NOISE STUDY

Latitude Business Park
City of Corona, CA

Prepared By:

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Project For:

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EXHIBIT 9

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COMMON TERMS

Sound Pressure Level (SPL): a ratio of one sound pressure to a reference pressure (L_{ref}) of 20 µPa. Because of the dynamic range of the human ear, the ratio is calculated logarithmically by 20 log (L/L_{ref}).

A-weighted Sound Pressure Level (dBA): Some frequencies of noise are more noticeable than others. To compensate for this fact, different sound frequencies are weighted more.

Minimum Sound Level (L_{min}): Minimum SPL or the lowest SPL measured over the time interval using the A-weighted network and slow time weighting.

Maximum Sound Level (L_{max}): Maximum SPL or the highest SPL measured over the time interval the A-weighted network and slow time weighting.

Equivalent sound level (L_{eq}): the true equivalent sound level measured over the run time. Leq is the A-weighted steady sound level that contains the same total acoustical energy as the actual fluctuating sound level.

Day Night Sound Level (LDN): Representing the Day/Night sound level, this measurement is a 24 –hour average sound level where 10 dB is added to all the readings that occur between 10 pm and 7 am. This is primarily used in community noise regulations where there is a 10 dB "Penalty" for night time noise. Typically LDN's are measured using A weighting.

Community Noise Exposure Level (CNEL): The accumulated exposure to sound measured in a 24-hour sampling interval and artificially boosted during certain hours. For CNEL, samples taken between 7 pm and 10 pm are boosted by 5 dB; samples taken between 10 pm and 7 am are boosted by 10 dB.

Octave Band: An octave band is defined as a frequency band whose upper band-edge frequency is twice the lower band frequency.

Third-Octave Band: A third-octave band is defined as a frequency band whose upper band-edge frequency is 1.26 times the lower band frequency.

Response Time (F,S,I): The response time is a standardized exponential time weighting of the input signal according to fast (F), slow (S) or impulse (I) time response relationships. Time response can be described with a time constant. The time constants for fast, slow and impulse responses are 1.0 seconds, 0.125 seconds and 0.35 milliseconds, respectively.

EXECUTIVE SUMMARY

This noise study has been completed to determine the noise impacts associated with the development of the proposed project. The proposed Project consists of developing multiple industrial/manufacturing/warehousing buildings up to 379,882 Square Feet (SF) of industrial usage and up to 159,744 SF of manufacturing usage and up to 535,205 SF warehouse space. This analysis was updated due to the fact that up to 175,000 SF of that warehouse space could contain cold storage. The Project site is located on the west side of Temescal Canyon Road, between La Gloria Street Road and Tom Barnes Street, in the City of Corona, California.

On-Site Noise Analysis

No noise sensitive land uses are proposed on the project site; therefore, no impacts from the adjacent roadways are anticipated. Mitigation measures are not necessary to meet the City standards.

Off-Site Noise Analysis

The project does not directly or cumulatively create a noise level increase of more than 3 dBA CNEL on any roadway segment. Therefore, no direct or cumulative offsite noise impact is expected and the proposed project's contributions to off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses.

Construction Noise Analysis

The City of Corona Development Code Section 17.84.040 limits construction activity to the hours of 7:00 a.m. to 8:00 p.m. from Monday to Saturday and from 10:00 a.m. to 6:00 p.m. on Sundays and federal holidays. The following recommended noise reductions measures should be employed to reduce the construction noise levels at the nearby residential areas. The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise sources and noise sensitive receptors nearest the project site. The construction contractor shall limit haul truck deliveries to the same hours specified for construction equipment. To the extent feasible, haul routes shall not pass sensitive land uses or residential dwellings. Homeowners shall be notified via postings on the construction site prior to the construction commencing.

Operational Analysis

The project will meet the 50 dBA Leq nighttime standard at its property lines per the City standards. No impacts are anticipated and no mitigation is required.

1.0 INTRODUCTION

1.1 Purpose of this Study

The purpose of this Noise study is to determine potential impacts (if any) that may be created by traffic, construction or operational noise (short term or long term) from the proposed Project. Should impacts be determined, the intent of this study would be to recommend suitable mitigation measures to bring those impacts to a level that would be considered less than significant.

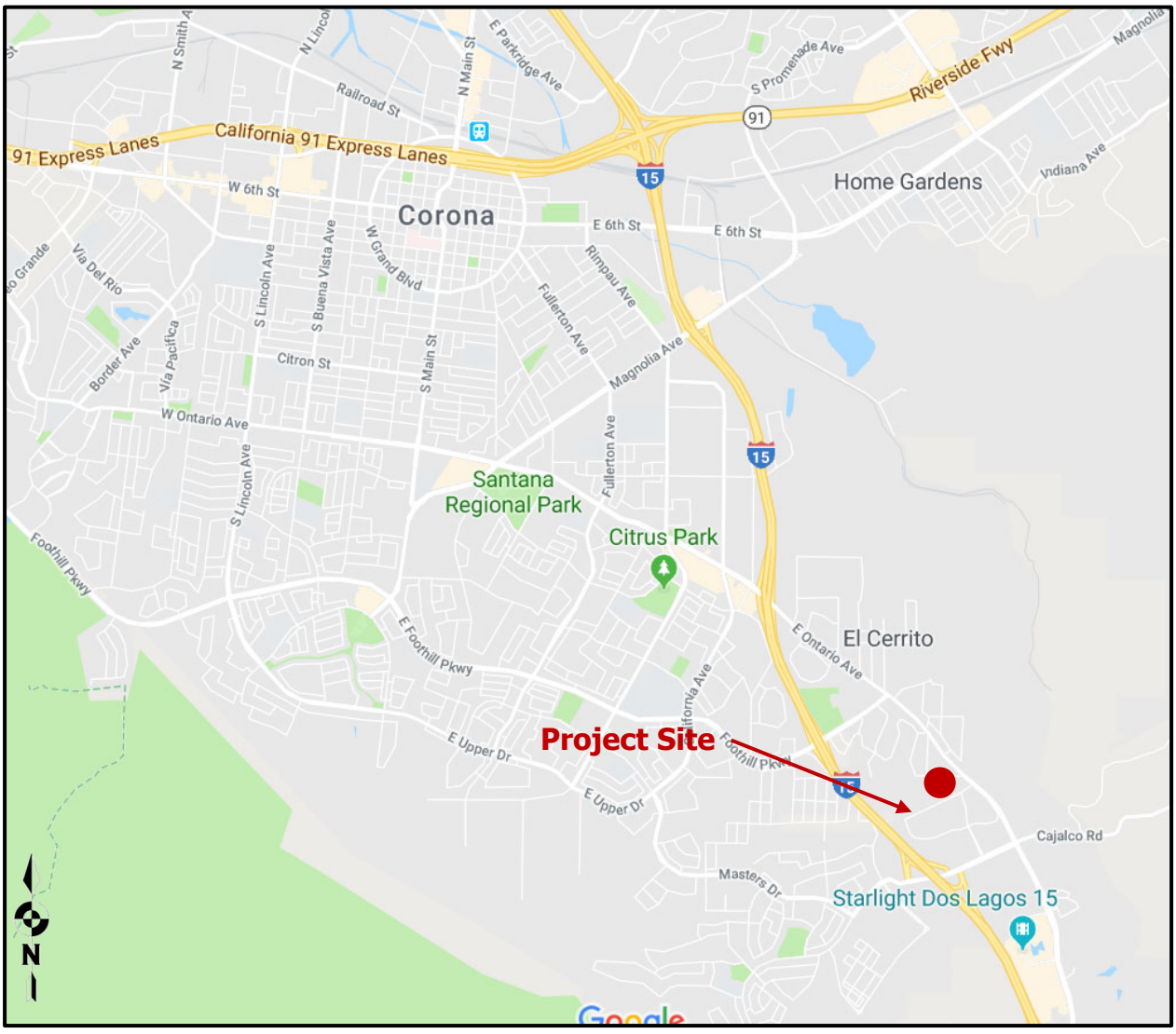
1.2 Project Location

The Project site is located on the west side of Temescal Canyon Road, between La Gloria Street Road and Tom Barnes Street, in the City of Corona, California. The general location of the project is shown on the Vicinity Map, Figure 1-A.

1.3 Project Description

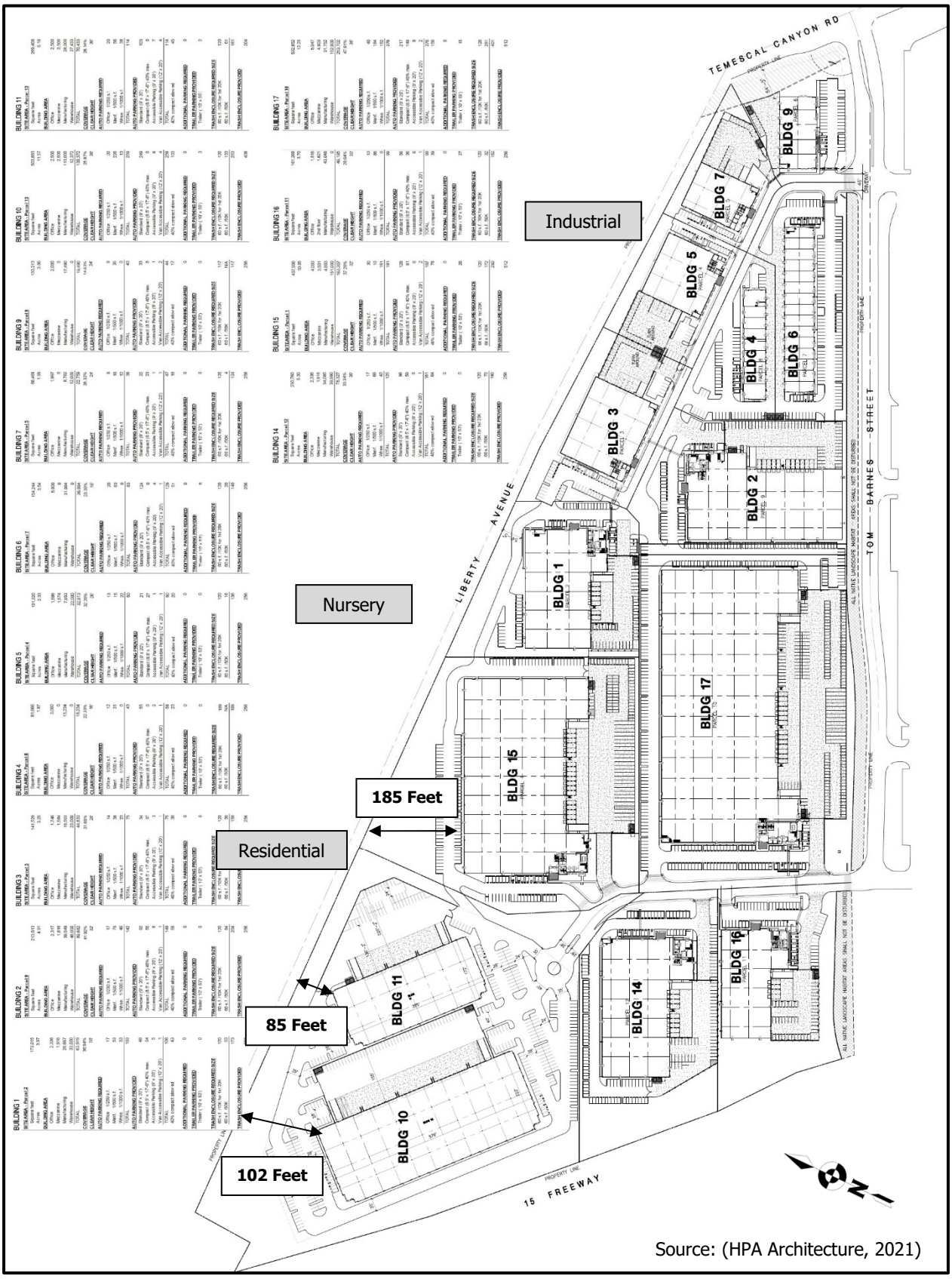
The proposed Project consists of developing multiple industrial/manufacturing/warehousing buildings up to 379,882 Square Feet (SF) of industrial usage and up to 159,744 SF of manufacturing usage and up to 535,205 SF warehouse space. This analysis was updated due to the fact that up to 175,000 SF of that warehouse space could contain cold storage. A site plan map is shown in Figure 1-B.

Figure 1-A: Project Vicinity Map



Source: (Google, 2019)

Figure 1-B: Site Plan Map



Source: (HPA Architecture, 2021)

1.4 Methodology and Equipment

a. Noise Modeling Software

The projected roadway noise impacts from vehicular traffic were projected using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model- FHWA-RD-77-108 (the "FHWA Model"). The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL).

Adjustments are then made to the REMEL to account for: the roadway classification (e.g., collector, secondary, major or arterial), the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway), the total average daily traffic (ADT), the travel speed, the percentages of automobiles, medium trucks, and heavy trucks in the traffic volume, the roadway grade, the angle of view (e.g., whether the roadway view is blocked), the site conditions ("hard" or "soft" relates to the absorption of the ground, pavement, or landscaping), and the percentage of total ADT which flows each hour throughout a 24-hour period.

b. Noise Calculations and Factors

Noise is defined as unwanted or annoying sound which interferes with or disrupts normal activities. Exposure to high noise levels has been demonstrated to cause hearing loss. The individual human response to environmental noise is based on the sensitivity of that individual, the type of noise that occurs and when the noise occurs.

Sound is measured on a logarithmic scale consisting of sound pressure levels known as a decibel (dB). The sounds heard by humans typically do not consist of a single frequency but of a broadband of frequencies having different sound pressure levels. The method for evaluating all the frequencies of the sound is to apply an A-weighting to reflect how the human ear responds to the different sound levels at different frequencies. The A-weighted sound level adequately describes the instantaneous noise whereas the equivalent sound level depicted as Leq represents a steady sound level containing the same total acoustical energy as the actual fluctuating sound level over a given time interval.

The Community Noise Equivalent Level (CNEL) is the 24 hour A-weighted average for sound, with corrections for evening and nighttime hours. The corrections require an addition of 5 decibels to sound levels in the evening hours between 7 p.m. and 10 p.m. and an addition of 10 decibels to sound levels at nighttime hours between 10 p.m. and 7 a.m. These additions are made to account for the increased sensitivity during the evening and nighttime hours when sound appears louder.

A vehicle's noise level is from a combination of the noise produced by the engine, exhaust and tires. The cumulative traffic noise levels along a roadway segment are based on three primary factors: the amount of traffic, the travel speed of the traffic, and the vehicle mix ratio or number of medium and heavy trucks. The intensity of traffic noise is increased by higher traffic volumes, greater speeds and increased number of trucks.

Because mobile/traffic noise levels are calculated on a logarithmic scale, a doubling of the traffic noise or acoustical energy results in a noise level increase of 3 dBA. Therefore, the doubling of the traffic volume, without changing the vehicle speeds or mix ratio, results in a noise increase of 3 dBA. Mobile noise levels radiate in an almost oblique fashion from the source and drop off at a rate of 3 dBA for each doubling of distance under hard site conditions and at a rate of 4.5 dBA for soft site conditions. Hard site conditions consist of concrete, asphalt and hard pack dirt while soft site conditions exist in areas having slight grade changes, landscaped areas and vegetation. On the other hand, fixed/point sources radiate outward uniformly as sound travels away from the source. Their sound levels attenuate or drop off at a rate of 6 dBA for each doubling of distance.

The most effective noise reduction methods consist of controlling the noise at the source, blocking the noise transmission with barriers or relocating the receiver. Any or all of these methods may be required to reduce noise levels to an acceptable level.

2.0 NOISE STANDARDS

2.1 Traffic Noise Sources (Off-site)

Changes in noise levels greater than 3 dBA are often identified as "barely perceptible," while changes of 5 dBA are "readily perceptible." In between 1 dBA to 3 dBA, people who are very sensitive to noise may perceive a slight change in noise level. However, traffic related noise increases typically occur over a long time period of time rather than the immediately. Therefore, for the purposes of this analysis a 3 dBA increase seems to be appropriate.

Direct and cumulative roadway noise impacts would be considered significant if the project increases noise levels for a noise sensitive land use by 3 dBA CNEL and if: (1) the existing noise levels already exceed the 65 dBA CNEL residential standard, or (2) the project increases noise levels from below the 65 dBA CNEL standard to above 65 dBA CNEL in the area adjacent to the roadway segment.

2.2 Construction Noise Sources

Section 17.84.040 of City of Corona Development Code defines limits for construction- related noise at different time intervals. Construction noise is prohibited between the hours of 8:00 p.m. to 7:00 a.m., Monday through Saturday and 6:00 p.m. to 10:00 a.m. on Sundays and federal holidays.

2.3 Stationary Noise Sources

City Municipal Code Section 17.84.040 set sound level limits at property lines. Unless a variance has been applied for and granted pursuant to this chapter, it is unlawful for any person to cause or allow the creation of any noise to the extent that the one-hour average sound level, at any point on or beyond the boundaries of the property on which the sound is produced, exceeds the applicable limits set forth below in Table 2-1. Residential land uses exist to the north and therefore, the Project must meet a 55 dBA Leq daytime standard and a property line standard of 50 dBA Leq nighttime standard the residential property line.

Table 2-1: City Noise Limits

Receiving Land Use Category	Time of Day	Applicable Limit One-Hour Average Sound Level (in decibels)
Residential	7:00 a.m. to 10:00 p.m.	55
	10:00 p.m. to 7:00 a.m.	50

3.0 TRAFFIC NOISE

3.1 Traffic Related Noise

The off-site project related roadway segment noise levels projected in this report were calculated using the methods in the Highway Noise Model published by the Federal Highway Administration (FHWA Highway Traffic Noise Prediction Model, FHWA-RD-77-108, December 1978). The FHWA Model uses the traffic volume, vehicle mix, speed, and roadway geometry to compute the equivalent noise level. A spreadsheet calculation was used which computes equivalent noise levels for each of the time periods used in the calculation of CNEL. Weighting these equivalent noise levels and summing them gives the CNEL for the traffic projections. The noise contours are then established by iterating the equivalent noise level over many distances until the distance to the desired noise contour(s) are found.

The future traffic noise model utilizes a typical vehicle mix of 97.42% Autos, 1.84% Medium Trucks and 0.74% Heavy Trucks for all analyzed roadway segments to account for heavy truck traffic that is common in the area. The vehicle mix provides the hourly distribution percentages of automobile, medium trucks and heavy trucks for input into the FHWA Model.

a) Direct Noise Impacts

To determine if direct off-site noise level increases associated with the development of the proposed project will create noise impacts. The noise levels for the existing conditions were compared with the noise level increase of existing plus the proposed project. Utilizing the project's traffic assessment (Source: LL&G Engineers, 2019), the noise levels for the roadways in the vicinity of the Project site are given in Table 3-1 for the Existing plus Project Scenario.

Please note, that the values given do not take into account the effect of any noise barriers, structures or topography that may affect ambient noise levels. The project does not create a noise level increase of more than 3 dBA CNEL on any roadway segment as shown in Table 3-1. The roadway segment noise levels will increase from 0.1 dBA CNEL to 1.3 dBA CNEL with the development of the proposed project. Therefore, the proposed project's direct contributions to off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses.

Table 3-1: Existing + Project Noise Levels

Roadway	Segment	Noise Level @ 50-Feet (dBA CNEL)			Significant Impact
		No Project	With Project	Increase	
El Cerrito Road	I-15 NB Ramps and Ontario Ave	68.3	68.6	0.3	No
Temescal Canyon Road	El Cerrito Rd and Tom Barnes St	71.4	71.6	0.2	No
Tom Barnes	Tuscany St and Temescal Canyon Rd	66.1	67.4	1.3	No
Temescal Canyon Road	Tom Barnes Street and Cajalco Rd	70.5	70.8	0.3	No
Cajalco Road	I-15 NB Ramps and Temescal Canyon Rd	72.4	72.5	0.1	No

[1] Source: Project Traffic study prepared by LL&G Engineers, 2019

b) Cumulative Noise Impacts

To determine if cumulative off-site noise level increases associated with the development of the proposed project will create noise impacts. The noise levels for the cumulative conditions were compared with the noise level increase with the proposed project. Utilizing the project's traffic assessment (Source: LL&G Engineers, 2019), the noise levels for the roadways in the vicinity of the Project site are given in Table 3-2 for the Cumulative plus Project Scenario.

Please note, that the values given do not take into account the effect of any noise barriers, structures or topography that may affect ambient noise levels. The project does not create a noise level increase of more than 3 dBA CNEL on any roadway segment as shown in Table 3-2. The roadway segment noise levels will increase from 0.8 dBA CNEL to 1.6 dBA CNEL with the development of the proposed project. Therefore, the proposed project's contributions to off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses.

Table 3-2: Cumulative + Project Noise Levels

Roadway	Segment	Noise Level @ 50-Feet (dBA CNEL)			Significant Impact
		No Project	With Project	Increase	
El Cerrito Road	I-15 NB Ramps and Ontario Ave	68.3	69.4	1.1	No
Temescal Canyon Road	El Cerrito Rd and Tom Barnes St	71.4	72.2	0.8	No
Tom Barnes	Tuscany St and Temescal Canyon Rd	66.1	67.7	1.6	No
Temescal Canyon Road	Tom Barnes Street and Cajalco Rd	70.5	71.4	0.9	No
Cajalco Road	I-15 NB Ramps and Temescal Canyon Rd	72.4	73.6	1.3	No

[1] Source: Project Traffic study prepared by LL&G Engineers, 2019

3.2 Conclusions

No noise sensitive land uses are proposed on the project site; therefore, no impacts from the adjacent roadways are anticipated. Mitigation measures are not necessary to meet the City standards.

The project does not directly or cumulatively create a noise level increase of more than 3 dBA CNEL on any roadway segment. Therefore, the proposed project's direct contributions to off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses.

4.0 CONSTRUCTION NOISE

4.1 Construction Noise Levels

Construction noise represents a short-term impact on the ambient noise levels. Noise generated by construction equipment includes haul trucks, water trucks, graders, dozers, loaders and scrapers can reach relatively high levels. Grading activities typically represent one of the highest potential sources for noise impacts. The most effective method of controlling construction noise is through local control of construction hours and by limiting the hours of construction to normal weekday working hours.

The U.S. Environmental Protection Agency (U.S. EPA) has compiled data regarding the noise generating characteristics of specific types of construction equipment. Noise levels generated by heavy construction equipment can range from 60 dBA to in excess of 100 dBA when measured at 50 feet. However, these noise levels diminish rapidly with distance from the construction site at a rate of approximately 6 dBA per doubling of distance. For example, a noise level of 75 dBA measured at 50 feet from the noise source to the receptor would be reduced to 69 dBA at 100 feet from the source to the receptor and reduced to 63 dBA at 200 feet from the source.

The Project site will be mass graded in one phase using the grading equipment identified in Table 4-1 below. The equipment is anticipated to be spread out over the entire site; some equipment may be operating at or near the property line while the rest of the equipment may be located over 800-feet from the same property line. This would result in an acoustical center for the grading operation at approximately 400-feet to the nearest property line.

Table 4-1: Construction Noise Levels

Construction Equipment	Quantity	Source Level @ 50-Feet (dBA)[1]	Duty Cycle (Hours/Day)	Cumulative Noise Level @ 50-Feet (dBA)
Scraper	4	8	75	81.0
Compactor	2	8	75	78.0
Water Truck	2	8	70	73.0
Motor Grader	2	8	73	76.0
Loader	2	8	72	75.0
Dozer	2	8	75	78.0
Cranes	2	8	78	81.0
			Cumulative Levels @ 50 Feet (dBA)	86.7

[1] Source: U.S. EPA 1971, U.S. DOT, 1995 and Empirical Data

4.2 Conclusions

Construction noise is of short-term duration and will not present any long-term impacts on the project site or the surrounding area. The most effective method of controlling construction noise is through local control of construction hours determined by the City. The City of Corona Development Code Section 17.84.040 limits construction activity to the hours of 7:00 a.m. to 8:00 p.m. from Monday to Saturday and from 10:00 a.m. to 6:00 p.m. on Sundays and federal holidays.

The following recommended noise reductions measures should be employed to reduce the construction noise levels at the nearby residential areas. The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise sources and noise sensitive receptors nearest the project site. The construction contractor shall limit haul truck deliveries to the same hours specified for construction equipment. To the extent feasible, haul routes shall not pass sensitive land uses or residential dwellings. Homeowners shall be notified via postings on the construction site prior to the construction commencing.

5.0 OPERATIONAL NOISE

5.1 Operational Noise Levels

City Municipal Code Section 17.84.040 set sound level limits at property lines. Unless a variance has been applied for and granted pursuant to this chapter, it is unlawful for any person to cause or allow the creation of any noise to the extent that the one-hour average sound level, at any point on or beyond the boundaries of the property on which the sound is produced, exceeds the applicable limits set forth below in Table 1. Residential land uses exist to the north and therefore, the Project must meet a 55 dBA Leq daytime standard and a property line standard of 50 dBA Leq nighttime standard the residential property line.

This section examines the potential stationary noise source impacts associated with the development and operation of the proposed project. The project site is designed for light industrial/business park uses and therefore may utilize noise-producing equipment including rooftop mechanical ventilation units and truck activities. The cumulative noise level from all equipment will vary at the property line depending on the location and orientation of the equipment, the amount of each type of equipment and the size of each type of equipment.

It is important to note that the following projected noise levels assume the worst-case noise environment with the trucks and roof-top mounted mechanical ventilation all occurring at the same time. In reality, these noise levels will vary throughout the day. The mechanical ventilation may operate during nighttime hours and the delivery trucks may arrive during evening or morning hours.

Trucks

The project is proposed with loading docks and truck parking spaces. Operational noise levels from trucks will be required to meet the 75 dBA standard at the industrial use property lines surrounding the project. The nearest noise sensitive residential land use exists over 800-feet to the north and are shielded by the proposed building. Therefore, no impacts are anticipated at the residential uses. The trucks utilizing these parking spaces and loading docks consist of regular trucks. Regular trucks create a noise level of 67 dBA at 23 feet. With roughly 66 available loading docks and approximately 60 trailer spaces a maximum number of 126 trucks may be on site. Not all the trucks will be operating while onsite, most will be parked. It is anticipated that as many as up to 18 trucks per hour may operate (enter or exit the site). As can be seen on the site plans, the trucks are shielded by the proposed building(s).

A truck will take approximately 5 minutes to drive in the site and position itself into a parking or loading bay. Based on the fact that trucks are not allowed to idle for more than 5 minutes within the State of California, it's assumed that each trip would not exceed 5

minutes or 10 minutes per round trip. Conservatively, no reduction was taken for the reduced operational time for the trucks. The noise level reductions due to the buildings is anticipated to reduce noise by about 20 decibels due to the locations of the noise sources and the height of the buildings. To be conservative, based on the truck movements, only a 10 decibel reduction was accounted for in the reductions.

As can be seen in Table 5-1, assuming all the trucks are operating for the full hour on site at the same time the noise levels would be below the 50 dBA nighttime thresholds at the nearest residential property lines to the north located 800 feet from Building 1 and 390 feet from Buildings 2 and 3 as can be seen in Figure 5-A below. Please refer to the project site plans for more details. Therefore, the truck activities are in compliance with the City's noise standards an no mitigation or impacts are anticipated.

Table 5-1: Truck Activity Noise Levels

Noise Level @ 23 Feet (dBA)	Quantity	Cumulative Noise Level (dBA)	Average Distance to Property Line (Feet)	Noise Reduction due to distance (dBA)	Noise Reduction for Buildings (dBA)	Resultant Property Line Noise Level (dBA)
67	18	79.6	390	-24.6	-10	45.0

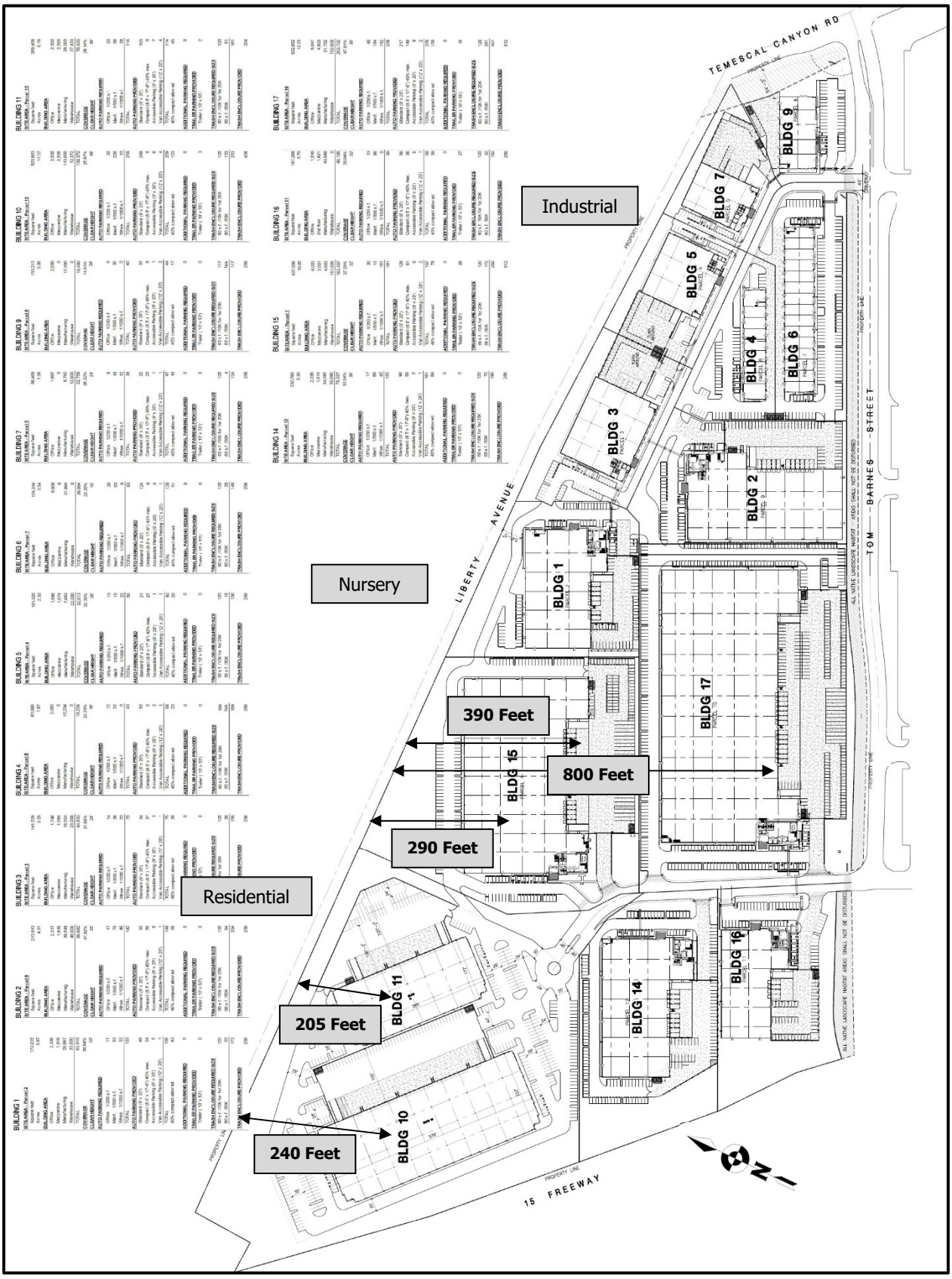
Roof-top Mechanical Ventilation Units

Rooftop mechanical ventilation units (HVAC) will be installed on the proposed buildings. Typically, mechanical equipment (HVAC) noise is 70-80 dBA at a distance of 3 feet from 3-ton to 10-ton units. The smaller buildings will have less units and smaller units. The larger buildings will have the larger sized units and number of units. Based on the site plans, the larger proposed buildings could have as many as ten (10) temperature control units (HVAC) located on the roof.

To determine the noise levels associated with the HVAC units on the northern buildings, the higher noise level of 80 dBA at 3 feet for each anticipated HVAC unit was utilized and as many as ten HVAC units would be in close proximity to each other and would operate at the same time. Based on the separation of each building and the separation of the HVAC units, cumulative noise levels from as many as ten HVAC units would be considered worst-case.

To predict the worst-case future noise environment, continuous reference noise levels were used to represent the mechanical ventilation system. Even though the mechanical ventilation system will cycle on and off throughout the day, this approach presents the worst-case noise condition.

Figure 5-A: Average Stationary Noise Sources



HVAC units would be included on the roof of the proposed buildings and would be shielded by a mechanical screen and/or the roof parapet, which would further reduce the noise levels by 5 decibels or more. The HVAC units would be spread out on the roof of the buildings with an average distance of 205 feet from Building 11 to the nearest residential property lines to the north and 240 feet from Building 10 and 290 feet from Building 15 as can be seen in Figure 5-A above. Please refer to the project site plans for more details. As can be seen in Table 5-2, the HVAC units will comply with the City's nighttime 50 dBA Leq noise standards at the shortest average distance of 205 feet and no mitigation or impacts are anticipated.

Table 5-2: HVAC Noise Levels

Noise Level @ 3 Feet (dBA)	Quantity	Cumulative Noise Level (dBA)	Average Distance to Property Line (Feet)	Noise Reduction due to distance (dBA)	Noise Reduction for Shielding (dBA)	Resultant Property Line Noise Level (dBA)
80	10	90.0	205	-36.7	-5	48.3

Cumulative Noise

The cumulative operational noise level, by summing the truck activities (45.0 dBA) and roof-top HVAC units (48.3 dBA) would result in an overall noise level of 50.0 dBA. It should be noted: this is conservative, since not all the HVAC units and trucks will be operating at the same time. Therefore, no cumulative offsite noise impact would result from project operations.

5.2 Conclusions

The project will meet the 50 dBA Leq nighttime standard at its property lines per the City standards. No impacts are anticipated and no mitigation is required.