Memorandum

Date:	June 4, 2025 ***(Revised October 15, 2025)***
To:	Adam Winslow Foster, City Ventures
From:	Philip Ault, Director of Noise and Air Quality, FirstCarbon Solutions Sara Landucci, Noise Scientist, FirstCarbon Solutions
Subject:	Noise Impacts Analysis for the Proposed Arcade Residential Project in Sunnyvale, California

At the request of City Ventures (project applicant), FirstCarbon Solutions (FCS), prepared this memorandum to summarize the findings for the proposed Arcade Residential Project (proposed project). The project site is located in the City of Sunnyvale (City), in Santa Clara County, California.

PROJECT DESCRIPTION

Project Site

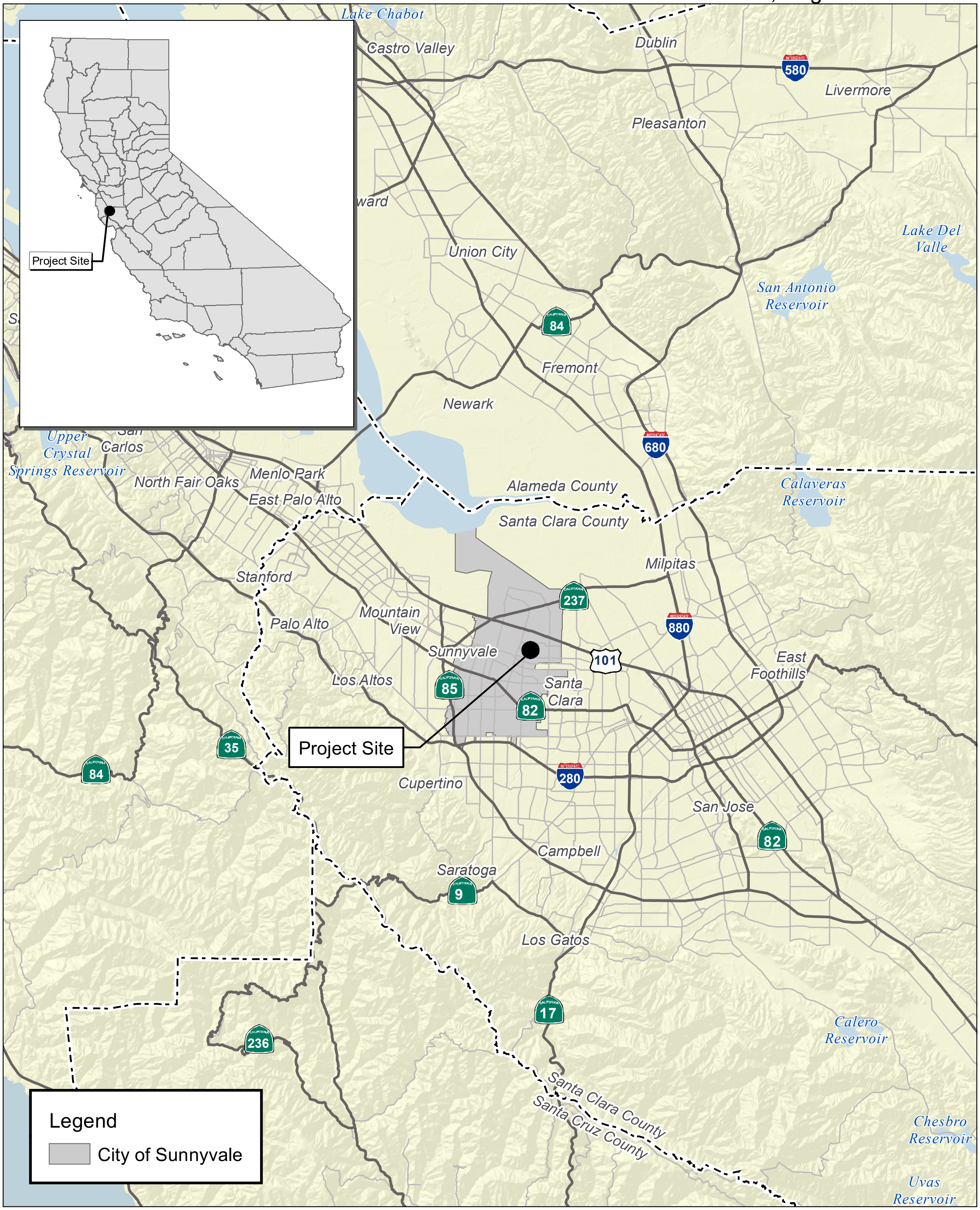
The project site is 1.17 acres and is associated with Assessor's Parcel Number (APN) 205-21-010 at 845 Stewart Drive (Exhibit 1 and Exhibit 2). The project applicant proposes to demolish the existing office building and parking lot and construct 28 townhome-style condominiums (Exhibit 3).

The project site is bounded by Stewart Drive to the south, De Guigne Drive to the east, and commercial buildings to the north and west. The project site is designated as "Medium Density Residential" (R-3) by the City of Sunnyvale General Plan (General Plan) and is zoned Industrial and Service (MS) by the City of Sunnyvale Zoning Ordinance. Given the property's R-3 land use designation, the applicant requests the R-3 zoning district be applied to the property as its best fit zoning. The R-3 zoning district is reserved for the construction, use and occupancy of not more than 24 dwelling units per acre (du/acre). The proposed project has a density of 23.1 du/acre, which is within the allowable range.

The proposed project involves the demolition of one office building totaling approximately 16,815 square feet and the associated parking lot totaling approximately 34,150 square feet. The proposed residential building has a total square footage of approximately 54,849 square feet. Four 3-story all-residential buildings are proposed. Building 1 would be 14,226 square feet (inclusive of garages). Building 2 would be 12,595 square feet. Buildings 3 and 4 would be 14,014 square feet. The proposed project includes approximately 16,767 square feet of landscaped open space, as well as 10,000 square feet of off-site improvements. The proposed project would include 59 parking spaces (two per unit in covered garages

[56] and three additional parking spaces). Grading would involve 417 cubic yards of soil to be exported from the site. For the purpose of construction modeling, the proposed project is modeled to start in May 2026 and is expected to last for 14 months, with operations beginning immediately following construction in July 2027. Four affordable units would be sold at affordability levels consistent with the City's Municipal Code. No bonus units are being requested pursuant to Government Code 65915.

The proposed project is anticipated to be categorically exempt (Class 32 Infill Exemption, Class 31 Exemption, and Statutory Residential Infill Exemption [Public Resources Code [PRC] § 21159.24]) from the California Environmental Quality Act (CEQA).



Source: Census 2000 Data, The California Spatial Information Library (CaSIL).

FCS
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5 2.5 0 5
Miles

Exhibit 1
Regional Location Map

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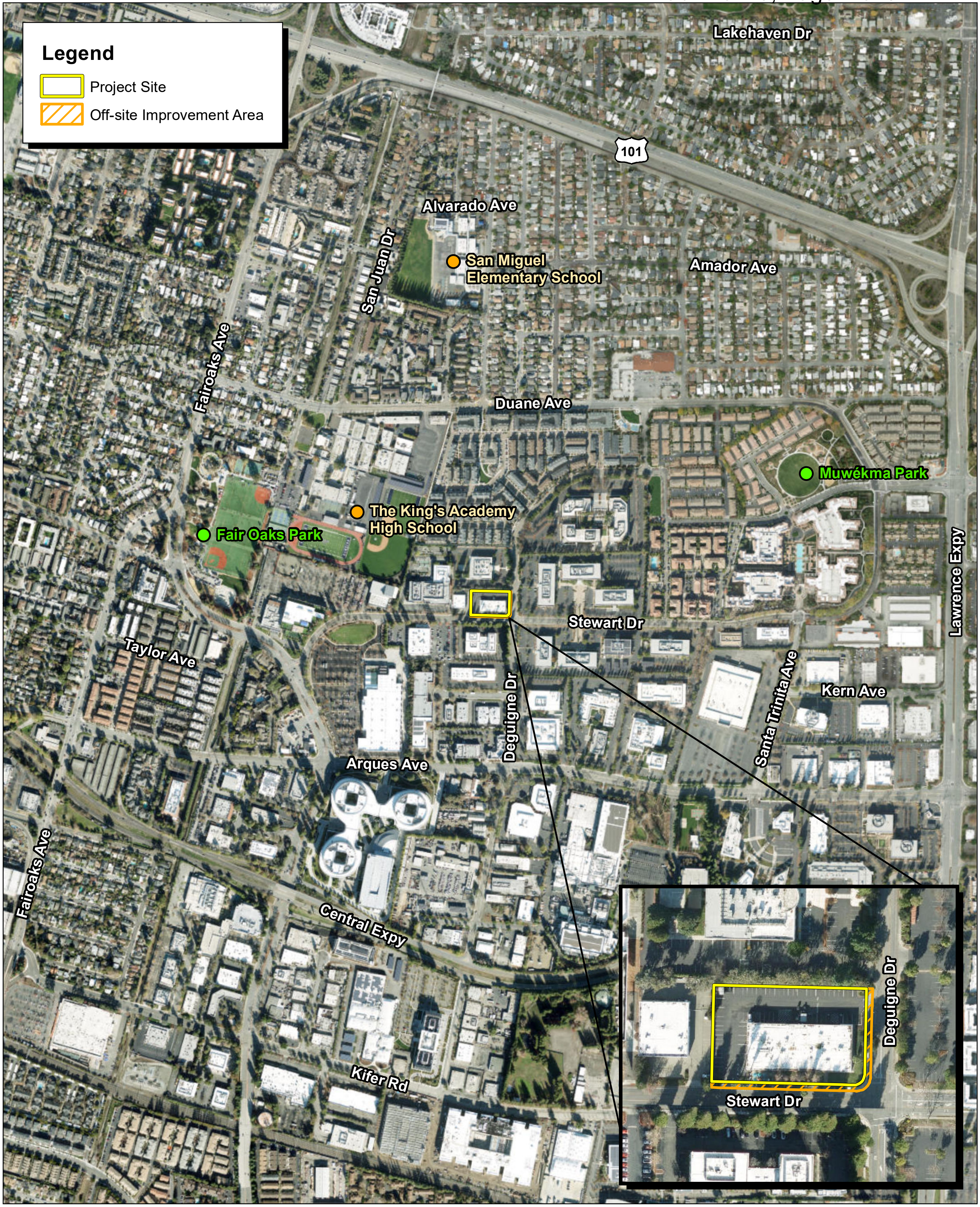
ADAM WINSLOW FOSTER, CITY VENTURES
THE ARCADE PROJECT
NOISE IMPACT ANALYSIS



Source: ESRI Aerial Imagery. Ruggeri-Jensen-Azar, 03/31/2025. Santa Clara County.

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1,000 500 0 1,000
Feet

Exhibit 2
Local Vicinity Map

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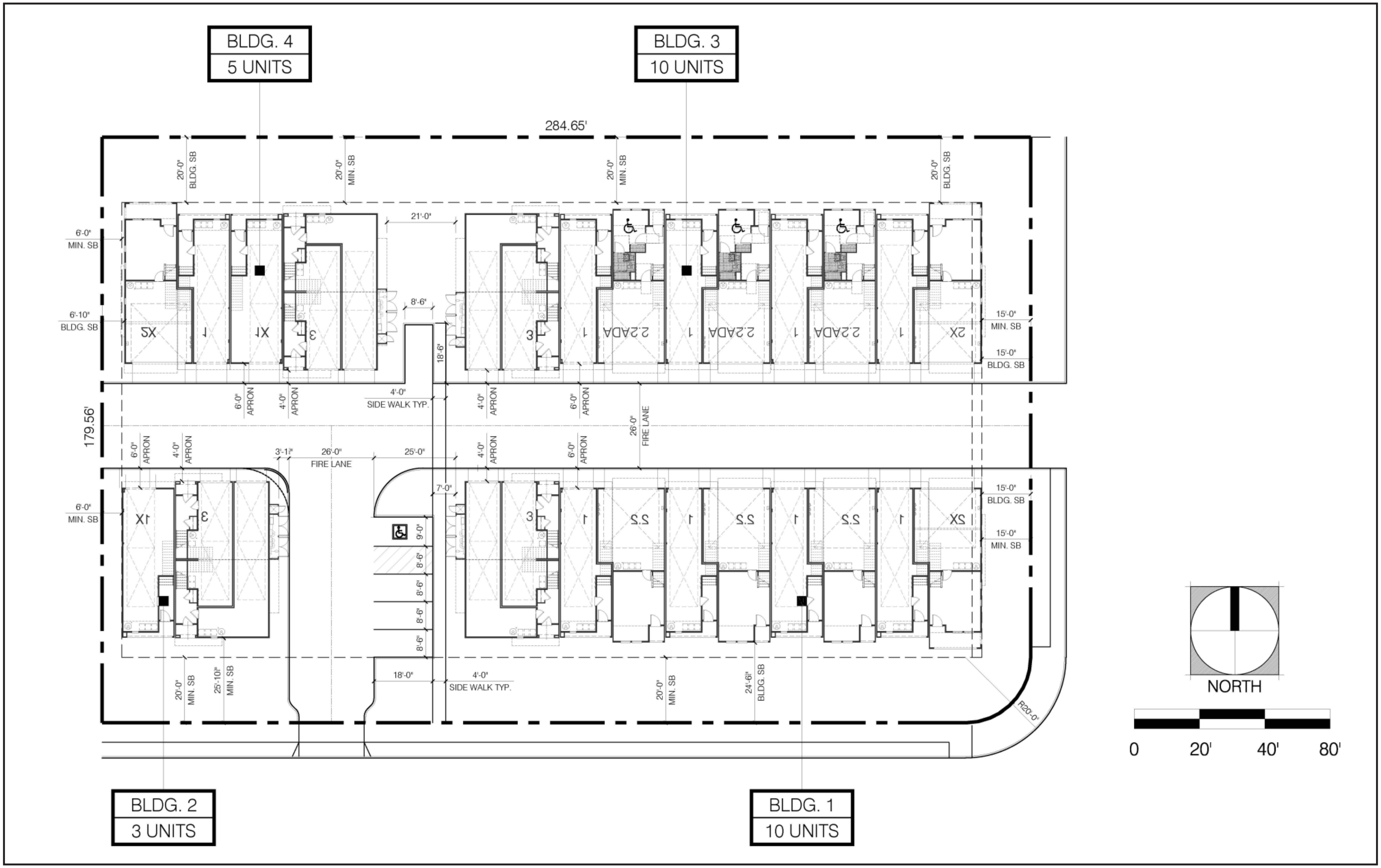
ADAM WINSLOW FOSTER, CITY VENTURES
THE ARCADE PROJECT
NOISE IMPACT ANALYSIS



Source: Fournier Design Studio, Hunt Hale Jones Architects, Ruggeri Jensen Azar, C2 Collaborative, 04/24/2025.

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Exhibit 3
Site Plan

NOISE AND VIBRATION FUNDAMENTALS

A summary of the fundamentals of noise and vibration is provided as Attachment A to this document.

SETTING AND REGULATORY FRAMEWORK

Federal Regulations

Currently, no federal noise standards directly regulate environmental noise associated with temporary construction activities or the long-term operations of development projects.

Federal Transit Administration

Though not regulatory in nature, vibration impact criteria for buildings and other structures have been established by the Federal Transit Authority (FTA), as building and structural damages are generally the foremost concern when evaluating the impacts of construction-related vibrations. For the evaluation of the proposed project's construction-related vibration impacts, the following FTA vibration impact criteria, shown in Table 1, are used given the absence of applicable federal, State, and City standards specific to temporary construction activities and their potential to result in building and structural damages.[1]

Table 1: Federal Transit Administration Construction Vibration Impact Criteria

Building Category	PPV (in/sec)
I. Reinforced Concrete, Steel, or Timber (no plaster)	0.5
II. Engineered Concrete and Masonry (no plaster)	0.3
III. Nonengineered Timber and Masonry Buildings	0.2
IV. Buildings Extremely Susceptible to Vibration Damage	0.12

Notes:
PPV = peak particle velocity
VdB = vibration measured as root mean square (rms) velocity in decibels of 1 microinch per second
Source: Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. September.

The FTA has also established criteria for the assessment of construction noise impacts. The FTA's day and nighttime criteria are shown in Table 2. To be discussed later, the City has adopted these criteria for assessment of the proposed project's construction noise impacts. According to the FTA, exceedances of these criteria may result in adverse community reaction.

[1] Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual.

Table 2: Federal Transit Administration Construction Noise Impact Criteria

Land Use	$L_{eq\ equipment\ (8hr)}$	
	Day	Night
Residential	80	70
Commercial	85	85
Industrial	90	90

Notes:
$L_{eq\ equipment\ (8hr)}$ = equipment noise level in L_{eq} over an 8-hour time period. The analysis assumes that the L_{eq} over this time period would be approximately equal to the L_{eq} over a single construction workday, from start to finish of that day's activities.

Source: Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. Detailed Analysis Construction Noise Criteria. September.

State Regulations

2017 General Plan Guidelines

The State of California's 2017 General Plan Guidelines propose county and city standards for acceptable exterior noise levels based on land use. These standards are incorporated into land use planning processes to prevent or reduce noise and land use incompatibilities. The State's suggested compatibility considerations between various land uses and exterior noise levels are not regulatory in nature but are recommendations intended to aid communities in determining their own noise-acceptability standards.

Assembly Bill 1307

Assembly Bill (AB) 1307 went into effect January 1, 2024. This bill clarifies that "for residential projects, the effects of noise generated by project occupants and their guests on human beings is not a significant effect on the environment." Therefore, this analysis does not address potential noise impacts from future occupants and their guests on sensitive receptors in the project vicinity.

Local Regulations

The project site is located in the City of Sunnyvale. The City addresses noise in the General Plan Noise Element and in the Municipal Code.

City of Sunnyvale General Plan

The General Plan Noise Element provides goals and policies to guide compatible land uses and the incorporation of noise attenuation measures for new uses to protect people living and working in the City from an excessive noise environment. The City's applicable policies include:

Goal SN-8	**Compatible Noise Environment:** Maintain or Achieve a Compatible Noise Environment for all Land Uses in the Community.
Policy SN-8.4	Require development projects to assess potential construction noise impacts on nearby noise-sensitive land uses and to minimize impacts on those uses, to the extent feasible, as determined by the Director of Community Development.
Policy SN-8.5	Require a vibration impact assessment for proposed projects in which heavy-duty construction equipment would be used within 600 feet of an existing structure. If applicable, the City shall require all feasible mitigation measures to be implemented to ensure that no damage or disturbance to structures would occur.
Policy SN-8.7	Ensure new stationary noise sources affecting existing development comply with adopted Sunnyvale Municipal Code Title 19 (zoning).
Goal SN-9	**Acceptable Limits for Community Nosie:** Maintain or achieve acceptable limits for the levels of noise generated by land use operations and single-events.
Policy SN-9.2	When new equipment is installed on a property, including new stationary noise sources (e.g., heating, ventilation, and air conditioning systems, generators, heating boilers) that could affect existing sensitive land uses, construction of enclosures or other screening materials should be installed around the stationary noise source such that equipment is in compliance with the City's operational noise code.

City of Sunnyvale Municipal Code

The Municipal Code Noise Ordinances that are applicable to the proposed project include:

16.08.030 Hours of construction—Time and noise limitations

Construction activity shall be permitted between the hours of 7:00 a.m. and 6:00 p.m. daily Monday through Friday. Saturday hours of operation shall be between 8:00 a.m. and 5:00 p.m. There shall be no construction activity on Sunday or federal holidays when City offices are closed.

No loud environmentally disruptive noises, such as air compressors without mufflers, continuously running motors or generators, loud playing musical instruments, radios, etc., will be allowed where such noises may be a nuisance to adjacent residential neighborhoods.

Exceptions:

(a) Construction activity is permitted for detached single-family residential properties when the work is being performed by the owner of the property, provided no construction activity is conducted prior to 7:00 a.m. or after 7:00 p.m. Monday through Friday, prior to 8:00 a.m. or after 7:00 p.m. on Saturday and prior to 9:00 a.m. or after 6:00 p.m. on Sunday and national holidays when City offices are closed. It is permissible for up to two persons to assist the owner of the property so long as they are not hired by the owner to perform the work. For purposes of this section, "detached single-family residential property" refers only to housing that stands completely alone with no adjoining roof, foundation or sides.

(b) As determined by the chief building official:
   (1) No loud environmentally disruptive noises, such as air compressors without mufflers, continuously running motors or generators, loud playing musical instruments, radios, etc., will be allowed where such noises may be a nuisance to adjacent properties.
   (2) Where emergency conditions exist, construction activity may be permitted at any hour or day of the week. Such emergencies shall be completed as rapidly as possible to prevent any disruption to other properties.
   (3) Where additional construction activity will not be a nuisance to surrounding properties, based on location and type of construction, a waiver may be granted to allow hours of construction other than as stated in this section. (Ord. 3006-13 § 2).

19.42.030 Noise or sound level.

(a) Residential Noise Limits.
   (1) Operational noise shall not exceed 50 dBA during nighttime or 60 dBA during daytime hours at any point on the property line of the adjacent single-family or duplex uses.
   (2) Operational noise shall not exceed 55 dBA during nighttime or 65 dBA during daytime hours on the primary usable open space of multi-family uses.
   (3) Operational noise shall not exceed 60 dBA during nighttime or 70 dBA during daytime hours on the primary usable open space of residential uses located along major transportation corridors (freeways, expressways, arterials, and rail lines) or mixed-use residential properties.

(b) Nonresidential Noise Limits.
   (1) Operational noise shall not exceed 60 dBA during nighttime or 70 dBA during daytime hours at any point on the property line of the adjacent nonresidential use.
   (2) Operational noise generated at industrial, manufacturing, or similar uses shall not exceed 75 dBA during daytime hours at the adjacent property line.

(c) Special Exceptions from Noise Limits.
   (1) Powered Equipment. Powered equipment used on a temporary basis during daytime hours is exempt from the operational noise limits. When used on a continuous basis or during nighttime hours, they should comply with operational noise limits. When used adjacent to residential uses, operation of powered equipment is not allowed during nighttime hours.
   (2) Construction. Construction activity regulated by Title 16 of this code shall not be governed by this section.

19.42.060 Ground vibration regulated.

Every activity or operation shall be conducted in such a manner that ground vibration generated or produced on the premises is not perceptible at any point on the property line of the premises without the use of a special measuring instrument.

Existing Noise Conditions

Ambient Noise

The project site is bounded by Stewart Drive to the south, De Guigne Drive to the east, and commercial buildings to the north and west. The dominant noise sources in the project vicinity include traffic primarily from Stewart Drive, De Guigne Drive. Other dominant noise sources include pedestrian traffic noise, mechanical ventilation systems (heating, ventilation, and air conditioning [HVAC]), parking lot noise, and humming from a Pacific Gas and Electric Company (PG&E) transformer.

An ambient noise monitoring effort was conducted to document daytime ambient noise levels on the project site. Short-term noise monitoring was conducted by FCS on April 9, 2025, between 1:29 p.m. and 2:47 p.m. The noise measurements were taken during the midday hours, as the midday hours typically have the highest daytime noise levels in urban environments. It should be noted that peak noise hours often vary slightly from peak traffic hours, as peak noise hours more closely align with high volume traffic that is still free flowing; while peak traffic hours often result in slower vehicle speeds due to the volume of traffic on the roadway. The measurements ranged between 50.7 dBA and 60.3 dBA equivalent sound level (L_{eq}) as shown in Table 3. The noise measurement data sheets are provided in Attachment B.

Table 3: Existing Ambient Noise Levels on the Project Site

Site ID #	Location/Primary Noise Source Description	dBA L_{eq}	dBA L_{min}	dBA L_{max}
ST-1	Southeast corner of project site on relatively sloping lawn. Approximately 40 feet west of De Guigne Drive and approximately 45 feet north of Stewart Drive. Stewart Drive Traffic, De Guigne Drive Traffic, Pedestrian Traffic, Intercom from parking lot activity at office complex to the east.	60.3	47.0	79.1
ST-2	Tenth parking space north of Stewart Drive on west side of project site along chain-link fence. Approximately 110 feet north of Stewart Drive and approximately 55 feet west of 845 Stewart Drive building. Approximately 10 feet east of chain-link fence. Stewart Drive Traffic, HVAC Duct on north side of 835 Stewart Drive. (Property to the west).	50.7	46.6	62.5
ST-3	North side of project site on parking space directly north of striped speed bump. Approximately 55 feet north of 845 Stewart Drive building and approximately 110 feet west of De Guigne Drive. De Guigne Drive Traffic, Stewart Drive Traffic, Constant humming from PG&E mounted transformer directly north of 845 Stewart Drive structure. HVAC Duct, Parking Lot Activity (Vehicles and Pedestrians).	51.3	46.8	64.6

Notes:
L_{eq} = equivalent sound level
L_{min} = minimum noise/sound level
L_{max} = maximum noise level
Source: FirstCarbon Solutions (FCS). 2025.

THRESHOLDS OF SIGNIFICANCE AND IMPACT ANALYSIS

Thresholds of Significance

According to CEQA Guidelines, Appendix G, to determine whether impacts related to noise and vibration are significant environmental effects, the following questions are analyzed and evaluated.

Would the proposed project:

a) Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

b) Generate excessive groundborne vibration or groundborne noise levels?

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Substantial Noise Increase in Excess of Standards

Construction Noise

For purposes of this analysis, a significant impact would occur if construction activities would result in a substantial temporary increase in ambient noise levels in excess of the City's applicable noise standards. A significant impact would occur if construction activities do not comply with Section 16.08.030 of the Municipal Code, limiting general construction activities to the hours of 7:00 a.m. and 6:00 p.m. daily Monday through Friday. Saturday hours of operation shall be between 8:00 a.m. and 5:00 p.m. There shall be no construction activity on Sunday or federal holidays when City offices are closed.

While the City does not establish substantial temporary noise level increase thresholds for construction activities, this analysis uses the noise limits established by the FTA to identify the potential for impacts due to substantial temporary construction noise. The FTA identifies construction noise limits in the Transit Noise and Vibration Impact Assessment Manual.[2] During daytime hours, a significant temporary increase would be an increase in excess of the average daily noise levels of 80 dBA $L_{eq(8\text{-hour})}$ as measured at a receiving residential land use and 85 dBA $L_{eq(8\text{-hour})}$ as measured at a receiving commercial land use.

On-site Construction Noise Impact

Construction is completed in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character

[2] Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. September.

of the noise generated on the site and, therefore, the noise levels surrounding the site as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full-power operation followed by 3 or 4 minutes at lower power settings. Impact equipment, such as impact pile drivers, are not planned to be used during construction of this proposed project.

The loudest phase of construction is typically the site preparation and grading phase, as that is when the loudest pieces of heavy construction equipment would operate. For example, the maximum noise level generated by each grader is assumed to be 85 dBA maximum noise/sound level (L_{max}) at 50 feet from this equipment. Each front-end loader would also generate 80 dBA L_{max} at 50 feet. The maximum noise level generated by each backhoe is approximately 80 dBA L_{max} at 50 feet.

A conservative but reasonable assumption is that this equipment would operate simultaneously and continuously over at least a 1-hour period in the vicinity of the closest existing residential receptors but would move linearly over the project site as they perform their earthmoving operations, spending a relatively short amount of time adjacent to any one receptor. Construction equipment must operate at some distance from one another on a project site and the combined noise level as measured at a point equidistant from the sources (acoustic center) would be the worst-case maximum noise level. This analysis assumes one piece of equipment operates at the very closest point on the project site to the nearest off-site receptor, while four additional pieces operate simultaneously within a reasonably safe operating distance from that closest piece of equipment. These operations would be expected to result in a reasonable worst-case hourly average of 84 dBA L_{eq} at a distance of 50 feet from the acoustic center of a construction area. These worst-case construction noise levels would only occur during the site preparation phase of development. The calculation spreadsheet with detailed modeling assumptions is provided in Attachment B.

The closest receptor to the project site is a commercial building located directly west of the project site. The façade of this building would be located approximately 45 feet from the acoustic center of construction activity where multiple pieces of heavy construction equipment would potentially operate simultaneously at the project site. At this distance, relative worst-case hourly average construction noise levels would attenuate to approximately 86 dBA L_{max}, intermittently, and could have an hourly average of up to 83 dBA L_{eq}. The calculation spreadsheet with detailed modeling assumptions is provided in Attachment B.

These reasonable worst-case construction noise levels would only occur periodically throughout the day as construction equipment operates along the nearest project boundaries. Additionally, these noise levels would drop off at a rate of 6 dBA per doubling of distance as the equipment moves over the project site. Therefore, the calculated reasonable worst-case 8-hour average noise level for construction assuming construction equipment moves over the project site would be 75 dBA $L_{eq(8\text{-hour})}$ as measured at the nearest commercial receptor.

The closest residential noise-sensitive receptor to the project site is a multi-family residential building located north of the project site. The façade of this building would be located approximately 350 feet from the acoustic center of construction activity where multiple pieces of heavy construction equipment would potentially operate simultaneously at the project site. At this distance, relative worst-case hourly average construction noise levels would attenuate to approximately 68 dBA L_{max}, intermittently, and could have an hourly average of up to 60 dBA L_{eq}. The calculation spreadsheet with detailed modeling assumptions is provided in Attachment B.

These reasonable worst-case construction noise levels would only occur periodically throughout the day as construction equipment operates along the nearest project boundaries. Additionally, these noise levels would drop off at a rate of 6 dBA per doubling of distance as the equipment moves over the project site. Therefore, the calculated reasonable worst-case 8-hour average noise level for construction assuming construction equipment moves over the project site would be 57 dBA $L_{eq(8\text{-hour})}$ as measured at the nearest residential receptor.

Therefore, these calculated reasonable worst-case construction noise levels would not exceed the FTA's average daily thresholds of 80 dBA $L_{eq(8\text{-hour})}$ as measured at the nearest residential receptors, and 85 dBA $L_{eq(8\text{-hour})}$ as measured at the nearest commercial receptors.

In addition, compliance with the City's restrictions on permissible hours for construction activity would preclude nighttime noise impacts. Therefore, the proposed project would not result in substantial temporary increase in ambient noise levels at off-site sensitive receptors above established standards, and construction noise impacts on sensitive receptors in the project vicinity would be **less than significant.**

Off-site Construction Noise Impact (Construction Traffic)

Haul truck trips, construction worker vehicle trips, and other construction-related trips would occur over the course of the proposed project's construction. Haul truck trips typically have the greatest potential to result in substantial off-site noise increases along nearby roadways. Typically, a doubling of the Average Daily Traffic (ADT) hourly volumes on a roadway segment is required in order to result in an increase of 3 dBA in traffic noise levels, as discussed in the characteristics of nose discussion above, is the lowest change that can be perceptible to the human ear in outdoor environments.

Based on the existing traffic data from the City of Sunnyvale Land Use and Transportation Element Environmental Impact Report (EIR) prepared for the City by Michael Baker International in 2016,[3] the existing traffic conditions on Stewart Drive adjacent to the project site has 692 PM peak-hour trips which would produce a minimum of 6,920 average daily trips.[4] Based on the air quality modeling performed for this project, construction of the proposed project would generate a maximum of 37 total trips per day during any phase of project construction; 25 of these trips would be truck haul trips. These average daily trips would not double traffic volumes along roadway segments accessing the project site. For this reason, short-term intermittent noise from construction trips would not be expected to result in a perceptible increase in hourly or daily average traffic noise levels in the project vicinity. Therefore, short-

[3] Michael Baker International. 2016. City of Sunnyvale Land Use and Transportation Element EIR. August.

[4] This traffic data is a conservative baseline value as it can reasonably be assumed that traffic has increased since 2016.

term construction-related noise impacts associated with the transportation of workers and equipment to the project site would be less than significant.

Operational Noise Impacts

On-site Operational Noise Impact

A significant impact would occur if operational noise levels generated by stationary noise sources at the project site would result in a substantial permanent increase in ambient noise levels in excess of any of the noise performance thresholds established in the City's Noise Ordinance. According to Municipal Code Section 19.42.030, Residential Noise Limits: Operational noise shall not exceed 50 dBA during nighttime or 60 dBA during daytime hours at any point on the property line of the adjacent single-family or duplex uses; operational noise shall not exceed 55 dBA during nighttime or 65 dBA during daytime hours on the primary usable open space of multi-family uses; and operational noise shall not exceed 60 dBA during nighttime or 70 dBA during daytime hours on the primary usable open space of residential uses located along major transportation corridors (freeways, expressways, arterials, and rail lines) or mixed-use residential properties. Furthermore, operational noise shall not exceed 60 dBA during nighttime or 70 dBA during daytime hours at any point on the property line of nonresidential uses.

The proposed project would include new stationary noise sources, including mechanical ventilation equipment associated with the proposed residential uses. Potential impacts associated with this new noise source are analyzed below.

Mechanical Equipment

Implementation of the proposed project would include operation of new mechanical ventilation equipment. Noise levels for residential-grade mechanical ventilation equipment systems range up to approximately 70 dBA Leq at a distance of 3 feet.

The proposed project would have residential-grade mechanical ventilation equipment for each unit. The nearest residential receptors are multi-family homes located north of the project site, approximately 380 feet from the nearest location where new mechanical ventilation equipment would be located. The combined reasonable worst-case operational noise level of multiple mechanical ventilation systems operating simultaneously would be 16 dBA L_{eq} as measured at the nearest off-site residential receptor. The noise calculation sheet is provided in Attachment B of this report.

The nearest commercial property line is located west of the project site, approximately 60 feet from the nearest location where new mechanical ventilation equipment would be located. The combined reasonable worst-case operational noise level of multiple mechanical ventilation systems operating simultaneously would be 37 dBA L_{eq} as measured at the nearest receiving commercial property line. The noise calculation sheet is provided in Attachment B of this report.

These reasonable worst-case mechanical ventilation equipment operational noise levels would not exceed the City's most restrictive daytime or nighttime noise performance thresholds as measured at the nearest receiving residential land uses. In addition, these noise levels would not exceed documented existing ambient noise levels in the project vicinity, as shown in Table 3. Therefore, the mechanical ventilation equipment operation noise levels would not result in a substantial permanent increase in ambient noise levels in excess of any of the City's noise performance thresholds and the impact would be less than significant.

Off-site Operational Noise Impact (Traffic)

A significant impact would occur if project-generated traffic would result in a substantial increase in ambient noise levels compared with those that would exist without the proposed project.

Typically, a doubling of the hourly or daily average traffic volumes on a roadway segment is required in order to result in an increase of 3 dBA in traffic noise levels, which, as discussed in the Characteristics of Noise section above, is the lowest change that can be perceptible to the human ear in outdoor environments. Therefore, for the purposes of this analysis, a doubling of the existing ADT volumes would result in a substantial permanent increase in traffic noise levels.

According to the City of Sunnyvale Land Use and Transportation Element EIR prepared for the City in 2016 by Michael Baker International, the existing traffic conditions on Stewart Drive adjacent to the project site has 692 PM peak-hour trips which would produce a minimum of 6,920 average daily trips. The traffic count data is also provided in Attachment B of this report. Based on the project trip generation data identified in the air quality analysis prepared for this project, the proposed project is anticipated to generate 182 average daily trips. The trip generation table is provided in Attachment B of this report. As a result, the proposed project would not double average daily trips on Stewart Drive adjacent to the project site and would not generate a 3 dBA increase in traffic noise levels. Therefore, the proposed project would not result in a substantial permanent increase in ambient noise levels from project-generated traffic trips, and mobile source operational noise impacts would be less than significant.

EXCESSIVE GROUNDBORNE VIBRATION LEVELS

Construction Vibration Impacts

The City requires that a vibration impact assessment be conducted for proposed projects in which heavy-duty construction equipment would be used within 600 feet of an existing structure. If applicable, the City shall require all feasible mitigation measures to be implemented to ensure that no damage or disturbance to structures would occur.

However, the City's policies and ordinances do not establish a numeric threshold for construction vibration impacts. Therefore, for the purposes of this analysis, a significant impact would occur if project construction activities would expose existing structures in the project vicinity to groundborne vibration levels in excess of the FTA's vibration impact criteria identified in Table 1.

Of the variety of equipment used during construction, the small vibratory rollers that are anticipated to be used in the site preparation phase of construction would produce the greatest groundborne vibration levels. Small vibratory rollers produce groundborne vibration levels ranging up to 0.101 inch per second (in/sec) PPV at 25 feet from the operating equipment.

The nearest off-site structure is located approximately 50 feet west from the nearest construction footprint where small vibratory rollers would potentially operate. At this distance, groundborne vibration levels would range up to 0.035 in/sec PPV from operation of the types of equipment that would produce the highest vibration levels. This is well below the FTA's construction vibration damage criteria of 0.2 in/sec PPV for this type of structure, a building of nonengineered timber and masonry construction. As a result, construction of the proposed project would not expose nearby buildings to groundborne vibration levels in excess of their applicable FTA damage criteria, and this impact would be less than significant.

Operational Vibration Impacts

For the purposes of this analysis, and in accordance with ground vibration regulations found in Municipal Code Section 19.42.060, a significant impact would occur if project operation would result in groundborne vibration that would be perceptible at any point on the property line of the premises without the use of a special measuring instrument.

Implementation of the proposed project would not include any permanent sources that would expose persons in the project vicinity to groundborne vibration levels that could be perceptible without instruments at any receiving property line. In addition, there are no existing significant permanent sources of groundborne vibration in the project vicinity to which the proposed project would be exposed. Therefore, project operational groundborne vibration level impacts would be **less than significant.**

EXCESSIVE NOISE LEVELS FROM AIRPORT ACTIVITY

A significant impact would occur if the proposed project would expose people residing or working in the project area to excessive noise levels for a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport.

The project site is not located within the vicinity of a private airstrip. The closest airport to the project site is Moffet Field Airport, located approximately 2.3 miles northwest of the project site. The nearest public airport to the project site is the San José Mineta International Airport, located approximately 3.6 miles southeast of the project site. Because of the distance to the airports and the orientation of the runways, the project site lies outside of the 60 dBA CNEL noise contours. Although aircraft noise is occasionally audible on the project site, nearby airport activity would not expose people residing or working near the project site to excessive noise levels. Therefore, implementation of the proposed project would not expose persons residing or working in the project vicinity to noise levels from airport activity that would be in excess of normally acceptable standards for the proposed land use development, and no impact would occur.

CONCLUSION

Based on the project understanding described above, the proposed project would result in less than significant impacts related to noise and vibration. Thank you for the opportunity to conduct this noise impact analysis. Please feel free to contact Phil Ault (559.930.6191 or pault@fcs-intl.com) should you have any questions.

Sincerely,

Philip Ault, Director of Noise and Air Quality
FirstCarbon Solutions
2999 Oak Road, Suite 250
Walnut Creek, CA 94597

Attachment A: Fundamentals of Noise
Attachment B: Noise Monitoring and Modeling Data

Attachment A:
Fundamentals of Noise

NOISE AND VIBRATION FUNDAMENTALS

Characteristics of Noise and Descriptors

Sound can be described in terms of its loudness (amplitude) and frequency (pitch). The standard unit of measurement for sound is the decibel, abbreviated dB. Because the human ear is not equally sensitive to sound at all frequencies, the A-weighted scale (dBA) is used to reflect the normal hearing sensitivity range of the human ear. Table 1 provides examples of A-weighted noise levels from common sources.

Although the terms "sound" and "noise" are often used synonymously, noise is commonly defined as sound that is either loud, unpleasant, unexpected, or undesired.[1] Because decibels are logarithmic units, they cannot be simply added or subtracted. For example, two cars each producing 60 dBA of noise would not produce a combined 120 dBA.

Table 1: A-Weighted Decibel Scale

Common Noise Sources	Sound Level, dBA
Near Jet Engine	130
Rock and Roll Band	110
Jet Flyover at 1,000 feet	100
Power Motor	90
Food Blender	80
Living Room Music	70
Human Voice at 3 feet	60
Residential Air Conditioner at 50 feet	50
Bird Calls	40
Quiet Living Room	30
Average Whisper	20
Rustling Leaves	10

Notes:
These noise levels are approximations intended for general reference and information use. They do not meet the standard required for detailed noise analysis but are provided for the reader to gain a rudimentary concept of various noise levels.
Source: Cowan, James P. 1993. Handbook of Environmental Acoustics.

[1] California Department of Transportation (Caltrans). 2013. Technical Noise Supplement to the Traffic Noise Analysis Protocol.

Table 2 briefly defines common noise measurement descriptors and other sound terminology used in this memorandum.

Table 2: Sound Terminology

Term	Definition
Sound	A vibratory disturbance created by a vibrating object which, when transmitted by pressure waves through a medium such as air, can be detected by a receiving mechanism such as the human ear or a microphone.
Noise	Sound that is loud, unpleasant, unexpected, or otherwise undesirable.
Ambient Noise	The composite of noise from all sources near and far in a given environment.
Decibel (dB)	A unitless measure of sound on a logarithmic scale which represents the squared ratio of sound pressure amplitude to a reference sound pressure. The reference pressure is 20 micropascals, representing the threshold of human hearing (0 dB).
A-Weighted Decibel (dBA)	An overall frequency-weighted sound level that approximates the frequency response of the human ear.
Equivalent Noise Level (L_{eq})	The average sound energy occurring over a specified time period. In effect, L_{eq} is the steady-state sound level that in a stated period would contain the same acoustical energy as the time-varying sound that actually occurs during the same period.
Maximum and Minimum Noise Levels (L_{max} and L_{min})	The maximum or minimum instantaneous sound level measured during a measurement period.
Day-Night Level (DNL or L_{dn})	The energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the A-weighted sound levels occurring between 10:00 p.m. and 7:00 a.m. (nighttime).
Community Noise Equivalent Level (CNEL)	The energy average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added to the A-weighted sound levels occurring between 7:00 p.m. and 10:00 p.m. and 10 dB added to the A- weighted sound levels occurring between 10:00 p.m. and 7:00 a.m.
Statistical Descriptor (L_X)	L_X is used to represent the noise level exceeded X% of a specified time period. For example, L_{90} represents the noise level that is exceeded 90% of a specified time period. L_{90} is commonly used to represent ambient or background steady-state noise levels.

Source: Data compiled by FirstCarbon Solutions (FCS) 2024.

EFFECTS OF ENVIRONMENTAL NOISE

The degree to which noise can impact an environment ranges from levels that interfere with speech and sleep to levels that can cause adverse health effects. Most human response to noise is subjective.

Factors that influence individual responses may include the intensity, frequency, and pattern of noise; the amount of background or existing noise present; and the nature of work or human activity that is exposed to intruding noise.

According to the National Institute of Health (NIH), extended or repeated exposure to sounds at or above 85 dB can cause hearing loss. Sounds of 75 dBA or less, even after continuous and repeated exposure, are unlikely to cause hearing loss.[2] The World Health Organization (WHO) reports that adults should not be exposed to sudden "impulse" noise events of 140 dB or greater. For children, this limit is 120 dB.[3]

Exposure to elevated nighttime noise levels can disrupt sleep, leading to increased levels of fatigue and decreased work or school performance. For the preservation of healthy sleeping environments, the WHO recommends that continuous interior noise levels should not exceed 30 dBA L_{eq} and that individual noise events of 45 dBA or higher be limited.[4]

Some epidemiological studies have shown a weak association between long-term exposure to noise levels of 65 to 70 dBA L_{eq} or greater and cardiovascular effects, including ischemic heart disease and hypertension. However, at this time, the relationship is largely inconclusive.

It is generally accepted that people with normal hearing sensitivity can barely perceive a 3 dBA change in noise levels, though if changes occur to the character of a sound (i.e., changes to the frequency content), then changes less than 3 dBA may be more noticeable.[5] Changes of 5 dBA may be readily perceptible, and changes of 10 dBA are perceived as a doubling in loudness.[6] However, few people are highly annoyed by daytime noise levels below 55 dBA.[7]

Loud noises, such as those from construction activities, can interfere with peoples' abilities to effectively communicate via speech, as well as other activities, resulting in annoyance or inconvenience. The EPA has found that a home interior noise level of 45 dBA L_{eq} generally protects speech and communication by

2 National Institute of Health (NIH), National Institute on Deafness and Other Communication. www.nidcd.nih.gov/health/noise-induced-hearing-loss.

3 World Health Organization (WHO). 1999. Guidelines for Community Noise.

4 Ibid.

5 California Department of Transportation (Caltrans). 2013. Technical Noise Supplement to the Traffic Noise Analysis Protocol.

6 Ibid.

7 World Health Organization (WHO). 1999. Guidelines for Community Noise.

providing 100 percent intelligibility of speech sounds.[8] Other common daily activities that may be disrupted by elevated interior noise levels include watching television, listening to music, or activities requiring concentration (such as reading). The EPA has determined that, given the preservation of an indoor noise level associated with 100 percent speech intelligibility (i.e., 45 dBA L_{eq}), the average community reaction is not evident and "7 dBA below levels associated with significant complaints and threats of legal action." Any complaints and annoyance are dependent on "attitude and other non-level related factors."

NOISE ATTENUATION

Generally speaking, noise levels decrease, or "attenuate," as distances from noise sources to receivers increases. For each doubling of distance, noise from stationary or small, localized sources, commonly referred to as "point sources," may attenuate at a rate of 6 dBA for each doubling of distance. This attenuation is referred to as the inverse square law. For example, if a point source emits a noise level of 80 dBA at a reference distance of 50 feet, its noise level would be approximately 74 dBA at a distance of 100 feet, 68 dBA at a distance of 200 feet, etc. Noise emitted by "line" sources, such as highways, attenuates at the rate of 3 dBA for each doubling of distance.[9]

Factors such as ground absorption and atmospheric effects may also affect the propagation of noise. In particular, ground attenuation by non-reflective surfaces, such as soft dirt or grass, may contribute to increased attenuation rates of up to an additional 8-10 dBA per doubling of distance.[10]

Noise is most audible when traveling by direct line of sight, an unobstructed visual path between a noise source and a receiver. Barriers that break the line of sight between noise sources and receivers, such as walls and buildings, can greatly reduce source noise levels by allowing noise to reach receivers by diffraction only. Barriers can reduce source noise levels by up to 20 dBA, though it is generally infeasible for temporary barriers to reduce source noise levels by more than 15 dBA.[11] In cases where the noise path from source to receiver is direct but grazes the top of a barrier, noise attenuation of up to 5 dBA may still occur.[12]

[8] United States Environmental Protection Agency (EPA). 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety.

[9] California Department of Transportation (Caltrans). 2013. Technical Noise Supplement to the Traffic Noise Analysis Protocol.

[10] Ibid.

[11] Ibid.

[12] Ibid.

CHARACTERISTICS OF VIBRATION AND DESCRIPTORS

Groundborne vibrations consist of rapidly fluctuating motions within the ground that have an average motion of zero. Vibrating objects in contact with the ground radiate vibration waves through various soil and rock strata to the foundations of nearby buildings.

Although groundborne vibration can be felt outdoors, it is typically only an annoyance to people indoors where the associated effects of the shaking of a building can be notable. When assessing annoyance from groundborne vibration, vibration is typically expressed as root mean square (rms) velocity in units of decibels of 1 microinch per second. To distinguish these vibration levels referenced in decibels from noise levels referenced in decibels, the unit is written as “VdB.”

In extreme cases, excessive groundborne vibration has the potential to cause structural damage to buildings. Common sources of groundborne vibration include construction activities such as blasting, pile driving, and operating heavy earthmoving equipment. However, construction vibration impacts on building structures are generally assessed in terms of peak particle velocity (PPV). For the purposes of this analysis, project-related impacts are expressed in terms of PPV. Typical vibration source levels from construction equipment are shown in Table 3.

Table 3: Vibration Levels of Construction Equipment

Construction Equipment	PPV at 25 Feet (inches/second)	rms Velocity in Decibels (VdB) at 25 Feet
Water Trucks	0.001	57
Scraper	0.002	58
Bulldozer (Small)	0.003	58
Jackhammer	0.035	79
Concrete Mixer	0.046	81
Concrete Pump	0.046	81
Paver	0.046	81
Pickup Truck	0.046	81
Auger Drill Rig	0.051	82
Backhoe	0.051	82
Crane (Mobile)	0.051	82
Excavator	0.051	82
Grader	0.051	82

Construction Equipment	PPV at 25 Feet (inches/second)	rms Velocity in Decibels (VdB) at 25 Feet
Loader	0.051	82
Loaded Trucks	0.076	86
Bulldozer (Large)	0.089	87
Caisson drilling	0.089	87
Vibratory Roller (Small)	0.101	88
Compactor	0.138	90
Clam shovel drop	0.202	94
Vibratory Roller (Large)	0.210	94
Pile Driver (Impact: typical)	0.644	104
Pile Driver (Impact: upper range)	1.518	112

Notes:
PPV = peak particle velocity
VdB = velocity in decibels
rms = root mean square
Source: Compilation of scientific and academic literature, generated by Federal Transit Administration (FTA) and Federal Highway Administration (FHWA).

As vibration waves propagate from a source, the vibration energy decreases in a logarithmic nature and the vibration levels typically decrease by 6 VdB per doubling of the distance from the vibration source. As stated above, this drop-off rate can vary greatly depending on the soil type, but it has been shown to be effective enough for screening purposes, in order to identify potential vibration impacts that may need to be studied through actual field tests. The vibration level (calculated below as PPV) at a distance from a point source can generally be calculated using the vibration reference equation:

$$PPV = PPV_{ref} * (25/D)^n \text{ (in/sec)}$$

Where:

PPV_{ref} = reference measurement at 25 feet from vibration source
D = distance from equipment to property line
n = vibration attenuation rate through ground

According to Section 7 of the FTA Transit Noise and Vibration Impact Assessment Manual, an “n” value of 1.5 is recommended to calculate vibration propagation through typical soil conditions.[13]

[13] Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. September.

Attachment B:

Noise Monitoring and Modeling Data

Mobile Construction Activity Noise Calculation

Receptor:	Receiving commercial receptor	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements								
		Reference (dBA) 50 ft		Usage		Ground	Shielding	Calculated (dBA)		
No.	Equipment Description	Lmax	Quantity	factor[1]	Distance to Receptor	Effect[2]	(dBA)[3]	Lmax	Leq	Energy
1	Grader	85	1	40	45	1		85.9	82.4	173513177.5
2	Excavator	85	1	40	95	1		79.4	72.7	18441625.08
3	Dozer	85	1	40	95	1		79.4	72.7	18441625.08
4	Front End Loader	80	1	40	95	1		74.4	67.7	5831753.9
5	Backhoe	80	1	40	95	1		74.4	67.7	5831753.9
6										
7										
8										
9										
10										
							Lmax[4]	86	Leq	83

Notes:
[1] Percentage of time activity occurs each hour
[2] Soft ground terrain between project site and receptor.
[3] Shielding due to terrain or structures
[4] Calculated Lmax is the Loudest value.

	8-Hour Average Calculation					
		Time	Hourly Leq	Leq'	0.1*Leq	antiLog
	Night	12:00 AM	0.0	10.0	1	10
		1:00 AM	0.0	10.0	1	10
		2:00 AM	0.0	10.0	1	10
		3:00 AM	0.0	10.0	1	10
		4:00 AM	0.0	10.0	1	10
		5:00 AM	0.0	10.0	1	10
		6:00 AM	0.0	10.0	1	10
	Day	7:00 AM	0.0	0.0	0	1
Equipment operating at Closest Point to Nearest Recptor as Shown Above		8:00 AM	83.0	83.0	8.3	199526231.5
Assuming closest equipment operating 95 feet from nearest receptor		9:00 AM	75.0	75.0	7.5	31622776.6
Assuming closest equipment operating 145 feet from nearest receptor		10:00 AM	70.0	70.0	7	10000000
Assuming closest equipment operating 195 feet from nearest receptor		11:00 AM	67.0	67.0	6.7	5011872.336
Lunch break		12:00 PM	0.0	0.0	0	1
Assuming closest equipment operating 245 feet from nearest receptor		1:00 PM	64.0	64.0	6.4	2511886.432
Assuming closest equipment operating 295 feet from nearest receptor		2:00 PM	62.0	62.0	6.2	1584893.192
Assuming closest equipment operating 345 feet from nearest receptor		3:00 PM	60.0	60.0	6	1000000
Assuming closest equipment operating 395 feet from nearest receptor		4:00 PM	59.0	59.0	5.9	794328.2347
		5:00 PM	0.0	0.0	0	1
		6:00 PM	0.0	0.0	0	1
	Evening	7:00 PM	0.0	5.0	0.5	3.16227766
		8:00 PM	0.0	5.0	0.5	3.16227766
		9:00 PM	0.0	5.0	0.5	3.16227766
	Night	10:00 PM	0.0	10.0	1	10
		11:00 PM	0.0	10.0	1	10
				Sum		252052091.8
				Sum/8		31506511.47
				Log10(Sum/8)		7.498400319
				10*Log10(Sum/8)		74.98400319
				8-Hour Average		75

Mobile Construction Activity Noise Calculation

Receptor:	Receiving residential receptor	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements								
		Reference (dBA) 50 ft		Usage		Ground	Shielding	Calculated (dBA)		
No.	Equipment Description	Lmax	Quantity	factor[1]	Distance to Receptor	Effect[2]	(dBA)[3]	Lmax	Leq	Energy
1	Grader	85	1	40	350	1	0	68.1	55.7	368778.7359
2	Excavator	85	1	40	400	1	0	66.9	53.9	247052.9422
3	Dozer	85	1	40	400	1	0	66.9	53.9	247052.9422
4	Front End Loader	80	1	40	400	1	0	61.9	48.9	78125
5	Backhoe	80	1	40	400	1	0	61.9	48.9	78125
6										
7										
8										
9										
10										
							Lmax[4]	68	Leq	60

Notes:
[1] Percentage of time activity occurs each hour
[2] Soft ground terrain between project site and receptor.
[3] Shielding due to terrain or structures
[4] Calculated Lmax is the Loudest value.

8-Hour Average Calculation

		Time	Hourly Leq	Leq'	0.1*Leq	antiLog
	Night	12:00 AM	0.0	10.0	1	10
		1:00 AM	0.0	10.0	1	10
		2:00 AM	0.0	10.0	1	10
		3:00 AM	0.0	10.0	1	10
		4:00 AM	0.0	10.0	1	10
		5:00 AM	0.0	10.0	1	10
		6:00 AM	0.0	10.0	1	10
	Day	7:00 AM	0.0	0.0	0	1
Equipment operating at Closest Point to Nearest Recptor as Shown Above		8:00 AM	60.0	60.0	6	1000000
Assuming closest equipment operating 400 feet from nearest receptor		9:00 AM	58.0	58.0	5.8	630957.3445
Assuming closest equipment operating 450 feet from nearest receptor		10:00 AM	57.0	57.0	5.7	501187.2336
Assuming closest equipment operating 500 feet from nearest receptor		11:00 AM	56.0	56.0	5.6	398107.1706
Lunch break		12:00 PM	0.0	0.0	0	1
Assuming closest equipment operating 550 feet from nearest receptor		1:00 PM	55.0	55.0	5.5	316227.766
Assuming closest equipment operating 550 feet from nearest receptor		2:00 PM	55.0	55.0	5.5	316227.766
Assuming closest equipment operating 550 feet from nearest receptor		3:00 PM	55.0	55.0	5.5	316227.766
Assuming closest equipment operating 550 feet from nearest receptor		4:00 PM	55.0	55.0	5.5	316227.766
		5:00 PM	0.0	0.0	0	1
		6:00 PM	0.0	0.0	0	1
	Evening	7:00 PM	0.0	5.0	0.5	3.16227766
		8:00 PM	0.0	5.0	0.5	3.16227766
		9:00 PM	0.0	5.0	0.5	3.16227766
	Night	10:00 PM	0.0	10.0	1	10
		11:00 PM	0.0	10.0	1	10
				Sum		3795266.3
				Sum/8		474408.2874
				Log10(Sum/8)		5.676152267
				10*Log10(Sum/8)		56.76152267
				8-Hour Average		57

Residential-Grade Mechanical Equipment

Receptor:	Nearest Commercial Receptor	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements								
		Reference (dBA) 3 ft			Distance to	Ground	Shielding	Calculated (dBA)		
No.	Equipment Description	Lmax	Quantity	Usage factor[1]	Receptor	Effect[2]	(dBA)[3]	Lmax	Leq	Energy
1	Residential grade mechanical ventilation equipment	70	2	100	65	1	0	43.3	32.9	1966.317706
2	Residential grade mechanical ventilation equipment	70	2	100	80	1	0	41.5	30.2	1054.6875
3	Residential grade mechanical ventilation equipment	70	2	100	95	1	0	40.0	28.0	629.8294212
4	Residential grade mechanical ventilation equipment	70	2	100	110	1	0	38.7	26.1	405.7099925
5	Residential grade mechanical ventilation equipment	70	2	100	125	1	0	37.6	24.4	276.48
6	Residential grade mechanical ventilation equipment	70	2	100	140	1	0	36.6	22.9	196.7930029
7	Residential grade mechanical ventilation equipment	70	1	100	160	1	0	35.5	18.2	65.91796875
8										
9										
10										
11										
									Leq	37

Notes:
[1] Percentage of time activity occurs each hour
[2] Soft ground terrain between project site and receptor.
[3] Shielding due to rooftop parapet/structural shielding

Residential-Grade Mechanical Equipment

Receptor:	Nearest Residential Receptor	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements								
		Reference (dBA) 3 ft	Quantity	Usage factor[1]	Distance to Receptor	Ground Effect[2]	Shielding (dBA)[3]	lculated (dBA)		Energy
No.	Equipment Description	Lmax						Lmax	Leq	
1	Residential grade mechanical ventilation equipment	70	1	100	380	1	0	27.9	6.9	4.920542353
2	Residential grade mechanical ventilation equipment	70	2	100	385	1	0	27.8	9.8	9.462623731
3	Residential grade mechanical ventilation equipment	70	3	100	390	1	0	27.7	11.4	13.65498407
4	Residential grade mechanical ventilation equipment	70	1	100	395	1	0	27.6	6.4	4.380992173
5	Residential grade mechanical ventilation equipment	70	1	100	405	1	0	27.4	6.1	4.064421074
6										
7										
8										
9										
10										
									Leq	16

Notes:
[1] Percentage of time activity occurs each hour
[2] Soft ground terrain between project site and receptor.
[3] Shielding due to structural/soundwall shielding

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Project Number: 4583.0013 Sheet 1 of 3

Project Name: 845 Stewart Drive

Test Personnel: Matthew Dionisio

NOISE MEASUREMENT SURVEY

Site Number: ST-1 Date: 4/9/2025 Time: From 1:29 PM to 1: 44 PM

Site Location: Southeast corner of project site on relatively sloping lawn. Approximately 40 feet west of De Guigne Drive and approximately 45 feet north of Stewart Drive.

Primary Noise Sources: Stewart Drive Traffic, De Guigne Drive Traffic, Pedestrian Traffic, Intercom from parking lot associated with office complex to the east.

Measurement Results

	dBA
L_{eq}	60.3
L_{max}	79.1
L_{min}	47.0
L_{peak}	91.5
L_5	64.6
L_{10}	61.6
L_{50}	56.0
L_{90}	51.4
SEL	

Observed Noise Sources/Events

Time	Noise Source/Event	dBA

Comments:

Equipment: Soundexpert821

Measured Difference: -0.09 dBA

Settings: A-Weighted ☐ Other ☐

Slow ☐ Fast ☐ Windscreen ☑

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Atmospheric Conditions

Maximum Wind Velocity (mph)	Average Wind Velocity (mph)	Temperature (F)	Relative Humidity (%)	
8 mph gusts	5 mph	74 F	43%	

Comments: No/slight breeze.

Photos Taken

Photo Number	Location/Description
1	Facing north towards palm tree east of 845 Stewart Drive building.
2	Facing east across De Guigne Drive towards parking lot for 510 De Guigne Drive.
3	Facing south across Stewart Drive towards redwood trees at southwest corner of Stewart Drive and De Guigne Drive Intersection.
4	Facing west down pathway directly south of 845 Stewart Drive building and landscaping.

Traffic Description

Roadway	# Lanes	Posted Speed	Average Speed	NB/EB Counts	SB/WB Counts
Stewart Drive	3 (1 E, 1 W, 1 turning)	25 mph	0-25 mph	49	28
De Guigne Drive	3 (1 N, 1 S, 1 turning)	30 mph	0-20 mph	41	22

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Diagram/Further Comments

15-minute traffic counts. Speed of cars slower than speed limit as cars slowing/stopping for intersection. Traffic consisted of mainly vehicles and few trucks.

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Project Number: 4583.0013

Sheet 2 of 3

Project Name: 845 Stewart Drive

Test Personnel: Matthew Dionisio

NOISE MEASUREMENT SURVEY

Site Number: ST-2 Date: 4/9/2025 Time: From 2:01 PM to 2:17 PM

Site Location: 10th parking space north of Stewart Drive on west side of project site along chain link fence. Approximately 110 feet north of Stewart Drive and approximately 55 feet west of 845 Stewart Drive building. Approximately 10 feet east of chain link fence.

Primary Noise Sources: Stewart Drive Traffic, HVAC Duct on north side of 835 Stewart Drive. (Property to the west).

Measurement Results

	dBA
L_{eq}	50.7
L_{max}	62.5
L_{min}	46.6
L_{peak}	83.3
L_5	54.7
L_{10}	53.3
L_{50}	48.9
L_{90}	47.0
SEL	

Observed Noise Sources/Events

Time	Noise Source/Event	dBA

Comments: 2:07-2:09 - Car engine idling. Parking lot activity.

Equipment: Soundexpert821

Measured Difference: 0.05 dBA

Settings: A-Weighted ☐ Other ☐

Slow ☐ Fast ☐ Windscreen ☑

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Atmospheric Conditions

Maximum Wind Velocity (mph)	Average Wind Velocity (mph)	Temperature (F)	Relative Humidity (%)	
9 mph gusts	6 mph	76 F	42%	

Comments: Small gusts of wind below 11 mph.

Photos Taken

Photo Number	Location/Description
1	Facing north towards enclosed trash receptables on northwest corner of project site.
2	Facing east across parking lot towards 845 Stewart Drive building.
3	Facing south towards parking lot entrance along Stewart Drive.
4	Facing west towards chain link fence and 835 Stewart Drive.

Traffic Description

Roadway	# Lanes	Posted Speed	Average Speed	NB/EB Counts	SB/WB Counts
Stewart Drive	2 (1 E, 1 W)	25 mph	20-35 mph	33	19

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Diagram/Further Comments

15-minute traffic counts. Mostly vehicles.

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Project Number: 4583.0013

Sheet 3 of 3

Project Name: 845 Stewart Drive

Test Personnel: Matthew Dionisio

NOISE MEASUREMENT SURVEY

Site Number: ST-3 Date: 4/9/2025 Time: From 2:32 PM to 2:47 PM

Site Location: North side of project site on parking space directly north of striped speed bump. Approximately 55 feet north of 845 Stewart Drive building and approximately 110 feet west of De Guigne Drive.

Primary Noise Sources: De Guigne Drive Traffic, Stewart Drive Traffic, Constant humming from PG&E mounted transformer directly north of 845 Stewart Drive structure. HVAC Duct, Parking Lot Activity (Vehicles and Pedestrians).

Measurement Results

	dBA
L_{eq}	51.3
L_{max}	64.6
L_{min}	46.8
L_{peak}	92.5
L_5	55.2
L_{10}	54.0
L_{50}	49.4
L_{90}	47.5
SEL	

Observed Noise Sources/Events

Time	Noise Source/Event	dBA

Comments: Cars in parking lot drove past noise equipment at 2:34, 2:35, 2:36, and 2:45 PM.

Equipment: Soundexpert821

Measured Difference: -0.04 dBA

Settings: A-Weighted ☐ Other ☐

Slow ☐ Fast ☐ Windscreen ☑

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Atmospheric Conditions

Maximum Wind Velocity (mph)	Average Wind Velocity (mph)	Temperature (F)	Relative Humidity (%)	
10 mph gusts	7 mph	77 F	43%	
Comments: Slight/Moderate Gusts but below 11 mph.				

Photos Taken

Photo Number	Location/Description
1	Facing north directly at large shrubs and trees.
2	Facing east towards parking lot entrance from De Guigne Drive.
3	Facing south across northern parking lot towards 845 Stewart Drive building.
4	Facing west along northern boundary of project site towards enclosed trash receptables.

Traffic Description

Roadway	# Lanes	Posted Speed	Average Speed	NB/EB Counts	SB/WB Counts
De Guigne Drive	2 (1 N, 1 S)	30 mph	20-30 mph	16	36

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Diagram/Further Comments

15-minute traffic counts. Most vehicles slower than posted speed limit due to approaching intersection and turning onto De Guigne Drive from surrounding business parks. Traffic consisted of mostly vehicles.