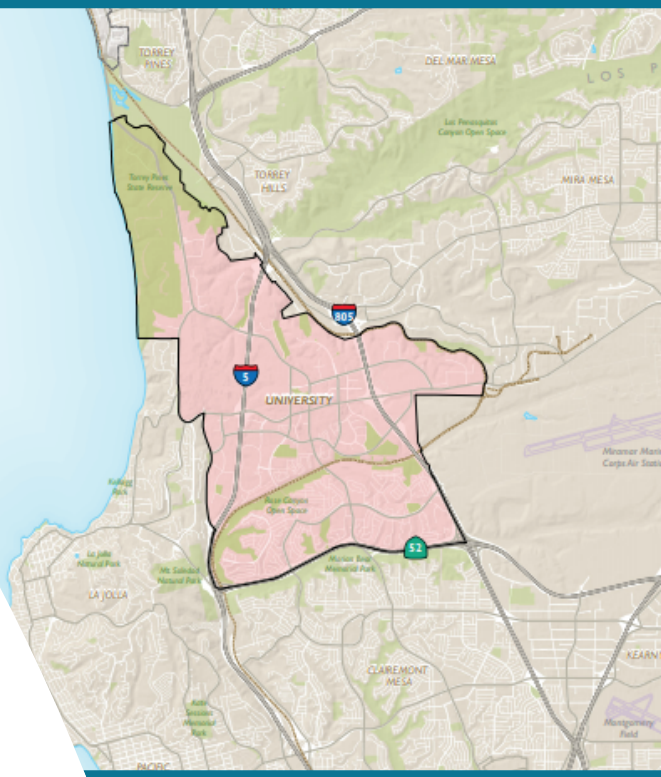
Final *Noise* Analysis
For the University Community Plan Update
San Diego, California



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Abbreviations and Acronyms

ADT	average daily traffic
CALGreen	California Green Building Standards
Caltrans	California Department of Transportation
CAP	Climate Action Plan
CBC	California Building Code
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
City	City of San Diego
CNEL	community noise equivalent level
CPA	community planning area
CPU	community plan update
dB	decibel
dBA	A-weighted Decibel
FTA	Federal Transit Administration
inch/sec	inch per second
L_{eq}	one-hour equivalent noise level
L_{max}	maximum sound level
MCAS	Marine Corps Air Station
PPV	peak particle velocity
SDIA	San Diego International Airport
SDMC	San Diego Municipal Code
TBD	To Be Determined

1 Introduction

The purpose of this report is to document the existing noise conditions, regulatory framework and methodology for evaluating noise impacts related to the University Community Plan Update (CPU).

The City of San Diego's (City) General Plan was adopted in 2008 and provides a comprehensive planning strategy and policy framework to shape long-term growth and development in the City. The University CPU supports the General Plan by providing localized goals and policies for the University Community Planning Area (CPA).

In the University CPA, the most common noise source is traffic noise on adjacent freeways, highways, and local roadways. Generally, the heavier and faster the traffic, the greater the noise levels. Marine Corps Air Station (MCAS) Miramar lies immediately to the east of the University CPA area and contributes military aircraft noise to the area.

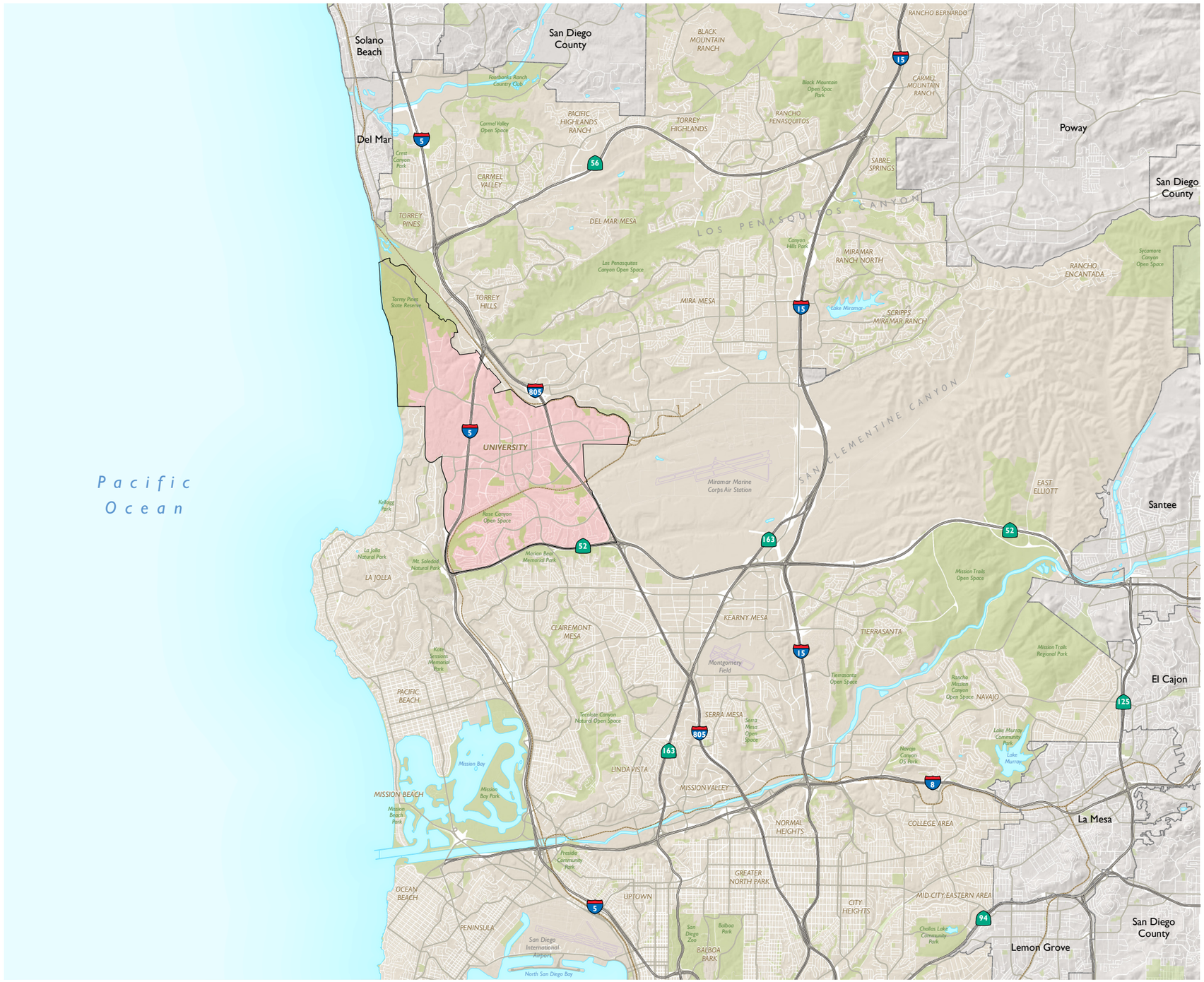
2 Project Description

2.1 Project Location

The University CPA is located in the north portion of the city and includes University City, the Eastgate Mall area, and parts of La Jolla Village and Torrey Pines.

The area encompasses the University of California San Diego, Torrey Pines City Park, and Eastgate Mall. At 8,676 acres, the planning area is roughly triangular shaped with California Highway CA-52 defining the southern boundary, the east side of the planning area borders Interstate 805, MCAS Miramar, and roughly following the North County Transit District San Diego Subdivision MT1 and MT2 lines with the northern point of the triangle ends at the Pacific Ocean. The planning area turns south, and the ocean makes up about three miles of the boundary and turns inland, and the remainder of the west boundary is North Torrey Pines Road to Gilman Drive to Interstate 5 back to the intersection of Interstate 5 and California Highway CA-52. Five other CPUs border the University CPU, from the north clockwise: Torrey Pines, Mira Mesa, Military Facilities (MCAS Miramar), Clairemont Mesa, and La Jolla.

Figure 1 shows the regional location of the CPA and Figure 2 shows an aerial view of the CPA.



UNIVERSITY COMMUNITY PLAN UPDATE

- University Community Plan Boundary
- City of San Diego
- Parks and Open Space
- Water Features
- Municipal Boundaries
- Freeways
- Major Roads
- Railroads

N

0 1.25 2.5 5

Miles

Source: City of San Diego, 2018; SANDAG, 2018; Dyett & Bhatia, 2018.

Figure 1 Regional Location

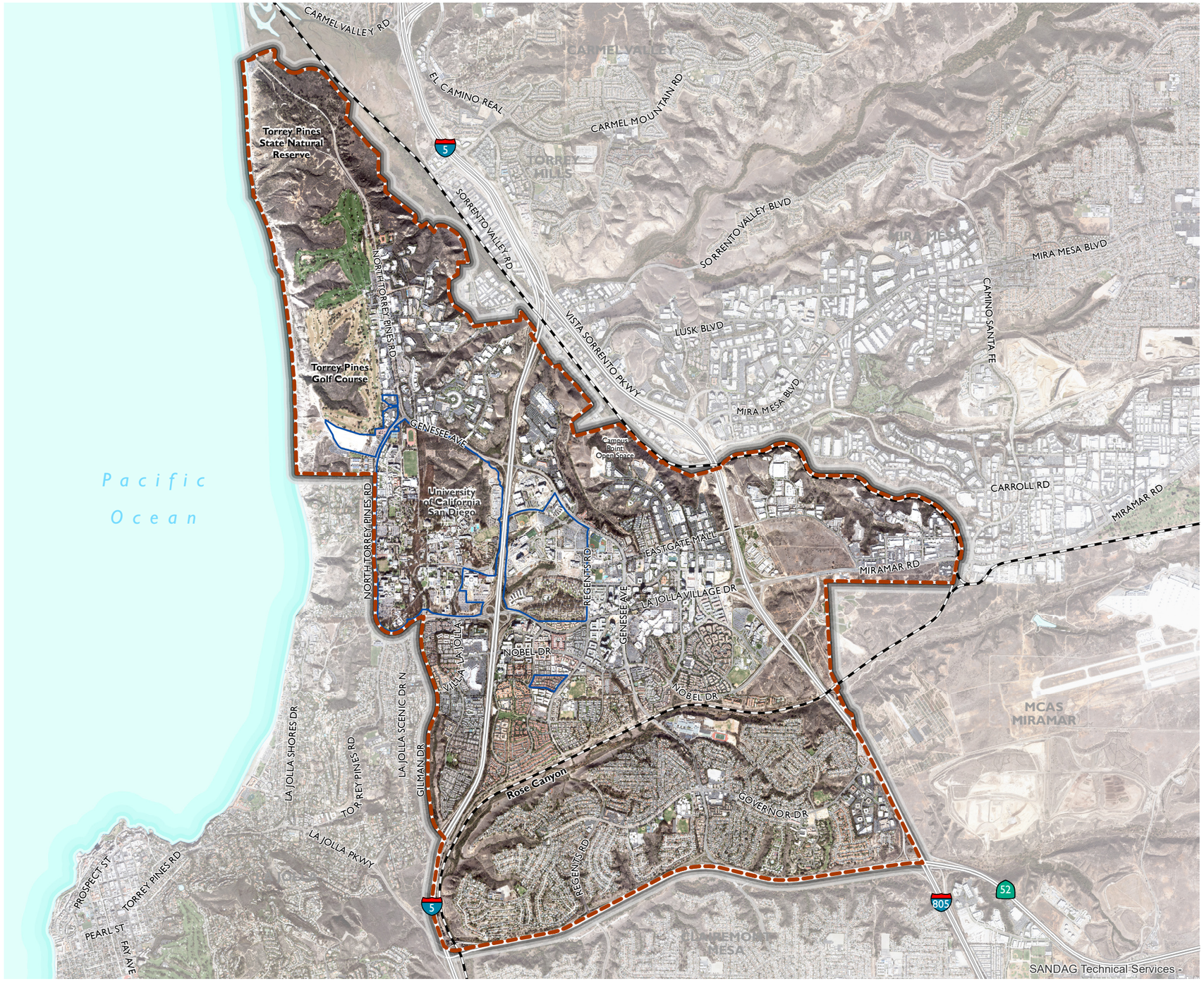


Figure 2 University Community Planning Area

2.2 Project Description Details

The total population of University is approximately 69,400 residents. University occupies only 4 percent of San Diego's land area, yet companies within University provide about 12.3 percent of private jobs within San Diego. The 3,300 businesses that exist in University employ about 92,000 people. About 70 percent of jobs in University are within the Educational Services; Professional, Scientific, and Tech Services; Healthcare and Social Assistance; Finance and Insurance; and Accommodation and Food Service sectors. The Study Area contains two State-controlled properties – University of California San Diego and Torrey Pines State Reserve – which lie outside the zoning jurisdiction of the City (see Figure 1).

The purpose of the University CPU is to update the current Community Plan by analyzing current land use, development, and environmental characteristics; evaluating changes in demographics that may affect land use needs; understanding demand for housing, public facility, and commercial development; determining key issues of concern and providing vision and objectives for the CPU; evaluating the "fit" of current Community Plan policies to achieve community goals and regulatory requirements; and ensuring that all policies and recommendations remain in harmony with the City's General Plan, Climate Action Plan (CAP), and State mandates (City of San Diego 2018).

The following lists the applicable policies for traffic and aircraft noise.

NE-B.1. Encourage noise-compatible land uses and site planning adjoining existing and future highways and freeways.

NE-B.2. Consider traffic calming design, traffic control measures, and low-noise pavement surfaces that minimize motor vehicle traffic noise (see also Mobility Element, Policy ME–C.5 regarding traffic calming).

NE-B.3. Require noise reducing site design, and/or traffic control measures for new development in areas of high noise to ensure that the mitigated levels meet acceptable decibel limits.

NE-B.4. Require new development to provide facilities which support the use of alternative transportation modes such as walking, bicycling, carpooling and, where applicable, transit to reduce peak-hour traffic.

NE-B.5. Designate local truck routes to reduce truck traffic in noise-sensitive land use areas.

NE-B.6. Work with California Department of Transportation (Caltrans) to landscape freeway-highway rights-of-way buffers and install low noise pavement surfaces, berms, and noise barriers to mitigate state freeway and highway traffic noise.

NE-B.7. Promote the use of berms, landscaping, setbacks, and architectural design where appropriate and effective, rather than conventional wall barriers to enhance aesthetics.

NE-B.8. Enforce the state vehicle code to ensure that motor vehicles are equipped with a functioning muffler and are not producing excessive noise levels.

NE-B.9. When parks are located in noisier areas, seek to reduce exposure through site

planning, including locating the most noise sensitive uses, such as children's play areas and picnic tables, in the quieter areas of the site, and in accordance with the other policies of this section.

NE-D.1. Encourage noise-compatible land use within airport influence areas in accordance with federal and state noise standards and guidelines.

NE-D.2. Limit future residential uses within airport influence areas to the 65 A-weighted decibel (dBA) community noise equivalent level (CNEL) airport noise contour, except for multiple-unit, mixed-use, and live work residential uses within the San Diego International Airport (SDIA) influence area in areas with existing residential uses and where a community plan and the Airport Land Use Compatibility Plan allow future residential uses.

NE-D.3. Ensure that future multiple-unit, mixed-use, and live work residential uses within the SDIA influence area that are located greater than the 65 dBA CNEL airport noise contour are located in areas with existing residential uses and where a community plan and Airport Land Use Compatibility Plan allow future residential uses.

a. Limit the amount of outdoor areas subject to exposure above the 65 dBA CNEL; and

b. Provide noise attenuation to ensure an interior noise level that does not exceed 45 dBA CNEL.

NE-D.4. Discourage outdoor uses in areas where people could be exposed to prolonged periods of high aircraft noise levels greater than the 65 dBA CNEL airport noise contour.

NE-D.5. Minimize excessive aircraft noise from aircraft operating at Montgomery Field to surrounding residential areas.

a. Implement a noise-monitoring program to assess aircraft noise.

b. Implement nighttime aircraft noise limits and a weight limit for aircraft using the airport.

NE-D.6. Encourage civilian and military airport operators, to the extent practical, to monitor aircraft noise, implement noise-reducing operation measures, and promote pilot awareness of where aircraft noise affects noise-sensitive land uses.

NE-D.7. Limit future uses within airport influences areas when the noise policies in the compatibility plans are more restrictive for uses affected by aircraft noise than shown on Table 3.

3 Fundamentals of Noise and Vibration

3.1 Fundamentals of Noise

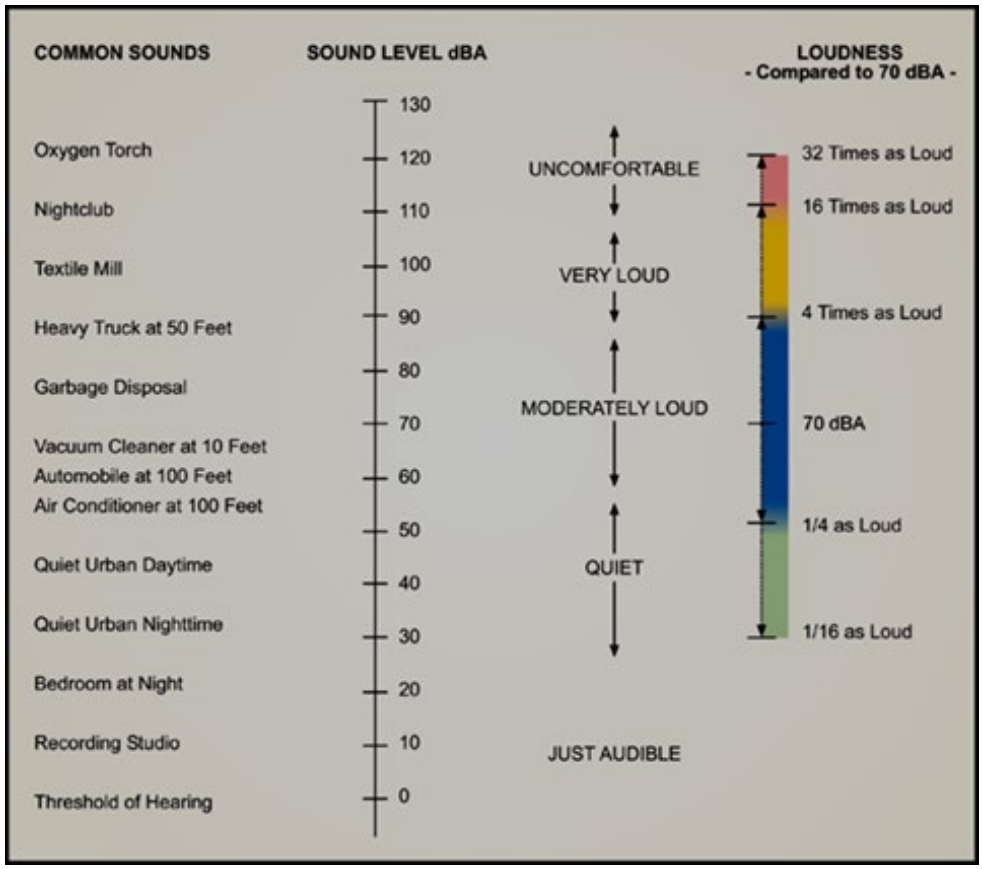
Noise is defined as unwanted or annoying sound that interferes with or disrupts normal human activities. Although continuous and extended exposure to high noise levels (e.g., through occupational

exposure) can cause hearing loss, the principal human response to noise is annoyance. The response of different individuals to similar noise events is diverse and is influenced by the type of noise, perceived importance of the noise, its appropriateness in the setting, time of day, type of activity during which the noise occurs, and sensitivity of the individual.

Sound characteristics include the sound power which relates to the source of the sound and sound pressure which is the sound received at a receptor. Sound power is the amount of energy of sound at the source. Sound pressure is the pressure vibrations caused by the source but perceived at the ear.

Levels of noise are measured in units called decibels (dB). However, several factors such as the actual level of noise, frequency, period of exposure, and fluctuations in noise levels during exposure affect how the human ear perceives sound. The human ear cannot equally perceive all pitches or frequencies and noise measurements metrics are adjusted or weighted to compensate for the human lack of sensitivity to low- and high-pitched sounds. This commonly used adjusted unit is known as the A-weighted decibel (dBA). The A-weighted metric, de-emphasizes very low and very high-pitched sound and is most often applied to noise generated by motor vehicle traffic and construction equipment. Typical sound levels are shown in Figure 3 and sound levels range from just audible at around 10 dB up to uncomfortably loud levels over 130 dBA.

For community planning purposes, average sound levels are preferred because they provide an overall cumulative average noise level. The Community Noise Equivalent Level (CNEL) represent the average of equivalent noise levels at a location for a 24-hour period, with 5 dBA added during the evening hours between 7 P.M. through 10 P.M. and 10 dBA added during the night hours between 10 P.M. and 7 A.M. These adjustments account for increased noise sensitivity and lower tolerance of individuals to noise during the evening and night periods.



Sources: Derived from Harris (1979) and Federal Interagency Committee on Aviation Noise (1997).

Figure 3 A-Weighted Sound Levels from Typical Sources

3.2 Fundamentals of Vibration

Vibrations are movement of the ground or air caused by explosions, construction work, railway and road transport, or other forces causing the earth to move. These vibrational motions are measured in terms of peak particle velocity (PPV). Construction activities such as pile driving, demolition activities, blasting, and other earth-moving operations have the potential to cause ground vibrations that may cause structural damage to adjacent buildings. Unless there are extreme flaws in pavement surfaces, heavy truck traffic on busy highways rarely create vibrations strong enough to cause damage though occasionally can generate human annoyance. Table 1 shows various vibration levels and corresponding effects expressed in terms of PPVs.

Transient vibration impacts to buildings vary depending on the type and structural integrity of buildings. According to the Swiss Association of Standardization Vibration Damage Criteria, transient vibration limits are a little more than double the continuous vibration limits (Caltrans 2013).

Table 1 Vibration Effects of Continuous and Transient Operations					
Vibration Amplitude Levels (PPV - Peak Particle Velocity)				**Human Reaction (Continuous and Transient)**	**Effect on Buildings**
Continuous		**Transient**			
mm/s	**in/sec**	**mm/s**	**in/sec**		
0.15–0.30	0.006–0.019	0.90	0.035	Threshold of perception; possibility of intrusion	Vibrations unlikely to cause damage of any type
2.0	0.08	6.10	0.24	Vibrations readily perceptible	Recommended upper amplitude of the vibration to which ruins and ancient monuments should be subjected
2.5	0.10	22.8	0.9	Amplitude at which continuous vibrations begin to annoy people	Virtually no risk of "architectural" damage to normal buildings
5.0	0.20			Vibrations annoying to people in buildings (this agrees with the amplitudes established for people standing on bridges and subjected to relative short periods of vibrations)	Threshold at which there is a risk of "architectural" damage to normal dwelling - houses with plastered walls and ceilings Special types of finish such as lining of walls, flexible ceiling treatment, etc., would minimize "architectural" damage
10–15	0.4–0.6	50.8	2.0	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater amplitude than normally expected from traffic but would cause "architectural" damage and possibly minor structural damage.
Source: Caltrans 2013 *Legend:* mm/s = millimeters per second; in/sec = inches per second					

4 Applicable Standards and Guidelines

4.1 City of San Diego California Environmental Quality Act Thresholds

The City's California Environmental Quality Act (CEQA) Significance Determination Thresholds identify thresholds for traffic noise (City of San Diego 2016). These thresholds are summarized in Table 2 below.

Table 2 Significance Thresholds for Traffic Noise			
Type of Use that would be Impacted by Traffic Noise	Interior Space (dBA CNEL)	Exterior Useable Space* (dBA CNEL)	General Indication of Potential Significance
Single-family detached	45 dB	65 dB	Structure or outdoor useable area is less than 50 feet from the center of the closest (outside) lane on a street with existing or future ADTs greater than 7,500 vehicles
Multi-family, schools, libraries, hospitals, day care centers, hotels, motels, parks, convalescent homes	Development Services Department ensures 45 dB pursuant to Title 24	65 dB	
Offices, churches, businesses, professional uses	n/a	70 dB	Structure or outdoor useable area is less than 50 feet from the center of the closest lane on a street with existing or future ADTs greater than 20,000 vehicles
Commercial, retail, industrial, outdoor spectator sports uses	n/a	75 dB	Structure or outdoor useable area is less than 50 feet from the center of the closest lane on a street with existing or future ADTs greater than 40,000 vehicles

Source: City of San Diego 2016
Notes:
*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. Exterior usable areas do not include residential front yards or balconies, unless the areas such as balconies are part of the required usable open space calculation for multi-family units (City of San Diego 2016).
Legend: ADT = average daily traffic; dBA CNEL = A-weighted Decibels Average Sound Level for Community Noise Equivalent Level

4.2 California Code of Regulations

Title 24 of the California Code of Regulations (CCR) regulates interior noise levels for habitable rooms. Title 24, Chapter 12, Section 1207 of the California Building Code (CBC) requires that interior noise levels, attributable to exterior sources, not exceed 45 CNEL in any habitable room within a residential structure. A habitable room in a building is used for living, sleeping, eating, or cooking. (24 CCR 1207 2016).

4.2.1 California Green Building Standards Code - Environmental Comfort

For nonresidential structures, Title 24, Chapter 12, Section 1207.5 refers to California Green Building Standards (CALGreen), Chapter 5 – Nonresidential Mandatory Measures, Division 5.5 – Environmental Quality Section 5.507 – Environmental Comfort, Subsection 5.507.4 – Acoustical Control. Following these standards, all nonresidential building construction shall employ building assemblies and components that achieve a composite sound transmission class rating of at least 50 or a composite Outdoor-Indoor Sound Transmission Class rating of no less than 40 or shall otherwise demonstrate that exterior noise shall not result in interior noise environment where noise levels exceed 50 dBA in occupied areas during any hour of operation (24 CCR 1207.5 2019).

4.3 City of San Diego General Plan

In 2015, the City amended its General Plan to include revisions to its Noise Element. The Noise Element includes goals and policies to guide compatible land uses and to incorporate noise attenuation measures for new uses to reduce noise impacts on people living and working in San Diego.

The Noise Element discusses the relationship between noise and its effect on land uses. Land use planning for future noise-sensitive land uses provides for separation between excessive noise areas and noise-sensitive land uses. Residential and institutional areas, such as hospitals, nursing facilities, schools, and places of worship are examples of noise-sensitive land uses.

To ensure new development does not create noise impacts, the City uses its Land Use - Noise Compatibility Guidelines as shown in Table 3 to evaluate noise exposure levels when reviewing land use development projects. A land use is considered "compatible" when exterior noise levels can be reduced to acceptable levels inside the structure by using standard construction methods. This also includes outdoor activities that can be exercised with minimal noise interference. Land uses that are "conditionally compatible" require additional noise attenuation beyond standard construction methods to reduce interior noise levels to acceptable levels. An acoustic study should be completed for land uses in "conditionally compatible" areas and should consider the type of noise source, the sensitivity of the noise receptor, and the degree that the noise source interferes with speech, sleep, or other activities characteristic of the land use. Development generally should not occur for land uses that are "incompatible" unless extensive mitigation is implemented.

Table 3 City of San Diego – Land Use – Noise Compatibility Guidelines

Land Use Category	Exterior Noise Exposure [dBA 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 & Farming; Community Gardens, Aquaculture, Dairies; Horticulture Nurseries & Greenhouses, Animal Raising, Maintain & 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, Beverages & Groceries; Pets & Pet Supplies; Sundries, Pharmaceutical, & Convenience Sales; Wearing Apparel & Accessories			50	50	
Commercial Services					
Building Services; Business Support; Eating & Drinking; Financial Institutions; Maintenance & Repair; Personal Services; Assembly & Entertainment (includes public and religious assembly); Radio & Television Studios; Golf Course Support			50	50	

Table 3 City of San Diego – Land Use – Noise Compatibility Guidelines							
Land Use Category				Exterior Noise Exposure [dBA CNEL]			
				60	65	70	75
Visitor Accommodations					45	45	45
Offices							
Business & Professional; Government; Medical, Dental & Health Practitioner; Regional & Corporate Headquarters						50	50
Vehicle and Vehicular Equipment Sales and Services Use							
Commercial or Personal Vehicle Repair & Maintenance; Commercial or Personal Vehicle Sales & Rentals; Vehicle Equipment & Supplies Sales & Rentals; Vehicle Parking							
Wholesale, Distribution, Storage Use Category							
Equipment & Materials Storage Yards; Moving & Storage Facilities; Warehouse; Wholesale Distribution							
Industrial							
Heavy Manufacturing; Light Manufacturing; Marine Industry; Trucking & Transportation Terminals; Mining & Extractive Industries							
Research & Development							50
	Compatible	Indoor Uses	Standard construction methods should attenuate exterior noise to an acceptable indoor noise level. Refer to Section I.				
		Outdoor Uses	Activities associated with the land use may be carried out.				
	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.				
		Outdoor Uses	Feasible noise mitigation techniques should be analyzed and incorporated to make the outdoor activities acceptable. Refer to Section I.				
	Incompatible	Indoor Uses	New construction should not be undertaken.				
		Outdoor Uses	Severe noise interference makes outdoor activities unacceptable.				

Source: City of San Diego General Plan Noise Element (2015)
Legend: dBA = A-weighted decibels; CNEL = community noise equivalent level

The Noise Element outlines policies to address noise impacts associated with different categories including noise and land use compatibility; motor vehicle traffic; trolley and train; aircraft; commercial and mixed-use activity; industrial activity: construction, refuse vehicles, parking lot sweepers, and public activity noise; and event noise. In addition, the Noise Element includes policies regarding noise attenuation methods. Each category has specific policies, and in total there are over forty stated policies in the Noise Element.

NE-B.1. Encourage noise-compatible land uses and site planning adjoining existing and future highways and freeways.

NE-B.2. Consider traffic calming design, traffic control measures, and low-noise pavement surfaces that minimize motor vehicle traffic noise (see also Mobility Element, Policy ME–C.5 regarding traffic calming).

NE-B.3. Require noise reducing site design, and/or traffic control measures for new development in areas of high noise to ensure that the mitigated levels meet acceptable decibel limits.

NE-B.4. Require new development to provide facilities which support the use of alternative transportation modes such as walking, bicycling, carpooling and, where applicable, transit to reduce peak-hour traffic.

NE-B.5. Designate local truck routes to reduce truck traffic in noise-sensitive land use areas.

NE-B.6. Work with Caltrans to landscape freeway-highway rights-of-way buffers and install low noise pavement surfaces, berms, and noise barriers to mitigate state freeway and highway traffic noise.

NE-B.7. Promote the use of berms, landscaping, setbacks, and architectural design where appropriate and effective, rather than conventional wall barriers to enhance aesthetics.

NE-B.8. Enforce the state vehicle code to ensure that motor vehicles are equipped with a functioning muffler and are not producing excessive noise levels.

NE-B.9. When parks are located in noisier areas, seek to reduce exposure through site planning, including locating the most noise sensitive uses, such as children's play areas and picnic tables, in the quieter areas of the site, and in accordance with the other policies of this section.

NE-D.1. Encourage noise-compatible land use within airport influence areas in accordance with federal and state noise standards and guidelines.

NE-D.2. Limit future residential uses within airport influence areas to the 65 dBA CNEL airport noise contour, except for multiple-unit, mixed-use, and live work residential uses within the San Diego International Airport influence area in areas with existing residential uses and where a community plan and the Airport Land Use Compatibility Plan allow future residential uses.

NE-D.3. Ensure that future multiple-unit, mixed-use, and live work residential uses within the San Diego International Airport influence area that are located greater than the 65 dBA CNEL airport noise contour are located in areas with existing residential uses and where a community plan and Airport Land Use Compatibility Plan allow future residential uses.

a. Limit the amount of outdoor areas subject to exposure above the 65 dBA CNEL; and

b. Provide noise attenuation to ensure an interior noise level that does not exceed 45 dBA CNEL.

NE-D.4. Discourage outdoor uses in areas where people could be exposed to prolonged periods of high aircraft noise levels greater than the 65 dBA CNEL airport noise contour.

NE-D.5. Minimize excessive aircraft noise from aircraft operating at Montgomery Field to surrounding residential areas.

a. Implement a noise-monitoring program to assess aircraft noise.

b. Implement nighttime aircraft noise limits and a weight limit for aircraft using the airport.

NE-D.6. Encourage civilian and military airport operators, to the extent practical, to monitor aircraft noise, implement noise-reducing operation measures, and promote pilot awareness of where aircraft noise affects noise-sensitive land

uses.

NE-D.7. Limit future uses within airport influences areas when the noise policies in the compatibility plans are more restrictive for uses affected by aircraft noise than shown on Table 3.

4.4 City of San Diego Municipal Code

The City's Municipal Code (SDMC) Section 59.5.0401 defines exterior noise level standards for various land uses, and permits differing noise levels depending upon the time of day. This standard protects noise-sensitive land uses (e.g., residential areas, hospitals, childcare facilities, schools) from high noise levels and guides the City's planning decisions (City of San Diego 2008). Table 4 shows the City's noise limits by land use and time of day.

Table 4 City of San Diego Noise Limits by Land Use and Time of Day

Land Use Zone	Time of Day	One-Hour Average Sound Level (dB)
1. Single Family Residential	7 a.m. to 7 p.m.	50
	7 p.m. to 10 p.m.	45
	10 p.m. to 7 a.m.	40
2. Multi-Family Residential (Up to a maximum density of 1/2000)	7 a.m. to 7 p.m.	55
	7 p.m. to 10 p.m.	50
	10 p.m. to 7 a.m.	45
3. All other Residential	7 a.m. to 7 p.m.	60
	7 p.m. to 10 p.m.	55
	10 p.m. to 7 a.m.	50
4. Commercial	7 a.m. to 7 p.m.	65
	7 p.m. to 10 p.m.	60
	10 p.m. to 7 a.m.	60
5. Industrial or Agricultural	Any time	75

Source: San Diego Municipal Code §59.5.0401 (2019)

Construction noise is regulated by the City's Noise Abatement and Control Ordinance (SDMC Section 59.5.0404). Pursuant to SDMC Section 59.5.0404, construction activity is prohibited between the hours of 7 P.M. and 7 A.M., on legal holidays as specified in Section 21.0104 of the SDMC (with the exception of Columbus Day and Washington's Birthday), and on Sundays. Exceptions are allowed and subject to a permit granted by the Noise Abatement and Control Administrator. Construction noise levels measured at or beyond the property lines of any property zoned residential are not permitted to exceed an average sound level (Leq) greater than 75 dB during the 12-hour period from 7 A.M. to 7 P.M. (City of San Diego 2010).

4.5 Vibration

The City does not have standards for vibration, but the Federal Transit Authority (FTA) and Caltrans has issued guidelines for vibration limits. Caltrans' guidelines recommend that a standard of 0.2 inch/sec PPV not be exceeded for the protection of normal residential buildings, and that a standard of 0.08

inch/sec PPV not be exceeded for the protection of old or historically significant structures (Caltrans 2013). With respect to human response within residential uses (i.e., annoyance, sleep disruption), the FTA recommends a maximum acceptable vibration standard of 80 vibration decibels (FTA 2018).

5 Existing Conditions

5.1 Noise Measurements

Due to Covid-19 restrictions and per City direction, the actual noise measurements have been postponed until a later time because traffic was limited at the time and may skew noise measurements. A supplemental final report will be developed once noise measurements have been conducted.

The following provides the locations and anticipated methodology once noise measurements are conducted.

As part of this assessment, ambient noise levels will be measured in the following focus areas for the University CPA: Focus Area 1, Focus Area 2, Focus Area 3, Focus Area 4, and Focus Area 5. These measurements will help characterize the existing noise environment and assist in determining constraints and opportunities for future development. Sixteen 15-minute daytime noise level measurements will be conducted and four long-term (up to 24 hours) noise measurements will be conducted throughout the focus areas. Noise measurements will be taken with a Type 1 Integrating Sound Level Meters, (serial numbers and specific type to be determined (TBD)). The following parameters will be used:

Filter:	A-weighted
Response:	Slow
Time History Period:	5 seconds
Height of Instrument:	5 feet above ground level

Each measurement location is shown in Figure 4. A summary of the measurements will be provided in Table 5, and traffic counts taken during measurements will be summarized in Table TBD. Noise measurement data will be provided in Attachment 1 (to be provided once noise measurements are conducted). Based on the measurement data, daytime noise levels in the CPA are typical of an urban environment. Each measurement location and noise source observed during the measurements will be discussed below.

Most of the land in the planning area north of MCAS Miramar is used for industrial or commercial purposes. Figure 5 shows the University CPU and the MCAS Miramar noise contours. Noise contours 65 dBA CNEL or greater extend from MCAS Miramar to the eastern portion of the University CPU area.

Table 5 University Noise Measurements					
Focus Area	ID[1]	Location (Street – Nearest landmark)	Date	Time	L_{eq}
Focus Area 1	ST-1	Science Center Drive- Northeast of Genesee Ave.	TBD	TBD	TBD
	ST-2	Genesee Ave- Corner of Genesee Ave and John Jay Hopkins Dr	TBD	TBD	TBD
	ST-3	N Torrey Pines Rd- Ambrx Inc	TBD	TBD	TBD
	ST-4	N Torrey Pines Rd- Scripps MD Anderson Cancer Center	TBD	TBD	TBD
	LT-1	N Torrey Pines Rd- Scripps MD Anderson Cancer Center	TBD	TBD	TBD
Focus Area 2	ST-1	Genesee Ave- Scripps Health Corporate Office	TBD	TBD	TBD
	LT-1	Genesee Ave- Scripps Health Corporate Office	TBD	TBD	TBD
	ST-2	Eastgate Mall- Good Samaritan Episcopal Church Parking Lot	TBD	TBD	TBD
	ST-3	Towne Center Drive- North of Eastgate Mall	TBD	TBD	TBD
	ST-4	Eastgate Mall- East of Judicial Dr	TBD	TBD	TBD
Focus Area 3	ST-1	Executive Dr- Corner of Executive Ave and Regents Park Row	TBD	TBD	TBD
	ST 2	La Jolla Village Dr- Embassy Suites	TBD	TBD	TBD
	LT-1	Nobel Dr- Cocos Restaurant	TBD	TBD	TBD
	ST-3	Nobel Dr- Cocos Restaurant	TBD	TBD	TBD
Focus Area 4	ST-1	Villa La Jolla Dr- Nordstrom Rack	TBD	TBD	TBD
	ST-2	Nobel Dr- Nobel Plaza	TBD	TBD	TBD
	LT-1	Nobel Dr- Nobel Plaza	TBD	TBD	TBD
	ST-3	Villa La Jolla Dr- North of Via Mallorca	TBD	TBD	TBD
Focus Area 5	ST-1	Governor Dr- Sprouts Farmers Market	TBD	TBD	TBD
	LT-1	Governor Dr- Chase Bank	TBD	TBD	TBD
	ST-2	Governor Dr- Chase Bank	TBD	TBD	TBD
	ST-3	Governor Dr- East of Greenwich Dr	TBD	TBD	TBD

Notes:

[1]Measurement locations are shown in Figure 4. ID points refer to the ST – Short-term, LT – Long-term.

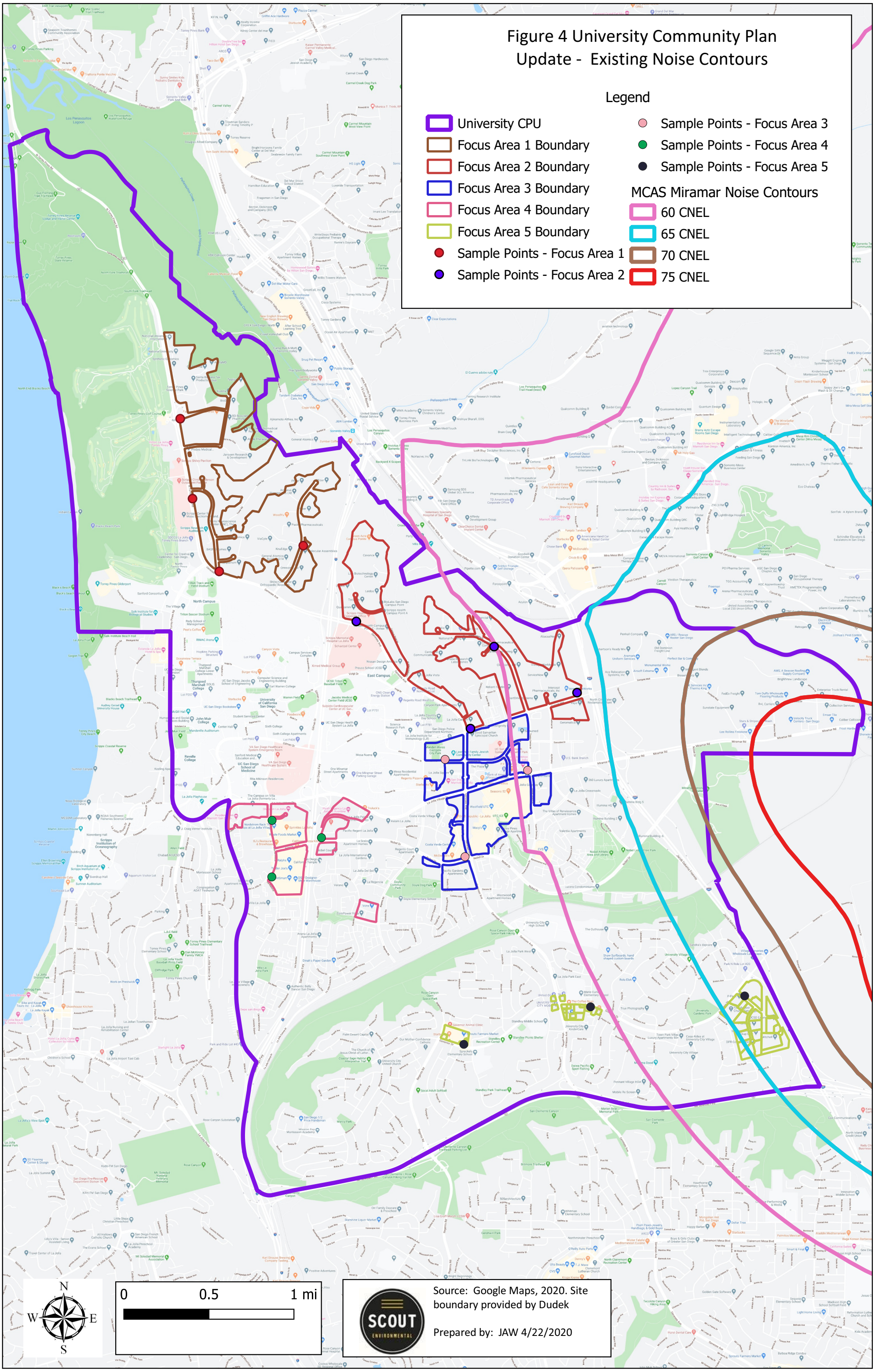
Legend: L_{eq} = one-hour equivalent noise level

5.2 Existing Aircraft Noise Contours

The University CPA is affected by military aircraft noise generated from operations at MCAS Miramar. Fighter jets, including F-18E/F and F-35 aircraft, flying on the Julian and Seawolf departure routes dominate the noise contours emanating from MCAS Miramar. Aircraft generally depart MCAS Miramar to the west on one of these two routes. The Julian departure route takes off the runway and turns north over Mira Mesa. The Seawolf departure route takes aircraft west over the ocean.

Most of the land in the CPA west of MCAS Miramar is used for industrial or commercial purposes. Figure 5 shows the University CPA and the MCAS Miramar noise contours. Noise contours 65 dBA CNEL or greater extend from MCAS Miramar to west of I-5 in the CPA. The area is predominately open space, commercial, and light industry, but some residential areas are impacted. There are numerous residential areas within the 60 dBA CNEL contours in the University CPA. Provided the interior spaces are less than 45 dBA residential areas are normally compatible in 60 dBA CNEL areas.

Figure 4 University Community Plan Update - Existing Noise Contours



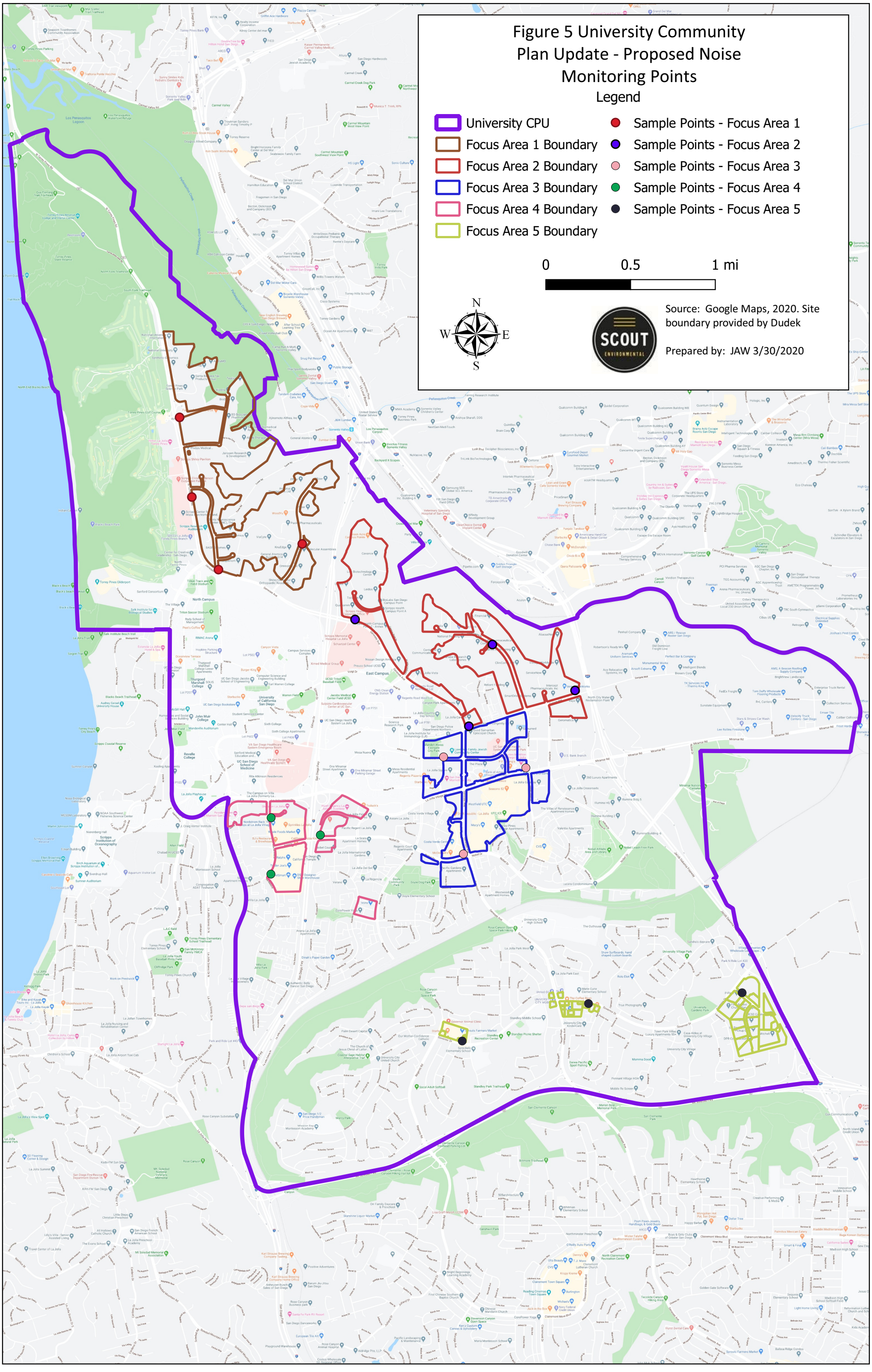


Figure 5 University Community Plan Update - Proposed Noise Monitoring Points
Legend
University CPU
Focus Area 1 Boundary
Focus Area 2 Boundary
Focus Area 3 Boundary
Focus Area 4 Boundary
Focus Area 5 Boundary
Sample Points - Focus Area 1
Sample Points - Focus Area 2
Sample Points - Focus Area 3
Sample Points - Focus Area 4
Sample Points - Focus Area 5
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S
SCOUT ENVIRONMENTAL
Source: Google Maps, 2020. Site boundary provided by Dudek
Prepared by: JAW 3/30/2020

6 Noise Sources and Analysis Methodology

6.1 Stationary Noise

Stationary noises are the noises emanating from or within a facility or building. Examples of stationary noises would be heating ventilation and air conditioning units, industrial equipment, parking lot operations, emergency generators, and recreational activities. Stationary noises are generated from a fixed location and are considered "point sources" from a noise perspective. Noise from point sources decrease as the distance between the source and the receptor increases. The rate for decrease, or attenuation, is 6 dBA for each doubling of the distance (i.e. a compressor that has a noise level of 78 dBA at 50 feet reduces to 72 dBA at 100 feet, 66 dBA at 200 feet, and 60 dBA at 400 feet).

6.2 Construction Noise

Construction noise is generated by the use of heavy equipment on job sites and is short-term in duration (i.e., the duration of the construction period). Use of heavy equipment occurs sporadically throughout daytime hours. Table 6 provides a list of representative samples of construction equipment and associated noise levels, adjusted for the percentage of time the equipment would typically be operated at full power at a construction site. Construction noise varies greatly depending on the construction process, type and condition of equipment used, and layout of the construction site. Overall, construction noise levels are governed primarily by the noisiest pieces of equipment, impact devices (i.e., jackhammers, pile drivers).

Table 6 Samples of Construction Noise Equipment

Equipment Description	*Impact Device*[1]	*Acoustical Usage Factor*[2] *(%)*	*Actual Measured L_{max} at 50 feet*[3] *(dBA)*
All Other Equipment > 5 HP	No	50	N/A
Backhoe	No	40	78
Clam Shovel (dropping)	Yes	20	87
Compactor (ground)	No	20	83
Compressor (air)	No	40	78
Concrete Mixer Truck	No	40	79
Concrete Saw	No	20	90
Crane	No	16	81
Dozer	No	40	82
Dump Truck	No	40	76
Excavator	No	40	81
Front End Loader	No	40	79
Generator	No	50	81
Grader	No	40	N/A
Impact Pile Driver	Yes	20	101
Jackhammer	Yes	20	89
Pavement Scarifier	No	20	90

Table 6 Samples of Construction Noise Equipment			
Equipment Description	*Impact Device*[1]	*Acoustical Usage Factor*[2] *(%)*	*Actual Measured L_{max} at 50 feet*[3] *(dBA)*
Paver	No	50	77
Roller	No	20	80
Scraper	No	40	84
Tractor	No	40	N/A
Vibratory Pile Driver	No	20	101

Source: United States Department of Transportation 2006

Notes:

1. Indication of whether or not the equipment is an impact device
2. The acoustical usage factor refers to the percentage of time the equipment is running at full power on the job site and is assumed at a typical construction site for modeling purposes
3. The measured "Actual" noise level at 50 feet for each piece of equipment based on hundreds of noise measurements performed on Central Artery/Tunnel, Boston MA work sites

7 Summary

This report documents the existing conditions for noise in University, provides the regulatory framework to be considered, reviews the current noise levels and their effects, establishes the thresholds at which proposed projects would be considered a significant impact on noise and addresses the assessment methodology to be used for the impact assessment.

The overall noise environment in University is dominated by vehicular traffic on the area's surface streets, arterials and freeways and military aircraft noise from MCAS Miramar activities. In general, vehicular traffic noise is TBD (pending noise measurements). Aircraft noise levels from MCAS Miramar create noise contours greater than 60 dBA CNEL in the southeastern portion of the CPA. Most of the residential areas with existing elevated noise levels occur within the noise contours greater than 60 dBA CNEL up to 65 dBA CNEL. Planning should continue to use compatibility guidelines provided in the City's General Plan Noise Element to ensure incompatible development does not occur in high noise levels.

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