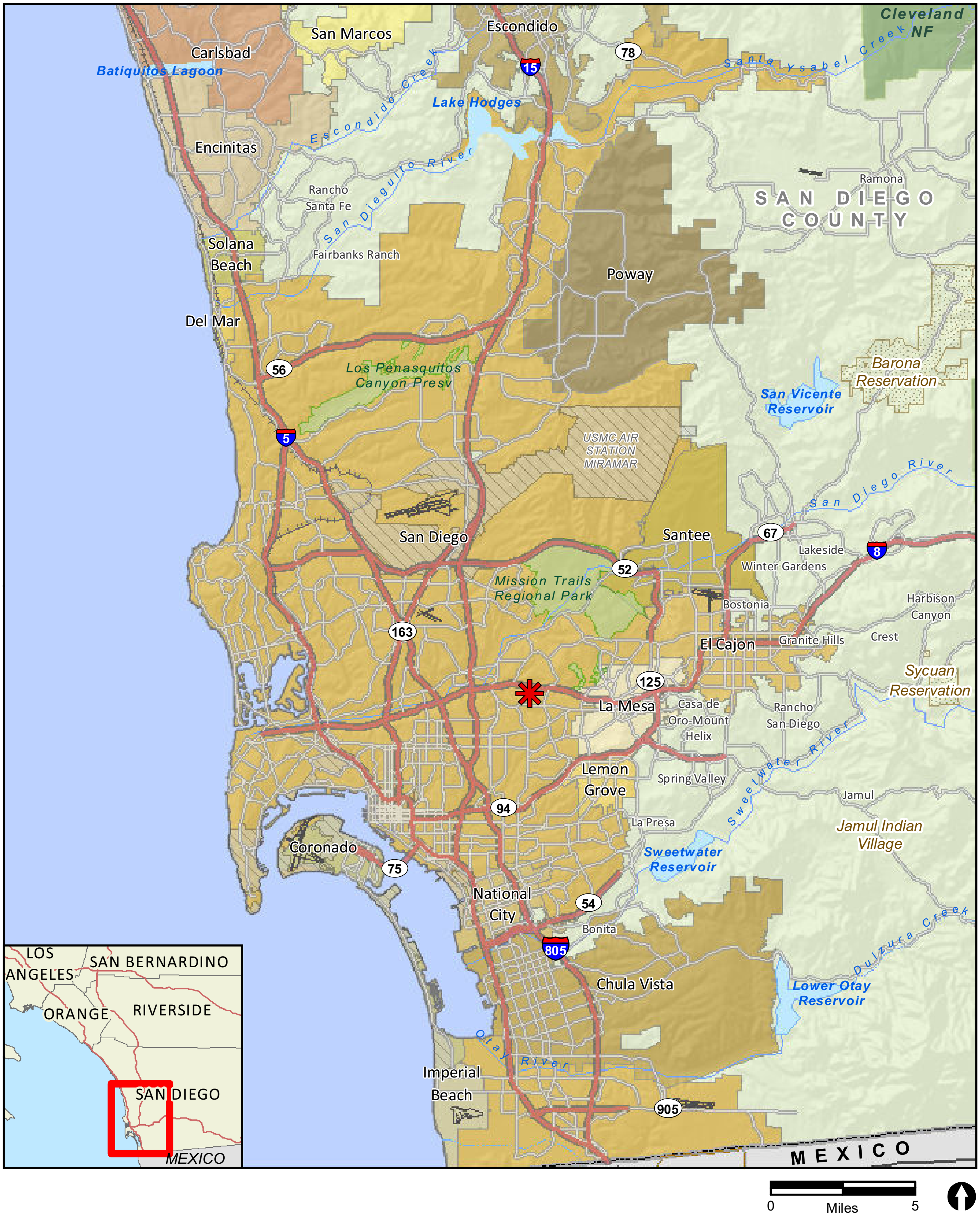
The project would demolish the existing buildings on site and construct a six-story building consisting of 90 multi-family units. The first level would consist of a 48-space parking garage. The project would also include a leasing office, fitness center, a podium deck with a pool and spa, storage units, bicycle parking, and other amenities. Figure 3 shows the proposed site plan.

1.2 Fundamentals of Noise

Sound levels are described in units called the decibel (dB). Decibels are measured on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale used for earthquake magnitudes. Thus, a doubling of the energy of a noise source, such as doubling of traffic volume, would increase the noise level by 3 dB; a halving of the energy would result in a 3 dB decrease.

Additionally, in technical terms, sound levels are described as either a "sound power level" or a "sound pressure level," which while commonly confused are two distinct characteristics of sound. Both share the same unit of measure, the dB. However, sound power, expressed as L_{pw}, is the energy converted into sound by the source. The L_{pw} is used to estimate how far a noise will travel and to predict the sound levels at various distances from the source. As sound energy travels through the air, it creates a sound wave that exerts pressure on receivers such as an eardrum or microphone and is the sound pressure level. Noise measurement instruments only measure sound pressure, and noise level limits used in standards are generally sound pressure levels.

The human ear is not equally sensitive to all frequencies within the sound spectrum. To accommodate this phenomenon, the A-scale, which approximates the frequency response of the average young ear when listening to most ordinary everyday sounds, was devised. When people make relative judgments of the loudness or annoyance of a sound, their judgments correlate well with the A-scale sound levels of those sounds. Therefore, the "A-weighted" noise scale is used for measurements and standards involving the human perception of noise. Noise levels using A-weighted measurements are designated with the notation dB(A).



Project Location

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FIGURE 1
Regional Location

Image Source: Nearmap (flown January 2020)

FIGURE 2
Project Location on Aerial Photograph

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Map Source: ktgy Architecture + Planning

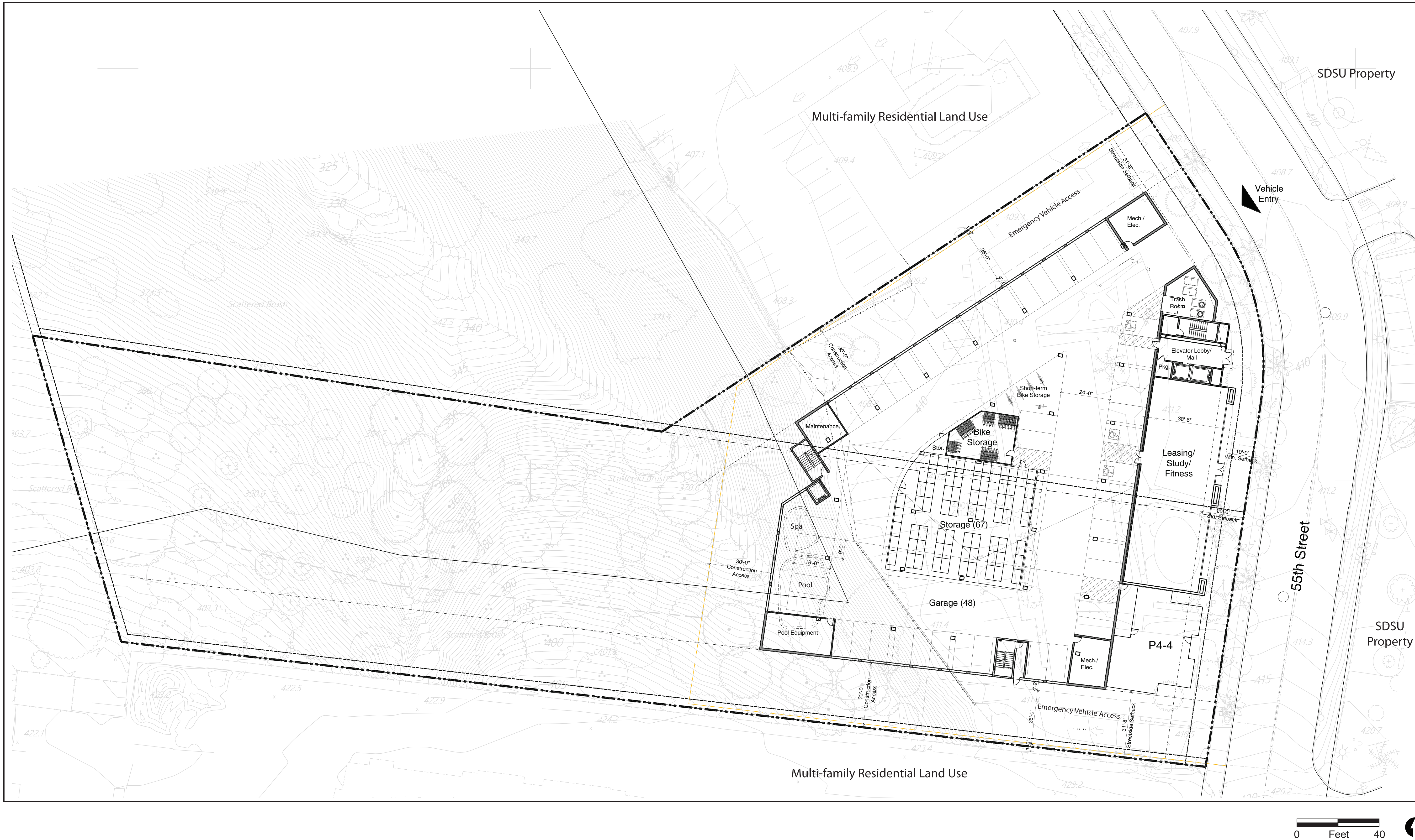

FIGURE 3
Site Plan

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The impact of noise is not a function of loudness alone. The time of day when noise occurs and the duration of the noise are also important. In addition, most noise that lasts for more than a few seconds is variable in its intensity. Consequently, a variety of noise descriptors has been developed. The noise descriptors used for this study are the one-hour equivalent noise level (L_{eq}), the community noise equivalent level (CNEL), and the sound exposure level (SEL). The CNEL is a 24-hour equivalent sound level. The CNEL calculation applies an additional 5 dB(A) penalty to noise occurring during evening hours, between 7:00 p.m. and 10:00 p.m., and an additional 10 dB(A) penalty is added to noise occurring during the night, between 10:00 p.m. and 7:00 a.m. These increases for certain times are intended to account for the added sensitivity of humans to noise during the evening and night. The SEL is a noise level over a stated period of time or event and normalized to one second.

Sound from a small, localized source (approximating a "point" source) radiates uniformly outward as it travels away from the source in a spherical pattern, known as geometric spreading. The sound level decreases or drops off at a rate of 6 dB(A) for each doubling of the distance.

Traffic noise is not a single, stationary point source of sound. The movement of vehicles makes the source of the sound appear to emanate from a line (line source) rather than a point when viewed over some time interval. The drop-off rate for a line source is 3 dB(A) for each doubling of distance.

The propagation of noise is also affected by the intervening ground, known as ground absorption. A hard site (such as parking lots or smooth bodies of water) receives no additional ground attenuation, and the changes in noise levels with distance (drop-off rate) are simply the geometric spreading of the source. A soft site (such as soft dirt, grass, or scattered bushes and trees) receives an additional ground attenuation value of 1.5 dB(A) per doubling of distance. Thus, a point source over a soft site would attenuate at 7.5 dB(A) per doubling of distance.

Human perception of noise has no simple correlation with acoustical energy. A change in noise levels is generally perceived as follows: 3 dB(A) barely perceptible, 5 dB(A) readily perceptible, and 10 dB(A) perceived as a doubling or halving of noise (California Department of Transportation [Caltrans] 2013a).

2.0 Applicable Standards

2.1 City of San Diego General Plan

The City of San Diego's (City's) Noise Element of the General Plan specifies compatibility standards for different land use categories (Table 1). Multi-family residential uses are considered "compatible" with exterior noise levels up to 60 CNEL and "conditionally compatible" with exterior noise levels up to 70 CNEL. The City's interior noise level standard for all residential uses is 45 CNEL.

2.2 CEQA Significance Thresholds

The noise section of the City's Significance Determination Thresholds for the California Environmental Quality Act (CEQA) identifies thresholds for traffic noise (City of San Diego 2016). These noise thresholds are summarized in Table 2. According to these thresholds, exposure of multi-family residential uses to noise levels in excess of 65 CNEL would be considered a significant impact. This exterior noise level is applied at exterior usable areas.

2.3 City of San Diego Municipal Code

2.3.1 On-Site Generated Noise

Section 59.5.0401 of the City's Noise Abatement and Control Ordinance states that:

A. It shall be unlawful for any person to cause noise by any means to the extent that the one-hour average sound level exceeds the applicable limit.

B. The sound level limit at a location on a boundary between two zoning districts is the arithmetic mean of the respective limits for the two districts.

The applicable noise limits of the City's Noise Abatement and Control Ordinance are summarized in Table 3.

Multi-family residential uses are located north and south of the project site, single-family residences are located west of the project site across the adjacent open space, and SDSU property is located east of the project site. The applicable limits between the project site and the multi-family residential uses are 60 dB(A) L_{eq} during the daytime hours, 55 dB(A) L_{eq} during the evening hours, and 50 dB(A) L_{eq} during the nighttime hours. The applicable limits between the project site and the single-family residential use are 55 dB(A) L_{eq} during the daytime hours, 50 dB(A) L_{eq} during the evening hours, and 45 dB(A) L_{eq} during the nighttime hours.

Table 1
City of San Diego Land Use – Noise Compatibility Guidelines

Land Use Category	Exterior Noise Exposure [dB(A) CNEL]				
		60	65	70	75
Parks and Recreational					
Parks, Active and Passive Recreation					
Outdoor Spectator Sports, Golf Courses; Water Recreational Facilities; Indoor Recreation Facilities					
Agricultural					
Crop Raising and Farming; Community Gardens, Aquaculture, Dairies; Horticulture Nurseries and Greenhouses; Animal Raising, Maintaining and Keeping; Commercial Stables					
Residential					
Single Dwelling Units; Mobile Homes		45			
Multiple Dwelling Units **For uses affected by aircraft noise, refer to Policies NE-D.2. & NE-D.3.*		45	45		
Institutional					
Hospitals; Nursing Facilities; Intermediate Care Facilities; Kindergarten through Grade 12 Educational Facilities; Libraries; Museums; Child Care Facilities		45			
Other Educational Facilities including Vocational/Trade Schools and Colleges and Universities		45	45		
Cemeteries					
Retail Sales					
Building Supplies/Equipment; Food, Beverage, and Groceries; Pets and Pet Supplies; Sundries, Pharmaceutical, and Convenience Sales; Wearing Apparel and Accessories			50	50	
Commercial Services					
Building Services; Business Support; Eating and Drinking; Financial Institutions; Maintenance & Repair; Personal Services; Assembly and Entertainment (includes public and religious assembly); Radio and Television Studios; Golf Course Support			50	50	
Visitor Accommodations		45	45	45	
Offices					
Business and Professional; Government; Medical, Dental, and Health Practitioner; Regional and Corporate Headquarters			50	50	
Vehicle and Vehicular Equipment Sales and Services Use					
Commercial or Personal Vehicle Repair and Maintenance; Commercial or Personal Vehicle Sales and Rentals; Vehicle Equipment and Supplies Sales and Rentals; Vehicle Parking					
Wholesale, Distribution, Storage Use Category					
Equipment and Materials Storage Yards; Moving and Storage Facilities; Warehouse; Wholesale Distribution					
Industrial					
Heavy Manufacturing; Light Manufacturing; Marine Industry; Trucking and Transportation Terminals; Mining and Extractive Industries					
Research and Development				50	

	Compatible	**Indoor Uses**	Standard construction methods should attenuate exterior noise to an acceptable indoor noise level. Refer to Section I [of the General Plan Noise Element].
		Outdoor Uses	Activities associated with the land use may be carried out.
45, 50	**Conditionally Compatible**	**Indoor Uses**	Building structure must attenuate exterior noise to the indoor noise level indicated by the number (45 or 50) for occupied areas. Refer to Section I [of the General Plan Noise Element].
		Outdoor Uses	Feasible noise mitigation techniques should be analyzed and incorporated to make the outdoor activities acceptable. Refer to Section I [of the General Plan Noise Element].
	Incompatible	**Indoor Uses**	New construction should not be undertaken.
		Outdoor Uses	Severe noise interference makes outdoor activities unacceptable.

SOURCE: City of San Diego 2015.

Table 2 Traffic Noise Significance Thresholds [dB(A) CNEL]			
Structure or Proposed Use that would be Impacted by Traffic Noise	Interior Space	Exterior Useable Space*	General Indication of Potential Significance
Single-family detached	45 dB	65 dB	Structure or outdoor useable area is <50 feet from the center of the closest (outside) lane on a street with existing or future ADTs >7,500
Multi-family, school, library, hospital, day care center, hotel, motel, park, convalescent home	Development Services Department ensures 45 dB pursuant to Title 24	65 dB	
Office, church, business, professional uses	n/a	70 dB	Structure or outdoor useable area is <50 feet from the center of the closest lane on a street with existing or future ADTs >20,000
Commercial, retail, industrial, outdoor spectator sports uses	n/a	75 dB	Structure or outdoor useable area is <50 feet from the center of the closest lane on a street with existing or future ADTs >40,000

SOURCE: City of San Diego 2016.
ADT = average daily trips; dB = decibel
*If a project is currently at or exceeds the significance thresholds for traffic noise described above and noise levels would result in less than a 3 dB increase, then the impact is not considered significant.

Table 3 Applicable Noise Level Limits		
Land Use	Time of Day	One-Hour Average Sound Level [dB(A) L_{eq}]
Single-family Residential	7:00 a.m. to 7:00 p.m. 7:00 p.m. to 10:00 p.m. 10:00 p.m. to 7:00 a.m.	50 45 40
Multi-family Residential (up to a maximum density of 1 unit/2,000 square feet)	7:00 a.m. to 7:00 p.m. 7:00 p.m. to 10:00 p.m. 10:00 p.m. to 7:00 a.m.	55 50 45
All other Residential	7:00 a.m. to 7:00 p.m. 7:00 p.m. to 10:00 p.m. 10:00 p.m. to 7:00 a.m.	60 55 50
Commercial	7:00 a.m. to 7:00 p.m. 7:00 p.m. to 10:00 p.m. 10:00 p.m. to 7:00 a.m.	65 60 60
Industrial or Agricultural	Anytime	75

SOURCE: City of San Diego Noise Abatement and Control Ordinance Section 59.5.0401.
dB(A) L_{eq} = A-weighted decibels equivalent noise level

2.3.2 Construction Noise

Section 59.5.0404 of the City's Noise Abatement and Control Ordinance states that:

A. It shall be unlawful for any person, between the hours of 7:00 p.m. of any day and 7:00 a.m. of the following day, or on legal holidays as specified in Section 21.04 of the San Diego Municipal Code, with exception of Columbus Day and Washington's Birthday, or on Sundays, to erect, construct, demolish, excavate for, alter or repair any building or structure in such a manner as to create disturbing, excessive or offensive noise. . . .

B. . . . it shall be unlawful for any person, including the City of San Diego, to conduct any construction activity so as to cause, at or beyond the property lines of any property zoned residential, an average sound level greater than 75 decibels during the 12-hour period from 7:00 a.m. to 7:00 p.m.

Construction would be restricted to between the hours of 7:00 a.m. and 7:00 p.m. and construction noise levels may not exceed a 12-hour equivalent noise level [dB(A) $L_{eq(12)}$] of 75 dB(A) $L_{eq(12)}$ as assessed at or beyond the property line of a property zoned residential. A residential use is located immediately south of the project site.

2.5 California Code of Regulations

Interior noise levels for habitable rooms are regulated also by Title 24 of the California Code of Regulations California Noise Insulation Standards. Title 24, Chapter 12, Section 1206.4, of the 2019 California Building Code requires that interior noise levels attributable to exterior sources not exceed 45 CNEL in any habitable room (California Code of Regulations 2019). A habitable room is a room used for living, sleeping, eating, or cooking. Bathrooms, closets, hallways, utility spaces, and similar areas are not considered habitable rooms for this regulation (24 California Code of Regulations, Chapter 12, Section 1206.4 2019).

2.6 Sensitive Habitat/MHPA Land Use Adjacency Guidelines

The U.S. Fish and Wildlife Service (USFWS) and other resource agencies, such as the U.S. Army Corps of Engineers and California Department of Fish and Wildlife, require limitation of noise levels to the habitats of threatened and endangered birds. Although no formal standards have been issued by these agencies, the precedent set over many years is that projects shall not result in noise levels that exceed 60 dB(A) L_{eq}, or the existing ambient noise level if greater than 60 dB(A) L_{eq}, at designated Multi-Habitat Planning Area (MHPA) habitat or a known nesting site for a federally listed threatened or endangered bird species during the breeding season. Based on this precedent, during the breeding seasons, the City requires that noise levels generated by a project shall not exceed 60 dB(A) L_{eq} at the edge of the occupied habitat or the existing ambient level if the ambient level is above 60 dB(A) L_{eq} (City of San

Diego 2016 and 2018). Likewise, the City has regulations to protect its MHPA lands. The project has the potential for indirect impacts to the adjacent MHPA along the western portion of the project site and is therefore required to adhere to Multiple Species Conservation Program (MSCP) Section 1.4.3 (City of San Diego 1997). With respect to noise, due to the site's location adjacent to or within the MHPA where the Qualified Biologist has identified potential nesting habitat for listed avian species, construction noise that exceeds the maximum levels allowed shall be avoided during the breeding seasons for coastal California gnatcatcher (March 1 to August 15) (RECON 2020). If protocol surveys are not conducted in suitable habitat during the breeding season for the aforementioned listed species, presence shall be assumed with implementation of noise attenuation measures which shall include assurance that construction noise will not exceed the maximum levels allowed.

3.0 Existing Conditions

Existing noise levels at the project site were measured on February 19, 2020, using one Larson-Davis LxT Sound Expert Sound Level Meters, serial number 3829. The following parameters were used:

Filter:	A-weighted
Response:	Slow
Time History Period:	5 seconds

The meter was calibrated before and after each measurement. The meter was set 5 feet above the ground level for each measurement.

Noise measurements were taken to obtain typical ambient noise levels at the project site and in the vicinity. Two 15-minute measurements were taken, as described below. The measurement locations are shown on Figure 4, and detailed data is contained in Attachment 1.

Measurement 1 was located at the western edge of the proposed limits of disturbance at the MHPA boundary. Noise levels were relatively quiet, with distant vehicle traffic from Interstate 8 to the north, and aircraft flyovers. The average measured noise level was 46.3 dB(A) L_{eq}.

Measurement 2 was located at the eastern project boundary, adjacent to 55th Street. The main source of noise included vehicle traffic on 55th Street and pedestrians. The average measured noise level was 54.7 dB(A) L_{eq}.

Image Source: Nearmap (flown January 2020)

Measurement Locations

Project Boundary

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FIGURE 4
Noise Measurement Locations

Noise measurements are summarized in Table 4.

Table 4 Noise Measurements				
Measurement	Location	Time	Noise Sources	L_{eq}
1	Boundary between limits of disturbance and MHPA	11:18 a.m. – 11:33 a.m.	Distant vehicle traffic and aircraft	46.3
2	Eastern project boundary adjacent to 55th Street	11:46 a.m. – 12:01 p.m.	Vehicle traffic and pedestrians	54.7
NOTE: Noise measurement data is contained in Attachment 1.				

4.0 Analysis Methodology

Noise level predictions and contour mapping were developed using noise modeling software, SoundPlan Essential, version 4.1 (Navcon Engineering 2018). SoundPLAN calculates noise propagation based on the International Organization for Standardization method (ISO 9613-2 – Acoustics, Attenuation of Sound during Propagation Outdoors). The model calculates noise levels at selected receiver locations using input parameter estimates such as total noise generated by each noise source; distances between sources, barriers, and receivers; and shielding provided by intervening terrain, barriers, and structures. The model outputs can be developed as noise level contour maps or noise levels at specific receivers. In all cases, receivers were modeled at 5 feet above ground elevation, which represents the average height of the human ear.

4.1 Construction Noise Analysis

Project construction noise would be generated by diesel engine-driven construction equipment used for site preparation and grading, building construction, loading, unloading, and placing materials and paving. Diesel engine-driven trucks also would bring materials to the site and remove the soils from excavation.

Construction equipment with a diesel engine typically generates maximum noise levels from 70 to 95 dB(A) L_{eq} at a distance of 50 feet (Federal Highway Administration [FHWA] 2006). Table 5 summarizes typical construction equipment noise levels.

Table 5
Typical Construction Equipment Noise Levels

Equipment	Noise Level at 50 Feet [dB(A) L_{eq}][1]	Typical Duty Cycle[2]
Auger Drill Rig	84	20%
Backhoe	80	40%
Blasting	94	1%
Chain Saw	85	20%
Clam Shovel	93	20%
Compactor (ground)	80	20%
Compressor (air)	80	40%
Concrete Mixer Truck	85	40%
Concrete Pump	82	20%
Concrete Saw	90	20%
Crane (mobile or stationary)	81	16%
Dozer	85	40%
Dump Truck	84	40%
Excavator	85	40%
Front End Loader	80	40%
Generator (25 kilovolt amps or less)	70	50%
Generator (more than 25 kilovolt amps)	82	50%
Grader	85	40%
Hydra Break Ram	90	10%
Impact Pile Driver (diesel or drop)	95	20%
In situ Soil Sampling Rig	84	20%
Jackhammer	85	20%
Mounted Impact Hammer (hoe ram)	90	20%
Paver	85	50%
Pneumatic Tools	85	50%
Pumps	77	50%
Rock Drill	85	20%
Roller	74	40%
Scraper	85	40%
Tractor	84	40%
Vacuum Excavator (vac-truck)	85	40%
Vibratory Concrete Mixer	80	20%
Vibratory Pile Driver	95	20%

SOURCE: FHWA 2006.
[1]Noise levels based on those specified in FHWA Road Construction Noise Model.
[2]Amount of time equipment operates at full power.

Construction of the project would require the use of a drill rig at the western side of the proposed building in order to place piers to support the building and the deck over the existing slope. The exact location of the piers is not known at this time. In order to determine potential noise levels at the adjacent properties due to use of a drill rig, noise levels were modeled at two potential drilling locations nearest to the adjacent MHPA and residential uses. As shown in Table 5, drill rigs generate a maximum noise level of 84 dB(A) L_{eq} at 50 feet with a duty cycle of 20 percent. Drill rig noise contours are shown in Figures 5a and 5b in Section 5.1.

The other loudest phase of construction would be grading activities. During grading, equipment moves to different locations and goes through varying load cycles, and there are breaks for the operators and for non-equipment tasks, such as measurement. Although maximum noise levels may be 70 to 95 dB(A) at a distance of 50 feet during most construction activities, hourly average noise levels from the grading phase of construction would be less. For this analysis, the simultaneous operation of two large pieces of construction equipment was modeled. This equipment would generate an average hourly noise level of 82 dB(A) L_{eq} at 50 feet from the center of construction activity. Grading noise contours are shown in Figure 6 in Section 5.1.

4.2 Traffic Noise Analysis

4.2.1 On-site Noise Compatibility

The SoundPLAN program uses the FHWA Traffic Noise Model algorithms and reference levels to calculate traffic noise levels at selected receiver locations. The model uses various input parameters, such as projected hourly average traffic rates; vehicle mix, distribution, and speed; roadway lengths and gradients; distances between sources, barriers, and receivers; and shielding provided by intervening terrain, barriers, and structures. Receivers, roadways, and barriers were input into the model using three-dimensional coordinates.

The main source of traffic noise at the project site is vehicle traffic on 55th Street and Remington Road. For the purpose of the future traffic noise compatibility analysis, future year 2035 plus project traffic volumes were modeled. Future traffic volumes were obtained from the Transportation Impact Analysis prepared for the SDSU Student Housing project located immediately south of the project site (Linscott, Law & Greenspan [LLG] 2017). Trips generated by the proposed project were calculated using the same trip generation rate used in the SDSU Student Housing study. Based on a trip generation rate of 1.46 trips per bed and accounting for at 10 percent trip reduction due to proximity to the trolley and campus (LLG 2017), the project would generate 396 daily trips. As a conservative analysis, the total project trips were added to the each of the modeled roadway segments. The SDSU Student Housing study does not provide a future traffic volume for 55th Street north of Remington Road. For this segment, a future volume of 800 average daily traffic (ADT) was obtained from San Diego Association of Governments traffic projections (SANDAG; 2020). The future plus project modeled traffic volumes for 55th Street south of Remington Road was 25,241 ADT, and the modeled volume for Remington Road west of 55th Street was 8,245 ADT. A standard vehicle classification mix of 95 percent automobiles, 2 percent medium trucks, 1 percent heavy trucks, 1 percent motorcycles, and 1 percent buses was modeled.

4.2.2 Off-site Vehicle Traffic Noise

Off-site traffic noise was modeled using the FHWA Traffic Noise Prediction Model algorithms and reference levels. Traffic noise levels were calculated at 50 feet from the centerline of the affected roadways to determine the noise level increase associated with the project. The model uses various input parameters, such as traffic volumes, vehicle mix, distribution, and speed.

The study area of the Transportation Impact Analysis prepared for the SDSU Student Housing project included the following local roadway segments: Montezuma Road, Remington Road, 55th Street, and College Avenue. As discussed in Section 4.2.1, as a conservative analysis, the total number of project trips (396 ADT) was added to each of the roadway segments. Traffic noise levels were calculated based on the total average daily traffic volume on each roadway segment. For modeling purposes, "hard" ground conditions were used for the analysis of future conditions, since a majority of the project area is paved and the hard site provides the most conservative impact assessment.

Existing and horizon (year 2035) traffic volumes with and without the project are summarized in Table 6.

Table 6
Traffic Volumes

Roadway Segment	Existing	Existing + Project	Horizon	Horizon + Project
Montezuma Road				
Collwood Boulevard to 55th Street	30,871	31,267	43,021	43,417
55th Street to College Avenue	33,244	33,640	39,794	40,190
East of College Avenue	21,803	22,199	25,963	26,359
Remington Road				
West of 55th Street	3,279	3,675	7,849	8,245
55th Street				
Remington Road to Montezuma Road	20,705	21,101	24,845	25,241
College Avenue				
Canyon Crest Drive to Zura Way	35,850	36,246	67,000	67,396
Zura Way to Montezuma Road	29,790	30,186	38,020	38,416
Montezuma Road to Arosa Street	27,871	28,267	33,841	34,237

4.3 On-site Generated Noise Analysis

The noise sources on the project site after completion of construction are anticipated to be those that would be typical of any residential complex, such as vehicles arriving and leaving, pedestrians, and landscape maintenance machinery. None of these noise sources is anticipated to violate the City's Noise Abatement and Control Ordinance or result in a substantial permanent increase in existing noise levels. However, the project would include rooftop heating, ventilation, and air conditioning (HVAC) units and a pool deck. Noise generated by these sources was modeled to determine if property line noise levels would exceed the limits established in the Noise Abatement and Control Ordinance (see Table 3). The following is a discussion of the methodology used to model on-site generated noise sources, and the results are presented in Section 5.3.

It is not known at this time which manufacturer, brand, or model of unit or units would be selected for use in the project. For the purposes of this analysis, to determine what general noise levels the HVAC units would generate, it was assumed that the rooftop units would be similar to a Carrier unit with a sound power level of 75 dB(A). The unit specification sheets are included in Attachment 2. Noise levels were modeled with all units operating at full capacity during the daytime and nighttime hours.

The project would also include a pool deck. Based on measurements taken of open swimming activities of approximately 25 children at a YMCA open air pool, noise levels from swimming pool activities were modeled using a sound power level of 92.5 dB(A) (Ldn Consulting 2014). It was assumed that the pool would be closed for use during the nighttime hours. The pool would also include mechanical equipment; however, this would be housed within enclosed rooms on the pool deck level and within the first floor parking garage area below the pool and would, therefore, not generate significant noise levels at the adjacent properties.

5.0 Future Acoustical Environment and Impacts

5.1 Construction Noise

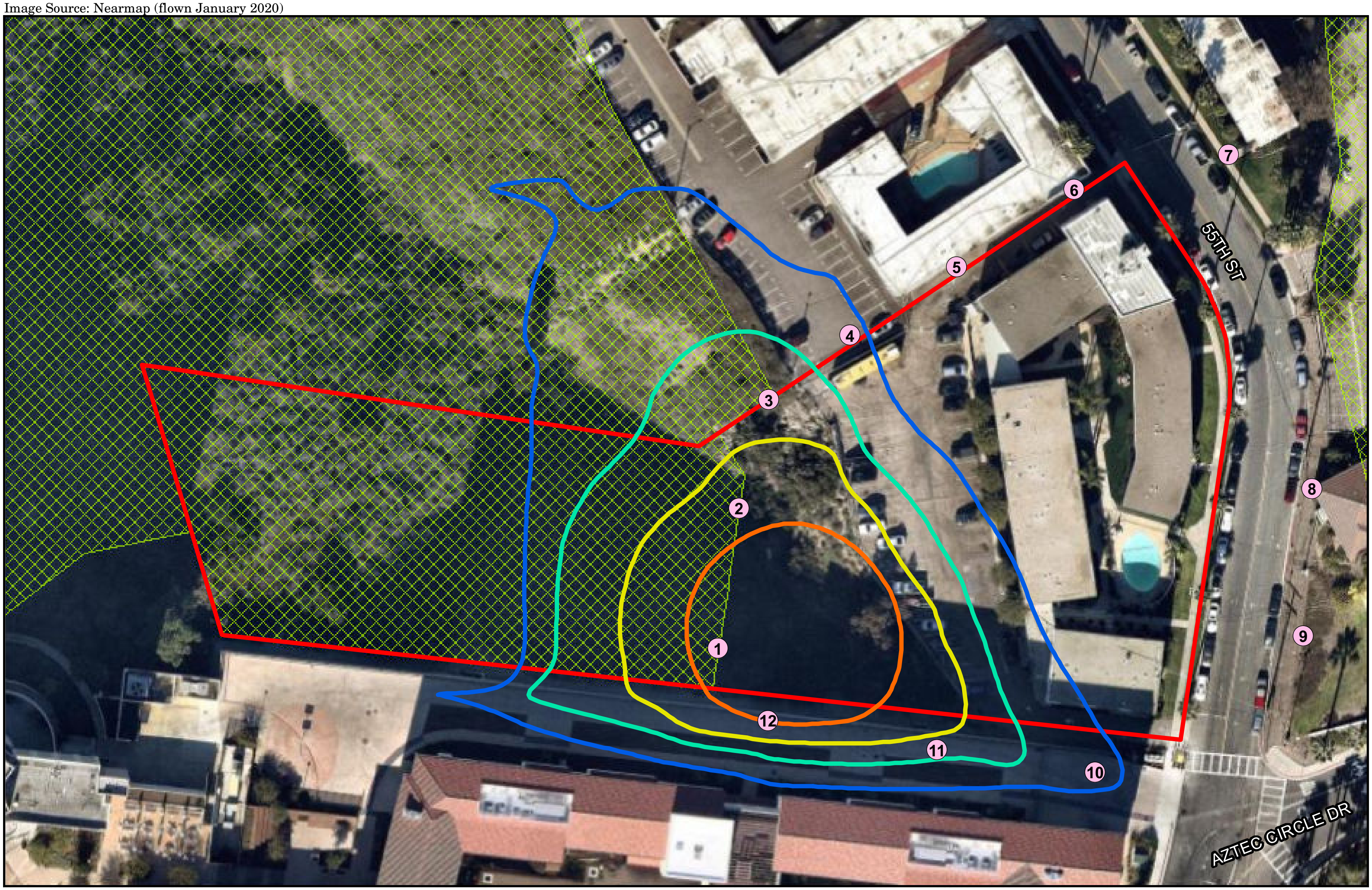
Noise associated with the grading and drilling for the project would potentially result in short-term impacts to surrounding properties. Construction noise is considered a point source and would attenuate at approximately 6 dB(A) for every doubling of distance. As discussed in Section 4.1, drilling noise levels were modeled at two potential drilling locations nearest to the adjacent MHPA and residential uses. Grading activities were modeled as an area source distributed over the grading footprint on the eastern portion of the project site. Noise levels were modeled at a series of 12 receivers located at the adjacent MHPA and the adjacent properties. The results are summarized in Table 7. Drilling noise contours for modeled location 1 and location 2 are shown in Figures 5a and 5b, respectively. Grading noise contours are shown in Figure 6. SoundPLAN data is contained in Attachment 3.

Table 7
Construction Noise Levels at Off-site Receivers [dB(A) L_{eq}]

Receiver	Land Use	Drilling Noise Level		Grading Noise Level
		Drilling Location 1	Drilling Location 2	
1	MHPA	78	72	68
2	MHPA	73	77	63
3	MHPA	68	74	68
4	Multi-Family Residential	61	66	74
5	Multi-Family Residential	53	61	75
6	Multi-Family Residential	47	56	74
7	Multi-Family Residential	44	52	69
8	Student Center	46	52	71
9	Student Center	51	55	71
10	Multi-Family Residential	61	59	74
11	Multi-Family Residential	66	67	73
12	Multi-Family Residential	72	69	70

dB(A) L_{eq} = A-weighted decibels equivalent noise level
MHPA = multi-habitat planning area

Image Source: Nearmap (flown January 2020)



Adjacent Receivers
Project Boundary
Multi-habitat Planning Area

Drilling Noise
60 dB(A) Leq
65 dB(A) Leq
70 dB(A) Leq
75 dB(A) Leq

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FIGURE 5a

Drilling Noise Contours - Modeled Location 1

Image Source: Nearmap (flown January 2020)

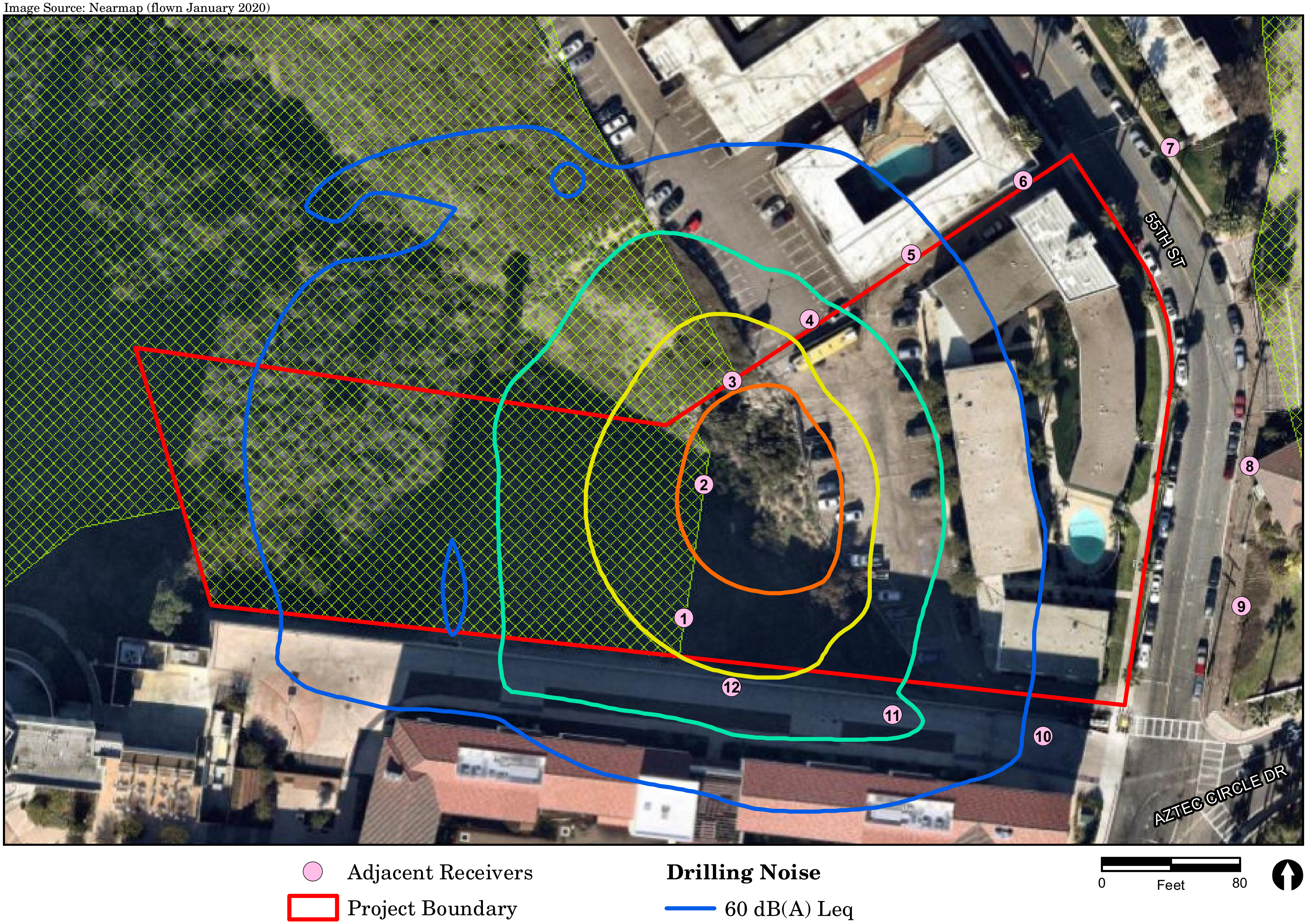

FIGURE 5b
Drilling Noise Contours - Modeled Location 2

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Image Source: Nearmap (flown January 2020)

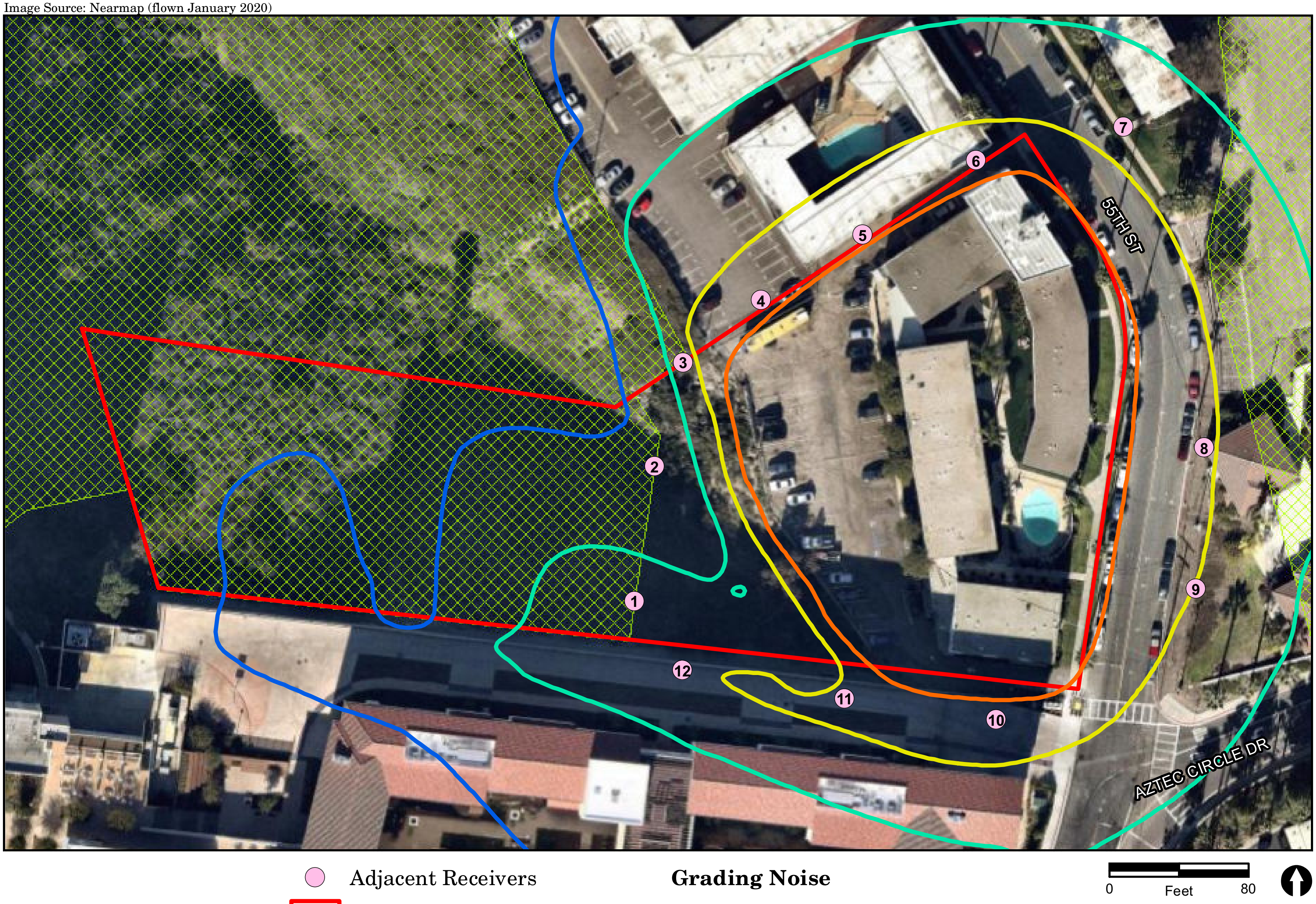

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FIGURE 6
Grading Noise Contours

As shown, at the adjacent multi-family uses, drilling noise levels would range from 44 to 72 dB(A) L_{eq} and grading noise levels would range from 69 to 75 dB(A) L_{eq}. All other construction activities would generate noise levels that are less than these drilling and grading noise levels. Construction noise levels are not anticipated to exceed 75 dB(A) L_{eq} at the adjacent residential use. Although the existing adjacent uses would be exposed to construction noise levels that could be heard above ambient conditions, the exposure would be temporary. As construction activities associated with the project would comply with noise level limits from Noise Abatement and Control Ordinance Section 59.5.0404, temporary increases in noise levels from construction activities would be less than significant.

In regards to the adjacent MHPA, construction noise levels would be significant if the habitat is occupied and if, during the breeding season, construction noise levels exceed 60 dB(A) L_{eq} or existing ambient noise level if above 60 dB(A) L_{eq}. As shown in Table 7, drilling noise levels could range from 68 to 78 dB(A) L_{eq} at the edge of the MHPA and grading noise levels could range from 63 to 68 dB(A) L_{eq}. However, as concluded in the Biological Survey Report prepared for the project (RECON 2020), no Diegan coastal sage scrub habitat occurs within the MHPA on the site and no coastal California gnatcatchers are anticipated to use the southern mixed chaparral habitat in the adjacent MHPA. Thus, coastal California gnatcatchers are likely not present adjacent to the project site and there is low potential for the species to occur on the project site. Based on these results of the Biological Survey Report, construction noise impacts to adjacent habitat would not be significant. Additionally, as discussed in the Biological Survey Report, the project would be required to comply with all MHPA land use adjacency guidelines as a condition of project approval.

5.2 Vehicle Traffic Noise

5.2.1 On-site Noise Compatibility

Vehicle traffic noise level contours across the project site were calculated using SoundPLAN. These contours take into account shielding provided by proposed buildings, topography, and proposed grading. These noise contours are shown in Figure 7. Noise levels were also modeled at 15 specific receiver locations at the building façade and the pool deck. The results are summarized in Table 8. SoundPLAN data are provided in Attachment 4. As shown, noise levels due to vehicle traffic would be 55 CNEL or less across the entire project, and would not exceed the City's "compatible" noise level of 60 CNEL.

Image Source: Nearmap (flown January 2020)

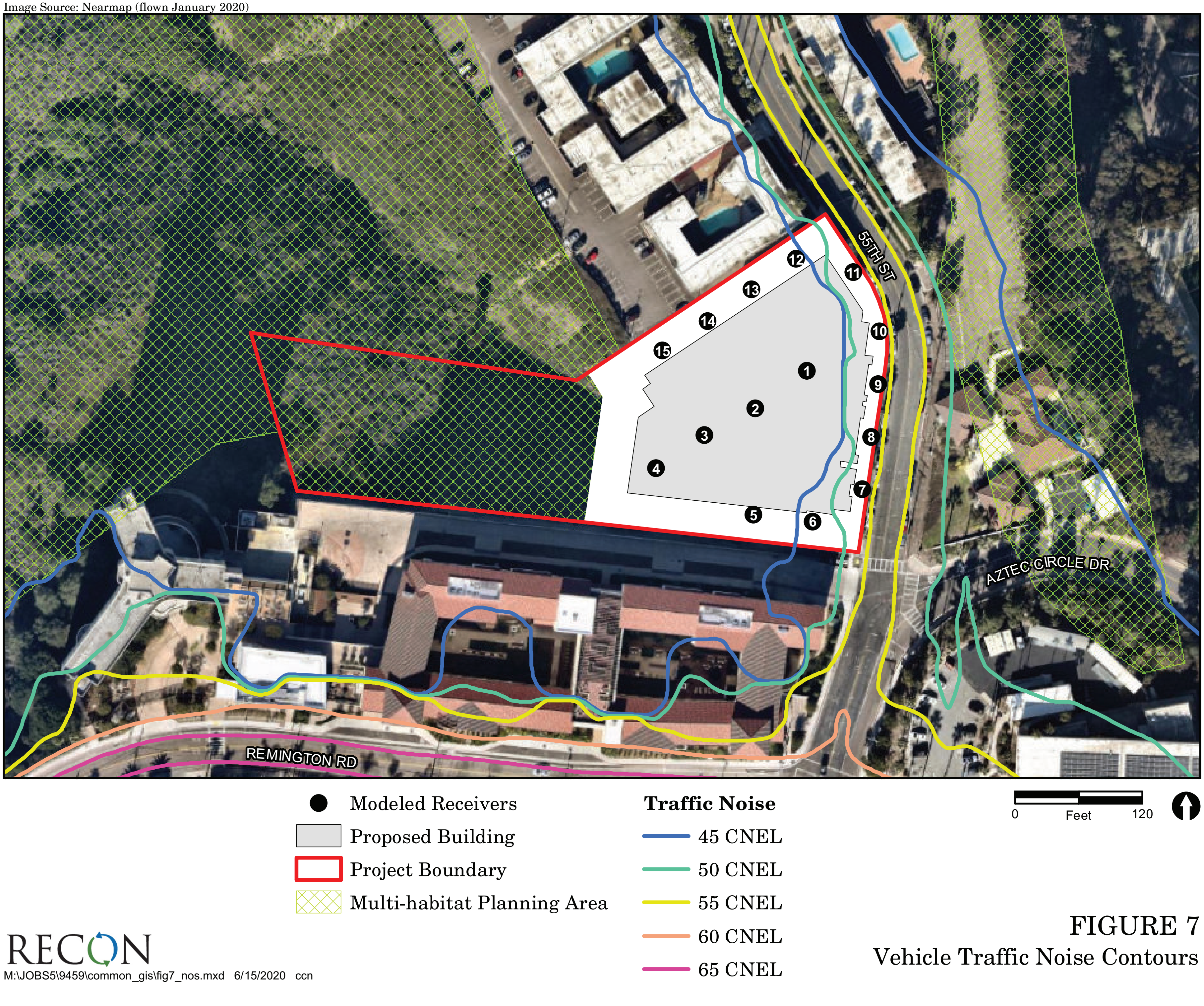

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FIGURE 7
Vehicle Traffic Noise Contours

Table 8 Future Vehicle Traffic Noise Levels						
	Exterior Noise Level (CNEL)					
Receiver	First Floor	Second Floor/Pool Deck/Courtyard	Third Floor	Fourth Floor	Fifth Floor	Sixth Floor
1	--	24	--	--	--	--
2	--	26	--	--	--	--
3	--	26	--	--	--	--
4	--	31	--	--	--	--
5	41	43	45	44	45	46
6	47	49	49	50	50	51
7	54	55	54	53	53	53
8	53	54	54	53	53	53
9	53	54	54	53	52	52
10	53	53	53	52	52	51
11	52	53	52	52	50	50
12	44	45	46	45	46	46
13	38	39	40	40	40	41
14	35	36	37	37	37	37
15	33	33	34	35	35	36

The interior noise level standard for residential uses is 45 CNEL. Interior noise levels can be reduced through standard construction techniques. According to the FHWA's document *Highway Traffic Noise Analysis and Abatement Guidance*, light-frame structures with windows open would provide noise level reductions of 10 dB, while light-frame structures with double glazed windows in the closed position would provide noise level reductions of 25 dB (FHWA 2011). As shown in Table 8, exterior noise levels at the residential building façades would be as high as 55 CNEL. Thus, even with windows in an open position, interior noise levels would be reduced to 45 CNEL or less.

5.2.2 Off-Site Vehicle Traffic Noise

The project would increase traffic volumes on local roadways. However, the project would not substantially alter the vehicle classifications mix on local or regional roadways nor would the project alter the speed on an existing roadway or create a new roadway. Thus, the primary factor affecting off-site noise levels would be increased traffic volumes. While changes in noise levels would occur along any roadway where project-related traffic occurs, for noise assessment purposes, noise level increases are assumed to be greatest nearest the project site, as this location would represent the greatest concentration of project-related traffic. A substantial noise increase is defined as an increase of 3 dB above existing conditions as stated in the City's CEQA significance standards.

Table 9 presents a conservative assessment of traffic noise levels based on the existing, existing plus project, horizon (year 2035), and horizon plus project noise levels generated by traffic. Table 9 also summarizes the traffic noise level increases due to the project. Noise level calculations are contained in Attachment 5.

Table 9 Traffic Noise Levels with and without Project, and Ambient Noise Increases							
	Existing			Horizon			
Roadway Segment	Without Project	With Project	Increase	Without Project	With Project	Increase	Total Increase Over Existing
Montezuma Road							
Collwood Boulevard to 55th Street	72.9	72.9	0.0	74.3	74.3	0.0	1.4
55th Street to College Avenue	72.0	72.0	0.0	72.8	72.8	0.0	0.8
East of College Avenue	70.2	70.2	0.0	70.9	71.0	0.1	0.8
Remington Road							
West of 55th Street	59.9	60.4	0.5	63.7	63.9	0.2	4.0
55th Street							
Remington Road to Montezuma Road	69.9	70.0	0.1	70.7	70.8	0.1	0.9
College Avenue							
Canyon Crest Drive to Zura Way	73.5	73.6	0.1	76.2	76.3	0.1	2.8
Zura Way to Montezuma Road	72.7	72.8	0.1	73.8	73.8	0.0	1.1
Montezuma Road to Arosa Street	71.2	71.3	0.1	72.1	72.1	0.0	0.9

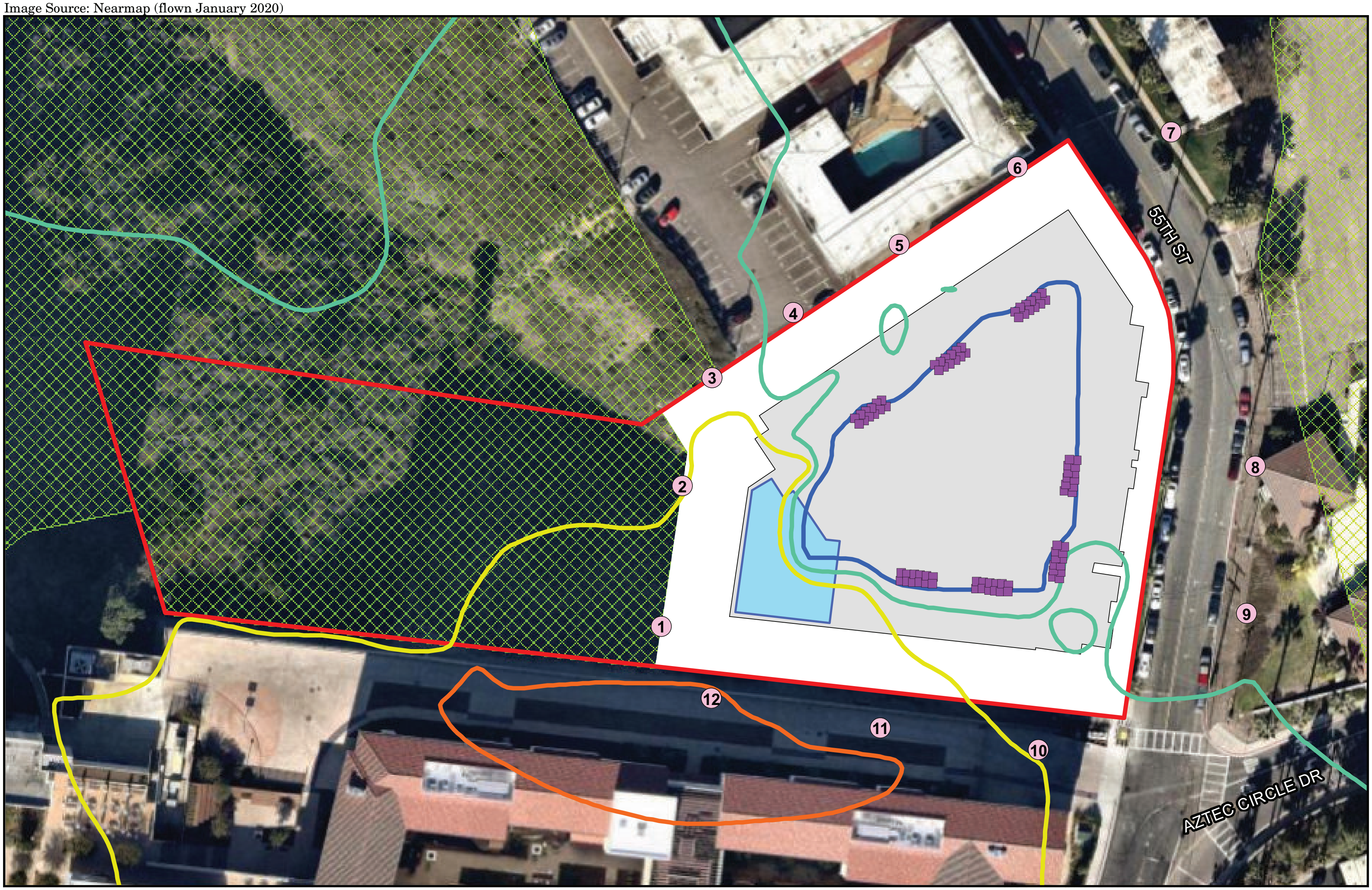
As shown, direct off-site noise level increases due to the project would be less than 1 dB. Therefore, direct off-site noise impacts associated with the project would be less than significant.

Similar to direct traffic noise impacts, a cumulative traffic noise impact occurs when the noise level would exceed the applicable standard and a substantial noise level increase compared to existing noise occurs. As shown, the total horizon (year 2035) with project increase over the existing condition would be less than 3 dB with the exception of Remington Road west of 55th Street. However, the project's contribution to the cumulative noise increase would be 0.2 dB, which would not be a cumulatively significant contribution. Additionally, the land uses adjacent to this roadway segment include multi-family residential and active recreation, and overall noise levels would not exceed the City's threshold of 65 CNEL. Therefore, cumulative off-site noise impacts associated with the project would be less than significant.

5.3 On-site Generated Noise

The primary noise sources on-site would be rooftop HVAC equipment and pool activities. Using the on-site noise source parameters discussed in Section 4.3, noise levels were modeled at a series of 12 receivers located at the adjacent MHPA and the adjacent properties. Modeled receivers and daytime on-site generated noise contours are shown in Figure 8a, and nighttime noise contours are shown in Figure 8b. Modeled data is included in Attachment 6. Future projected noise levels generated by the HVAC units and pool deck are summarized in Table 10.

Image Source: Nearmap (flown January 2020)



Adjacent Receivers
HVAC
Pool Deck
Proposed Building
Project Boundary
Multi-habitat Planning Area

Daytime On-site Noise

30 dB(A) Leq
35 dB(A) Leq
40 dB(A) Leq
45 dB(A) Leq

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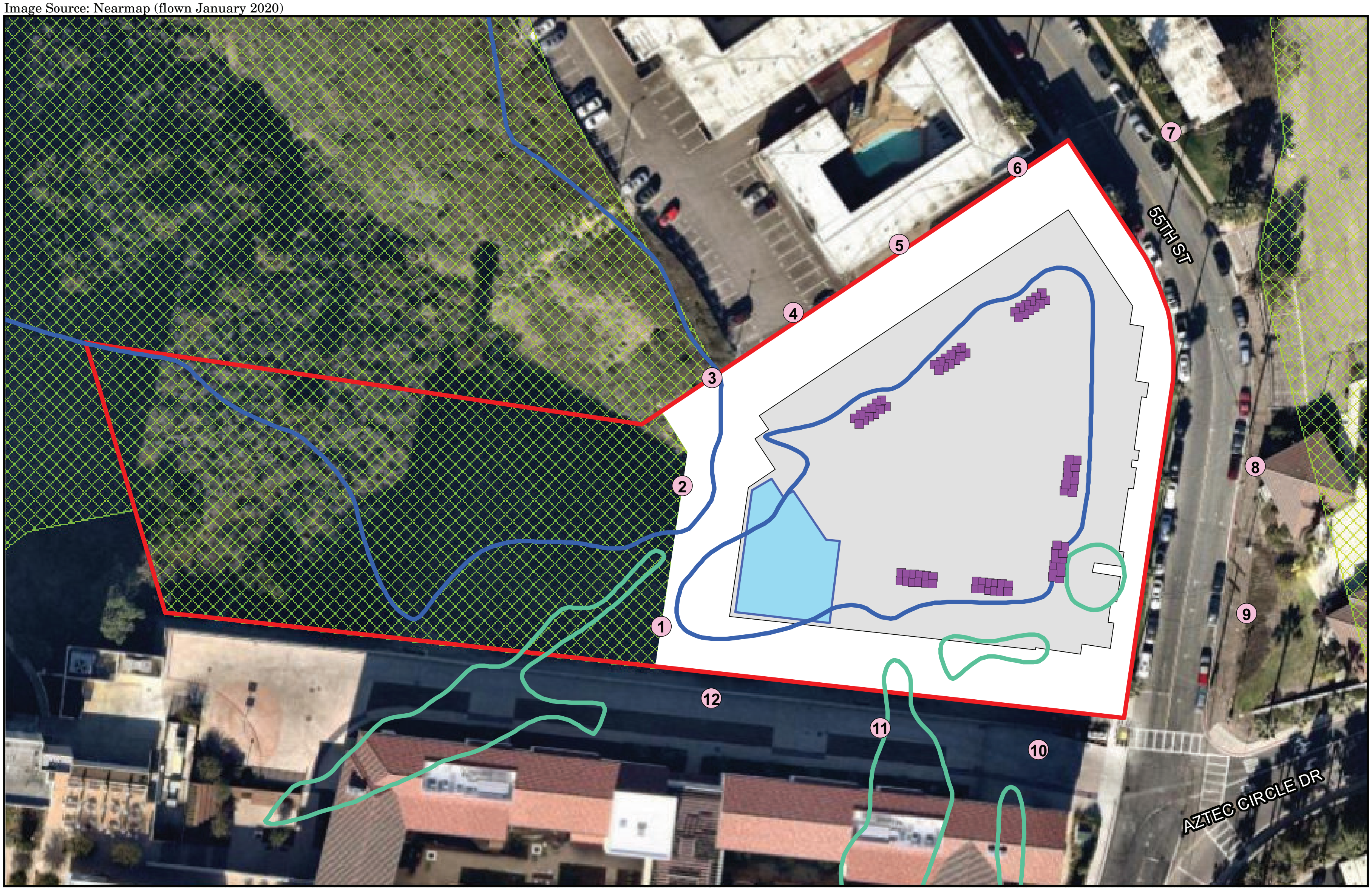
FIGURE 8a
Daytime On-site
Generated Noise Contours

Image Source: Nearmap (flown January 2020)



Adjacent Receivers
HVAC
Pool Deck
Proposed Building
Project Boundary
Multi-habitat Planning Area

Nighttime On-site Noise

30 dB(A) Leq
35 dB(A) Leq
40 dB(A) Leq
45 dB(A) Leq

0 Feet 80

FIGURE 8b
Nighttime On-site Generated Noise Contours

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Table 10 HVAC Units and Pool Deck Noise Levels at Adjacent Property Lines [dB(A) L_{eq}]			
Receiver	Land Use	Daytime Noise Level	Nighttime Noise Level
1	MHPA	42	31
2	MHPA	40	29
3	MHPA	39	30
4	Multi-family Residential	34	33
5	Multi-family Residential	34	33
6	Multi-family Residential	32	32
7	Multi-family Residential	31	31
8	Student Center	34	34
9	Student Center	35	35
10	Multi-family Residential	38	33
11	Multi-family Residential	40	32
12	Multi-family Residential	42	31
dB(A) L_{eq} = A-weighted decibels equivalent noise level MHPA = multi-habitat planning area			

As shown, noise levels at the adjacent MHPA would not exceed 60 dB(A) L_{eq}, and noise impacts to the adjacent habitat would be less than significant. Noise levels at the adjacent multi-family uses would range from 31 to 42 dB(A) L_{eq} during the daytime hours and 31 to 35 dB(A) L_{eq} during the nighttime hours. Noise levels would not exceed the most restrictive multi-family nighttime noise ordinance limit of 45 dB(A) L_{eq} during the daytime or nighttime hours. Additionally, as shown in Figures 8a and 8b, HVAC and pool deck noise levels within the project site would also be less than 45 dB(A) L_{eq}; therefore, HVAC units and pool activities would not have a significant noise impact to the residences within the proposed multi-family building and no mitigation would be required.

In summary, on-site generated noise (HVAC units and pool deck) would not exceed the limits established in the Noise Abatement and Control Ordinance. Operational noise from the project also would not result in a land use incompatibility (see Table 1) at the adjacent uses or at the proposed residential uses. Therefore, on-site generated noise would be less than significant. No mitigation for on-site generated noise would be required.

5.4 Vibration

Construction activities would have the potential to result in varying degrees of temporary ground vibration, depending on the specific construction equipment used and operations involved. Ground vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. The effects of ground vibration may be imperceptible at the lowest levels, low rumbling sounds and detectable vibrations at moderate levels, and damage to nearby structures at the highest levels. Vibration perception would occur at structures, as people do not perceive vibrations without vibrating structures.

Human reaction to vibration is dependent on the environment the receiver is in as well as individual sensitivity. For example, vibration outdoors is rarely noticeable and generally not considered annoying. Typically, humans must be inside a structure for vibrations to become noticeable and/or annoying. Based on several federal studies, the threshold of perception is 0.035 inch per second (in/sec) peak particle velocity (PPV), with 0.24 in/sec PPV being a distinctly perceptible (Caltrans 2013a). Neither cosmetic nor structural damage of buildings occurs at levels below 0.1 in/sec PPV. For the purposes of this analysis, based on Caltrans guidance, vibration impacts would be significant if they exceed 0.1 in/sec PPV.

On-site construction equipment that would cause the most noise and vibration would be associated with the use of the drill rig, large bulldozers, and trucks. Table 11 summarizes the vibration levels associated with this equipment. According to Caltrans, vibration levels associated with the use of drills, bulldozers, and trucks range from approximately 0.003 to 0.089 in/sec PPV at 25 feet. Vibration levels at the closest structures were calculated using standard vibration propagation rates.

The multi-family structure to the north is located approximately 35 feet from the proposed construction. A worst-case vibration level of 0.089 in/sec PPV at 25 feet would attenuate to 0.061 in/sec PPV at 35 feet. The multi-family structures to the south are located approximately 70 feet from the proposed construction. A worst-case vibration level of 0.089 in/sec PPV at 25 feet would attenuate to 0.029 in/sec PPV at 70 feet. The structures to the east are located approximately 65 feet from the proposed construction. A worst-case vibration level of 0.089 in/sec PPV at 25 feet would attenuate to 0.031 in/sec PPV at 65 feet. This range of construction vibration levels would be below 0.1 in/sec PPV. Thus, groundborne vibration impacts generated during construction would be less than significant. No mitigation would be required.

Table 11
Typical Construction Equipment Vibration Levels

Equipment	PPV at 25 feet (in/sec)
Caisson Drilling	0.089
Large Bulldozer	0.089
Loaded Trucks	0.076
Small Bulldozer	0.003

SOURCE: Caltrans 2013b.
PPV = peak particle velocity; in/sec = inch per second.

Once construction is complete, the project would not be a source of groundborne vibration during operation. Operational vibration impacts would be less than significant and no mitigation would be required.

6.0 Conclusions

6.1 Construction Noise

As shown in Table 7, at the adjacent multi-family uses, construction noise levels would be 75 dB(A) L_{eq} or less. Although the existing adjacent uses would be exposed to construction noise levels that could be heard above ambient conditions, the exposure would be temporary. As construction activities associated with the project would comply with noise level limits from Noise Abatement and Control Ordinance Section 59.5.0404, temporary increases in noise levels from construction activities would be less than significant.

In regards to the adjacent MHPA, construction noise levels would be significant if the habitat is occupied and if, during the breeding season, construction noise levels exceed 60 dB(A) L_{eq} or existing ambient noise level if above 60 dB(A) L_{eq}. As shown in Table 7, construction noise levels are anticipated to exceed 60 dB(A) L_{eq}. However, based on the results of the Biological Survey Report prepared for the project (RECON 2020), coastal California gnatcatchers are likely not present adjacent to the project site and there is low potential for the species to occur on the project site. Based on these results of the Biological Survey Report, construction noise impacts to adjacent habitat would not be significant. Additionally, as discussed in the Biological Survey Report, the project would be required to comply with all MHPA land use adjacency guidelines as a condition of project approval.

6.2 Vehicle Traffic Noise

6.2.1 On-site Noise Compatibility

The main source of traffic noise at the project site is vehicle traffic on 55th Street and Remington Road. According to the General Plan Noise Element, multi-family residential uses are considered “compatible” with exterior noise levels up to 60 CNEL and “conditionally compatible” with exterior noise levels up to 70 CNEL. The City’s interior noise level standard for all residential uses is 45 CNEL.

As shown in Table 8, noise levels due to vehicle traffic would be 55 CNEL or less across the entire project, and would not exceed the City’s “compatible” noise level of 60 CNEL. Additionally, even with windows in an open position, interior noise levels would be reduced to 45 CNEL or less. The project would be compatible with the City’s exterior and interior noise standards.

6.2.2 Off-site Vehicle Traffic Noise

The project would increase traffic volumes on local roadways. However, the project would not substantially alter the vehicle classifications mix on local or regional roadways, nor would the project alter the speed on an existing roadway or create a new roadway. Thus, the primary factor affecting off-site noise levels would be increased traffic volumes. A substantial noise increase is defined as an increase of 3 dB above existing conditions as stated in the City's CEQA significance standards.

As shown in Table 9, direct off-site noise level increases due to the project would be less than 1 dB. Therefore, direct off-site noise impacts associated with the project would be less than significant. Similar to direct traffic noise impacts, a cumulative traffic noise impact occurs when the noise level would exceed the applicable standard and a substantial noise level increase compared to existing noise occurs. As shown in Table 9, the total horizon (year 2035) with project increase over the existing condition would be less than 3 dB with the exception of Remington Road west of 55th Street. However, the project's contribution to the cumulative noise increase would be 0.2 dB, which would not be a cumulatively significant contribution. Additionally, the land uses adjacent to this roadway segment include multi-family residential and active recreation, and overall noise levels would not exceed the City's threshold of 65 CNEL. Therefore, cumulative off-site noise impacts associated with the project would be less than significant.

6.3 On-site Generated Noise

The noise sources on the project site after completion of construction are anticipated to be those that would be typical of any residential complex, such as vehicles arriving and leaving and landscape maintenance machinery. None of these noise sources is anticipated to violate the City's Noise Abatement and Control Ordinance. However, the project would include rooftop HVAC units and a pool deck that have the potential to produce noise in excess of City limits. Rooftop HVAC and pool noise levels were modeled at the adjacent MHPA and the adjacent properties. As shown in Table 10, noise levels at the adjacent MHPA would not exceed 60 dB(A) L_{eq} and noise impacts to the adjacent habitat would be less than significant. Noise levels at the adjacent multi-family uses would range from 31 to 42 dB(A) L_{eq} during the daytime hours, and 31 to 35 dB(A) L_{eq} during the nighttime hours. Noise levels would not exceed the most restrictive multi-family nighttime noise ordinance limit of 45 dB(A) L_{eq} during the daytime or nighttime hours. Additionally, as shown in Figures 8a and 8b, HVAC and pool deck noise levels within the project site would also be less than 45 dB(A) L_{eq}; therefore, HVAC units and pool activities would not have a significant noise impact to the residences within the proposed multi-family building and no mitigation would be required.

In summary, on-site generated noise (HVAC units and pool deck) would not exceed the limits established in the Noise Abatement and Control Ordinance. Operational noise from the project also would not result in a land use incompatibility (see Table 1) at the adjacent uses or at the proposed residential uses. Therefore, on-site generated noise would be less than significant. No mitigation for on-site generated noise would be required.

6.4 Vibration

On-site construction equipment that would cause the most noise and vibration would be associated with the use of the drill rig, large bulldozers, and trucks. Vibration impacts would be significant if they exceed 0.1 in/sec PPV. Vibration levels at the closest structures were calculated using standard vibration propagation rates. As calculated in Section 5.4, vibration levels at the nearest structures would not exceed 0.1 in/sec PPV. Thus, groundborne vibration impacts generated during construction would be less than significant. No mitigation would be required.

Once construction is complete, the project would not be a source of groundborne vibration during operation. Operational vibration impacts would be less than significant and no mitigation would be required.

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ATTACHMENTS

ATTACHMENT 1

Noise Measurement Data

Summary				
Filename	LxT_Data.002			
Serial Number	3829			
Model	SoundExpert™ LxT			
Firmware Version	2.301			
User	Nate Yerka			
Location	College View			
Job Description	9459.0			
Note				
Measurement Description				
Start	2020/02/19 11:18:05			
Stop	2020/02/19 11:33:05			
Duration	0:15:00.1			
Run Time	0:15:00.1			
Pause	0:00:00.0			
Pre Calibration	2020/02/19 11:04:28			
Post Calibration	None			
Calibration Deviation	---			
Overall Settings				
RMS Weight	A Weighting			
Peak Weight	A Weighting			
Detector	Slow			
Preamp	PRMLxT1L			
Microphone Correction	Off			
Integration Method	Linear			
OBA Range	Normal			
OBA Bandwidth	1/1 and 1/3			
OBA Freq. Weighting	A Weighting			
OBA Max Spectrum	At Lmax			
Overload	122.1	dB		
	A		**C**	**Z**
Under Range Peak	**78.3**		75.3	80.3 dB
Under Range Limit	**26.2**		25.3	32.2 dB
Noise Floor	16.3		16.2	22.1 dB
Results				
LAeq	46.3	dB		
LAE	75.8	dB		
EA	4.249	µPa²h		
LApeak (max)	2020/02/19 11:29:41		89.3 dB	
LASmax	2020/02/19 11:29:41		54.5 dB	
LASmin	2020/02/19 11:26:43		40.9 dB	
SEA	-99.9	dB		
LAS > 85.0 dB (Exceedence Counts / Duration)	0		0.0 s	
LAS > 115.0 dB (Exceedence Counts / Duration)	0		0.0 s	
LApeak > 135.0 dB (Exceedence Counts / Duration)	0		0.0 s	
LApeak > 137.0 dB (Exceedence Counts / Duration)	0		0.0 s	
LApeak > 140.0 dB (Exceedence Counts / Duration)	0		0.0 s	

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**
	46.3	46.3	-99.9	46.3	46.3	-99.9	-99.9

LCeq	59.4	dB
LAeq	46.3	dB
LCeq - LAeq	13.1	dB
LAIeq	49.4	dB
LAeq	46.3	dB
LAIeq - LAeq	3.1	dB
# Overloads	0	
Overload Duration	0.0	s
# OBA Overloads	0	
OBA Overload Duration	0.0	s
Statistics		
LAS5.00	49.9	dB
LAS10.00	48.6	dB
LAS33.30	46.2	dB
LAS50.00	45.3	dB
LAS66.60	44.6	dB
LAS90.00	43.3	dB

Summary	
Filename	LxT_Data.003
Serial Number	3829
Model	SoundExpert™ LxT
Firmware Version	2.301
User	Nate Yerka
Location	College View
Job Description	9459.0
Note	
Measurement Description	
Start	2020/02/19 11:46:04
Stop	2020/02/19 12:01:04
Duration	0:15:00.1
Run Time	0:15:00.1
Pause	0:00:00.0
Pre Calibration	2020/02/19 11:04:28
Post Calibration	None
Calibration Deviation	---

Overall Settings			
RMS Weight	A Weighting		
Peak Weight	A Weighting		
Detector	Slow		
Preamp	PRMLxT1L		
Microphone Correction	Off		
Integration Method	Linear		
OBA Range	Normal		
OBA Bandwidth	1/1 and 1/3		
OBA Freq. Weighting	A Weighting		
OBA Max Spectrum	At Lmax		
Overload	122.1 dB		
	A	**C**	**Z**
Under Range Peak	**78.3**	75.3	80.3 dB
Under Range Limit	**26.2**	25.3	32.2 dB
Noise Floor	16.3	16.2	22.1 dB

Results		
LAeq	54.7 dB	
LAE	84.2 dB	
EA	29.401 µPa²h	
LApeak (max)	2020/02/19 11:46:20	95.4 dB
LASmax	2020/02/19 11:46:20	68.8 dB
LASmin	2020/02/19 11:51:48	46.0 dB
SEA	-99.9 dB	

LAS > 85.0 dB (Exceedence Counts / Duration)	0	0.0 s
LAS > 115.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 135.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 137.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 140.0 dB (Exceedence Counts / Duration)	0	0.0 s

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**
	54.7	54.7	-99.9	54.7	54.7	-99.9	-99.9

LCeq	67.1 dB
LAeq	54.7 dB
LCeq - LAeq	12.4 dB
LAIeq	58.2 dB
LAeq	54.7 dB
LAIeq - LAeq	3.6 dB
# Overloads	0
Overload Duration	0.0 s
# OBA Overloads	0
OBA Overload Duration	0.0 s

Statistics	
LAS5.00	60.1 dB
LAS10.00	58.2 dB
LAS33.30	52.9 dB
LAS50.00	51.0 dB
LAS66.60	49.8 dB
LAS90.00	48.0 dB

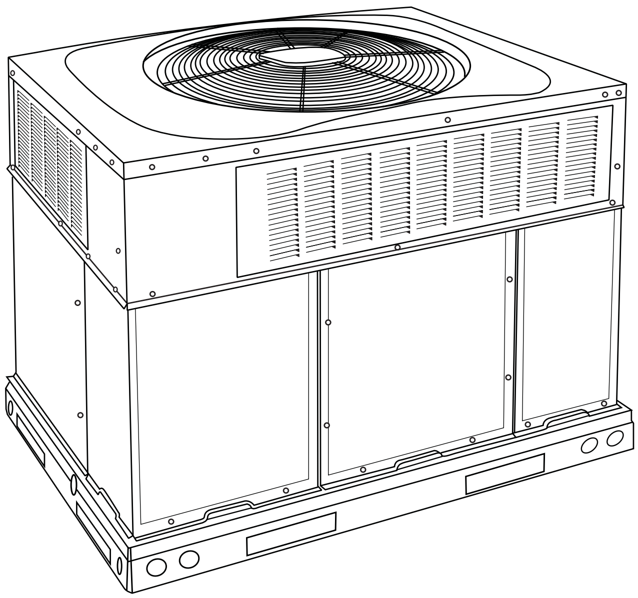
ATTACHMENT 2

HVAC Specifications

50VG–A
Performance™ 16 SEER 2–Stage Packaged Air Conditioner System with Puron® (R–410A) Refrigerant
Single and Three Phase
2 to 5 Nominal Tons (Sizes 24–60)

turn to the experts

Product Data



A09033

Fig. 1 - Unit 50VG-A

Single-Packaged Products with Energy-Saving Features and Puron® refrigerant.

- 15.0-16.0 SEER / 12.0-12.5 EER
- Factory-Installed TXV
- Multi-speed ECM Blower Motor - Standard
- Sound levels as low as 72dBA
- Two Stages of Cooling
- Dehumidification Feature

FEATURES/BENEFITS

One-piece cooling unit with optional electric heater, low sound levels, easy installation, low maintenance, and dependable performance.

Puron Environmentally Sound Refrigerant is Carrier's unique refrigerant designed to help protect the environment. Puron is an HFC refrigerant which does not contain chlorine that can harm the ozone layer. Puron refrigerant is in service in millions of systems proving highly reliable, environmentally sound performance.

Easy Installation

Factory-assembled package is a compact, fully self-contained, electric cooling unit that is prewired, pre-piped, and pre-charged for minimum installation expense. These units are available in a variety of standard cooling sizes with voltage options to meet residential and light commercial requirements. Units are lightweight and install easily on a rooftop or at ground level. The high tech composite base eliminates rust problems associated with ground level applications.

Innovative Unit Base Design

On the inside a high-tech composite material will not rust and incorporates a sloped drain pan which improves drainage and helps inhibit mold, algae and bacterial growth. On the outside metal base rails provide added stability as well as easier handling and rigging.

Convertible duct configuration

Unit is designed for use in either downflow or horizontal applications. Each unit is converted from horizontal to downflow and includes horizontal duct covers. Downflow operation is provided in the field to allow vertical ductwork connections. The basepan seals on the bottom openings to ensure a positive seal in the vertical airflow mode.

Efficient operation High-efficiency design offers SEER (Seasonal Energy Efficiency Ratios) of up to 16.0. (See page 4.)

Durable, dependable components

Scroll Compressors have 2 stages of cooling and are designed for high efficiency. Each compressor is hermetically sealed against contamination to help promote longer life and dependable operation. Each compressor also has vibration isolation to provide quieter operation. All compressors have internal high pressure and overcurrent protection.

Multi-speed ECM Blower Motor is standard on all 50VG-A.

Direct-drive PSC (Permanent Split Capacitor) condenser-fan motors are designed to help reduce energy consumption and provide for cooing operation down to 40°F (4.4°C) outdoor temperature. Motormaster® II low ambient kit is available as a field-installed accessory.

Thermostatic Expansion Valve - A hard shutoff, balance port TXV maintains a constant superheat at the evaporator exit (cooling cycle) resulting in higher overall system efficiency.

Refrigerant system is designed to provide dependability. Liquid filter driers are used to promote clean, unrestricted operation. Each unit leaves the factory with a full refrigerant charge. Refrigerant service connections make checking operating pressures easier.

High and Low Pressure Switches provide added reliability for the compressor.

Indoor and Outdoor coils are computer-designed for optimum heat transfer and efficiency. The indoor coil is fabricated from copper tube and aluminum fins and is located inside the unit for protection against damage. The outdoor coil is internally mounted on the top tier of the unit.

Low sound ratings ensure a quiet indoor and outdoor environment with sound ratings as low as 72dBA. (See Page 4.)

Easy to service cabinets provide easy 3 panel accessibility to serviceable components during maintenance and installation. The basepan with integrated drain pan provides easy ground level installation with a mounting pad. A nesting feature ensures a positive basepan to roof curb seal when the unit is roof mounted. A convenient 3/4-in. (19.05 mm) wide perimeter flange makes frame mounting on a rooftop easy.

AHRI* CAPACITIES

Cooling Capacities and Efficiencies

Unit Model 50VG-A	Nominal Tons	Standard CFM (High / Low Stage)	Net Cooling Capacities - Btuh (High Stage)	EER @A**	SEER†
24	2	800 / 600	23000	12.0	15.0
30	2-1/2	1000 / 750	29000	12.0	15.0
36	3	1200 / 900	35400	12.5	16.0
42	3-1/2	1400 / 1050	42000	12.5	16.0
48	4	1600 / 1200	47500	12.3	16.0
60	5	1750 / 1200	57000	12.3	16.0

LEGEND
dB− Sound Levels (decibels)
db—Dry Bulb
SEER—Seasonal Energy Efficiency Ratio
wb—Wet Bulb
COP−Coefficient of Performance
* Air Conditioning, Heating & Refrigeration Institute.
**At “A” conditions−80°F (26.7°C) indoor db/67°F (19.4°C) indoor wb & 95°F (35°C) outdoor db.
† Rated in accordance with U.S. Government DOE Department of Energy) test procedures and/or AHRI Standards 210/240.

Notes:
1. Ratings are net values, reflecting the effects of circulating fan heat. Ratings are based on:
Cooling Standard: 80°F (26.7°C) db, 67°F wb (19.4°C) indoor entering−air temperature and 95°F db (35°C) outdoor entering−air temperature.
2. Before purchasing this appliance, read important energy cost and efficiency information available from AHRIdirectory.org.

A−WEIGHTED SOUND POWER LEVEL (dBA)

Model 50VG-A	Sound Ratings (dBA)	TYPICAL OCTAVE BAND SPECTRUM (dBA without tone adjustment)						
		125	250	500	1000	2000	4000	8000
24	73	60.0	62.5	68.5	68.5	64.0	60.0	53.0
30	77	57.5	67.0	73.5	72.0	67.0	61.0	52.5
36	73	62.5	65.5	67.5	68.0	65.5	60.0	52.5
42	73	60.5	63.5	68.0	68.0	66.0	60.5	53.0
48	72	60.0	63.5	66.0	67.0	63.5	58.5	49.5
60	75	69.0	67.0	69.0	68.0	65.0	61.5	54.0

NOTE: Tested in accordance with AHRI Standard 270 (not listed in AHRI).

ATTACHMENT 3

SoundPLAN Data – Construction Noise

9459 College View
SoundPLAN - Construction

		Level		Corrections		
Source name	Reference	Location 1	Location 2	Cwall	CI	CT
		dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Location 1	Lw/unit	108.6	-	-	-	-
Location 2	Lw/unit	-	108.6	-	-	-

9459 College View
SoundPLAN - Construction

		Level		Corrections	
Source name	Reference	Leq1	Cwall	CI	CT
		dB(A)	dB(A)	dB(A)	dB(A)
Grading	Lw/unit	113.6	-	-	-

	Coordinates			Drilling Level w/o NP		Grading Level w/o NP	Grading Level w NP
No.	X	Y	Height	Location 1	Location 2	Leq1	Leq1
	in meter		m	dB(A)	dB(A)	dB(A)	dB(A)
1	492731.08	3626453.04	121.49	77.8	71.8	66.2	60.3
2	492734.45	3626476.65	114.82	73.0	77.1	60.6	54.9
3	492739.26	3626494.89	122.07	67.7	74.3	66.2	59.0
4	492752.86	3626505.88	126.16	60.7	66.1	73.4	73.6
5	492770.64	3626517.46	126.35	52.6	61.0	74.1	74.1
6	492790.32	3626530.64	126.02	47.0	56.3	72.8	72.8
7	492816.20	3626536.67	126.09	43.5	52.4	68.1	68.2
8	492830.65	3626480.63	127.23	45.7	51.7	70.5	70.5
9	492829.38	3626455.87	128.91	51.1	55.0	70.1	70.1
10	492794.60	3626432.70	130.00	61.2	59.4	73.3	73.3
11	492767.94	3626436.23	130.51	66.0	67.3	72.7	72.3
12	492739.45	3626439.88	130.74	72.3	69.1	69.4	67.8

ATTACHMENT 4

SoundPLAN Data – Vehicle Traffic Noise

9459 College View
SoundPLAN - On-SIte Vehicle Traffic

		Traffic values						Control	Constr.	Affect.		Gradient
Station	ADT	Vehicles type	Vehicle na	day	evening	night	Speed	device	Speed	veh.	Road surface	Min / Max
km	Veh/24h			Veh/h	Veh/h	Veh/h	km/h		km/h	%		%
Remington Road - West of 55th Street			Traffic direction:	In entry direction								
0+000	8244	Total	-	529	275	119	-	none	-	-	Average (of DGAC and PCC)	-0.05263
0+000	8244	Automobiles	-	503	261	113	40	none	-	-	Average (of DGAC and PCC)	-0.05263
0+000	8244	Medium trucks	-	11	6	2	40	none	-	-	Average (of DGAC and PCC)	-0.05263
0+000	8244	Heavy trucks	-	5	3	1	40	none	-	-	Average (of DGAC and PCC)	-0.05263
0+000	8244	Buses	-	5	3	1	40	none	-	-	Average (of DGAC and PCC)	-0.05263
0+000	8244	Motorcycles	-	5	3	1	40	none	-	-	Average (of DGAC and PCC)	-0.05263
0+000	8244	Auxiliary vehicle	-	-	-	-	-	none	-	-	Average (of DGAC and PCC)	-0.05263
0+430	-	-	-	-	-	-						
55th Street - South of Remington Road			Traffic direction:	In entry direction								
0+000	25248	Total	-	1620	841	365	-	none	-	-	Average (of DGAC and PCC)	-0.14286
0+000	25248	Automobiles	-	1539	799	347	40	none	-	-	Average (of DGAC and PCC)	-0.14286
0+000	25248	Medium trucks	-	32	17	7	40	none	-	-	Average (of DGAC and PCC)	-0.14286
0+000	25248	Heavy trucks	-	16	8	4	40	none	-	-	Average (of DGAC and PCC)	-0.14286
0+000	25248	Buses	-	16	8	4	40	none	-	-	Average (of DGAC and PCC)	-0.14286
0+000	25248	Motorcycles	-	16	8	4	40	none	-	-	Average (of DGAC and PCC)	-0.14286
0+000	25248	Auxiliary vehicle	-	-	-	-	-	none	-	-	Average (of DGAC and PCC)	-0.14286
0+256	-	-	-	-	-	-						
55th Street - North of Remington Road			Traffic direction:	In entry direction								
0+000	801	Total	-	51	27	12	-	none	-	-	Average (of DGAC and PCC)	-8.875
0+000	801	Automobiles	-	48	26	11	40	none	-	-	Average (of DGAC and PCC)	-8.875
0+000	801	Medium trucks	-	1	1	0	40	none	-	-	Average (of DGAC and PCC)	-8.875
0+000	801	Heavy trucks	-	1	0	0	40	none	-	-	Average (of DGAC and PCC)	-8.875
0+000	801	Buses	-	1	0	0	40	none	-	-	Average (of DGAC and PCC)	-8.875
0+000	801	Motorcycles	-	1	0	0	40	none	-	-	Average (of DGAC and PCC)	-8.875
0+000	801	Auxiliary vehicle	-	-	-	-	-	none	-	-	Average (of DGAC and PCC)	-8.875
0+336	-	-	-	-	-	-						

Receiver name	Coordinates X	Y	Floor	Height	Level w/o NP Day	Evening	Night	Lden
	in meter			m	dB(A)			
1	492793.73	3626490.18	Podium	131.60	22.0	19.2	15.6	23.9
2	492779.09	3626479.36	Podium	131.60	24.0	21.2	17.6	25.9
3	492764.45	3626471.54	Podium	131.59	24.4	21.5	17.9	26.3
4	492750.63	3626461.90	Podium	131.60	28.9	26.1	22.5	30.8
5	492778.81	3626448.81	1.Fl	127.02	38.9	36.1	32.5	40.8
5	492778.81	3626448.81	2.Fl	129.82	41.4	38.6	35.0	43.3
5	492778.81	3626448.81	3.Fl	132.62	42.6	39.8	36.2	44.5
5	492778.81	3626448.81	4.Fl	135.42	42.4	39.6	36.0	44.4
5	492778.81	3626448.81	5.Fl	138.22	43.1	40.3	36.7	45.0
5	492778.81	3626448.81	6.Fl	141.02	44.1	41.3	37.7	46.0
6	492795.82	3626446.99	1.Fl	127.80	45.1	42.3	38.8	47.1
6	492795.82	3626446.99	2.Fl	130.60	46.8	44.0	40.5	48.8
6	492795.82	3626446.99	3.Fl	133.40	47.4	44.6	41.0	49.3
6	492795.82	3626446.99	4.Fl	136.20	47.9	45.1	41.5	49.8
6	492795.82	3626446.99	5.Fl	139.00	48.3	45.4	41.9	50.2
6	492795.82	3626446.99	6.Fl	141.80	49.1	46.2	42.6	51.0
7	492810.00	3626456.35	1.Fl	127.60	51.9	49.1	45.6	53.9
7	492810.00	3626456.35	2.Fl	130.40	52.5	49.7	46.2	54.5
7	492810.00	3626456.35	3.Fl	133.20	52.1	49.3	45.8	54.1
7	492810.00	3626456.35	4.Fl	136.00	51.4	48.6	45.0	53.4
7	492810.00	3626456.35	5.Fl	138.80	51.3	48.5	45.0	53.3
7	492810.00	3626456.35	6.Fl	141.60	51.1	48.3	44.7	53.1
8	492812.36	3626471.45	1.Fl	126.95	51.2	48.4	44.9	53.2
8	492812.36	3626471.45	2.Fl	129.75	51.8	49.0	45.5	53.8
8	492812.36	3626471.45	3.Fl	132.55	51.9	49.1	45.6	53.9
8	492812.36	3626471.45	4.Fl	135.35	51.0	48.2	44.7	53.0
8	492812.36	3626471.45	5.Fl	138.15	50.8	48.0	44.5	52.8
8	492812.36	3626471.45	6.Fl	140.95	50.5	47.7	44.2	52.5
9	492814.36	3626486.54	1.Fl	126.74	51.2	48.4	44.9	53.2
9	492814.36	3626486.54	2.Fl	129.54	51.7	48.9	45.4	53.7
9	492814.36	3626486.54	3.Fl	132.34	51.6	48.8	45.2	53.6
9	492814.36	3626486.54	4.Fl	135.14	50.9	48.1	44.5	52.8
9	492814.36	3626486.54	5.Fl	137.94	50.3	47.5	43.9	52.3
9	492814.36	3626486.54	6.Fl	140.74	50.1	47.3	43.7	52.1
10	492814.64	3626501.81	1.Fl	126.47	50.6	47.9	44.3	52.6
10	492814.64	3626501.81	2.Fl	129.27	51.0	48.2	44.7	53.0
10	492814.64	3626501.81	3.Fl	132.07	50.6	47.8	44.3	52.6
10	492814.64	3626501.81	4.Fl	134.87	50.0	47.3	43.7	52.0
10	492814.64	3626501.81	5.Fl	137.67	49.7	47.0	43.4	51.7
10	492814.64	3626501.81	6.Fl	140.47	49.4	46.6	43.1	51.4
11	492807.00	3626518.63	1.Fl	126.12	50.0	47.2	43.7	52.0
11	492807.00	3626518.63	2.Fl	128.92	50.7	47.9	44.4	52.7
11	492807.00	3626518.63	3.Fl	131.72	50.2	47.5	43.9	52.2
11	492807.00	3626518.63	4.Fl	134.52	49.5	46.8	43.2	51.5
11	492807.00	3626518.63	5.Fl	137.32	48.4	45.6	42.1	50.4
11	492807.00	3626518.63	6.Fl	140.12	47.8	45.1	41.5	49.8
12	492790.45	3626522.36	1.Fl	126.16	41.6	38.8	35.3	43.6
12	492790.45	3626522.36	2.Fl	128.96	43.4	40.7	37.1	45.4
12	492790.45	3626522.36	3.Fl	131.76	43.5	40.7	37.2	45.5
12	492790.45	3626522.36	4.Fl	134.56	43.3	40.5	37.0	45.3
12	492790.45	3626522.36	5.Fl	137.36	43.8	41.0	37.5	45.8
12	492790.45	3626522.36	6.Fl	140.16	43.7	40.9	37.4	45.7
13	492777.81	3626513.45	1.Fl	126.34	35.7	32.9	29.4	37.7
13	492777.81	3626513.45	2.Fl	129.14	37.2	34.4	30.9	39.2
13	492777.81	3626513.45	3.Fl	131.94	38.2	35.5	31.9	40.2
13	492777.81	3626513.45	4.Fl	134.74	37.7	34.9	31.4	39.7
13	492777.81	3626513.45	5.Fl	137.54	38.1	35.3	31.8	40.1
13	492777.81	3626513.45	6.Fl	140.34	38.6	35.9	32.3	40.6
14	492765.18	3626504.36	1.Fl	126.36	32.5	29.7	26.1	34.5
14	492765.18	3626504.36	2.Fl	129.16	33.5	30.7	27.2	35.5
14	492765.18	3626504.36	3.Fl	131.96	34.7	31.9	28.4	36.7
14	492765.18	3626504.36	4.Fl	134.76	35.1	32.3	28.8	37.1
14	492765.18	3626504.36	5.Fl	137.56	34.7	31.9	28.4	36.7
14	492765.18	3626504.36	6.Fl	140.36	35.2	32.5	28.9	37.2
15	492752.36	3626495.72	1.Fl	126.00	30.6	27.8	24.2	32.5
15	492752.36	3626495.72	2.Fl	128.80	31.4	28.6	25.0	33.3
15	492752.36	3626495.72	3.Fl	131.60	32.4	29.7	26.1	34.4
15	492752.36	3626495.72	4.Fl	134.40	33.2	30.4	26.9	35.2
15	492752.36	3626495.72	5.Fl	137.20	33.5	30.7	27.1	35.4
15	492752.36	3626495.72	6.Fl	140.00	33.5	30.7	27.2	35.5

Source name							Level w/o NP Day	Evening	Night	Lden
							dB(A)			
1	1.Fl	22.0	19.2	15.6	23.9	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							6.5	3.8	0.3	8.6
55th Street - South of Remington Road							19.3	16.5	12.9	21.2
Remington Road - West of 55th Street							18.4	15.5	11.9	20.3
2	1.Fl	24.0	21.2	17.6	25.9	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							6.0	3.3	-0.3	8.0
55th Street - South of Remington Road							21.8	19.0	15.4	23.7
Remington Road - West of 55th Street							19.9	17.0	13.4	21.8
3	1.Fl	24.4	21.5	17.9	26.3	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							5.5	2.8	-0.8	7.5
55th Street - South of Remington Road							21.6	18.8	15.2	23.5
Remington Road - West of 55th Street							20.9	18.1	14.4	22.8
4	1.Fl	28.9	26.1	22.5	30.8	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							25.5	22.7	19.2	27.5
55th Street - South of Remington Road							23.9	21.1	17.4	25.8
Remington Road - West of 55th Street							22.4	19.5	15.9	24.3
5	1.Fl	38.9	36.1	32.5	40.8	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							36.5	33.8	30.2	38.5
55th Street - South of Remington Road							25.7	22.8	19.2	27.6
Remington Road - West of 55th Street							34.5	31.7	28.0	36.4
5	2.Fl	41.4	38.6	35.0	43.3	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							38.7	35.9	32.4	40.7
55th Street - South of Remington Road							26.4	23.6	20.0	28.3
Remington Road - West of 55th Street							37.7	34.9	31.2	39.6
5	3.Fl	42.6	39.8	36.2	44.5	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							39.6	36.9	33.3	41.6
55th Street - South of Remington Road							26.3	23.5	19.9	28.2
Remington Road - West of 55th Street							39.3	36.4	32.8	41.2
5	4.Fl	42.4	39.6	36.0	44.4	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							38.8	36.1	32.6	40.9
55th Street - South of Remington Road							28.5	25.7	22.1	30.4
Remington Road - West of 55th Street							39.6	36.7	33.1	41.5
5	5.Fl	43.1	40.3	36.7	45.0	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							39.0	36.2	32.7	41.0
55th Street - South of Remington Road							32.2	29.3	25.7	34.1
Remington Road - West of 55th Street							40.3	37.5	33.8	42.2
5	6.Fl	44.1	41.3	37.7	46.0	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							39.0	36.2	32.7	41.0
55th Street - South of Remington Road							37.3	34.4	30.8	39.2
Remington Road - West of 55th Street							40.9	38.1	34.4	42.8
6	1.Fl	45.1	42.3	38.8	47.1	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							43.9	41.1	37.6	45.9
55th Street - South of Remington Road							38.9	36.1	32.4	40.8
Remington Road - West of 55th Street							19.9	17.0	13.4	21.8
6	2.Fl	46.8	44.0	40.5	48.8	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							45.1	42.3	38.8	47.1
55th Street - South of Remington Road							41.9	39.0	35.4	43.8
Remington Road - West of 55th Street							21.6	18.8	15.1	23.5
6	3.Fl	47.4	44.6	41.0	49.3	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							44.5	41.8	38.3	46.6
55th Street - South of Remington Road							44.1	41.3	37.7	46.0
Remington Road - West of 55th Street							22.6	19.8	16.2	24.5
6	4.Fl	47.9	45.1	41.5	49.8	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							43.9	41.2	37.7	46.0
55th Street - South of Remington Road							45.6	42.7	39.1	47.5
Remington Road - West of 55th Street							25.4	22.6	19.0	27.3
6	5.Fl	48.3	45.4	41.9	50.2	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							43.7	40.9	37.4	45.7
55th Street - South of Remington Road							46.3	43.5	39.9	48.2
Remington Road - West of 55th Street							29.1	26.2	22.6	31.0
6	6.Fl	49.1	46.2	42.6	51.0	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							43.5	40.7	37.2	45.5
55th Street - South of Remington Road							47.4	44.6	40.9	49.3
Remington Road - West of 55th Street							34.7	31.8	28.2	36.6
7	1.Fl	51.9	49.1	45.6	53.9	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							51.4	48.7	45.2	53.5
55th Street - South of Remington Road							41.9	39.0	35.4	43.8
Remington Road - West of 55th Street							22.2	19.3	15.7	24.1
7	2.Fl	52.5	49.7	46.2	54.5	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							51.7	49.0	45.4	53.7
55th Street - South of Remington Road							44.4	41.5	37.9	46.3
Remington Road - West of 55th Street							25.1	22.2	18.6	27.0
7	3.Fl	52.1	49.3	45.8	54.1	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							50.8	48.1	44.5	52.8
55th Street - South of Remington Road							46.1	43.2	39.6	48.0
Remington Road - West of 55th Street							26.1	23.2	19.6	28.0
7	4.Fl	51.4	48.6	45.0	53.4	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							49.2	46.5	42.9	51.2
55th Street - South of Remington Road							47.3	44.5	40.8	49.2
Remington Road - West of 55th Street							26.9	24.1	20.4	28.8
7	5.Fl	51.3	48.5	45.0	53.3	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							48.7	45.9	42.4	50.7
55th Street - South of Remington Road							47.8	45.0	41.4	49.7
Remington Road - West of 55th Street							28.1	25.3	21.7	30.0
7	6.Fl	51.1	48.3	44.7	53.1	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							47.9	45.2	41.6	49.9
55th Street - South of Remington Road							48.2	45.4	41.7	50.1
Remington Road - West of 55th Street							30.8	28.0	24.4	32.7
8	1.Fl	51.2	48.4	44.9	53.2	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							50.7	48.0	44.4	52.7
55th Street - South of Remington Road							41.2	38.3	34.7	43.1
Remington Road - West of 55th Street							20.5	17.7	14.0	22.4
8	2.Fl	51.8	49.0	45.5	53.8	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							51.1	48.3	44.8	53.1
55th Street - South of Remington Road							43.7	40.9	37.3	45.6
Remington Road - West of 55th Street							23.4	20.6	16.9	25.3
8	3.Fl	51.9	49.1	45.6	53.9	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							50.8	48.0	44.5	52.8
55th Street - South of Remington Road							45.3	42.5	38.8	47.2
Remington Road - West of 55th Street							24.3	21.5	17.8	26.2
8	4.Fl	51.0	48.2	44.7	53.0	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							49.4	46.6	43.1	51.4
55th Street - South of Remington Road							46.0	43.1	39.5	47.9
Remington Road - West of 55th Street							25.0	22.2	18.6	26.9
8	5.Fl	50.8	48.0	44.5	52.8	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							48.7	46.0	42.4	50.7
55th Street - South of Remington Road							46.6	43.8	40.2	48.5
Remington Road - West of 55th Street							26.0	23.2	19.5	27.9
8	6.Fl	50.5	47.7	44.2	52.5	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							47.9	45.1	41.6	49.9
55th Street - South of Remington Road							47.1	44.2	40.6	49.0
Remington Road - West of 55th Street							27.6	24.7	21.1	29.5
9	1.Fl	51.2	48.4	44.9	53.2	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							50.7	47.9	44.4	52.7
55th Street - South of Remington Road							41.4	38.5	34.9	43.3
Remington Road - West of 55th Street							18.6	15.8	12.1	20.5
9	2.Fl	51.7	48.9	45.4	53.7	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							51.0	48.3	44.8	53.1
55th Street - South of Remington Road							43.1	40.3	36.6	45.0
Remington Road - West of 55th Street							21.4	18.6	14.9	23.3
9	3.Fl	51.6	48.8	45.2	53.6	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							50.6	47.8	44.3	52.6
55th Street - South of Remington Road							44.5	41.6	38.0	46.4
Remington Road - West of 55th Street							22.2	19.4	15.7	24.1
9	4.Fl	50.9	48.1	44.5	52.8	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							49.5	46.8	43.3	51.6
55th Street - South of Remington Road							45.0	42.1	38.5	46.9
Remington Road - West of 55th Street							23.0	20.1	16.5	24.9
9	5.Fl	50.3	47.5	43.9	52.3	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							48.5	45.7	42.2	50.5
55th Street - South of Remington Road							45.6	42.7	39.1	47.5
Remington Road - West of 55th Street							23.9	21.1	17.4	25.8
9	6.Fl	50.1	47.3	43.7	52.1	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							47.9	45.2	41.7	50.0
55th Street - South of Remington Road							45.9	43.1	39.5	47.9
Remington Road - West of 55th Street							25.2	22.4	18.7	27.1
10	1.Fl	50.6	47.9	44.3	52.6	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							50.3	47.6	44.1	52.4
55th Street - South of Remington Road							38.5	35.7	32.1	40.4
Remington Road - West of 55th Street							13.1	10.3	6.6	15.0
10	2.Fl	51.0	48.2	44.7	53.0	0.0	0.0	0.0	0.0	
55th Street - North of Remington Road							50.6	47.8	44.3	52.6
55th Street - South of Remington Road							40.3	37.4	33.8	42.2

Remington Road - West of 55th Street						14.0	11.1	7.5	15.9
10	3.Fl	50.6	47.8	44.3	52.6	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						50.0	47.2	43.7	52.0
55th Street - South of Remington Road						41.9	39.1	35.4	43.8
Remington Road - West of 55th Street						15.0	12.2	8.6	16.9
10	4.Fl	50.0	47.3	43.7	52.0	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						49.1	46.3	42.8	51.1
55th Street - South of Remington Road						43.0	40.1	36.5	44.9
Remington Road - West of 55th Street						15.9	13.1	9.5	17.8
10	5.Fl	49.7	47.0	43.4	51.7	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						48.5	45.7	42.2	50.5
55th Street - South of Remington Road						43.7	40.9	37.2	45.6
Remington Road - West of 55th Street						17.6	14.8	11.2	19.5
10	6.Fl	49.4	46.6	43.1	51.4	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						47.9	45.1	41.6	49.9
55th Street - South of Remington Road						44.1	41.3	37.6	46.0
Remington Road - West of 55th Street						20.3	17.5	13.9	22.2
11	1.Fl	50.0	47.2	43.7	52.0	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						50.0	47.2	43.7	52.0
55th Street - South of Remington Road						15.2	12.4	8.7	17.1
Remington Road - West of 55th Street						10.4	7.5	3.9	12.3
11	2.Fl	50.7	47.9	44.4	52.7	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						50.7	47.9	44.4	52.7
55th Street - South of Remington Road						15.0	12.2	8.5	16.9
Remington Road - West of 55th Street						10.8	8.0	4.4	12.7
11	3.Fl	50.2	47.5	43.9	52.2	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						50.2	47.5	43.9	52.2
55th Street - South of Remington Road						16.2	13.4	9.7	18.1
Remington Road - West of 55th Street						11.9	9.1	5.4	13.8
11	4.Fl	49.5	46.8	43.2	51.5	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						49.5	46.8	43.2	51.5
55th Street - South of Remington Road						18.0	15.1	11.5	19.9
Remington Road - West of 55th Street						11.1	8.3	4.6	13.0
11	5.Fl	48.4	45.6	42.1	50.4	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						48.4	45.6	42.1	50.4
55th Street - South of Remington Road						19.6	16.8	13.1	21.5
Remington Road - West of 55th Street						13.6	10.7	7.1	15.5
11	6.Fl	47.8	45.1	41.5	49.8	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						47.8	45.0	41.5	49.8
55th Street - South of Remington Road						22.9	20.1	16.5	24.8
Remington Road - West of 55th Street						16.5	13.6	10.0	18.4
12	1.Fl	41.6	38.8	35.3	43.6	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						41.5	38.8	35.3	43.6
55th Street - South of Remington Road						13.7	10.8	7.2	15.6
Remington Road - West of 55th Street						18.9	16.0	12.4	20.8
12	2.Fl	43.4	40.7	37.1	45.4	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						43.4	40.6	37.1	45.4
55th Street - South of Remington Road						14.7	11.9	8.2	16.6
Remington Road - West of 55th Street						19.8	17.0	13.4	21.7
12	3.Fl	43.5	40.7	37.2	45.5	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						43.4	40.6	37.1	45.4
55th Street - South of Remington Road						15.6	12.8	9.1	17.5
Remington Road - West of 55th Street						23.7	20.8	17.2	25.6
12	4.Fl	43.3	40.5	37.0	45.3	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						43.2	40.4	36.9	45.2
55th Street - South of Remington Road						14.9	12.1	8.4	16.8
Remington Road - West of 55th Street						25.7	22.9	19.3	27.6
12	5.Fl	43.8	41.0	37.5	45.8	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						43.7	41.0	37.4	45.7
55th Street - South of Remington Road						17.1	14.3	10.7	19.1
Remington Road - West of 55th Street						26.1	23.2	19.6	28.0
12	6.Fl	43.7	40.9	37.4	45.7	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						43.6	40.8	37.3	45.6
55th Street - South of Remington Road						20.6	17.7	14.1	22.5
Remington Road - West of 55th Street						26.3	23.5	19.8	28.2
13	1.Fl	35.7	32.9	29.4	37.7	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						35.3	32.5	29.0	37.3
55th Street - South of Remington Road						14.0	11.1	7.5	15.9
Remington Road - West of 55th Street						24.9	22.1	18.4	26.8
13	2.Fl	37.2	34.4	30.9	39.2	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						36.9	34.1	30.6	38.9
55th Street - South of Remington Road						14.8	11.9	8.3	16.7
Remington Road - West of 55th Street						24.8	22.0	18.4	26.7
13	3.Fl	38.2	35.5	31.9	40.2	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						38.0	35.2	31.7	40.0
55th Street - South of Remington Road						15.8	12.9	9.3	17.7
Remington Road - West of 55th Street						25.3	22.4	18.8	27.2
13	4.Fl	37.7	34.9	31.4	39.7	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						37.4	34.6	31.1	39.4
55th Street - South of Remington Road						15.1	12.3	8.6	17.0
Remington Road - West of 55th Street						25.6	22.8	19.1	27.5
13	5.Fl	38.1	35.3	31.8	40.1	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						37.7	35.0	31.4	39.7
55th Street - South of Remington Road						17.1	14.3	10.6	19.0
Remington Road - West of 55th Street						26.3	23.4	19.8	28.2
13	6.Fl	38.6	35.9	32.3	40.6	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						38.3	35.5	32.0	40.3
55th Street - South of Remington Road						20.5	17.6	14.0	22.4
Remington Road - West of 55th Street						26.5	23.7	20.0	28.4
14	1.Fl	32.5	29.7	26.1	34.5	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						31.1	28.4	24.8	33.1
55th Street - South of Remington Road						13.6	10.7	7.1	15.5
Remington Road - West of 55th Street						26.5	23.7	20.1	28.4
14	2.Fl	33.5	30.7	27.2	35.5	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						32.4	29.6	26.1	34.4
55th Street - South of Remington Road						15.0	12.1	8.5	16.9
Remington Road - West of 55th Street						26.8	24.0	20.3	28.7
14	3.Fl	34.7	31.9	28.4	36.7	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						33.8	31.0	27.5	35.8
55th Street - South of Remington Road						15.7	12.8	9.2	17.6
Remington Road - West of 55th Street						27.2	24.4	20.7	29.1
14	4.Fl	35.1	32.3	28.8	37.1	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						34.2	31.4	27.9	36.2
55th Street - South of Remington Road						15.3	12.4	8.8	17.2
Remington Road - West of 55th Street						27.7	24.9	21.2	29.6
14	5.Fl	34.7	31.9	28.4	36.7	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						33.7	30.9	27.4	35.7
55th Street - South of Remington Road						17.4	14.5	10.9	19.3
Remington Road - West of 55th Street						27.4	24.5	20.9	29.3
14	6.Fl	35.2	32.5	28.9	37.2	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						34.1	31.3	27.8	36.1
55th Street - South of Remington Road						20.1	17.2	13.6	22.0
Remington Road - West of 55th Street						28.2	25.4	21.8	30.1
15	1.Fl	30.6	27.8	24.2	32.5	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						28.5	25.7	22.2	30.5
55th Street - South of Remington Road						14.8	11.9	8.3	16.7
Remington Road - West of 55th Street						26.1	23.2	19.6	28.0
15	2.Fl	31.4	28.6	25.0	33.3	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						29.7	26.9	23.4	31.7
55th Street - South of Remington Road						16.0	13.1	9.5	17.9
Remington Road - West of 55th Street						26.0	23.2	19.5	27.9
15	3.Fl	32.4	29.7	26.1	34.4	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						30.9	28.2	24.6	32.9
55th Street - South of Remington Road						17.1	14.2	10.6	19.0
Remington Road - West of 55th Street						26.7	23.9	20.2	28.6
15	4.Fl	33.2	30.4	26.9	35.2	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						31.8	29.0	25.5	33.8
55th Street - South of Remington Road						17.1	14.3	10.6	19.0
Remington Road - West of 55th Street						27.2	24.4	20.8	29.1
15	5.Fl	33.5	30.7	27.1	35.4	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						32.0	29.2	25.7	34.0
55th Street - South of Remington Road						19.1	16.3	12.7	21.0
Remington Road - West of 55th Street						27.4	24.5	20.9	29.3
15	6.Fl	33.5	30.7	27.2	35.5	0.0	0.0	0.0	0.0
55th Street - North of Remington Road						31.7	28.9	25.4	33.7
55th Street - South of Remington Road						21.6	18.7	15.1	23.5
Remington Road - West of 55th Street						27.9	25.0	21.4	29.8

ATTACHMENT 5

FHWA RD-77-108 – Off-Site Traffic Noise

	Road	Segment	Existing	Existing + Project	∆db	Horizon	Horizon + Project	∆db	∆db Over Existing
1	Montezuma Road	Collwood Boulevard to 55th Street	72.9	72.9	0.0	74.3	74.3	0.0	1.4
2	Montezuma Road	55th Street to College Avenue	72.0	72.0	0.0	72.8	72.8	0.0	0.8
3	Montezuma Road	East of College Avenue	70.2	70.2	0.0	70.9	71.0	0.1	0.8
4	Remington Road	West of 55th Street	59.9	60.4	0.5	63.7	63.9	0.2	4.0
5	55th Street	Remington Road to Montezuma Road	69.9	70.0	0.1	70.7	70.8	0.1	0.9
6	College Avenue	Canyon Crest Drive to Zura Way	73.5	73.6	0.1	76.2	76.3	0.1	2.8
7	College Avenue	Zura Way to Montezuma Road	72.7	72.8	0.1	73.8	73.8	0.0	1.1
8	College Avenue	Montezuma Road to Arosa Street	71.2	71.3	0.1	72.1	72.1	0.0	0.9

FHWA RD-77-108
Traffic Noise Prediction Model
Data Input Sheet

Project Name : College View
Project Number : 9459
Modeled Condition : Existing, Existing + Project

Surface Refelction: CNEL
Assessment Metric: Hard
Peak ratio to ADT: 10.0
Traffic Desc. (Peak or ADT) : ADT

Segment	Roadway	Segment	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	K-Factor
EXISTING												
1	Montezuma Road	Collwood Boulevard to 55th Street	30,871	40	50	95.00	3.00	2.00	80.00	10.00	10.00	
2	Montezuma Road	55th Street to College Avenue	33,244	35	50	95.00	3.00	2.00	80.00	10.00	10.00	
3	Montezuma Road	East of College Avenue	21,803	35	50	95.00	3.00	2.00	80.00	10.00	10.00	
4	Remington Road	West of 55th Street	3,279	25	50	95.00	3.00	2.00	80.00	10.00	10.00	
5	55th Street	Remington Road to Montezuma Road	20,705	35	50	95.00	3.00	2.00	80.00	10.00	10.00	
6	College Avenue	Canyon Crest Drive to Zura Way	35,850	40	50	95.00	3.00	2.00	80.00	10.00	10.00	
7	College Avenue	Zura Way to Montezuma Road	29,790	40	50	95.00	3.00	2.00	80.00	10.00	10.00	
8	College Avenue	Montezuma Road to Arosa Street	27,871	35	50	95.00	3.00	2.00	80.00	10.00	10.00	
EXISTING + PROJECT												
1	Montezuma Road	Collwood Boulevard to 55th Street	31,267	40	50	95.00	3.00	2.00	80.00	10.00	10.00	
2	Montezuma Road	55th Street to College Avenue	33,640	35	50	95.00	3.00	2.00	80.00	10.00	10.00	
3	Montezuma Road	East of College Avenue	22,199	35	50	95.00	3.00	2.00	80.00	10.00	10.00	
4	Remington Road	West of 55th Street	3,675	25	50	95.00	3.00	2.00	80.00	10.00	10.00	
5	55th Street	Remington Road to Montezuma Road	21,101	35	50	95.00	3.00	2.00	80.00	10.00	10.00	
6	College Avenue	Canyon Crest Drive to Zura Way	36,246	40	50	95.00	3.00	2.00	80.00	10.00	10.00	
7	College Avenue	Zura Way to Montezuma Road	30,186	40	50	95.00	3.00	2.00	80.00	10.00	10.00	
8	College Avenue	Montezuma Road to Arosa Street	28,267	35	50	95.00	3.00	2.00	80.00	10.00	10.00	

FHWA RD-77-108
Traffic Noise Prediction Model
Predicted Noise Levels

Project Name : College View
Project Number : 9459
Modeled Condition : Existing, Existing + Project
Assessment Metric: Hard

			Noise Levels, dBA Hard					Distance to Traffic Noise Level Contours, Feet				
Segment	Roadway	Segment	Auto	MT	HT	Total	75 dB	70 dB	65 dB	60 dB	55 dB	50 dB
EXISTING												
1	Montezuma Road	Collwood Boulevard to 55th Street	70.4	64.4	67.4	72.9	31	97	308	975	3,083	9,749
2	Montezuma Road	55th Street to College Avenue	69.1	63.8	67.2	72.0	25	79	251	792	2,506	7,924
3	Montezuma Road	East of College Avenue	67.3	62.0	65.4	70.2	17	52	166	524	1,656	5,236
4	Remington Road	West of 55th Street	54.8	51.4	57.3	59.9	2	5	15	49	155	489
5	55th Street	Remington Road to Montezuma Road	67.0	61.7	65.2	69.9	15	49	155	489	1,545	4,886
6	College Avenue	Canyon Crest Drive to Zura Way	71.1	65.0	68.1	73.5	35	112	354	1,119	3,540	11,194
7	College Avenue	Zura Way to Montezuma Road	70.3	64.2	67.3	72.7	29	93	294	931	2,944	9,310
8	College Avenue	Montezuma Road to Arosa Street	68.3	63.0	66.5	71.2	21	66	208	659	2,084	6,591
EXISTING + PROJECT												
1	Montezuma Road	Collwood Boulevard to 55th Street	70.5	64.4	67.5	72.9	31	97	308	975	3,083	9,749
2	Montezuma Road	55th Street to College Avenue	69.2	63.8	67.3	72.0	25	79	251	792	2,506	7,924
3	Montezuma Road	East of College Avenue	67.3	62.0	65.5	70.2	17	52	166	524	1,656	5,236
4	Remington Road	West of 55th Street	55.3	51.9	57.8	60.4	2	5	17	55	173	548
5	55th Street	Remington Road to Montezuma Road	67.1	61.8	65.2	70.0	16	50	158	500	1,581	5,000
6	College Avenue	Canyon Crest Drive to Zura Way	71.1	65.1	68.1	73.6	36	115	362	1,145	3,622	11,454
7	College Avenue	Zura Way to Montezuma Road	70.4	64.3	67.3	72.8	30	95	301	953	3,013	9,527
8	College Avenue	Montezuma Road to Arosa Street	68.4	63.1	66.5	71.3	21	67	213	674	2,133	6,745

FHWA RD-77-108

Traffic Noise Prediction Model

Data Input Sheet

Project Name : College View
Project Number : 9459
Modeled Condition : Horizon, Horizon + Project

Surface Refelction: CNEL
Assessment Metric: Hard
Peak ratio to ADT: 10.0
Traffic Desc. (Peak or ADT) : ADT

Segment	Roadway	Segment	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	K-Factor
HORIZON												
1	Montezuma Road	Collwood Boulevard to 55th Street	43,021	40	50	95.00	3.00	2.00	80.00	10.00	10.00	
2	Montezuma Road	55th Street to College Avenue	39,794	35	50	95.00	3.00	2.00	80.00	10.00	10.00	
3	Montezuma Road	East of College Avenue	25,963	35	50	95.00	3.00	2.00	80.00	10.00	10.00	
4	Remington Road	West of 55th Street	7,849	25	50	95.00	3.00	2.00	80.00	10.00	10.00	
5	55th Street	Remington Road to Montezuma Road	24,845	35	50	95.00	3.00	2.00	80.00	10.00	10.00	
6	College Avenue	Canyon Crest Drive to Zura Way	67,000	40	50	95.00	3.00	2.00	80.00	10.00	10.00	
7	College Avenue	Zura Way to Montezuma Road	38,020	40	50	95.00	3.00	2.00	80.00	10.00	10.00	
8	College Avenue	Montezuma Road to Arosa Street	33,841	35	50	95.00	3.00	2.00	80.00	10.00	10.00	
HORIZON + PROJECT												
1	Montezuma Road	Collwood Boulevard to 55th Street	43,417	40	50	95.00	3.00	2.00	80.00	10.00	10.00	
2	Montezuma Road	55th Street to College Avenue	40,190	35	50	95.00	3.00	2.00	80.00	10.00	10.00	
3	Montezuma Road	East of College Avenue	26,359	35	50	95.00	3.00	2.00	80.00	10.00	10.00	
4	Remington Road	West of 55th Street	8,245	25	50	95.00	3.00	2.00	80.00	10.00	10.00	
5	55th Street	Remington Road to Montezuma Road	25,241	35	50	95.00	3.00	2.00	80.00	10.00	10.00	
6	College Avenue	Canyon Crest Drive to Zura Way	67,396	40	50	95.00	3.00	2.00	80.00	10.00	10.00	
7	College Avenue	Zura Way to Montezuma Road	38,416	40	50	95.00	3.00	2.00	80.00	10.00	10.00	
8	College Avenue	Montezuma Road to Arosa Street	34,237	35	50	95.00	3.00	2.00	80.00	10.00	10.00	

FHWA RD-77-108

Traffic Noise Prediction Model

Predicted Noise Levels

Project Name : College View
Project Number : 9459
Modeled Condition : Horizon, Horizon + Project
Assessment Metric: Hard

			Noise Levels, dBA Hard					Distance to Traffic Noise Level Contours, Feet				
Segment	Roadway	Segment	Auto	MT	HT	Total	75 dB	70 dB	65 dB	60 dB	55 dB	50 dB
HORIZON												
1	Montezuma Road	Collwood Boulevard to 55th Street	71.9	65.8	68.9	74.3	43	135	426	1,346	4,256	13,458
2	Montezuma Road	55th Street to College Avenue	69.9	64.6	68.0	72.8	30	95	301	953	3,013	9,527
3	Montezuma Road	East of College Avenue	68.0	62.7	66.1	70.9	19	62	195	615	1,945	6,151
4	Remington Road	West of 55th Street	58.6	55.2	61.1	63.7	4	12	37	117	371	1,172
5	55th Street	Remington Road to Montezuma Road	67.8	62.5	66.0	70.7	19	59	186	587	1,858	5,874
6	College Avenue	Canyon Crest Drive to Zura Way	73.8	67.7	70.8	76.2	66	208	659	2,084	6,591	20,843
7	College Avenue	Zura Way to Montezuma Road	71.4	65.3	68.3	73.8	38	120	379	1,199	3,793	11,994
8	College Avenue	Montezuma Road to Arosa Street	69.2	63.9	67.3	72.1	26	81	256	811	2,564	8,109
HORIZON + PROJECT												
1	Montezuma Road	Collwood Boulevard to 55th Street	71.9	65.8	68.9	74.3	43	135	426	1,346	4,256	13,458
2	Montezuma Road	55th Street to College Avenue	69.9	64.6	68.0	72.8	30	95	301	953	3,013	9,527
3	Montezuma Road	East of College Avenue	68.1	62.8	66.2	71.0	20	63	199	629	1,991	6,295
4	Remington Road	West of 55th Street	58.8	55.4	61.3	63.9	4	12	39	123	388	1,227
5	55th Street	Remington Road to Montezuma Road	67.9	62.6	66.0	70.8	19	60	190	601	1,901	6,011
6	College Avenue	Canyon Crest Drive to Zura Way	73.8	67.8	70.8	76.3	67	213	674	2,133	6,745	21,329
7	College Avenue	Zura Way to Montezuma Road	71.4	65.3	68.4	73.8	38	120	379	1,199	3,793	11,994
8	College Avenue	Montezuma Road to Arosa Street	69.2	63.9	67.3	72.1	26	81	256	811	2,564	8,109

ATTACHMENT 6

SoundPLAN Data – On-Site Noise

		Level			Corrections	
Source name	Reference	Daytime	Nighttime	Cwall	CI	CT
		dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
HVAC1	Lw/unit	75	75	-	-	-
HVAC2	Lw/unit	75	75	-	-	-
HVAC3	Lw/unit	75	75	-	-	-
HVAC4	Lw/unit	75	75	-	-	-
HVAC5	Lw/unit	75	75	-	-	-
HVAC6	Lw/unit	75	75	-	-	-
HVAC7	Lw/unit	75	75	-	-	-
HVAC8	Lw/unit	75	75	-	-	-
HVAC9	Lw/unit	75	75	-	-	-
HVAC10	Lw/unit	75	75	-	-	-
HVAC11	Lw/unit	75	75	-	-	-
HVAC12	Lw/unit	75	75	-	-	-
HVAC13	Lw/unit	75	75	-	-	-
HVAC14	Lw/unit	75	75	-	-	-
HVAC15	Lw/unit	75	75	-	-	-
HVAC16	Lw/unit	75	75	-	-	-
HVAC17	Lw/unit	75	75	-	-	-
HVAC18	Lw/unit	75	75	-	-	-
HVAC19	Lw/unit	75	75	-	-	-
HVAC20	Lw/unit	75	75	-	-	-
HVAC21	Lw/unit	75	75	-	-	-
HVAC22	Lw/unit	75	75	-	-	-
HVAC23	Lw/unit	75	75	-	-	-
HVAC24	Lw/unit	75	75	-	-	-
HVAC25	Lw/unit	75	75	-	-	-
HVAC26	Lw/unit	75	75	-	-	-
HVAC27	Lw/unit	75	75	-	-	-
HVAC28	Lw/unit	75	75	-	-	-
HVAC29	Lw/unit	75	75	-	-	-
HVAC30	Lw/unit	75	75	-	-	-
HVAC31	Lw/unit	75	75	-	-	-
HVAC32	Lw/unit	75	75	-	-	-
HVAC33	Lw/unit	75	75	-	-	-
HVAC34	Lw/unit	75	75	-	-	-
HVAC35	Lw/unit	75	75	-	-	-
HVAC36	Lw/unit	75	75	-	-	-
HVAC37	Lw/unit	75	75	-	-	-
HVAC38	Lw/unit	75	75	-	-	-
HVAC39	Lw/unit	75	75	-	-	-
HVAC40	Lw/unit	75	75	-	-	-
HVAC41	Lw/unit	75	75	-	-	-
HVAC42	Lw/unit	75	75	-	-	-
HVAC43	Lw/unit	75	75	-	-	-
HVAC44	Lw/unit	75	75	-	-	-
HVAC45	Lw/unit	75	75	-	-	-
HVAC46	Lw/unit	75	75	-	-	-
HVAC47	Lw/unit	75	75	-	-	-
HVAC48	Lw/unit	75	75	-	-	-
HVAC49	Lw/unit	75	75	-	-	-
HVAC50	Lw/unit	75	75	-	-	-
HVAC51	Lw/unit	75	75	-	-	-
HVAC52	Lw/unit	75	75	-	-	-
HVAC53	Lw/unit	75	75	-	-	-
HVAC54	Lw/unit	75	75	-	-	-
HVAC55	Lw/unit	75	75	-	-	-
HVAC56	Lw/unit	75	75	-	-	-
HVAC57	Lw/unit	75	75	-	-	-
HVAC58	Lw/unit	75	75	-	-	-
HVAC59	Lw/unit	75	75	-	-	-
HVAC60	Lw/unit	75	75	-	-	-
HVAC61	Lw/unit	75	75	-	-	-
HVAC62	Lw/unit	75	75	-	-	-
HVAC63	Lw/unit	75	75	-	-	-
HVAC64	Lw/unit	75	75	-	-	-
HVAC65	Lw/unit	75	75	-	-	-
HVAC66	Lw/unit	75	75	-	-	-
HVAC67	Lw/unit	75	75	-	-	-
HVAC68	Lw/unit	75	75	-	-	-
HVAC69	Lw/unit	75	75	-	-	-
HVAC70	Lw/unit	75	75	-	-	-
HVAC71	Lw/unit	75	75	-	-	-
HVAC72	Lw/unit	75	75	-	-	-
HVAC73	Lw/unit	75	75	-	-	-
HVAC74	Lw/unit	75	75	-	-	-
HVAC75	Lw/unit	75	75	-	-	-
HVAC76	Lw/unit	75	75	-	-	-
HVAC77	Lw/unit	75	75	-	-	-
HVAC78	Lw/unit	75	75	-	-	-
HVAC79	Lw/unit	75	75	-	-	-
HVAC80	Lw/unit	75	75	-	-	-
HVAC81	Lw/unit	75	75	-	-	-
HVAC82	Lw/unit	75	75	-	-	-
HVAC83	Lw/unit	75	75	-	-	-
HVAC84	Lw/unit	75	75	-	-	-
Pool	Lw/unit	92.5	-	-	-	-

9459 College View
SoundPLAN - On-Site Generated Noise

	Coordinates			Level w/o NP	
No.	X	Y	Height	Daytime	Nighttime
	in meter		m	dB(A)	dB(A)
1	492731.08	3626453.04	121.49	42.1	31.2
2	492734.45	3626476.65	114.82	39.8	29.2
3	492739.26	3626494.89	122.07	39.4	29.7
4	492752.86	3626505.88	126.16	34.2	33.1
5	492770.64	3626517.46	126.35	33.7	33.1
6	492790.32	3626530.64	126.02	32.1	31.7
7	492816.20	3626536.67	126.09	31.0	30.6
8	492830.65	3626480.63	127.23	33.7	33.5
9	492829.38	3626455.87	128.91	35.2	34.9
10	492795.40	3626437.14	127.87	38.4	33.2
11	492767.94	3626440.31	123.08	40.1	31.9
12	492739.84	3626443.49	122.72	42.2	30.5

Source name			Level w/o NP Daytime dB(A)		Nighttime
1	1.Fl	42.1	31.2	0.0	0.0
HVAC1			12.7		12.7
HVAC2			12.6		12.6
HVAC3			12.2		12.2
HVAC4			12.4		12.4
HVAC5			12.1		12.1
HVAC6			11.8		11.8
HVAC7			11.2		11.2
HVAC8			11.4		11.4
HVAC9			11.2		11.2
HVAC10			10.9		10.9
HVAC11			10.7		10.7
HVAC12			10.9		10.9
HVAC13			12.5		12.5
HVAC14			8.9		8.9
HVAC15			12.1		12.1
HVAC16			12.3		12.3
HVAC17			12.1		12.1
HVAC18			11.9		11.9
HVAC19			12.0		12.0
HVAC20			11.9		11.9
HVAC21			12.0		12.0
HVAC22			11.9		11.9
HVAC23			11.7		11.7
HVAC24			11.8		11.8
HVAC25			10.3		10.3
HVAC26			10.1		10.1
HVAC27			10.1		10.1
HVAC28			5.9		5.9
HVAC29			5.8		5.8
HVAC30			5.7		5.7
HVAC31			5.6		5.6
HVAC32			5.7		5.7
HVAC33			5.6		5.6
HVAC34			5.5		5.5
HVAC35			5.5		5.5
HVAC36			5.6		5.6
HVAC37			5.0		5.0
HVAC38			4.9		4.9
HVAC39			4.8		4.8
HVAC40			4.9		4.9
HVAC41			4.9		4.9
HVAC42			4.8		4.8
HVAC43			4.7		4.7
HVAC44			4.8		4.8
HVAC45			4.8		4.8
HVAC46			4.7		4.7
HVAC47			4.6		4.6
HVAC48			4.7		4.7
HVAC49			8.3		8.3
HVAC50			8.3		8.3
HVAC51			8.4		8.4

HVAC52			8.4		8.4
HVAC53			8.5		8.5
HVAC54			8.5		8.5
HVAC55			8.6		8.6
HVAC56			8.6		8.6
HVAC57			8.7		8.7
HVAC58			8.7		8.7
HVAC59			12.3		12.3
HVAC60			10.2		10.2
HVAC61			9.9		9.9
HVAC62			12.8		12.8
HVAC63			13.0		13.0
HVAC64			10.1		10.1
HVAC65			10.2		10.2
HVAC66			13.1		13.1
HVAC67			10.3		10.3
HVAC68			10.3		10.3
HVAC69			10.5		10.5
HVAC70			13.4		13.4
HVAC71			13.7		13.7
HVAC72			10.6		10.6
HVAC73			13.0		13.0
HVAC74			18.0		18.0
HVAC75			18.2		18.2
HVAC76			13.2		13.2
HVAC77			13.6		13.6
HVAC78			18.3		18.3
HVAC79			18.6		18.6
HVAC80			13.9		13.9
HVAC81			14.2		14.2
HVAC82			18.8		18.8
HVAC83			19.1		19.1
HVAC84			14.5		14.5
Pool			41.7		-
2	1.Fl	39.8	29.2	0.0	0.0
HVAC1			9.6		9.6
HVAC2			9.5		9.5
HVAC3			9.2		9.2
HVAC4			9.2		9.2
HVAC5			8.8		8.8
HVAC6			8.8		8.8
HVAC7			8.4		8.4
HVAC8			8.3		8.3
HVAC9			8.1		8.1
HVAC10			8.1		8.1
HVAC11			8.0		8.0
HVAC12			8.1		8.1
HVAC13			7.0		7.0
HVAC14			7.0		7.0
HVAC15			6.8		6.8
HVAC16			6.8		6.8
HVAC17			6.7		6.7
HVAC18			6.7		6.7
HVAC19			6.5		6.5
HVAC20			6.6		6.6

HVAC21	6.4	6.4
HVAC22	6.4	6.4
HVAC23	6.3	6.3
HVAC24	6.3	6.3
HVAC25	4.9	4.9
HVAC26	4.8	4.8
HVAC27	4.8	4.8
HVAC28	4.9	4.9
HVAC29	4.9	4.9
HVAC30	4.8	4.8
HVAC31	4.8	4.8
HVAC32	4.9	4.9
HVAC33	4.9	4.9
HVAC34	4.8	4.8
HVAC35	4.8	4.8
HVAC36	4.9	4.9
HVAC37	4.9	4.9
HVAC38	4.7	4.7
HVAC39	4.7	4.7
HVAC40	4.9	4.9
HVAC41	4.8	4.8
HVAC42	4.7	4.7
HVAC43	4.7	4.7
HVAC44	4.8	4.8
HVAC45	4.8	4.8
HVAC46	4.7	4.7
HVAC47	4.6	4.6
HVAC48	4.8	4.8
HVAC49	9.4	9.4
HVAC50	9.4	9.4
HVAC51	9.5	9.5
HVAC52	9.5	9.5
HVAC53	9.6	9.6
HVAC54	9.6	9.6
HVAC55	9.7	9.7
HVAC56	9.7	9.7
HVAC57	9.8	9.8
HVAC58	9.8	9.8
HVAC59	9.9	9.9
HVAC60	9.9	9.9
HVAC61	11.5	11.5
HVAC62	11.6	11.6
HVAC63	11.7	11.7
HVAC64	11.7	11.7
HVAC65	11.8	11.8
HVAC66	11.9	11.9
HVAC67	12.0	12.0
HVAC68	11.9	11.9
HVAC69	12.2	12.2
HVAC70	12.2	12.2
HVAC71	12.3	12.3
HVAC72	12.3	12.3
HVAC73	13.6	13.6
HVAC74	13.7	13.7
HVAC75	13.8	13.8

HVAC76			13.8		13.8
HVAC77			13.9		13.9
HVAC78			14.0		14.0
HVAC79			14.3		14.3
HVAC80			14.1		14.1
HVAC81			14.3		14.3
HVAC82			14.4		14.4
HVAC83			14.5		14.5
HVAC84			14.4		14.4
Pool			39.4		-
3	1.Fl	39.4	29.7	0.0	0.0
HVAC1			8.6		8.6
HVAC2			8.6		8.6
HVAC3			8.5		8.5
HVAC4			8.4		8.4
HVAC5			8.4		8.4
HVAC6			8.3		8.3
HVAC7			8.2		8.2
HVAC8			8.2		8.2
HVAC9			8.0		8.0
HVAC10			8.0		8.0
HVAC11			7.9		7.9
HVAC12			7.9		7.9
HVAC13			6.9		6.9
HVAC14			6.9		6.9
HVAC15			6.8		6.8
HVAC16			6.7		6.7
HVAC17			6.6		6.6
HVAC18			6.6		6.6
HVAC19			6.5		6.5
HVAC20			6.5		6.5
HVAC21			6.3		6.3
HVAC22			6.4		6.4
HVAC23			6.2		6.2
HVAC24			6.2		6.2
HVAC25			5.5		5.5
HVAC26			5.4		5.4
HVAC27			5.4		5.4
HVAC28			5.5		5.5
HVAC29			5.6		5.6
HVAC30			5.5		5.5
HVAC31			5.5		5.5
HVAC32			5.6		5.6
HVAC33			5.6		5.6
HVAC34			5.5		5.5
HVAC35			5.5		5.5
HVAC36			5.7		5.7
HVAC37			5.9		5.9
HVAC38			5.8		5.8
HVAC39			5.8		5.8
HVAC40			5.9		5.9
HVAC41			5.9		5.9
HVAC42			5.8		5.8
HVAC43			5.8		5.8
HVAC44			6.0		6.0

HVAC45			6.0		6.0
HVAC46			5.8		5.8
HVAC47			5.9		5.9
HVAC48			6.0		6.0
HVAC49			7.7		7.7
HVAC50			8.0		8.0
HVAC51			8.3		8.3
HVAC52			8.0		8.0
HVAC53			8.3		8.3
HVAC54			8.6		8.6
HVAC55			8.9		8.9
HVAC56			8.6		8.6
HVAC57			8.8		8.8
HVAC58			9.0		9.0
HVAC59			8.2		8.2
HVAC60			12.5		12.5
HVAC61			10.3		10.3
HVAC62			10.6		10.6
HVAC63			10.8		10.8
HVAC64			9.9		9.9
HVAC65			10.2		10.2
HVAC66			10.9		10.9
HVAC67			11.0		11.0
HVAC68			10.5		10.5
HVAC69			10.8		10.8
HVAC70			11.1		11.1
HVAC71			11.3		11.3
HVAC72			11.0		11.0
HVAC73			13.5		13.5
HVAC74			16.2		16.2
HVAC75			16.3		16.3
HVAC76			13.6		13.6
HVAC77			16.2		16.2
HVAC78			14.2		14.2
HVAC79			16.6		16.6
HVAC80			16.4		16.4
HVAC81			16.6		16.6
HVAC82			16.8		16.8
HVAC83			17.0		17.0
HVAC84			16.7		16.7
Pool			38.9		-
4	1.Fl	34.2	33.1	0.0	0.0
HVAC1			8.3		8.3
HVAC2			8.5		8.5
HVAC3			8.3		8.3
HVAC4			8.2		8.2
HVAC5			8.2		8.2
HVAC6			8.2		8.2
HVAC7			8.2		8.2
HVAC8			8.1		8.1
HVAC9			8.0		8.0
HVAC10			8.1		8.1
HVAC11			8.0		8.0
HVAC12			7.9		7.9
HVAC13			7.2		7.2

HVAC14	7.3	7.3
HVAC15	7.2	7.2
HVAC16	7.1	7.1
HVAC17	7.0	7.0
HVAC18	7.1	7.1
HVAC19	7.0	7.0
HVAC20	6.9	6.9
HVAC21	6.8	6.8
HVAC22	6.9	6.9
HVAC23	6.8	6.8
HVAC24	6.7	6.7
HVAC25	6.2	6.2
HVAC26	6.1	6.1
HVAC27	6.1	6.1
HVAC28	6.3	6.3
HVAC29	6.3	6.3
HVAC30	6.2	6.2
HVAC31	6.3	6.3
HVAC32	6.4	6.4
HVAC33	6.5	6.5
HVAC34	6.4	6.4
HVAC35	6.4	6.4
HVAC36	6.6	6.6
HVAC37	7.1	7.1
HVAC38	7.0	7.0
HVAC39	7.0	7.0
HVAC40	7.2	7.2
HVAC41	7.3	7.3
HVAC42	7.1	7.1
HVAC43	7.1	7.1
HVAC44	7.3	7.3
HVAC45	7.4	7.4
HVAC46	7.2	7.2
HVAC47	7.2	7.2
HVAC48	7.4	7.4
HVAC49	14.2	14.2
HVAC50	14.4	14.4
HVAC51	14.6	14.6
HVAC52	14.4	14.4
HVAC53	14.7	14.7
HVAC54	14.6	14.6
HVAC55	15.0	15.0
HVAC56	14.8	14.8
HVAC57	12.0	12.0
HVAC58	15.4	15.4
HVAC59	13.0	13.0
HVAC60	12.0	12.0
HVAC61	16.3	16.3
HVAC62	16.7	16.7
HVAC63	16.8	16.8
HVAC64	16.5	16.5
HVAC65	16.6	16.6
HVAC66	17.0	17.0
HVAC67	17.1	17.1
HVAC68	16.8	16.8

HVAC69			16.9		16.9
HVAC70			17.2		17.2
HVAC71			16.1		16.1
HVAC72			15.5		15.5
HVAC73			18.6		18.6
HVAC74			19.5		19.5
HVAC75			19.5		19.5
HVAC76			18.7		18.7
HVAC77			18.8		18.8
HVAC78			19.4		19.4
HVAC79			19.5		19.5
HVAC80			18.8		18.8
HVAC81			18.8		18.8
HVAC82			19.4		19.4
HVAC83			18.1		18.1
HVAC84			17.8		17.8
Pool			27.6		-
5	1.Fl	33.7	33.1	0.0	0.0
HVAC1			7.1		7.1
HVAC2			7.3		7.3
HVAC3			7.3		7.3
HVAC4			7.1		7.1
HVAC5			7.0		7.0
HVAC6			7.2		7.2
HVAC7			7.2		7.2
HVAC8			7.0		7.0
HVAC9			6.9		6.9
HVAC10			7.1		7.1
HVAC11			7.1		7.1
HVAC12			6.9		6.9
HVAC13			6.6		6.6
HVAC14			6.7		6.7
HVAC15			6.7		6.7
HVAC16			6.5		6.5
HVAC17			6.5		6.5
HVAC18			6.6		6.6
HVAC19			6.6		6.6
HVAC20			6.4		6.4
HVAC21			6.4		6.4
HVAC22			6.5		6.5
HVAC23			6.5		6.5
HVAC24			6.3		6.3
HVAC25			6.3		6.3
HVAC26			6.2		6.2
HVAC27			6.3		6.3
HVAC28			6.4		6.4
HVAC29			6.5		6.5
HVAC30			6.4		6.4
HVAC31			6.5		6.5
HVAC32			6.6		6.6
HVAC33			6.7		6.7
HVAC34			6.7		6.7
HVAC35			6.8		6.8
HVAC36			6.9		6.9
HVAC37			7.9		7.9

HVAC38			7.8		7.8
HVAC39			7.9		7.9
HVAC40			8.0		8.0
HVAC41			8.2		8.2
HVAC42			8.0		8.0
HVAC43			8.1		8.1
HVAC44			8.2		8.2
HVAC45			8.4		8.4
HVAC46			8.3		8.3
HVAC47			8.4		8.4
HVAC48			8.5		8.5
HVAC49			13.1		13.1
HVAC50			13.7		13.7
HVAC51			13.8		13.8
HVAC52			17.1		17.1
HVAC53			17.2		17.2
HVAC54			17.5		17.5
HVAC55			17.6		17.6
HVAC56			17.3		17.3
HVAC57			17.4		17.4
HVAC58			17.7		17.7
HVAC59			17.7		17.7
HVAC60			17.4		17.4
HVAC61			17.8		17.8
HVAC62			18.1		18.1
HVAC63			18.0		18.0
HVAC64			17.8		17.8
HVAC65			17.7		17.7
HVAC66			18.0		18.0
HVAC67			14.3		14.3
HVAC68			13.8		13.8
HVAC69			13.8		13.8
HVAC70			19.4		19.4
HVAC71			19.5		19.5
HVAC72			18.7		18.7
HVAC73			16.9		16.9
HVAC74			17.1		17.1
HVAC75			17.1		17.1
HVAC76			16.8		16.8
HVAC77			16.7		16.7
HVAC78			15.6		15.6
HVAC79			15.5		15.5
HVAC80			15.0		15.0
HVAC81			14.9		14.9
HVAC82			16.6		16.6
HVAC83			16.5		16.5
HVAC84			16.2		16.2
Pool			24.8		-
6	1.Fl	32.1	31.7	0.0	0.0
HVAC1			5.1		5.1
HVAC2			5.3		5.3
HVAC3			5.3		5.3
HVAC4			5.1		5.1
HVAC5			5.1		5.1
HVAC6			5.3		5.3

HVAC7	5.3	5.3
HVAC8	5.1	5.1
HVAC9	5.2	5.2
HVAC10	5.3	5.3
HVAC11	5.3	5.3
HVAC12	5.2	5.2
HVAC13	5.2	5.2
HVAC14	5.3	5.3
HVAC15	5.3	5.3
HVAC16	5.2	5.2
HVAC17	5.2	5.2
HVAC18	5.3	5.3
HVAC19	5.3	5.3
HVAC20	5.2	5.2
HVAC21	5.2	5.2
HVAC22	5.4	5.4
HVAC23	6.1	6.1
HVAC24	5.2	5.2
HVAC25	5.6	5.6
HVAC26	5.6	5.6
HVAC27	5.8	5.8
HVAC28	5.7	5.7
HVAC29	5.9	5.9
HVAC30	5.9	5.9
HVAC31	6.0	6.0
HVAC32	6.0	6.0
HVAC33	6.1	6.1
HVAC34	6.1	6.1
HVAC35	6.3	6.3
HVAC36	6.3	6.3
HVAC37	7.5	7.5
HVAC38	7.5	7.5
HVAC39	7.6	7.6
HVAC40	7.6	7.6
HVAC41	8.6	8.6
HVAC42	7.8	7.8
HVAC43	7.9	7.9
HVAC44	7.9	7.9
HVAC45	8.1	8.1
HVAC46	8.1	8.1
HVAC47	8.2	8.2
HVAC48	8.2	8.2
HVAC49	17.7	17.7
HVAC50	18.0	18.0
HVAC51	17.9	17.9
HVAC52	17.6	17.6
HVAC53	17.5	17.5
HVAC54	17.8	17.8
HVAC55	17.8	17.8
HVAC56	17.5	17.5
HVAC57	17.4	17.4
HVAC58	17.7	17.7
HVAC59	17.5	17.5
HVAC60	17.2	17.2
HVAC61	16.0	16.0

HVAC62			16.2		16.2
HVAC63			16.1		16.1
HVAC64			15.8		15.8
HVAC65			15.5		15.5
HVAC66			15.9		15.9
HVAC67			15.6		15.6
HVAC68			15.6		15.6
HVAC69			15.4		15.4
HVAC70			15.4		15.4
HVAC71			15.4		15.4
HVAC72			15.3		15.3
HVAC73			10.9		10.9
HVAC74			11.0		11.0
HVAC75			11.2		11.2
HVAC76			10.8		10.8
HVAC77			10.7		10.7
HVAC78			10.9		10.9
HVAC79			10.7		10.7
HVAC80			10.4		10.4
HVAC81			10.0		10.0
HVAC82			10.2		10.2
HVAC83			10.1		10.1
HVAC84			9.5		9.5
Pool			21.8		-
7	1.Fl	31.0	30.6	0.0	0.0
HVAC1			3.5		3.5
HVAC2			3.6		3.6
HVAC3			3.6		3.6
HVAC4			3.5		3.5
HVAC5			3.6		3.6
HVAC6			3.7		3.7
HVAC7			3.7		3.7
HVAC8			3.6		3.6
HVAC9			3.6		3.6
HVAC10			3.7		3.7
HVAC11			3.8		3.8
HVAC12			3.7		3.7
HVAC13			3.9		3.9
HVAC14			4.0		4.0
HVAC15			4.1		4.1
HVAC16			4.0		4.0
HVAC17			4.0		4.0
HVAC18			4.1		4.1
HVAC19			4.2		4.2
HVAC20			4.0		4.0
HVAC21			4.1		4.1
HVAC22			4.4		4.4
HVAC23			4.5		4.5
HVAC24			4.1		4.1
HVAC25			9.7		9.7
HVAC26			9.7		9.7
HVAC27			9.9		9.9
HVAC28			9.9		9.9
HVAC29			9.9		9.9
HVAC30			10.0		10.0

HVAC31	10.2	10.2
HVAC32	10.0	10.0
HVAC33	10.0	10.0
HVAC34	10.3	10.3
HVAC35	10.5	10.5
HVAC36	10.1	10.1
HVAC37	9.4	9.4
HVAC38	11.8	11.8
HVAC39	11.9	11.9
HVAC40	9.6	9.6
HVAC41	9.8	9.8
HVAC42	12.0	12.0
HVAC43	12.0	12.0
HVAC44	10.0	10.0
HVAC45	10.1	10.1
HVAC46	12.2	12.2
HVAC47	10.6	10.6
HVAC48	10.3	10.3
HVAC49	16.8	16.8
HVAC50	16.9	16.9
HVAC51	16.5	16.5
HVAC52	16.5	16.5
HVAC53	15.9	15.9
HVAC54	16.1	16.1
HVAC55	15.6	15.6
HVAC56	15.7	15.7
HVAC57	15.4	15.4
HVAC58	15.5	15.5
HVAC59	15.2	15.2
HVAC60	15.0	15.0
HVAC61	12.8	12.8
HVAC62	12.9	12.9
HVAC63	12.7	12.7
HVAC64	12.6	12.6
HVAC65	12.3	12.3
HVAC66	12.4	12.4
HVAC67	12.3	12.3
HVAC68	12.2	12.2
HVAC69	12.5	12.5
HVAC70	12.6	12.6
HVAC71	12.4	12.4
HVAC72	12.3	12.3
HVAC73	10.6	10.6
HVAC74	10.7	10.7
HVAC75	10.6	10.6
HVAC76	10.4	10.4
HVAC77	10.7	10.7
HVAC78	10.4	10.4
HVAC79	10.6	10.6
HVAC80	10.6	10.6
HVAC81	10.4	10.4
HVAC82	10.5	10.5
HVAC83	10.3	10.3
HVAC84	10.2	10.2
Pool	19.6	-

8	1.Fl	33.7	33.5	0.0	0.0
HVAC1			6.4		6.4
HVAC2			6.5		6.5
HVAC3			6.6		6.6
HVAC4			6.4		6.4
HVAC5			10.1		10.1
HVAC6			6.6		6.6
HVAC7			6.9		6.9
HVAC8			10.3		10.3
HVAC9			11.3		11.3
HVAC10			7.0		7.0
HVAC11			10.7		10.7
HVAC12			11.5		11.5
HVAC13			12.7		12.7
HVAC14			12.7		12.7
HVAC15			13.0		13.0
HVAC16			12.9		12.9
HVAC17			13.2		13.2
HVAC18			13.2		13.2
HVAC19			13.5		13.5
HVAC20			13.5		13.5
HVAC21			13.6		13.6
HVAC22			15.4		15.4
HVAC23			15.7		15.7
HVAC24			13.7		13.7
HVAC25			13.5		13.5
HVAC26			13.9		13.9
HVAC27			14.2		14.2
HVAC28			16.3		16.3
HVAC29			16.6		16.6
HVAC30			16.8		16.8
HVAC31			17.3		17.3
HVAC32			16.8		16.8
HVAC33			16.8		16.8
HVAC34			17.4		17.4
HVAC35			18.3		18.3
HVAC36			16.9		16.9
HVAC37			17.6		17.6
HVAC38			17.8		17.8
HVAC39			19.3		19.3
HVAC40			19.1		19.1
HVAC41			19.3		19.3
HVAC42			20.0		20.0
HVAC43			19.9		19.9
HVAC44			19.3		19.3
HVAC45			19.2		19.2
HVAC46			19.9		19.9
HVAC47			17.5		17.5
HVAC48			16.9		16.9
HVAC49			14.8		14.8
HVAC50			14.5		14.5
HVAC51			14.3		14.3
HVAC52			14.6		14.6
HVAC53			14.4		14.4
HVAC54			14.1		14.1

HVAC55			13.9		13.9
HVAC56			14.2		14.2
HVAC57			10.9		10.9
HVAC58			13.9		13.9
HVAC59			8.7		8.7
HVAC60			8.9		8.9
HVAC61			7.6		7.6
HVAC62			7.5		7.5
HVAC63			7.4		7.4
HVAC64			7.5		7.5
HVAC65			7.4		7.4
HVAC66			7.3		7.3
HVAC67			7.2		7.2
HVAC68			7.3		7.3
HVAC69			7.2		7.2
HVAC70			7.1		7.1
HVAC71			7.0		7.0
HVAC72			7.1		7.1
HVAC73			6.1		6.1
HVAC74			6.0		6.0
HVAC75			5.9		5.9
HVAC76			6.0		6.0
HVAC77			5.9		5.9
HVAC78			5.9		5.9
HVAC79			5.8		5.8
HVAC80			5.8		5.8
HVAC81			5.7		5.7
HVAC82			5.7		5.7
HVAC83			5.6		5.6
HVAC84			5.7		5.7
Pool			21.3		-
9	1.Fl	35.2	34.9	0.0	0.0
HVAC1			11.6		11.6
HVAC2			11.6		11.6
HVAC3			11.7		11.7
HVAC4			11.7		11.7
HVAC5			11.9		11.9
HVAC6			11.8		11.8
HVAC7			12.0		12.0
HVAC8			12.1		12.1
HVAC9			12.3		12.3
HVAC10			12.2		12.2
HVAC11			12.4		12.4
HVAC12			12.5		12.5
HVAC13			13.9		13.9
HVAC14			14.1		14.1
HVAC15			14.3		14.3
HVAC16			14.2		14.2
HVAC17			14.9		14.9
HVAC18			14.6		14.6
HVAC19			14.9		14.9
HVAC20			15.2		15.2
HVAC21			15.4		15.4
HVAC22			28.5		28.5
HVAC23			15.5		15.5

HVAC24	15.8	15.8
HVAC25	17.9	17.9
HVAC26	18.4	18.4
HVAC27	18.4	18.4
HVAC28	17.9	17.9
HVAC29	17.8	17.8
HVAC30	18.3	18.3
HVAC31	15.9	15.9
HVAC32	15.4	15.4
HVAC33	19.9	19.9
HVAC34	20.6	20.6
HVAC35	20.6	20.6
HVAC36	19.9	19.9
HVAC37	17.1	17.1
HVAC38	18.4	18.4
HVAC39	18.4	18.4
HVAC40	17.7	17.7
HVAC41	17.7	17.7
HVAC42	18.3	18.3
HVAC43	18.2	18.2
HVAC44	17.7	17.7
HVAC45	17.5	17.5
HVAC46	18.0	18.0
HVAC47	17.7	17.7
HVAC48	17.3	17.3
HVAC49	13.3	13.3
HVAC50	13.1	13.1
HVAC51	12.9	12.9
HVAC52	13.1	13.1
HVAC53	13.0	13.0
HVAC54	12.8	12.8
HVAC55	8.3	8.3
HVAC56	8.5	8.5
HVAC57	8.4	8.4
HVAC58	8.2	8.2
HVAC59	8.3	8.3
HVAC60	8.5	8.5
HVAC61	7.0	7.0
HVAC62	6.8	6.8
HVAC63	6.7	6.7
HVAC64	6.9	6.9
HVAC65	6.9	6.9
HVAC66	6.7	6.7
HVAC67	6.7	6.7
HVAC68	6.8	6.8
HVAC69	6.7	6.7
HVAC70	6.6	6.6
HVAC71	6.5	6.5
HVAC72	6.6	6.6
HVAC73	5.5	5.5
HVAC74	5.3	5.3
HVAC75	5.3	5.3
HVAC76	5.4	5.4
HVAC77	5.3	5.3
HVAC78	5.2	5.2

HVAC79			5.1		5.1
HVAC80			5.2		5.2
HVAC81			5.2		5.2
HVAC82			5.0		5.0
HVAC83			5.0		5.0
HVAC84			5.1		5.1
Pool			22.0		-
10	1.Fl	38.4	33.2	0.0	0.0
HVAC1			16.6		16.6
HVAC2			15.8		15.8
HVAC3			13.6		13.6
HVAC4			14.7		14.7
HVAC5			14.6		14.6
HVAC6			13.5		13.5
HVAC7			13.4		13.4
HVAC8			14.2		14.2
HVAC9			14.2		14.2
HVAC10			13.6		13.6
HVAC11			13.8		13.8
HVAC12			14.3		14.3
HVAC13			17.8		17.8
HVAC14			16.5		16.5
HVAC15			17.5		17.5
HVAC16			17.1		17.1
HVAC17			17.8		17.8
HVAC18			17.6		17.6
HVAC19			17.7		17.7
HVAC20			17.9		17.9
HVAC21			18.1		18.1
HVAC22			17.7		17.7
HVAC23			17.8		17.8
HVAC24			18.1		18.1
HVAC25			18.6		18.6
HVAC26			17.6		17.6
HVAC27			17.4		17.4
HVAC28			18.1		18.1
HVAC29			17.6		17.6
HVAC30			17.2		17.2
HVAC31			16.9		16.9
HVAC32			17.2		17.2
HVAC33			16.7		16.7
HVAC34			16.7		16.7
HVAC35			16.4		16.4
HVAC36			16.4		16.4
HVAC37			14.6		14.6
HVAC38			14.6		14.6
HVAC39			14.4		14.4
HVAC40			14.4		14.4
HVAC41			14.2		14.2
HVAC42			14.2		14.2
HVAC43			14.1		14.1
HVAC44			10.5		10.5
HVAC45			13.8		13.8
HVAC46			13.8		13.8
HVAC47			13.6		13.6

HVAC48			9.9		9.9
HVAC49			5.4		5.4
HVAC50			5.3		5.3
HVAC51			5.4		5.4
HVAC52			5.5		5.5
HVAC53			5.5		5.5
HVAC54			5.4		5.4
HVAC55			5.5		5.5
HVAC56			5.6		5.6
HVAC57			5.6		5.6
HVAC58			5.5		5.5
HVAC59			5.6		5.6
HVAC60			5.7		5.7
HVAC61			6.1		6.1
HVAC62			6.0		6.0
HVAC63			6.1		6.1
HVAC64			6.1		6.1
HVAC65			6.2		6.2
HVAC66			6.1		6.1
HVAC67			6.2		6.2
HVAC68			6.2		6.2
HVAC69			6.3		6.3
HVAC70			6.2		6.2
HVAC71			6.2		6.2
HVAC72			6.3		6.3
HVAC73			6.7		6.7
HVAC74			6.6		6.6
HVAC75			6.6		6.6
HVAC76			6.7		6.7
HVAC77			6.7		6.7
HVAC78			6.6		6.6
HVAC79			6.7		6.7
HVAC80			6.8		6.8
HVAC81			6.8		6.8
HVAC82			6.7		6.7
HVAC83			6.7		6.7
HVAC84			6.8		6.8
Pool			36.8		-
11	1.Fl	40.1	31.9	0.0	0.0
HVAC1			17.5		17.5
HVAC2			17.3		17.3
HVAC3			17.3		17.3
HVAC4			17.5		17.5
HVAC5			17.3		17.3
HVAC6			17.0		17.0
HVAC7			17.0		17.0
HVAC8			17.3		17.3
HVAC9			17.3		17.3
HVAC10			17.0		17.0
HVAC11			17.0		17.0
HVAC12			17.2		17.2
HVAC13			16.8		16.8
HVAC14			16.5		16.5
HVAC15			16.4		16.4
HVAC16			13.7		13.7

HVAC17	13.6	13.6
HVAC18	13.0	13.0
HVAC19	12.9	12.9
HVAC20	13.5	13.5
HVAC21	13.8	13.8
HVAC22	12.5	12.5
HVAC23	13.6	13.6
HVAC24	14.3	14.3
HVAC25	15.0	15.0
HVAC26	14.9	14.9
HVAC27	14.6	14.6
HVAC28	14.8	14.8
HVAC29	14.5	14.5
HVAC30	14.3	14.3
HVAC31	14.2	14.2
HVAC32	14.3	14.3
HVAC33	11.0	11.0
HVAC34	14.0	14.0
HVAC35	13.8	13.8
HVAC36	10.3	10.3
HVAC37	12.7	12.7
HVAC38	8.2	8.2
HVAC39	12.5	12.5
HVAC40	8.1	8.1
HVAC41	8.0	8.0
HVAC42	12.4	12.4
HVAC43	7.8	7.8
HVAC44	7.8	7.8
HVAC45	7.7	7.7
HVAC46	7.6	7.6
HVAC47	7.5	7.5
HVAC48	7.6	7.6
HVAC49	4.8	4.8
HVAC50	4.7	4.7
HVAC51	4.9	4.9
HVAC52	4.9	4.9
HVAC53	5.0	5.0
HVAC54	5.0	5.0
HVAC55	5.1	5.1
HVAC56	5.1	5.1
HVAC57	5.2	5.2
HVAC58	5.2	5.2
HVAC59	5.2	5.2
HVAC60	5.3	5.3
HVAC61	6.2	6.2
HVAC62	6.3	6.3
HVAC63	6.4	6.4
HVAC64	6.3	6.3
HVAC65	6.4	6.4
HVAC66	6.5	6.5
HVAC67	6.6	6.6
HVAC68	6.5	6.5
HVAC69	6.6	6.6
HVAC70	6.7	6.7
HVAC71	6.8	6.8

HVAC72			6.7		6.7
HVAC73			7.7		7.7
HVAC74			7.7		7.7
HVAC75			7.8		7.8
HVAC76			7.8		7.8
HVAC77			7.9		7.9
HVAC78			7.9		7.9
HVAC79			8.0		8.0
HVAC80			8.0		8.0
HVAC81			8.1		8.1
HVAC82			8.1		8.1
HVAC83			8.2		8.2
HVAC84			8.2		8.2
Pool			39.4		-
12	1.Fl	42.2	30.5	0.0	0.0
HVAC1			16.2		16.2
HVAC2			15.6		15.6
HVAC3			15.5		15.5
HVAC4			16.1		16.1
HVAC5			16.0		16.0
HVAC6			15.3		15.3
HVAC7			15.1		15.1
HVAC8			15.8		15.8
HVAC9			15.7		15.7
HVAC10			14.9		14.9
HVAC11			14.9		14.9
HVAC12			15.3		15.3
HVAC13			13.6		13.6
HVAC14			13.2		13.2
HVAC15			13.2		13.2
HVAC16			13.7		13.7
HVAC17			13.7		13.7
HVAC18			13.1		13.1
HVAC19			13.0		13.0
HVAC20			13.6		13.6
HVAC21			13.4		13.4
HVAC22			12.9		12.9
HVAC23			12.7		12.7
HVAC24			13.3		13.3
HVAC25			11.4		11.4
HVAC26			11.3		11.3
HVAC27			11.2		11.2
HVAC28			11.4		11.4
HVAC29			11.2		11.2
HVAC30			11.0		11.0
HVAC31			10.9		10.9
HVAC32			11.0		11.0
HVAC33			10.9		10.9
HVAC34			10.8		10.8
HVAC35			10.6		10.6
HVAC36			10.8		10.8
HVAC37			5.6		5.6
HVAC38			5.5		5.5
HVAC39			5.4		5.4
HVAC40			5.5		5.5

HVAC41	5.4	5.4
HVAC42	5.3	5.3
HVAC43	5.2	5.2
HVAC44	5.3	5.3
HVAC45	5.2	5.2
HVAC46	5.1	5.1
HVAC47	5.1	5.1
HVAC48	5.2	5.2
HVAC49	5.1	5.1
HVAC50	4.9	4.9
HVAC51	4.9	4.9
HVAC52	5.2	5.2
HVAC53	5.4	5.4
HVAC54	5.0	5.0
HVAC55	5.1	5.1
HVAC56	5.4	5.4
HVAC57	5.5	5.5
HVAC58	5.2	5.2
HVAC59	6.9	6.9
HVAC60	5.6	5.6
HVAC61	6.3	6.3
HVAC62	7.6	7.6
HVAC63	7.7	7.7
HVAC64	6.4	6.4
HVAC65	6.5	6.5
HVAC66	7.8	7.8
HVAC67	8.1	8.1
HVAC68	6.5	6.5
HVAC69	6.6	6.6
HVAC70	8.2	8.2
HVAC71	8.4	8.4
HVAC72	6.8	6.8
HVAC73	9.2	9.2
HVAC74	10.7	10.7
HVAC75	11.0	11.0
HVAC76	9.5	9.5
HVAC77	9.9	9.9
HVAC78	11.3	11.3
HVAC79	11.6	11.6
HVAC80	10.2	10.2
HVAC81	10.5	10.5
HVAC82	11.8	11.8
HVAC83	12.1	12.1
HVAC84	10.8	10.8
Pool	41.9	-