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2018 Mr. Eric Kwon
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Subject: Air Quality, Greenhouse Gas, and Construction Noise Analysis Report for a Multi-Unit Residential Building Development at 355 South Kingsley Drive in Los Angeles, CA

Dear Mr. Kwon:

Yorke Engineering, LLC (Yorke) is pleased to provide this letter Air Quality (AQ), Greenhouse Gas (GHG), and Noise Report. This technical report includes CalEEMod emissions estimates, criteria pollutant analysis, and GHG analysis for the proposed residential development at 355 South Kingsley Drive in Los Angeles, CA. The Noise Analysis includes background on noise analyses in general, applicable regulations / policies for this location, as well as background and construction noise level assessment for the proposed facility. These evaluations can support a Categorical Exemption or a Mitigated Negative Declaration (MND) from the City under the California Environmental Quality Act (CEQA). Notwithstanding possible temporary construction noise impacts near the project site, it will also show that long-term operational noise impacts for the residential development are below local thresholds.

PROJECT DESCRIPTION

The project site is located within the South Coast Air Basin (SCAB) and the jurisdiction of the South Coast Air Quality Management District (SCAQMD, or District). The project site is a 7,372-square foot parcel that contains an old 2,900 square foot house that will be demolished. The project site is located between South Western Avenue and Normandie Avenue, one block south of West 3rd Street. KSK design is proposing to develop a new 5-story, 20-unit multi-family residential building with basement and ground-level parking at 355 South Kingsley Drive in Los Angeles, CA (the City). The finished grade elevation for the site will be relatively close to the existing grade. However, the export of soil will be needed for the construction of the subterranean parking garage and may involve site remediation work by a qualified geotechnical contractor. The total planned area for this development is approximately 31,898 square feet with 19,636 square feet of residential area, 9,376 square feet (21 spaces) of enclosed parking on the basement and ground levels, 1,086 square feet of hardscape, and 1,800 square feet of landscaping.

ASSUMPTIONS

The following basic assumptions were used in developing the emission and noise level estimates for the proposed project using the California Emissions Estimator Model® (CalEEMod):

- CalEEMod defaults were applied to all phases of the project, unless specified in the assumptions.
- Some project design features including size of some building features were defined by the Applicant or Architectural Drawings and replaced some CalEEMod default settings.
- The size of the existing home to be demolished, was provided by the Applicant.
- Construction site watering for fugitive dust control was set to three times daily.
- Energy efficiency and water conservation measures generally required by codes are implemented.
- It was assumed that building coatings (e.g. primer, paint, window coatings etc.) will be contain no more than 100 g/L Volatile Organic Chemicals (VOCs).
- CalEEMod construction timelines are generally accurate, unless otherwise stated.
- There will be no hearths (fireplaces) in the apartment units.
- Localized significance calculations for operational particulate matter (PM) comprising mainly fugitive road dust caused by resident and customer traffic were performed using the modeled emissions for 2 miles per trip. This means that localized impacts account for any driving within a 1-mile radius of the proposed project, i.e., arriving and departing residents and customers.
- The Default equipment from CalEEMod for each construction phase, is representative of actual construction equipment used during construction.
- For the construction noise analysis, U.S. Department of Transportation (DOT) equipment categories were correlated with CalEEMod equipment categories as applicable. Notably "forklifts", which did not have a clear classification, were assumed to be the same noise level as a "backhoe (with loader)".
- For the daytime construction noise analysis, neighbors were assumed to be inside their homes, and the geometric average distance was assumed to be the center of the development property to the center of the nearest neighbor's homes.
- Construction activities will not occur outside of normal daytime working hours.
- Non-Traffic urban ambient noise was assumed to be 40 dBA.

LIST OF TABLES

The project analyses and results are summarized in the following tables:

AIR QUALITY AND GREENHOUSE GAS IMPACTS ANALYSES

The Air Quality Section of Appendix G of the California Environmental Quality Act (CEQA) Guidelines (Environmental Checklist Form) contains air quality and GHG significance criteria. Where applicable, quantitative significance criteria established by the local air quality management district (AQMD) or air pollution control district (APCD) may be relied upon to make significance determinations based on mass emissions of criteria pollutants and GHGs, as determined in this report.

Project Emissions Estimation

The construction and operation analysis was performed using CalEEMod® (California Emissions Estimation Model, version 2016.3.2), the official statewide land use computer model designed to provide a uniform platform for estimating potential criteria pollutant and GHG emissions associated with both construction and operations of land use projects under CEQA. The model quantifies direct emissions from construction and operations (including vehicle use), as well as indirect emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use. The mobile source emission factors used in the model – published by the California Air Resources Board (CARB) – include the Pavley standards and Low Carbon Fuel standards. The model also identifies project design features, regulatory measures, and mitigation measures to reduce criteria pollutant and GHG emissions along with calculating the benefits achieved from the selected measures. CalEEMod was developed by the California Air Pollution Control Officers Association (CAPCOA) in collaboration with the SCAQMD, the Bay Area Air Quality Management District (BAAQMD), the San Joaquin Valley Air Pollution Control District (SJVAPCD), and other California air districts. Default land use data (e.g., emission factors, trip lengths, meteorology, source inventory, etc.) were provided by the various California air districts to account for local requirements and conditions. As the official assessment methodology

for land use projects in California, CalEEMod is relied upon herein for construction and operational emissions quantification, which forms the basis for the impact analysis.

Based on information received from the Applicant, land use data used for CalEEMod input is presented in Table 1. The SCAQMD quantitative significance thresholds shown in Table 2 were used to evaluate project emissions impacts (SCAQMD 2015).

Table 1: Land Use Data for CalEEMod Input – 355 South Kingsley Drive

Project Element	Land Use Type	Land Use Subtype	Unit Amount	Size Metric	Lot Acreage (footprint)	Square Feet (est.)	Est. Pop.
Apartments +Other Residential	Residential	Apartments Mid Rise	20	Residential Units	0.103	19,636	48
Parking 1st floor and basement	Parking	Enclosed Parking with Elevator	9.38	1000	0.000	9,376	0
Other paved surfaces	Parking	Other Asphalt Surfaces	1.09	1000	0.025	1,086	0
Landscaping	Parking	Other Non-Asphalt Surfaces	1.80	1000	0.041	1,800	0
Project Site (est.)					**0.169**	**31,898**	48

Source: Applicant 2018, CalEEMod version 2016.3.2, Google Earth measurements

Notes:

Zip Code: 90020

Utility: LADWP

Climate Zone: 11

Source Receptor Area: 2 - Los Angeles

Per Drawings

All land use areas per preliminary drawings

Table 2: SCAQMD CEQA Thresholds of Significance

Pollutant	Project Construction lbs/day	Project Operation lbs/day
ROG (VOC)	75	55
NO_X	100	55
CO	550	550
SO_X	150	150
PM_{10}	150	150
$PM_{2.5}$	55	55
24-hour $PM_{2.5}$ Increment	10.4 µg/m^3	2.5 µg/m^3
24-hour PM_{10} Increment	10.4 µg/m^3	2.5 µg/m^3
Annual PM_{10} Increment	1.0 µg/m^3 annual average	
1-hour NO_2 Increment	0.18 ppm (state)	
Annual NO_2 Increment	0.03 ppm (state) & 0.0534 ppm (federal)	
1-hour SO_2 Increment	0.25 ppm (state) & 0.075 ppm (federal – 99th percentile)	
24-hour SO_2 Increment	0.04 ppm (state)	
24-hour Sulfate Increment	25 ug/m^3 (state)	
1-hour CO Increment	20 ppm (state) & 35 ppm (federal)	
8-hour CO Increment	9.0 ppm (state/federal)	
Toxic Air Contaminants (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥10 in 1 million	
	Cancer Burden >0.5 excess cancer cases (in areas ≥1 in 1 million)	
	Chronic & Acute Hazard Index ≥1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to Rule 402	
Greenhouse Gases	10,000 MT/yr CO_2e for industrial facilities	
	3,000 MT/yr CO_2e for land use projects (draft proposal)	

Source: SCAQMD 2015

Criteria Pollutants from Project Construction

A project's construction phase produces many types of emissions, but PM_{10} (including $PM_{2.5}$) in fugitive dust and diesel engine exhaust are the pollutants of greatest concern. Fugitive dust emissions can result from a variety of construction activities, including excavation, grading, demolition, vehicle travel on paved and unpaved surfaces, and vehicle exhaust. Construction-related emissions can cause substantial increases in localized concentrations of PM_{10}, as well as affecting PM_{10} compliance with ambient air quality standards on a regional basis. Particulate emissions from construction activities can lead to adverse health effects as well as nuisance concerns such as reduced visibility and soiling of exposed surfaces. The use of diesel-powered construction equipment emits ozone precursors oxides of nitrogen (NO_x) and reactive organic gases (ROG), and diesel particulate matter (DPM), the latter being a composite of toxic air contaminants (TACs) containing a variety of hazardous substances. Large construction projects

using multiple large earthmoving equipment are evaluated to determine if operations may exceed the District's daily threshold for NO_x emissions and could temporarily expose area residents to hazardous levels of DPM. Use of architectural coatings and other materials associated with finishing buildings may also emit ROG and TACs. CEQA significance thresholds address the impacts of construction activity emissions on local and regional air quality. Thresholds are also provided for other potential impacts related to project construction, such as odors and TACs.

The SCAQMD's approach to CEQA analyses of fugitive dust impacts is to require implementation of effective and comprehensive dust control measures rather than to require detailed quantification of emissions. PM_{10} emitted during construction can vary greatly depending on the level of activity, the specific operations taking place, the equipment being operated, local soils, weather conditions, and other factors, making quantification difficult. Despite this variability in emissions, experience has shown that there are several feasible control measures that can be reasonably implemented to significantly reduce fugitive dust emissions from construction. For larger projects, the SCAQMD has determined that compliance with an approved fugitive dust control plan comprising Best Management Practices (BMPs), primarily through frequent water application, constitutes sufficient mitigation to reduce PM_{10} impacts to a level considered less than significant.

Criteria Pollutants from Project Operation

The term "project operations" refers to the full range of activities that can or may generate criteria pollutant, GHG, and TAC emissions when the project is functioning in its intended use. For projects, such as office parks, shopping centers, apartment buildings, residential subdivisions, and other indirect sources, motor vehicles traveling to and from the project represents the primary source of air pollutant emissions. For industrial projects and some commercial projects, equipment operation and manufacturing processes, i.e., permitted stationary sources, can be of greatest concern from an emissions standpoint. CEQA significance thresholds address the impacts of operational emission sources on local and regional air quality. Thresholds are also provided for other potential impacts related to project operations, such as odors.

Results of Criteria Pollutant Emissions Analyses

Table 3 shows unmitigated and mitigated criteria pollutant construction emissions and evaluates mitigated emissions against SCAQMD significance thresholds.

Table 4 shows unmitigated and mitigated criteria pollutant operational emissions and evaluates mitigated emissions against SCAQMD significance thresholds.

As shown in Tables 3 and 4, mass emissions of criteria pollutants from construction and operation are below applicable SCAQMD significance thresholds, i.e., Less Than Significant (LTS).

Table 3: Construction Emissions Summary and Significance Evaluation

Criteria Pollutants	Unmitigated lbs/day	Mitigated lbs/day	Threshold lbs/day	Significance
ROG (VOC)	25.5	25.5	75	LTS
NO_X	49.1	49.1	100	LTS
CO	16.9	16.9	550	LTS
SO_X	0.1	0.1	150	LTS
Total PM_{10}	3.9	3.3	150	LTS
Total $PM_{2.5}$	1.8	1.5	55	LTS

Table 4: Operational Emissions Summary and Significance Evaluation

Criteria Pollutants	Unmitigated lbs/day	Mitigated lbs/day	Threshold lbs/day	Significance
ROG (VOC)	6.0	0.8	55	LTS
NO_X	1.8	1.4	55	LTS
CO	15.7	5.5	550	LTS
SO_X	0.0	0.0	150	LTS
Total PM_{10}	2.5	1.0	150	LTS
Total $PM_{2.5}$	1.8	0.3	55	LTS

Sources: SCAQMD 2015, CalEEMod version 2016.3.2

Notes:

lbs/day are winter or summer maxima for planned land use

Total PM_{10} / $PM_{2.5}$ comprises fugitive dust plus engine exhaust

LTS - Less Than Significant

LTSM - Less Than Significant with Mitigation Incorporated

PS - Potentially Significant

Localized Significance Threshold Analysis

The SCAQMD's Localized Significance Threshold (LST) methodology (2008a) was used to analyze the neighborhood scale impacts of NO_X, CO, PM_{10}, and $PM_{2.5}$ associated with project-specific mass emissions. Introduced in 2003, the LST methodology was revised in 2008 to include the $PM_{2.5}$ significance threshold methodology and update the LST mass rate lookup tables for the new 1-hour NO_2 standard.

For determining localized air quality impacts from small projects in a defined geographic source-receptor area (SRA), the LST methodology provides mass emission rate lookup tables for 1-acre, 2-acre, and 5-acre parcels by SRA. The tabulated LSTs represent the maximum mass emissions from a project that will not cause or contribute to an exceedance of state or national ambient air quality standards (CAAQS or NAAQS) for the above pollutants and were developed based on

ambient concentrations of these pollutants for each SRA in the South Coast Air Basin. (SCAQMD 2008a)

For most land use projects, the highest daily emission rates occur during the site preparation and grading phases of construction – due to the use of heavy earthmoving equipment. For this reason, a construction LST analysis was performed.

Since land use operational emissions – mainly from associated traffic – are dispersed over a wide area, localized impacts from project operation are substantially lower than during project construction. However, since there is traffic associated with this project an Operational LST analysis was also performed. For the purposes of this analysis the last 1 mile of any trip to the proposed project site and the first 1 mile of any trip from the proposed project site were used to find the local effect of mobile sources.

The proposed project site is approximately 0.17 acres, located in Source-Receptor Area (SRA) Zone 2 – Los Angeles. The peak daily soil disturbance occurs during the site preparation phase and equates to a maximum soil disturbance of less than 1 acre on any given day. Thus, the 1-acre (the smallest category) screening lookup tables were used to evaluate NO_x, CO, PM_{10}, and $PM_{2.5}$ impacts on nearby receptors. The closest sensitive receptor was located less than 25 meters away so in the LST tables of Appendix C, 25 meters was used. (SCAQMD 2008a)

Results of Localized Significance Threshold Analysis

The LST results provided in Tables 5 and 6 show that on-site emissions from construction and operations meet the LST passing criteria at the nearest receptors (25 meters). Thus, impacts would be less than significant.

Table 5: Construction Localized Significance Threshold Evaluation

Criteria Pollutants	Mitigated lbs/day	Threshold lbs/day	Percent of Threshold	Result
NO_X	49.1	103	48%	Pass
CO	16.9	562	3%	Pass
PM_{10}	3.3	4	84%	Pass
$PM_{2.5}$	1.5	3	51%	Pass

Sources: SCAQMD 2015, CalEEMod version 2016.3.2

Notes:

Source Receptor Area: 2 - Los Angeles

< 1-acre active area, 25 meters to receptor

Table 6: Operations Localized Significance Threshold Evaluation

Criteria Pollutants	Mitigated lbs/day	Threshold lbs/day	Percent of Threshold	Result
NO_X	1.4	103	1%	Pass
CO	5.5	562	1%	Pass
PM_{10}	0.2	1	22%	Pass
$PM_{2.5}$	0.1	1	7%	Pass

Sources SCAQMD 2015, CalEEMod version 2016.3.2

Notes:

Source Receptor Area: 2 - Los Angeles

< 1-acre active area, 25 meters to receptor

Operational PM impacts estimated within 1-mile radius of project site (over 90% road dust)

Greenhouse Gas Emissions from Construction and Operation

Greenhouse gases – primarily carbon dioxide (CO_2), methane (CH_4), and nitrous (N_2O) oxide, collectively reported as carbon dioxide equivalents (CO_2e) – are directly emitted from stationary source combustion of natural gas in equipment such as water heaters, boilers, process heaters, and furnaces. GHGs are also emitted from mobile sources such as on-road vehicles and off-road construction equipment burning fuels such as gasoline, diesel, biodiesel, propane, or natural gas (compressed or liquefied). Indirect GHG emissions result from electric power generated elsewhere (i.e., power plants) used to operate process equipment, lighting, and utilities at a facility. Also, included in the indirect GHG quantification is electric power used to pump the water supply (e.g., aqueducts, wells, pipelines) and disposal and decomposition of municipal waste in landfills. (CARB 2008)

California's Building Energy Efficiency Standards are updated on an approximately three-year cycle. The 2016 standards improved upon the 2013 standards for new construction of, and additions and alterations to, residential, commercial, and industrial buildings. The 2016 standards went into effect on January 1, 2017 (CEC 2017).

Since the Title 24 standards require energy conservation features in new construction (e.g., high-efficiency lighting, high-efficiency heating, ventilating, and air-conditioning (HVAC) systems, thermal insulation, double-glazed windows, water conserving plumbing fixtures, etc.), they indirectly regulate and reduce GHG emissions.

Using CalEEMod, direct on-site and off-site GHG emissions were estimated for construction and operation, and indirect off-site GHG emissions were estimated to account for electric power used by the proposed project, water conveyance, and solid waste disposal.

Results of Greenhouse Gas Emissions Analyses

The SCAQMD officially adopted an industrial facility mass emissions threshold of 10,000 metric tons (MT) CO_2e per year (SCAQMD 2015) and has proposed a residential/commercial mass emissions threshold of 3,000 metric tons (MT) CO_2e per year. (SCAQMD 2008b)

Table 7 shows unmitigated and mitigated GHG emissions and evaluates mitigated emissions against SCAQMD significance thresholds. Operational mitigation measures incorporate typical code-required energy and water conservation features. Off-site traffic impacts are included in these emissions estimates, along with construction emissions amortized over 30 years.

As shown in Table 7, mitigated GHG emissions are below the proposed GHG significance threshold for land use projects, i.e., Less Than Significant (LTS).

Table 7: Greenhouse Gas Emissions Summary and Significance Evaluation

Greenhouse Gases	Unmitigated	Mitigated	Threshold	Significance
	MT/yr	MT/yr	MT/yr	
CO_2	220	213	—	—
CH_4	0.17	0.16	—	—
N_2O	0	0	—	—
CO_2e	224	218	3,000	LTS

Sources: SCAQMD 2008, CalEEMod version 2016.3.2

Notes:

Comprises annual operational emissions plus construction emissions amortized over 30 years

LTS - Less Than Significant

LTSM - Less Than Significant with Mitigation Incorporated

PS - Potentially Significant

NOISE IMPACT ANALYSIS

Noise Analysis Methodology

The screening-level noise analysis for Project construction was based on methodology developed by the U.S. Department of Transportation Federal Highway Administration (DOT FHWA) at the John A. Volpe National Transportation Systems Center and other technical references consistent with CalEEMod™ outputs (equipment utilization). The DOT FHWA methodology uses actual noise measurement data collected during the Boston "Big Dig" project (1991-2006) as reference levels for a wide variety of construction equipment in common use, such as on the proposed Project. Noise impacts were evaluated against community noise standards contained in the City or County General Plan or other state or federal agency as applicable to the vicinity of the Project site. The noise study did not include field measurements of ambient noise in the vicinity of the Project site.

For this Project, the noise element of the L.A. CEQA Thresholds Guide contained applicable evaluation criteria.

During construction activities, the Project would generate noise due to operation of off-road equipment, portable equipment, and vehicles at or near the Project site. Screening-level Project-generated noise is evaluated in relation to established thresholds of significance. If applicable, the same methods are used to determine noise impacts on the nearest sensitive receptors. No significant increase in traffic is expected due to this relatively small project. No strong sources of vibrations are planned to be used during construction activities.

The FHWA noise model provides relatively conservative predictions because it does not account for site-specific geometry, dimensions of nearby structures, and local environmental conditions that can affect sound transmission, reflection, and attenuation. As a result, actual measured sound levels at receptors may vary somewhat from predictions, typically lower. Additionally, the impacts of noise upon receptors (persons) are subjective because of differences in individual sensitivities and perceptions.

Since the Project is near several urban streets, the incremental effect of Project operation (possible slightly increased traffic) would not be quantifiable against existing traffic noise (background) in the Project vicinity (i.e., less than significant impact). Also, since no airport is closer than 2 miles from the Project site, evaluation of aircraft noise upon the Project is not required.

Environmental Setting

Noise Descriptors

Noise is typically described as any unwanted or objectionable sound. Sound is technically described in terms of the loudness (amplitude) and frequency (pitch) of the sound. The standard unit of measurement of the loudness of sound is the decibel (dB). Because the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity, the A-weighted decibel scale (dBA). Table 8 lists common sources of sound and their intensities in dBA.

Table 8: Typical Sound Level Characteristics

Pressure N/m^2	Level dB	Sound Level Characteristic
2000	160	Rocket Launch
600	150	Military Jet Plane Takeoff
200	140	Threshold of Pain
60	130	Commercial Jet Plane Takeoff
20	120	Industrial Chipper or Punch Press
6	110	Loud Automobile Horn
2	100	Passing Diesel Truck
0.6	90	Factory - Heavy Manufacturing
0.2	80	Factory - Light Manufacturing
0.06	70	Open Floor Office - Cubicles
0.02	60	Conversational Speech
0.006	50	Private Office - Walled
0.002	40	Residence in Daytime
0.0006	30	Bedroom at Night
0.0002	20	Recording or Broadcasting Studio
0.00006	10	Threshold of Good Hearing - Adult
0.00002	0	Threshold of Excellent Hearing - Child

Sources: Broch 1971, Plog 1988

Notes:

Reference Level $P_0 = 0.00002\ N/m^2 = 0.0002\ \mu bar$

N/m^2 = Newtons per square meter (the Newton is the unit of force derived in the metric system); it is equal to the amount of net force required to accelerate a mass of one kilogram at a rate of one meter per second per second ($1\ kg \cdot 1\ m/s^2$).

In most situations, a 3-dBA change in sound pressure is considered a "just-detectable" difference. A 5-dBA change (either louder or quieter) is readily noticeable, and 10-dBA change is a doubling (if louder) or halving (if quieter) of the subjective loudness. Sound from a small localized source (a "point" source) radiates uniformly outward as it travels away from the source in a spherical pattern. The sound level attenuates (drops off) at a rate of 6 dBA for each doubling of the distance.

The duration of noise and the time period at which it occurs are important factors in determining the impact of noise on sensitive receptors. A single number called the equivalent continuous noise level (L_{eq}) may be used to describe sound that is changing in level. It is also used to describe the acoustic range of the noise source being measured, which is accomplished through the maximum L_{eq} (L_{max}) and minimum L_{eq} (L_{min}) indicators.

In determining the daily measure of community noise, it is important to account for the difference in human response to daytime and nighttime noise. Noise is more disturbing at night than during the day, and noise indices have been developed to account for the varying duration of noise events over time, as well as community response to them. The Community Noise Equivalent Level (CNEL) adds a 5-dB penalty to the "nighttime" hourly noise levels (HNLs) (i.e., 7:00 p.m. to 10:00

p.m.) and the Day-Night Average Level (L_{dn}) adds a 10-dB penalty to the evening HNLs (Caltrans 2013; FTA 2006).

Vibration Descriptors

Vibration is a unique form of noise because its energy is carried through structures and the earth, whereas noise is carried through the air. Thus, vibration is generally felt rather than heard. Typically, ground borne vibration generated by manmade activities attenuates rapidly as distance from the source of the vibration increases. Actual human and structural response to different vibration levels is influenced by a combination of factors, including soil type, distance between the source and receptor, duration, and the number of perceived events.

While not a direct health hazard, the energy transmitted through the ground as vibration may result in structural damage, which may be costly to repair and dangerous in the event of structural failure. To assess the potential for structural damage associated with vibration, the vibratory ground motion in the vicinity of the affected structure is measured in terms of point peak velocity/peak particle velocity (PPV) in the vertical and horizontal directions (vector sum). A freight train passing at 100 feet may cause PPVs of 0.1 inch per second, while a strong earthquake may produce PPVs in the range of 10 inches per second. Minor cosmetic damage to buildings may begin in the range of 0.5 inch per second (Caltrans 2013; FTA 2006).

Existing Noise Environment

The Project site is in the City of Los Angeles, Los Angeles County, in a characteristically urban and densely populated area subject to noise from local traffic on public streets, through traffic on highways, aircraft flyovers, trains, construction, and small power equipment (e.g., lawn mowers, edgers, etc.). Our noise model puts the expected ambient noise from known sources at about 68.7 dBA at the nearest sensitive receptor to the proposed project. This model is based on background traffic noise from South Kingsley Street, West 4th Street, South Harvard Boulevard, and West 3rd Street in combination with an overall 40 dBA urban background noise level.

Sensitive Receptors

Some land uses are generally regarded as being more sensitive to noise than others due to the types of population groups or activities involved. Sensitive population groups include children and the elderly. The City of Los Angeles Noise Element also includes residential areas as noise-sensitive land uses. Other sensitive land uses generally include hospitals, schools, child care facilities, senior facilities, libraries, churches, and parks.

The nearest sensitive receptors to the Project site are multi-tenant residences immediately next-door, approximately 18 meters (59 feet) north of the central construction zone. The next nearest residential receptors are approximately 32 meters (105 feet) north of the central construction zone. The next nearest unobstructed receptor is to the west, approximately 50 meters (164 feet) away. All construction activities would be short-term (i.e., temporary). All construction work is planned to be conducted during daylight hours; no nighttime work is planned to be performed. Upon completion of construction, temporary generation of noise would permanently cease. No significant additional long-term traffic is expected, and therefore no additional Project-related noise is expected over the long-term.

Regulatory Setting

California

The State of California does not promulgate statewide standards for environmental noise but requires each city and county to include a noise element in its general plan [California Government Code Section 65302(f)]. In addition, Title 4 of the CCR has guidelines for evaluating the compatibility of various land uses as a function of community noise exposure. In general, the guidelines require that community noise standards:

- Protect residents from the harmful and annoying effects of exposure to excessive noise;
- Prevent incompatible land uses from encroaching upon existing or programmed land uses likely to create significant noise impacts; and
- Encourage the application of state-of-the-art land use planning methodologies in the area of managing and minimizing potential noise conflicts.

Construction vibration is regulated at the state level in accordance with standards established by the *Transportation and Construction-Induced Vibration Guidance Manual* issued by Caltrans in 2004. Continuous sources include the use of vibratory compaction equipment and other construction equipment that creates vibration other than in single events. Transient sources create a single isolated vibration event, such as blasting. Thresholds for continuous sources are 0.5 and 0.1 inch per second PPV for structural damage and annoyance, respectively. Thresholds for transient sources are 1.0 and 0.9 PPV for structural damage and annoyance, respectively (Caltrans 2013).

City of Los Angeles CEQA Threshold Guides - Noise

The noise element of the L.A. CEQA Thresholds Guide clearly states that noise impacts for a construction project would be considered potentially significant if noise is increased by 10 dBA for 10 or less days in a 3-month period, and 5 dBA for any noise created for more than 10 days in a 3-month period.

The Operational Section of the L.A. CEQA Thresholds Guide also very clearly states that operational noise can usually be considered insignificant if the project does not introduce any stationary noise sources that will be heard beyond the property line, does not provide 75 or more dwelling units, does not exceed 100,000 square feet of non-residential space, and does not have the potential to create 1,000 additional daily vehicle trips.

Results

Use of off-road equipment, on-road vehicles, and portable equipment would generate noise due to engine mechanicals, engine exhaust, driveline mechanicals, shaft-driven devices and accessories, hydraulics operation, ground friction and displacement, and gravity drops (dumping, unloading). Since no intense percussive actions (strikes, impacts) would occur during the site work, no strong vibrations are planned to be generated that could affect nearby structures.

Types of equipment (FHWA 2006) to be used during the Project and noise-emitting characteristics (i.e., usage factors, reference dBA, and percussive source) are shown in Table 9 consistent with CalEEMod outputs (Attachment 1).

The Project is expected to require less than one year of planned work activities comprising six construction phases:

1) Demolition
2) Site Preparation;
3) Grading;
4) Building construction;
5) Paving; and
6) Architectural coating.

Deviations from this schedule would not affect the noise analysis because noise does not persist or accumulate in the environment.

Table 9: FHWA Noise Reference Levels and Usage Factors

CalEEMod Construction Detail			FHWA Equipment Type	Ref.	Usage Factor	Ref. Level
Phase Name	Equipment Description	Qty.			percent	dBA
Demolition (1)	Concrete/ Industrial Saws	1	Concrete Saw	1	20%	90
	Rubber Tired Dozers	1	Tractor [or Skidder] (rubber tire)	1	40%	84
	Tractors/ Loaders/ Backhoes	2	Backhoe (with loader)	2	40%	80
Site Preparation (2)	Graders	1	Grader	1	40%	85
	Tractors/ Loaders/ Backhoes	1	Backhoe (with loader)	1	40%	80
Grading (3)	Concrete/ Industrial Saws	1	Concrete Saw	1	20%	90
	Rubber Tired Dozers	1	Tractor [or Skidder] (rubber tire)	1	40%	84
	Tractors/ Loaders/ Backhoes	2	Backhoe (with loader)	1	40%	80
Building Construction (4)	Cranes	1	Crane	1	16%	85
	Forklifts	2	Backhoe (with loader)	1	40%	80
	Tractors/ Loaders/ Backhoes	2	Backhoe (with loader)	1	40%	80
Paving (5)	Cement and Mortar Mixers	4	Drum Mixer	1	50%	80
	Pavers	1	Paver (asphalt)	1	50%	85
	Rollers	1	Roller	1	20%	85
	Tractors/ Loaders/ Backhoes	1	Backhoe (with loader)	1	40%	80
Architectural Coating (6)	Air Compressors	1	Compressor (air)	1	40%	80

Source: CalEEMod v2013.2.2, FHWA 2006

Table 10 shows a comparison of: screening-level estimated daytime exterior noise impacts for peak construction activities at designated receptors, and the CEQA thresholds outlined in the Noise section of the L.A. CEQA Threshold Guides, using FHWA attenuation algorithms. If the threshold is not exceeded, then this project should be considered acceptable.

Table 10: Estimated Noise Impacts – Next Nearest Neighbor (N)

Construction Phases	Normal Acceptance Criteria			
	Modeled Noise Level (L_{eq} dBA)	CalEEMod Duration (days)	City of LA CEQA Threshold (CNEL dBA)	Exceeds Threshold (Yes/No)?
Background	68.0	-	-	No
Demolition	72.8	10	78.0	No
Site Preparation	70.0	1	73.0	No
Grading	71.7	10	73.0	No
Building Construction	70.4	100	73.0	No
Paving	72.2	5	73.0	No
Architectural Coating	68.6	5	73.0	No
Long-Term: No Impact	68.0	-	-	No

Sources: CalEEMod v2013.2.2, FHWA 2006, Broch 1971, Plog 1988, LA CEQA Threshold Guide 2006
All Noise is daytime noise

Table 11: Estimated Noise Impacts – Next Nearest Unobstructed Neighbor (W)

Construction Phases	Normal Acceptance Criteria			
	Modeled Noise Level (L_{eq} dBA)	CalEEMod Duration (days)	City of LA CEQA Threshold (CNEL dBA)	Exceeds Threshold (Yes/No)?
Background	71.0	-	-	No
Demolition	72.5	10	81.0	No
Site Preparation	71.5	1	76.0	No
Grading	72.0	10	76.0	No
Building Construction	71.6	100	76.0	No
Paving	72.2	5	76.0	No
Architectural Coating	71.1	5	76.0	No
Long-Term: No Impact	71.0	-	-	No

Sources: CalEEMod v2013.2.2, FHWA 2006, Broch 1971, Plog 1988, LA CEQA Threshold Guide 2006
All noise is daytime noise

Discussion

Under the CEQA Guidelines, this project is allowed up to 10 days during which noise can be up to 10 dBA higher than ambient noise levels. The project is expected to increase noise by less than 5 dBA for the next nearest neighbors and the next nearest unobstructed neighbors. For these neighbors, the project in compliance with the L.A. CEQA Threshold Guidelines. Additionally, all construction noise is expected to take place during the least sensitive times of day, i.e., business and school hours.

For all neighbors, operational noise is expected to be less than significant. No significant sources of stationary noise are expected to be implemented such as engines, or machinery. As evident in Table 1, the project will not add more than 75 residential units or 100,000 square feet of non-residential space. In addition, CalEEMod estimates that the number of trips per day is not expected to exceed approximately 200 vehicle trips per day, which is well below the 1,000-trip threshold.

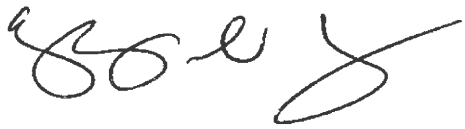
Given the dimensions of the small parcel and its close proximity to the residence to the north, the immediate neighbors may be temporarily exposed to a potentially significant impact from construction noise during the daytime, i.e., a 7-10 dBA increase above ambient for more than 10 days in three months. In particular, demolition and earthmoving equipment used during the early stages of construction could generate significant levels of noise. However, in this case, this impact is limited to the one residential building immediately north of the construction site. Additionally, a majority of the time (106 out of 123 planned construction days) the impact is 5 dBA or less, and the remaining 17 days will have impacts of 6.6 dBA or less. Construction activities occur for more than 6 months, however, there are less than 20 days when the noise level is predicted to be in the 7-10 dBA range at the nearest residence. In addition, the difference between 6.6 dBA and 5 dBA should be nearly imperceptible (i.e., less than 3 dBA difference), and, if necessary, the project operators would be willing to implement mitigation measures as described in the following paragraph. Other residences in the area, including all residences farther north, and the nearest residences east, west, and south, are expected to experience less than significant impacts per Tables 10 and 11 above.

This study predicts a less than significant impact in accordance with the L.A. CEQA Thresholds Guide for all non-immediate neighbors. For lessening daytime construction noise impacts on the immediate next-door neighbors, a temporary sound-attenuating wall and/or curtain at ground-level may need to be installed as a noise mitigation measure during construction. However, a sound wall should only be needed if actual daytime sound measurements conducted by qualified personnel using calibrated equipment at nearby receptors indicate an exceedance of the applicable evaluation criteria without mitigation.

CONCLUSION

Thank you very much for the opportunity to be of assistance to the KSK Design. Should you have any questions, please contact me at (805) 293-7867 (direct) or Sean Gildea (949) 201-0605.

Sincerely,



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Enclosures/Attachments:

1. CalEEMod Outputs

AIR QUALITY AND GHG REFERENCES

California Air Resources Board (CARB). 2008. Climate Change Scoping Plan. Website (http://www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm) accessed February 20, 2018.

California Department of Resources Recycling and Recovery (CalRecycle). 2016. Solid Waste Cleanup Program Weights and Volumes for Project Estimates. Website (http://www.calrecycle.ca.gov/swfacilities/cdi/Tools/Calculations.htm) accessed February 19, 2018.

California Emissions Estimation Model (CalEEMod™). 2016. Version 2016.3.2. Website (http://www.caleemod.com/) accessed February 21, 2018.

California Energy Commission (CEC). 2017. Building Energy Efficiency Program. Website (http://www.energy.ca.gov/title24/) accessed February 19, 2018.

South Coast Air Quality Management District (SCAQMD). 2015. Air Quality Significance Thresholds. Website (http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2) accessed February 16, 2018.

South Coast Air Quality Management District (SCAQMD). 2008a. Localized Significance Threshold Methodology. Website (http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/final-lst-methodology-document.pdf?sfvrsn=2) accessed February 16, 2018.

South Coast Air Quality Management District (SCAQMD). 2008b. Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans. Website (http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgboardsynopsis.pdf?sfvrsn=2) accessed February 19, 2018.

NOISE REFERENCES

Broch, Jens. 1971. Acoustic Noise Measurements. Bruel & Kjaer.

California Department of Transportation (Caltrans). 2013. Transportation and Construction Vibration Guidance Manual. Website (http://www.dot.ca.gov/hq/env/noise/pub/TCVGM_Sep13_FINAL.pdf) accessed March 30, 2018.

City of Los Angeles. 2006. L.A. CEQA Thresholds Guide. Website (http://environmentla.org/programs/Thresholds/I-Noise.pdf) accessed September 6, 2018.

City of Los Angeles. 1999. City of Los Angeles General Plan. Website (https://planning.lacity.org/cwd/gnlpln/noiseElt.pdf) accessed July 3, 2018.

Plog, Barbara, Ed. 1988. Fundamentals of Industrial Hygiene – 3rd Edition, National Safety Council.

U.S. Department of Transportation – Federal Highway Administration (FHWA). 2006. Roadway Construction Noise Model User's Guide. Website (https://www.fhwa.dot.gov/Environment/noise/construction_noise/rcnm/) accessed March 30, 2018.

U.S. Department of Transportation – Federal Transit Authority (FTA). 2006. Transit Noise and Vibration Impact Assessment. Website (https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_Noise_and_Vibration_Manual.pdf) accessed March 30, 2018.