Fontana Citrus Industrial Building

Noise and Vibration Impact Assessment Report

July 2023

CEQA Lead Agency:

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Planning Department
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List of Acronyms, Abbreviations, and Symbols	
Acronym / Abbreviation	**Full Phrase or Description**
APN	Assessor's Parcel Number
CalEEMod	California Emission Estimator Model
CALGreen	California Green Building Standards Code
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
D	Distance
dB	Decibel (unweighted)
dBA	Decibels, A-Weighted
DNL / L_{dn}	Day-Night Noise Level
FHWA	Federal Highway Works Administration
FTA	Federal Transit Administration
HUD	U.S. Department of Housing and Urban Development
HVAC	Heating, Ventilation, and Air Conditioning
Hz	Hertz
I	Interstate
In/sec	Inches per SOITCecond
kH	Kilohertz
L_{eq}	Average / Equivalent Noise Level
L_{max}	Maximum Noise Level
L_{min}	Minimum Noise Level
LT	Long-term
MPH	Miles per Hour
OITC	Outside-Indoor Transmission Class
OPR	Office of Planning and Research
Pa	Pascals
PCE	Passenger Car Equivalents
PRC	Public Resources Code
PPV	Peak Particle Velocity (inches/second)
R	Receiver
RCNM	Roadway Construction Noise Model
ROW	Right-of-Way

List of Acronyms, Abbreviations, and Symbols	
Acronym / Abbreviation	**Full Phrase or Description**
Report	Noise and Vibration Impact Analysis Report (this document)
ST	Short-term
STC	Sound Transmission Class
UF	Usage Factor
VdB	Velocity Decibels
§	Section
%	Percent

EXECUTIVE SUMMARY

This Noise Impact Analysis Report (**"Report"**) evaluates and documents noise levels associated with the construction and operation of the proposed Fontana Citrus Industrial Building Project (proposed **"Project"**) located at the northeast corner of the intersection of Citrus Avenue and Slover Avenue and at the southwest corner of the intersection of Oleander Avenue and Boyle Avenue, in the in the south-central part of the City of Fontana, in San Bernardino County.

This Report is intended to assist the California Environmental Quality Act ("**CEQA**") Lead Agency (City of Fontana, **"City"**) with its review of the proposed Project's potential noise and vibration impacts in compliance with the State CEQA Statutes and Guidelines, particularly in respect to the noise and vibration issues identified in Appendix G of the State CEQA Guidelines.

S.1 PROPOSED PROJECT DESCRIPTION

CHIPT Fontana Citrus Avenue, L.P. is proposing to develop the proposed Project, which would consist of consolidating 15 parcels into 1 parcel, demolishing 25 small existing structures, and constructing a new industrial building with approximately 360,500 square feet of gross building space (the **"Building"**). The building would be all-electric design. The approximately 16.12-acre rectangular Project site is bound by Boyle Avenue to the north, Slover Avenue and existing commercial development (an Arco fuel service station) to the south, existing non-conforming residential development to the east, and Citrus Avenue and existing commercial development (the same Arco fuel service station) to the west. The Project site is approximately 485 feet (0.9 miles) south of a Union Pacific Railroad ("**UPRR**") line and 575 feet (0.11 miles) south of Interstate 10 (I-10).

The building would include 55 truck docks located mainly at the southern portion of the site, with additional docks located at the western portion of the site. Truck access would be provided along three driveways on the southern side of the site and one driveway in the northwestern corner of the site. Truck movements would generally occur along the southern side of the site and potentially from the northwestern truck dock to the southern docks via an internal driveway. Parking space for commuter vehicles (e.g., cars and pick-up trucks) would be present on the western and eastern perimeters of the proposed warehouse.

The proposed Project would involve construction and operational activities that would generate noise from construction equipment, on- and off-site vehicle and truck trips, truck dock loading and unloading activities (including cargo handling equipment use), and heating, ventilation, and air conditioning ("**HVAC"**) equipment. Construction activities are anticipated to last approximately 10 months and begin in early 2024. The building could operate 24-hours per day, 7 days per week.

S.2 POTENTIAL CONSTRUCTION NOISE AND VIBRATION IMPACTS

The proposed Project's construction noise and vibration levels were estimated using the Federal Highway Administration's Roadway Construction Noise Model (**"RCNM"**), Version 1.1. The RCNM is a computer program that uses empirical data and sound propagation principles to predict noise levels associated with a variety of construction equipment and operations. The equipment assumptions used in this Report are based on, and consistent with, the California Emissions Estimator Model (**"CalEEMod"**) construction phasing, equipment usage, and operating schedules used to evaluate the proposed Project's potential construction air quality impacts (MIG, 2023).

The RCNM was used to model noise levels at 12 different receptor locations that could be impacted by the project's construction noise levels. Construction noise was modeled to reflect both worst-case and typical construction noise levels. As estimated using the RCNM, the modeled worst-case construction noise level at any residential receptor location would be 94.4 dBA $L_{eq.}$ This would occur at the residence located east of the Project site, along Oleander Avenue, during the Project's grading phase. During typical construction periods, construction noise levels would not exceed 80 dBA L_{eq} at any residence near the Project site.

The City's Municipal Code does not establish numeric standards for construction noise levels (e.g., 90 dBA L_{eq}) but does limit construction activities to the hours of 7 AM to 6 PM during weekdays and 8 AM to 5 PM on Saturday (Municipal code Section 18-63). Potential construction noise level increases at residential land uses, when compared to the existing ambient noise environment, could be up to approximately 9 to 38 dBA higher than existing conditions, depending on the construction activities undertaken. This temporary increase is considered substantial and has the potential to annoy sensitive residential land uses. MIG, therefore, recommends Mitigation Measure NOI-1 be incorporated into the Project, which would reduce construction noise levels by 5 dBA to 10 dBA at individual receptor locations during the daytime. The implementation of Mitigation NOI-1 would lower overall Project construction noise levels, reduce the potential for Project construction noise levels to surprise or annoy residential receptors, and reduce the potential for Project construction noise levels to interfere with normal use of residential properties. The implementation of Mitigation Measure NOI-1 would, therefore, render the proposed Project's potential construction noise levels less than significant with mitigation.

Vibrational construction activities could take place as close as approximately 30 feet from residential buildings and 35 feet from an adjacent commercial building. The use of a vibratory roller at these distances would have the potential to generate worst-case ground-borne vibration levels of approximately 0.172 inches per second peak particle velocity (in/sec PPV) and 0.145 in/sec PPV, respectively, which would be strongly perceptible per Caltrans' criteria. At no point during construction would Project equipment generate ground-borne vibration that has the potential to damage the structural integrity of any buildings near the Project site. In addition, as vibration-generating equipment (e.g., vibratory roller) moves away from the property line, vibration levels would decrease. At approximately 375 feet, the vibratory roller would produce vibrations that would not be perceptible at nearby commercial or residential building locations. Although construction-related vibrations could be perceptible, they would not be excessive for several reasons. First, potential worst-case construction vibrations would be intermittent, lasting only a few hours each day at any individual receptor. Second, potential worst-case construction vibrations would occur only when equipment operates directly adjacent to a receptor, which is not anticipated to last more than several days in total. Third, all construction activity would occur during the daytime, when human beings are less sensitive to vibrations, and would not interfere with evening or nighttime use of residences. Finally, potential construction vibrations would not result in physical damage to any building or structure because estimated worst-case vibration levels would be below Caltrans' guidelines for damage to sensitive residential structures and commercial structures. For these reasons, the proposed Project would not result in excessive ground-borne vibration levels. This impact would be less than significant.

S.3 POTENTIAL OPERATIONAL NOISE IMPACTS

Once constructed, the proposed Project would generate noise from on-site and off-site activities. On-site activities would include vehicle travel and parking, truck travel, maneuvering, and idling, heating, ventilation, and air conditioning (HVAC) equipment operations, and other miscellaneous activities such as refuse collection, small, non-diesel-powered pallet jacks and lifts, and landscaping equipment. Off-site

noise activities would include vehicle travel on Slover Avenue, Oleander Avenue, and Boyle Avenue used to access the site.

The proposed Project could generate worst-case combined hourly noise levels of approximately 55.2 dBA L_{eq} at adjacent residential property lines. These noise levels would not exceed the City's exterior noise standard for residential land uses (70 dBA L_{eq} daytime / 65 dBA L_{eq} nighttime), nor would the Project result in interior noise levels at any residential or commercial building that exceed City standards (45 dB for residential zoning districts). This impact would be less than significant.

The proposed Project would have a limited potential to generate operational noise levels that exceed City standards because the proposed Project's design and estimated noise levels would be consistent with City's General Plan Noise and Safety policies pertaining to noise. At worst-case, the proposed Project is estimated to generate hourly noise levels of 55.2 dBA. The proposed Project's truck dock bays would be inset along the southern perimeter of the warehouse building, behind 10-foot-tall concrete screening walls. The warehouse building and concrete screening walls would visually screen and shield noise from the loading docks from impacting adjacent residential property lines.

The proposed Project would generate off-site vehicle trips that would be distributed onto Slover Avenue, Oleander Avenue, and Boyle Avenue and potentially increase noise levels along travel routes. Caltrans considers a doubling of total traffic volume to result in a three (3) dBA increase in traffic-related noise levels. The proposed Project would not double traffic volumes on any local roadway and, therefore, would not result in a substantial off-site increase in noise levels.

The proposed Project would not result in excessive operational vibration levels because it does not involve the use of large or vibration-inducing equipment near off-site structures during operations.

S.4 AIRPORT NOISE-RELATED IMPACTS

The proposed Project is located approximately 7.4 miles east of the nearest runway associated with the Ontario International Airport. The proposed Project is not located in a noise impact zone associated with Ontario International Airport. Therefore, the proposed Project would not expose people working in the Project area to excessive airport-related noise levels.

S.5 OTHER NOISE AND VIBRATION EFFECTS

The California Supreme Court in *California Building Industry Association v. Bay Area Air Quality Management District*, 62 Cal.4th 369 (2015) ruled that CEQA review is focused on a project's impact on the environment "and not the environment's impact on the project." Per this ruling, a Lead Agency is not required to analyze how existing conditions might impact a project's future users or residents; however, a Lead Agency may elect to disclose information relevant to a project even if it not is considered an impact under CEQA. Furthermore, the City's General Plan Noise Element set noise standards for receiving land uses which require evaluation for consistency and compliance even if such evaluation is not required by CEQA.

The City's General Plan Noise and Safety does not establish noise and land use compatibility standards for industrial land uses because such land uses are not considered to be noise-sensitive uses. As described in Section 4.2.1, the 24-hour CNEL value at LT-1 was determined to be 67.7 dBA CNEL (see Table 4 1). This CNEL value is within the normally acceptable noise level (75 CNEL) identified for industrial land uses in the Governor's Office of Planning and Research (OPR) most recently published General Plan

Guidelines (OPR, 2017). The proposed Project, therefore, would not be exposed to unacceptable exterior noise levels that exceed City General Plan noise and land use compatibility standards.

The proposed building's southern façade would be subjected to noise levels of approximately 70.4 dBA CNEL. Standard construction techniques and materials for new commercial/industrial buildings are commonly accepted to provide a minimum exterior to interior noise attenuation (i.e., reduction) of 30 to 32 dBA with all windows and doors closed, which would result in interior noise levels of approximately 41 dBA L_{eq} for occupied rooms fronting Slover Avenue. Thus, with standard construction techniques, the proposed Project would satisfy interior building code noise requirements.

S.6 RECOMMENDED MITIGATION MEASURES

To reduce the potential for Project construction activities to result in a substantial temporary increase in ambient noise levels in the vicinity of the Project site that could annoy adjacent residential receptors and/or interfere with the normal use and enjoyment of residential properties, MIG recommends Mitigation Measure NOI-1 be incorporated into the Project.

Mitigation Measure NOI-1: Reduce Construction Noise Levels. To reduce potential noise levels associated with construction of the proposed Project, the Applicant and/or its designated contractor, contractor's representatives, or other appropriate personnel shall:

1) *Notify Adjacent Land Use of Planned Construction Activities.* This notice shall be provided at least two weeks prior to the start of any construction activities, describe the noise control measures to be implemented by the Project, and include the name and phone number of a designated contact for the Applicant and the City of Fontana responsible for handling construction-related noise complaints (per action #5 below). This notice shall be provided to the owner/occupants of all occupied properties within 250 feet of the Project site.
2) *Restrict work hours/equipment noise.* All construction-related work activities, including material deliveries, shall be subject to the requirements of City Municipal Code Section 18-63. Construction activities, including deliveries, shall only occur during the hours of 7:00 AM to 6:00 PM on weekdays and 8:00 AM to 5:00 PM on Saturdays. The Applicant and/or its contractor shall post a sign at all entrances to the construction site informing contractors, subcontractors, construction workers, etc. of this requirement.
3) *Construction equipment selection, use, and noise control measures*. The following measures shall apply during construction activities:
    a) Contractors shall use the smallest size equipment capable of safely completing work activities.
    b) Construction staging shall occur as far away from the adjacent residential properties as possible.
    c) The Applicant and/or his contractor shall connect to existing electrical service at the site to avoid the use of stationary power generators. This measure shall be subject to the approval of the local electric utility. If electric service is denied, the Applicant shall ensure actions 3a, 3b, and 3d are implemented.
    d) All stationary noise-generating equipment such as pumps, compressors, and welding machines shall be shielded and located as far from residential land uses as possible given site and active work constraints. Shielding may consist of a three- or four-sided enclosure

provided the structure/enclosure breaks the line of sight between the equipment and the receptor and provided for proper ventilation and equipment operation.

e) Heavy equipment engines shall be equipped with standard noise suppression devices such as mufflers, engine covers, and engine/mechanical isolators, mounts, and be maintained in accordance with manufacturer's recommendations during active construction activities.

f) Pneumatic tools shall include a noise suppression device on the compressed air exhaust.

g) No radios or other amplified sound devices shall be audible beyond the property line of the construction site.

4) *Install Construction Noise Barrier.* During all demolition, site preparation, grading, trenching, and structure foundation work (e.g., excavation, pad pour, etc.), the Applicant shall install and maintain a physical noise barrier along the eastern perimeter of the site. The noise barrier shall extend to a height of eight (8) feet above grade. Potential barrier options capable of reducing construction noise levels could include, but are not limited to:

a) A plywood or other barrier installed at-grade (or mounted to structures located at-grade, such as a K-Rail), and consisting of a solid material (i.e., free of openings or gaps other than weep holes) that has a minimum rated transmission loss value of 20 dB.

b) Commercially available acoustic panels or other products such as acoustic barrier blankets that have a minimum sound transmission class (STC) or transmission loss value of 20 dB.

c) Any combination of noise barriers and commercial products that have a minimum sound transmission class (STC) or transmission loss value of 20 dB.

The noise barrier may be removed following the completion of building foundation work (i.e., it is not necessary once framing and typical vertical building construction begins provided no other grading, foundation, etc. work is still occurring on-site). Furthermore, the noise barrier shall not be required if the 10-foot-tall perimeter concrete masonry unit wall included in the project's site plan is fully constructed prior to the start of substantial demolition, site preparation, and grading activities at the site (i.e., only clearing and grubbing and grading necessary to access the site and install the perimeter wall may occur).

5) *Prepare a Construction Noise Complaint Plan:* The Applicant shall prepare a Construction Noise Complaint Plan that shall:

a) Identify the name and/or title and contact information (including phone number and email) for a designated Project and City representative responsible for addressing construction-related noise issues.

b) Includes procedures describing how the designated Project representative will receive, respond, and resolve construction noise complaints.

c) At a minimum, upon receipt of a noise complaint, the Project representative shall notify the City contact, identify the noise source generating the complaint, determine the cause of the complaint, and take steps to resolve the complaint.

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1 INTRODUCTION

CHIPT Fontana Citrus Avenue, L.P., (the **"Applicant"**) has applied to the City of Fontana for a design review, general plan amendment, zone change, and tentative parcel map for its proposed Fontana Citrus Industrial Building Project. The proposed Project would be located at the northeast corner of the intersection of Citrus Avenue and Slover Avenue and at the southwest corner of the intersection of Oleander Avenue and Boyle Avenue, in the south-central part of the City, and would include the development of a new industrial building consisting of approximately 360,500 gross square feet of building space with 55 total truck docks.

MIG, Inc. (**"MIG"**) has prepared this Noise and Vibration Impact Analysis Report to evaluate the potential construction and operations-related noise impacts of the proposed Project. MIG has prepared this Report using project-specific information contained in the applicant's submittal to the City for the approvals listed above. Where necessary, MIG has supplemented available information with standardized sources of information, such as model assumptions pertaining to construction equipment activity levels. In general, this Report evaluates the potential "worst-case" conditions associated with the proposed Project's construction and operational noise levels to ensure a conservative (i.e., likely to overestimate) assessment of potential noise and vibration impacts is presented.

This Report is intended for use by the City to assess the potential noise and vibration impacts of the proposed Project in compliance with the California Environmental Quality Act (CEQA; PRC §21000 et seq.) and the State CEQA Guidelines (14 CCR §15000 et seq.), particularly in respect to the noise and vibration issues identified in Appendix G of the State CEQA Guidelines.

1.1 REPORT ORGANIZATION

This Report is organized as follows:

- **Chapter 1, Introduction,** explains the contents of this Report and its intended use.
- **Chapter 2, Project Description**, provides an overview of construction and operational activities associated with the proposed Project.
- **Chapter 3, Noise Fundamentals**, provides pertinent background information on the measurement, propagation, and characterization of noise levels.
- **Chapter 4, Environmental and Regulatory Setting,** describes the existing noise and setting of the proposed Project and provides information on the federal, state, and local regulations that govern the Project setting and potential noise impacts.
- **Chapter 5, CEQA Noise and Vibration Impact Analysis,** identifies the potential operational noise impacts of the proposed Project and evaluates these effects in accordance with Appendix G of the State CEQA Guidelines.
- **Chapter 6, Other Noise and Vibration Effects,** discloses other potential noise and vibration issues, such as incompatible or otherwise adverse existing environmental conditions that may affect the proposed Project and/or the proposed Project's ability to comply with applicable noise or vibration standards.
- **Chapter 7, Report Preparers and References,** list the individuals involved, and the references used, in the preparation of this Report.

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2 PROPOSED PROJECT DESCRIPTION

The following describes the Building and the activities proposed by the Project.

2.1 PROJECT LOCATION

The proposed Project would be located at the northeast corner of the intersection of Citrus Avenue and Slover Avenue and at the southwest corner of the intersection of Oleander Avenue and Boyle Avenue in the south-central part of the City of Fontana, San Bernardino County. The Project site is a partially developed, approximately 16.12-acre (gross), irregularly shaped area that consists of 15 parcels of land (Assessor's Parcel Number (APN) 0251-151-03, 07, -09, -10, -14, -15, -16, -21, -22 and -39 to -44) The site is bound by Boyle Avenue to the north, Slover Avenue and existing commercial development (an Arco fuel service station) to the south, existing non-conforming residential development to the east, and Citrus Avenue and existing commercial development (the same Arco fuel service station) to the west (see Figure 2-1: Aerial View of Project Site).

The Project site is, at closest, approximately 485 feet (0.09 miles) south of a Union Pacific Railroad (UPRR) line and 575 feet (0.1 miles) south of Interstate 10 (I-10).[1]

2.1.1 SITE LAND USE AND ZONING

The City's General Plan primarily designates the site as Light Industrial (I-L); however, a single parcel in the southern portion of the site (APN 251-151-10) is designated Community Commercial (C-C; (City of Fontana, 2022a). The City's Zoning Map also designates the Project site as Light Industrial (M-1) and Community Commercial (C-1; City of Fontana, 2022b). Per the Zoning Map, the Project site is not located within any Specific Plan area or zoning overlay district.

2.1.2 SURROUNDING LAND USES

The proposed Project site is surrounded by a mix of non-conforming residential and light industrial uses to the north (across Boyle Avenue), non-conforming residential uses to the east and commercial uses to the southeast (across Oleander Avenue), commercial, light industrial, educational, and residential land uses to the south (across Slover Avenue), and commercial and residential land uses to the west (primarily across Citrus Avenue).

The proposed Project is located approximately 7.4 miles east of the nearest runway associated with the Ontario International Airport. Based on the City's General Plan, Fontana has no areas identified as having a residential land use designation within the noise impact zones (City of Fontana, 2018; Ontario International Airport – Inter Agency Collaborative, 2011). Airport-related noise is not considered in this Report due to the proximity to the nearest airport.

[1] Unless otherwise indicated, reported distances are measured between the edge of the listed feature (e.g., road or rail right-of-way, land use property boundary, etc.) and the Project's closest property line.

Figure 2-1: Aerial View of Project Site

Source: MIG 2023

2.2 EXISTING SITE DESCRIPTION AND OPERATIONS

The Project site includes occupied and vacated residences, ancillary residential structures (e.g., garages, sheds, and other structures), and a retail building. The site includes 13 single-family residences and 12 ancillary structures occupying approximately 31,359 feet, a metal building occupying 19,445 square feet, and a plant nursery occupying approximately 950 square feet. A majority of the site is undeveloped and consists of crushed aggregate/ruderal vegetation.

2.3 PROPOSED SITE DEVELOPMENT AND OPERATIONS

The proposed Project would involve the development of a new, all-electric approximately 360,500 square foot industrial building. Approximately 5,500 square feet of the building's total area would consist of office space. The entire approximately 16.12-acre site would be graded; the portions of the site not developed with the Building would either be hardscaped (e.g., parking or sidewalks) or landscaped. The proposed Project site plan is shown in Figure 2-2: Site Plan.

2.3.1 SITE LAYOUT AND BUILDING DESCRIPTION

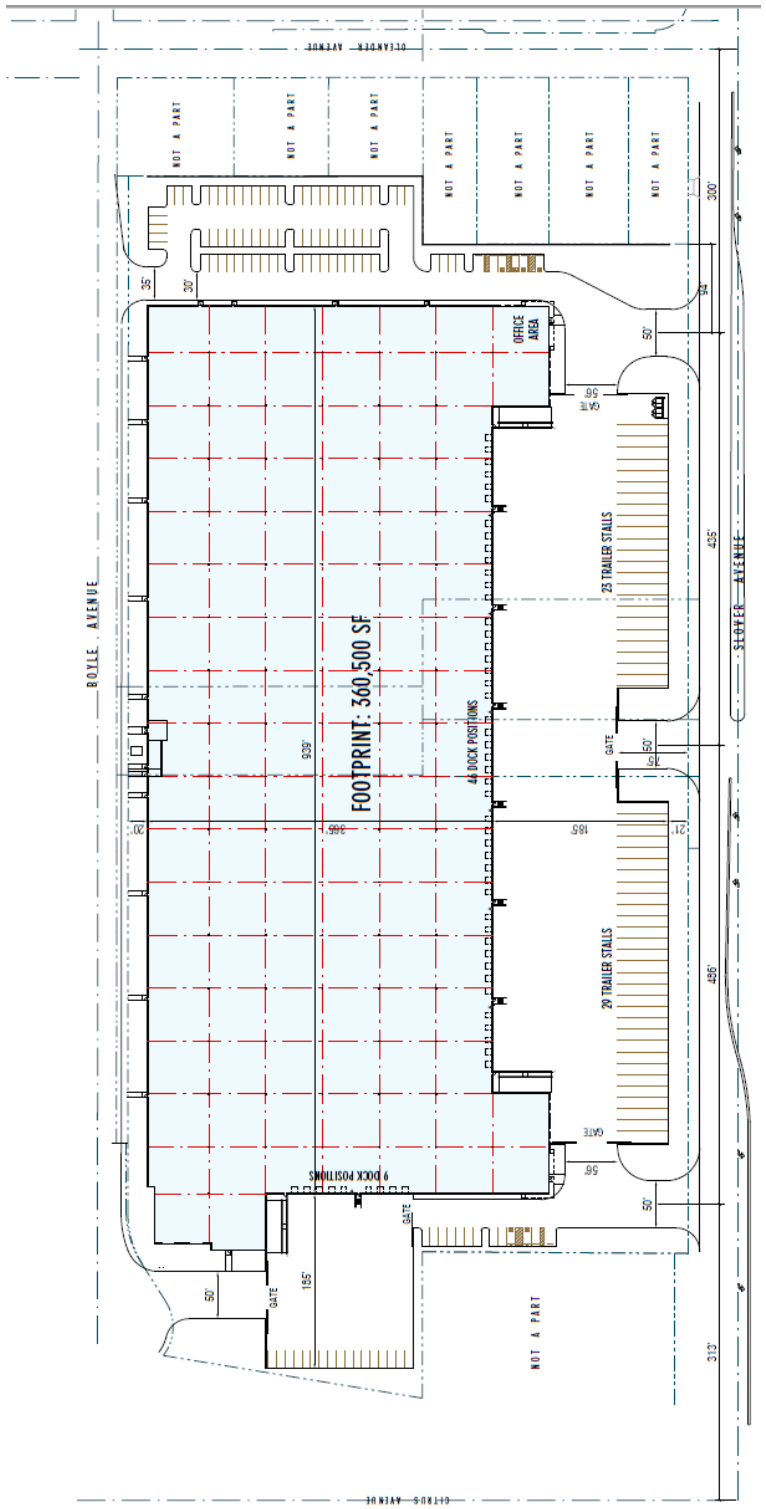
The proposed rectangular building would reach a height of 50 feet above ground level. The long axis of the building, like the site, would be oriented east to west, with the front of the building on the eastern perimeter. The building's office space would be located at the southeastern corner of the building. Employee parking areas would generally be located along the site's western and eastern perimeter.

The Building would include 55 truck docks located mainly at the southern portion of the site, with additional docks located at the western portion of the site. The building's southern façade would include 46 truck docks that would be set back from the site's southern property line by approximately 206 feet and the building's western façade would include 9 truck docks that would be set back from the northwestern property boundary by at least 185 feet. The building's facades would be set back at least 20 feet from the site's northern property line, 146 feet from the site's southern property line, 58 feet from the eastern property line, and 50 feet from the western property line. Consistent with Fontana Industrial Sustainability Ordinance requirements (see Section 4.3.4.1), the Project would include a 10-foot-tall concrete screening wall around the site perimeter. An existing 6-foot-tall concrete wall located along a portion of the shared property line with the Arco fuel station adjacent to the southwest corner of the site would also remain in place.

2.3.2 SITE ACCESS AND PARKING

Access to the site would be provided via five driveways: two along the northern portion of the site on Boyle Avenue and three along the southern portion of the site on Slover Avenue. There would be drive aisles along the western, southern, and eastern portions of the site which would connect these five driveways. The southwest, southcentral, and southeast driveways would be connected by a 56-foot-wide drive aisle while the drive aisles along the western and eastern portions of the site would be as narrow as 30 feet wide. The three southern driveways would provide access to the 46 docks along the building's southern façade. The northwestern driveway would provide access to the 9 docks along the building's western façade and the northeastern driveway would provide access to employee parking in the eastern portion of the site. There would be a total of 110 employee parking spaces, which would be located along the western portion of the site (30 stalls) and the eastern portion of the site (81 stalls). In addition, there would be 52 trailer stalls located along the southern boundary of the site. A median in Slover Avenue would prevent trucks from turning left into the site's southern driveways.

Figure 2-2: Site Plan



Source: RGA, 2023.
Note: The figure is orientated with north to the left of the page.

2.3.3 PROJECT OPERATIONS

The proposed Project is considered a speculative industrial building because tenants/end users have not been identified. In general, industrial warehouse buildings generate noise emissions from sources such as on- and off-site vehicle trips, on-site truck maneuvering, loading, and unloading activities, on-site parking, and other on-site operations. With regards to potential Project operations that could generate emission, this Report assumes:

- **Hours of Operation:** The Project could operate up to 24 hours per day, 7 days per week. Employee shift changes would occur in the morning (approximately 7 to 8 AM), afternoon (approximately 3 PM to 4 PM), and nighttime (approximately 11 PM to 12 AM), with most employees working a daytime shift.
- **Vehicle Trip Generation:** The proposed Project's trip generation potential, as estimated in the Site Access Memorandum prepared for the Project, is summarized in Table 2-1 (Ganddini Group, 2023). As shown in Table 2-1, the proposed Project would result in 505 total vehicle trips per day, including 425 passenger vehicle trips and 80 truck trips. The site memorandum assumed that 95% of inbound trucks would access and exit the site from the southern driveways on Slover Avenue and 5% would access and exit the site from the northwestern driveway on Boyle Avenue.
- **Yard Equipment:** The Project could include the use and operation of up to 43 electric - powered forklifts, pallet jacks, and other material handling equipment and 1 electric-powered yard hostler. This estimate is based on the average equipment usage at high cube warehouses, based on a survey conducted by the South Coast Air Quality Management District (SCAQMD, 2014). This forklifts would primarily operate inside the proposed industrial warehouse building.

Table 2-1: Project Trip Generation Rates

Vehicle Type	AM Peak Hour	PM Peak Hour	Average Daily Trips	
			Number	Percent
Proposed Project				
Passenger Cars	22	32	425	84.2%
Truck Trips				
2-axle	2	0	13	2.6%
3-axle	2	0	17	3.4%
4-axle	4	2	50	9.9%
Subtotal(A)	8	2	80	15.8%
Total Project Trips(A)	***30***	***34***	***505***	***100%***
Existing Conditions				
Total Existing Trips	***11***	***14***	***142***	***100%***
Net Change in Vehicle Trips				
Total Net Change	***19***	***20***	***363***	***100%***

Source: Ganddini, 2023, Table 1 and Table 2
(A) Totals may not equal due to rounding.

2.3.4 PROJECT DESIGN FEATURES THAT REDUCE NOISE POLLUTION

The proposed Project would include design features that reduce exposure to noise generation associated with the Project, and that are necessary to comply with the City of Fontana Municipal Code, Chapter 9, Article V: Industrial Commerce Centers Sustainability Standards. These design features are part of the proposed Project and are reflected in the analyses contained in this Report; they are not mitigation measures. The proposed Project's emission reduction design features are summarized in Table 2-2.

Table 2-2: Summary of Project Design Features that Reduce Noise Pollution

Project Design Feature	Code Section and Requirement	Design Feature Description	Project Design Feature
Landscaping Buffer	9-71.(a) Warehouse buildings larger than 50,000 sq ft but less than 400,000 sq ft shall include a minimum 10-foot-wide landscaping buffer, measured from the property line of all adjacent sensitive receptors. Buffer areas shall include at a minimum a solid decorative wall of at least 10 feet in height, natural ground landscaping, and solid screen buffering trees, unless there is an existing solid block wall.	The Applicant will require a 10-foot- wide landscaping buffer, measured from the property line adjacent sensitive receptors to the east. The buffer includes a minimum10-foot solid wall, natural ground landscaping, and a solid screen of evergreen, drought tolerant buffer trees.	This buffer would limit noise transmission to surrounding adjacent land uses and receptors.
Location of Truck Docks	9-71.(f) Unless impossible, docks and truck entries shall be oriented away from abutting sensitive receptors. As best able, docks, truck entries and drive aisles shall be located away from nearby sensitive receptors.	The Project is designed with docks located to the south and west, away from sensitive receptors to the north and east. The northwest driveway near residential receptors to the north of the Project site across Boyle Avenue would only be used by 5% of truck trips (Ganddini 2023).	The site plan and layout of the drive aisle and docks would minimize noise due to both docks areas facing away from nearby sensitive receptors and being recessed on the western and southern sides of the site, respectively. The trailer stalls area and setbacks of the building from the eastern and southern property lines would also limit noise

			transmission originating from the docks.
Truck Routing and Idling Restriction	9-72.(c, e-i, d) Signs are required for a 3-minute idling limit, on-site circulation patterns, parking, truck routes, and the SCAQMD contact information. A truck routing plan to and from the state highway system based on the City's latest truck route map is required. It will include the facility's operational characteristics and measures for preventing truck queuing, circling, stopping, and parking on public streets.	Facility operators will submit a truck routing plan and install the required signs.	On-site circulation, parking, and signs would help reduce traffic congestion entering into and exiting from the site via Boyle Avenue and Slover Avenue. These features would also reduce truck idling, and therefore would reduce noise generation.
Use of Zero Emission On-site Operations Equipment (forklifts, pallet jacks, etc.)	9-73.(a) On-site motorized operational equipment shall be ZE (zero emission).	The Applicant will require the use of electric forklifts, pallet jacks, and other cargo/material handling equipment as a lease condition / condition of sale.	Electric motorized operational equipment would generally limit noise generation, especially in and around the docks area.

2.4 PROJECT CONSTRUCTION

Construction of the proposed Project is anticipated to begin as early as January 2024 and take approximately 10 months to complete. The development of the approximately 16.12-acre site and the construction of the approximately 360,500 square feet industrial warehouse building would require demolition, site preparation, grading, trenching, building construction, paving, and architectural coating phases/activities. A total of 51,754 square-feet of building space would be demolished. Site grading would require approximately 18,600 cubic yards of cut and 24,000 cubic yards of fill, resulting in the net import of 5,400 cubic yards of soil. The proposed Project is anticipated to require varying types of equipment throughout the different construction phases including, but not limited to, bulldozers, backhoes, loaders, graders, cranes and forklifts. Table 2-3 summarizes the proposed Project's construction phasing and the typical pieces of heavy-duty, off-road construction equipment that would be required during each phase.

Table 2-3: Project Construction Activity, Duration, and Typical Equipment		
Construction Activity	**Duration (Days)(A)**	**Typical Equipment Used(B)**
Demolition	20	Saws, Excavator, Dozer
Site Preparation	10	Dozer, Tractor/Loader/Backhoe
Grading	30	Excavator, Grader, Dozer, Backhoe
Trenching	60	Trencher, Forklift, Tractor/Loader/Backhoe
Building Construction	160	Crane, Forklift, Backhoe
Paving	10	Paver, Paving Equipment, Roller
Architectural Coating	25	Air Compressor

Source: MIG 2023

(A) There would be overlap between the Trenching and Building Construction phases and between the Building Construction, Paving, and Architectural Coating phases.

(B) Days refers to total active workdays in the construction phase, not calendar days.

(C) The typical equipment list does not reflect all equipment that would be used during the construction phase. Not all equipment would operate eight hours per day each workday.

3 NOISE AND VIBRATION FUNDAMENTALS

3.1 DEFINING NOISE

"Sound" is a vibratory disturbance created by a moving or vibrating source and is capable of being detected. For example, airborne sound is the rapid fluctuation of air pressure above and below atmospheric pressure. "Noise" may be defined as unwanted sound that is typically construed as loud, unpleasant, unexpected, or undesired by a specific person or for a specific area.

3.1.1 SOUND PRODUCTION

Sound has three properties: frequency (or pitch), amplitude (or intensity or loudness), and duration. Pitch is the height or depth of a tone or sound and depends on the frequency of the vibrations by which it is produced. Sound frequency is expressed in terms of cycles per second, or Hertz (Hz). Humans generally hear sounds with frequencies between 20 and 20,000 Hz and perceive higher frequency sounds, or high pitch noise, as louder than low-frequency sound or sounds low in pitch. Sound intensity or loudness is a function of the amplitude of the pressure wave generated by a noise source combined with the reception characteristics of the human ear. Atmospheric factors and obstructions between the noise source and receptor also affect the loudness perceived by the receptor.

The frequency, amplitude, and duration of a sound all contribute to the effect on a listener, or receptor, and whether or not the receptor perceives the sound as "noisy" or annoying. Despite the ability to measure sound, human perceptibility is subjective, and the physical response to sound complicates the analysis of its impact on people. People judge the relative magnitude of sound sensation in subjective terms such as "noisiness" or "loudness."

3.1.2 MEASURING SOUND

Sound pressure levels are typically expressed on a logarithmic scale in terms of decibels (dB). A dB is a unit of measurement that indicates the relative amplitude (i.e., intensity or loudness) of a sound, with 0 dB corresponding roughly to the threshold of hearing for the healthy, unimpaired human ear. Since decibels are logarithmic units, an increase of 10 dBs represents a ten-fold increase in acoustic energy, while 20 dBs is 100 times more intense, 30 dBs is 1,000 times more intense, etc. In general, there is a relationship between the subjective noisiness or loudness of a sound and its intensity, with each 10 dB increase in sound level perceived as approximately a doubling of loudness. Due to the logarithmic basis, decibels cannot be directly added or subtracted together using common arithmetic operations:

$$50\ decibels + 50\ decibels\ \neq 100\ decibels$$

Instead, the combined sound level from two or more sources must be combined logarithmically. For example, if one noise source produces a sound power level of 50 dBA, two of the same sources would combine to produce 53 dB as shown below.

$$10 * \ 10\ log\left(10^{\left(\frac{50}{10}\right)} + \ 10^{\left(\frac{50}{10}\right)}\right) = 53\ decibels$$

In general, when one source is 10 dB higher than another source, the quieter source does not add to the sound levels produced by the louder source because the louder source contains ten times more sound energy than the quieter source.

3.1.3 CHARACTERIZING SOUND

Although humans generally can hear sounds with frequencies between 20 and 20,000 Hz most of the sound humans are normally exposed to do not consist of a single frequency, but rather a broad range of frequencies perceived differently by the human ear. In general, humans are most sensitive to the frequency range of 1,000–8,000 Hz and perceive sounds within that range better than sounds of the same amplitude in higher or lower frequencies. Instruments used to measure sound, therefore, include an electrical filter that enables the instrument's detectors to replicate human hearing. This filter known as the "A-weighting" or "A-weighted sound level" filters low and very high frequencies, giving greater weight to the frequencies of sound to which the human ear is typically most sensitive. Most environmental measurements are reported in dBA, meaning decibels on the A-scale. Most environmental measurements are reported in dBA, meaning decibels on the A-scale. A list of common noise sources and their associated A-weighted noise level is provided in Table 3-1. Other weightings include the B-, C-, and D-weighting, but these scales are not commonly used for environmental noise because human annoyance correlates well with the A-weighting and these weighting scales are not incorporated in typical environmental noise descriptors.

Sound levels are usually not steady and vary over time. Therefore, a method for describing either the average character of the sound or the statistical behavior of the variations over a period of time is necessary. The continuous equivalent noise level (L_{eq}) descriptor is used to represent the average character of the sound over a period of time. The L_{eq} represents the level of steady-state noise that would have the same acoustical energy as the sum of the time-varying noise measured over a given time period. L_{eq} is useful for evaluating shorter time periods over the course of a day. The most common L_{eq} averaging period is hourly, but L_{eq} can describe any series of noise events over a given time period.

Variable noise levels are the values that are exceeded for a portion of the measured time period. Thus, the L_{01}, L_{05}, L_{25}, L_{50}, and L_{90} descriptors represent the sound levels exceeded 1%, 5%, 25%, 50%, and 90% of the time the measurement was performed. The L_{90} value usually corresponds to the background sound level at the measurement location.

When considering environmental noise, it is important to account for the different responses people have to daytime and nighttime noise. In general, during the nighttime, background noise levels are generally quieter than during the daytime but also more noticeable because household noise decreases as people begin to retire and sleep. Accordingly, a variety of methods for measuring noise have been developed. The California General Plan Guidelines for Noise Elements identifies the following common metrics for measuring noise (OPR, 2017):

- **L_{dn} or DNL (Day-Night Average Level):** The average equivalent A-weighted sound level during a 24-hour day, divided into a 15-hour daytime period (7:00 AM to 10:00 PM) and a 9-hour nighttime period (10:00 PM to 7:00 AM). A 10 dB "penalty" is added to measure nighttime noise levels when calculating the 24-hour average noise level. For example, a 45-dBA nighttime sound level (e.g., at 2:00 AM) would contribute as much to the overall day-night average as a 55-dBA daytime sound level (e.g., at 7:00 AM).
- **CNEL (Community Noise Equivalent Level):** The CNEL descriptor is similar to DNL, except that it includes an additional 5 dBA penalty for noise events that occur during the evening time period (7:00 PM to 10:00 PM). For example, a 45-dBA evening sound level (e.g., at 8:00 PM) would contribute as much to the overall day-night average as a 50-dBA daytime sound level (e.g. at 8:00 AM).

Table 3-1: Typical Noise Levels		
Common Outdoor Activities	**Noise Level (dBA)**	**Common Indoor Activities**
	110	Rock Band
Jet flyover at 1,000 feet	105	
	100	
Gas lawn mower at 3 feet	95	
	90	
Diesel truck at 50 feet at 50 mph	85	Food blender at 3 feet
	80	Garbage disposal at 3 feet
Noise urban area, daytime	75	
Gas lawnmower, 100 feet	70	Vacuum cleaner at 10 feet
Commercial area	65	Normal speech at 3 feet
Heavy traffic at 300 feet	60	
	55	Large business office
Quiet urban daytime	50	Dishwasher next room
	45	
Quiet urban nighttime	40	Theater, large conference room
Quiet suburban nighttime	35	
	30	Library
Quite rural nighttime	25	Bedroom at night
	20	
	15	Broadcast/recording studio
	10	
	5	
Typical threshold of human hearing	0	Typical threshold of human hearing
Source: Caltrans, 2013		

The artificial penalties imposed during DNL and CNEL calculations are intended to account for a receptor's increased sensitivity to noise levels during quieter nighttime periods. As such, the DNL and CNEL metrics are usually applied when describing longer-term ambient noise levels because they account for all noise sources over an extended period of time and account for the heightened sensitivity of people to noise during the night. In contrast, the L_{eq} metric is usually applied to shorter reference periods where sensitivity is presumed to remain generally the same.

Federal and State agencies have established noise and land use compatibility guidelines that use averaging approaches to noise measurement. The State Department of Aeronautics and the California Commission on Housing and Community Development have adopted the CNEL for evaluating community noise exposure levels.

3.1.4 SOUND PROPAGATION

The energy contained in a sound pressure wave dissipates and is absorbed by the surrounding environment as the sound wave spreads out and travels away from the noise generating source. The strength of the source is often characterized by its "sound power level." Sound power level is independent of the distance a receiver is from the source and is a property of the source alone. Knowing the sound power level of an idealized source and its distance from a receiver, sound pressure level at the receiver point can be calculated based on geometrical spreading and attenuation (noise reduction) as a result of distance and environmental factors, such as ground cover (asphalt vs. grass or trees), atmospheric absorption, and shielding by terrain or barriers.

For an ideal "point" source of sound, such as mechanical equipment, the energy contained in a sound pressure wave dissipates and is absorbed by the surrounding environment as the sound wave spreads out in a spherical pattern and travels away from the point source. Theoretically, the sound level attenuates, or decreases, by 6 dB with each doubling of distance from the point source. In contrast, a "line" source of sound, such as roadway traffic or a rail line, spreads out in a cylindrical pattern and theoretically attenuates by 3 dB with each doubling of distance from the line source; however, the sound level at a receptor location can be modified further by additional factors. The first is the presence of a reflecting plane such as the ground. For hard ground, a reflecting plane typically increases A-weighted sound pressure levels by 3 dB. If some of the reflected sound is absorbed by the surface, this increase will be less than 3 dB. Other factors affecting the predicted sound pressure level are often lumped together into a term called "excess attenuation." Excess attenuation is the amount of additional attenuation that occurs beyond simple spherical or cylindrical spreading. For sound propagation outdoors, there is almost always excess attenuation, producing lower levels than what would be predicted by spherical or cylindrical spreading. Some examples include attenuation by sound absorption in air; attenuation by barriers; attenuation by rain, sleet, snow, or fog; attenuation by grass, shrubbery, and trees; and attenuation from shadow zones created by wind and temperature gradients. Under certain meteorological conditions, like fog and low-level clouds, some of these excess attenuation mechanisms are reduced or eliminated due to noise reflection.

3.1.5 NOISE EFFECTS ON HUMANS

Noise effects on human beings are generally categorized as:

- Subjective effects of annoyance, nuisance, and/or dissatisfaction
- Interference with activities such as speech, sleep, learning, or relaxing
- Physiological effects such as startling and hearing loss

Most environmental noise levels produce subjective or interference effects; physiological effects are usually limited to high noise environments such as industrial manufacturing facilities or airports.

Predicting the subjective and interference effects of noise is difficult due to the wide variation in individual thresholds of annoyance and past experiences with noise; however, an accepted method to determine a person's subjective reaction to a new noise source is to compare it the existing environment without the noise source, or the "ambient" noise environment. In general, the more a new noise source exceeds the ambient noise level, the more likely it is to be considered annoying and to disturb normal activities.

Under controlled conditions in an acoustical laboratory, the trained, healthy human ear is able to discern 1-dB changes in sound levels when exposed to steady, single-frequency ("pure-tone") signals in the mid-frequency (1,000–8,000 Hz) range. In typical noisy environments, changes in noise of 1 to 2 dB are

generally not perceptible. However, it is widely accepted that people can begin to detect sound level increases of 3 dB in typical noisy environments. Further, a 5-dB increase is generally perceived as a distinctly noticeable increase, and a 10-dB increase is generally perceived as a doubling of loudness that would almost certainly cause an adverse response from community noise receptors.

When exposed to high noise levels, humans may suffer hearing damage. Sustained exposure to high noise levels (e.g., 90 dB for hours at a time) can cause gradual hearing loss, which is usually temporary, whereas sudden exposure to a very high noise level (e.g., 130 to 140 dB) can cause sudden and permanent hearing loss. In addition to hearing loss, noise can cause stress in humans and may contribute to stress-related diseases, such as hypertension, anxiety, and heart disease (Caltrans, 2013).

3.1.6 GROUND-BORNE VIBRATION AND NOISE

Vibration is the movement of particles within a medium or object such as the ground or a building. Vibration may be caused by natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or humans (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources are usually characterized as continuous, such as factory machinery, or transient, such as explosions.

As is the case with airborne sound, ground-borne vibrations may be described by amplitude and frequency; however, unlike airborne sound, there is no standard way of measuring and reporting amplitude. Vibration amplitudes can be expressed in terms of velocity (inches per second) or discussed in dB units to compress the range of numbers required to describe vibration. Vibration impacts to buildings are usually discussed in terms of peak particle velocity (PPV) in inches per second (in/sec). PPV represents the maximum instantaneous positive or negative peak of a vibration signal and is most appropriate for evaluating the potential for building damage. Vibration can impact people, structures, and sensitive equipment. The primary concern related to vibration and people is the potential to annoy those working and residing in the area. Vibration with high enough amplitudes can damage structures (such as crack plaster or destroy windows). Ground-borne vibration can also disrupt the use of sensitive medical and scientific instruments, such as electron microscopes. Potential human annoyance associated with ground-borne velocity is typically assessed using velocity decibel (VdB) notation.

Ground-borne noise is noise generated by vibrating building surfaces such as floors, walls, and ceilings that radiate noise inside buildings subjected to an external source of vibration. The vibration level, the acoustic radiation of the vibrating element, and the acoustical absorption of the room are all factors that affect potential ground-borne noise generation.

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4 ENVIRONMENTAL AND REGULATORY SETTING

This chapter provides information on the environmental and regulatory noise setting of the proposed Project.

4.1 PROJECT LOCATION AND SITE DESCRIPTION

The proposed Project would be located on developed light industrial land in the southern part of the City of Fontana. Refer to Section 2.1.2 for a description of the Project site and its surroundings.

4.2 EXISTING NOISE ENVIRONMENT

The City's General Plan Chapter 11 Noise and Safety identifies traffic noise, including traffic on major roadways (e.g., Interstate 10 (I-10) and Interstate 15 (I-15) freeways, portions of SR-210, etc.), airport noise associated with Ontario International Airport, and non-transportation sources including industrial, commercial, and residential activities and equipment as the predominant noise sources in the City (City of Fontana, 2018). The proposed Project is located along Citrus Avenue and Slover Avenue, south of I-10 freeway. The segment of Citrus Avenue north of Jurupa Avenue and Slover Avenue are designated as truck routes by the City (City of Fontana, 2018). The closest air travel facility to the Project site is Ontario International Airport, located approximately 7.4 miles to the west.

4.2.1 AMBIENT NOISE LEVELS AT PROJECT SITE

MIG conducted ambient noise level monitoring at and near the proposed Project site from approximately 11:00 AM on Wednesday, February 5, 2023, to 11:00 AM on Thursday, February 6, 2023 (see Appendix A). The ambient noise levels were digitally measured and stored using one (1) Larson Davis SoundTrack LxT sound level meter that meets American National Standards Institute requirements for a Type 1 integrating sound level meter. The sound meter was calibrated immediately before and after the monitoring period using a reference one kilohertz (1kH) check frequency and 114 dB sound pressure level and found to be operating within normal parameters for sensitivity. Measurements were continuously collected over the sample period in 1-minute intervals. This interval was selected to capture long-term noise events and increases in noise levels above typical background conditions. Ambient noise measurements were also made using one Piccolo-II Integrating Averaging Sound Level Meter that meets the ANSI S1.43 Type 2 requirements for an integrated sound level meter. The sound meter was calibrated immediately before and after the monitoring period using a reference 1kH check frequency and 94 dB sound pressure level and found to be operating within normal parameters for sensitivity. Short-term measurements were periodically collected over sample periods in 1-minute intervals in order to capture short-term noise events and increases in noise levels above background conditions. Weather conditions during the monitoring were generally clear and sunny during the daytime and clear and cool during the nighttime. Temperatures ranged from 50 to 60 degrees Fahrenheit. Winds were generally light and variable and ranged from approximately 5 to 10 miles per hour (mph).

The ambient noise monitoring conducted for this Report included one (1) long-term (LT) and five (5) short-term (ST) measurement at locations selected to:

- Provide direct observations of existing noise sources at and in the vicinity of the proposed Project;
- Measure typical ambient noise levels at and in the vicinity of the proposed Project; and

- Evaluate potential Project noise levels at nearby sensitive receptors (see Section 4.2.1.1).

The ambient noise monitoring locations are described below and shown on Figure 4-1: Ambient Noise Monitoring Locations.

- **LT-1** was in the western portion of the Project site at the northeastern corner of the property line at 16150 Slover Avenue, in the approximate center between Slover Avenue and Boyle Avenue. Ambient noise levels at this location were measured from approximately 11:00 AM on Wednesday, February 5, 2023, to 11:00 AM on Thursday, February 6, 2023. The ambient noise levels measured at LT-1 are representative of the typical noise levels at the project site.
- **ST-1** was along the property line in the northwestern portion of the Project site, at the end of the cul-de-sac along Boyle Avenue. Ambient noise levels at this location were measured from 11:27 AM to 11:47 AM on Wednesday, February 5, 2023. The ambient noise levels measured at ST-1 are representative of the typical daytime noise levels produced at the Project site.
- **ST-2** was at the northeastern corner of the intersection between Boyle Avenue and Oleander Avenue, approximately 170 feet from the northeastern corner of the Project site. Ambient noise levels at this location were measured from 12:00 PM to 12:20 PM on Wednesday, February 5, 2023. The ambient noise levels measured at ST-2 are representative of the typical daily noise exposure levels along Boyle Avenue and Oleander Avenue in the vicinity of the Project.
- **ST-3** was in the northern portion of the site, approximately 35 feet south of (across Boyle Avenue) the residential property line at 16222 Boyle Avenue. Ambient noise levels at this location were measured from 12:36 PM to 12:56 PM on Wednesday, February 5, 2023. The ambient noise levels measured at ST-3 are representative of the typical daytime noise levels produced at the Project site and typical daily noise exposure levels along Boyle Avenue in the vicinity of the Project.
- **ST-4** was adjacent to the residential property at 10424 Oleander Avenue near the eastern portion of the site, approximately 150 feet from the Project's eastern property line. Ambient noise levels at this location were measured from 1:18 PM to 1:38 PM on Wednesday, February 5, 2023. The ambient noise levels measured at ST-4 are representative of the typical daily noise exposure levels along Oleander Avenue in the vicinity of the Project.
- **ST-5** was along the southern portion of the site, approximately 5 feet from the southern property line. Ambient noise levels at this location were measured from 2:00 PM to 2:20 PM on Wednesday, February 5, 2023. The ambient noise levels measured at ST-5 are representative of the typical daytime noise levels produced at the project site.

Figure 4-1: Ambient Noise Monitoring Locations

Based on observations during the monitoring, vehicle traffic on I-10, Slover Avenue, Oleander Avenue, and Boyle Avenue was the predominant noise source near the Project site, with industrial and commercial land use activities and occasional aircraft overflights also contributing to the noise environment. The results of the LT and ST ambient noise monitoring conducted for this Report are summarized in Table 4-1 and Table 4-2, respectively. Refer to Appendix A for detailed ambient noise monitoring results.

Table 4-1: Summary of Measured Long-Term Ambient Noise Levels Near Project Site (dBA)

Day / Site	Total Hours Monitored	L_{min}	L_{max}	Measured Noise Level[A]			
				Daytime (7 AM to 7 PM)	Evening (7 PM to 10 PM)	Nighttime (10 PM to 7 AM)	24-Hour CNEL[B]
Wednesday, February 5, 2023, to Thursday, February 6, 2023							
LT-1	24 hours	47.4	81.8	57.1 – 63.7	57.1 – 59.9	58.1 – 64.5	67.7

Source: MIG (See Appendix A)

(A) Values are the lowest and highest measured hourly L_{eq} values during the listed time period.

(B) CNEL data is presented for a full 24-hour monitoring period (11:00 AM on 02/05/23 to 11:00 AM on 02/06/23).

Table 4-2: Summary of Measured Short-Term Ambient Noise Levels at and near Project Site				
Day / Site	Duration	Measured Noise Level (dBA)		
		L_{min}	L_{max}	L_{eq}
Wednesday, February 5, 2023 (11:27 AM to 11:47 AM)				
ST-1	20 minutes	50.0	70.7	57.5
LT-1	20 minutes	49.3	68.5	57.8
Wednesday, February 5, 2023 (12:00 PM to 12:20 PM)				
ST-2	20 minutes	53.5	70.0	56.9
LT-1	20 minutes	53.1	74.0	59.0
Wednesday, February 5, 2023 (12:36 PM to 12:56 PM)				
ST-3	20 minutes	48.8	79.5	58.0
LT-1	20 minutes	50.9	65.4	57.4
Wednesday, February 5, 2023 (1:18 PM to 1:38 PM)				
ST-4	20 minutes	48.1	87.3	62.3
LT-1	20 minutes	48.8	75.9	58.2
Wednesday, February 5, 2023 (2:00 PM to 2:20 PM)				
ST-5	20 minutes	52.3	90.1	72.3
LT-1	20 minutes	52.1	67.0	58.0
Source: MIG (see Appendix A)				

As shown in Table 4-1 and Table 4-2, the measured ambient noise levels at and near the Project site are consistently above approximately 55 dBA L_{eq} during the daytime, evening, and nighttime. Measured noise levels were higher closer to Slover Avenue (ST-4 and ST-5) than on the interior of the Project site (LT-1) due to higher traffic volumes on this road. The 24-hour noise exposure level at LT-1 was 67.7 dBA CNEL.

4.2.1.1 Discussion of Ambient Noise Levels at an Existing Warehouse/Business Park Use

In addition to collecting ambient noise data at the Project site, MIG has conducted ambient noise level monitoring at an existing, approximately 80,000 square-foot warehouse/business park use to inform potential project noise levels. The existing warehouse was located at 1900 East Alessandro Boulevard in the City of Riverside. The noise monitoring was conducted from approximately 8:30 AM to 3:00 PM on Tuesday, July 28, 2020, following the same procedures described in Section 4.2.1. Measurements were continuously collected over the sample period in 1-minute intervals. This interval was selected to capture short-term noise events and increases in noise levels above typical background conditions. Weather conditions during the monitoring were generally clear and sunny, with temperatures ranging from the low 80's (in the morning) to the high 90's (in the later afternoon). Winds were generally calm. The ambient noise monitoring included two (2) ST measurements at locations selected to:

- Provide direct observations and measurements of existing noise sources at and in the vicinity of the existing 80,000 square foot warehouse; and
- Determine typical ambient noise levels at and in the vicinity of the proposed Project; and

The existing warehouse ambient noise monitoring locations were generally located approximately 90 feet and 385 feet from the site's entrance, approximately 50 feet from drive aisles/maneuvering areas, and approximately 115 feet from building façade/truck dock doors. Based on observations made during the ambient noise monitoring, the noise environment at a warehouse is a function of intermittent site usage, with noise levels increasing during truck unloading and loading activities and returning to background levels when truck docks are not in use. Table 4-3 summarizes the results of the existing warehouse ambient noise monitoring conducted previously by MIG. Refer to Appendix A for detailed ambient noise monitoring results.

Table 4-3: Measured Short-Term Ambient Noise Levels At Typical Warehouse (dBA)

Day / Site	Duration	L_{min}	L_{max}	Measured Noise Level (dBA)					
				L_{eq}	$L_{1.6}$	$L_{8.3}$	L_{25}	L_{50}	L_{90}
Tuesday, July 28, 2020(A)									
WH-1	5.5 Hours	42.9	88.5	62.8	71.0	66.2	62.7	60.2	58.1
WH-2	5.5 Hours	41.9	89.6	59.9	69.4	64.9	58.9	55.1	51.9
Specific Site/Truck Activity Noise Levels at 50 Feet									
Main Engine Idling		60.8	63.2	61.6	63.1	62.9	61.6	61.3	61.1
Main Engine Acceleration		52.7	77.5	67.1	77.1	72.1	66.7	56.9	54.4
Truck Passby (5 to 10 mph)		62.8	72.9	66.7	72.2	70.5	67.5	64.6	63.4
Air Brake Release		63.4	73.8	64.8	70.9	65.1	64.6	63.9	63.6
Two Trucks Maneuvering and Idling (8 minutes)		56.4	79.5	68.2	74.9	71.6	68.7	66.6	63.3

Source: MIG (See Appendix A)

(A) Measurements occurred from 8:30 AM to 3:00 PM. WH-1 was located approximately 385 feet from the gated warehouse entrance and WH-2 was located 90 feet from the gated warehouse entrance. Both sites were situated approximately 50 feet from the main drive aisle providing access to truck loading/unloading docks and approximately 100 feet from the building façade/truck dock doors.

4.2.2 NOISE SENSITIVE RECEPTORS

Noise sensitive land uses and receptors are buildings or areas where unwanted sound or increases in sound may have an adverse effect on people or land uses. The City's General Plan defines noise as unwanted sound, and the Municipal Code defines sensitive noise receptors as any residence including private homes, condominiums, apartments, and living quarters, schools, preschools, daycare centers, in-home daycares, health facilities such as hospitals, long term care facilities, retirement and nursing homes, prisons, and dormitories (City of Fontana, 2018).

Based on the City's General Plan and Municipal Code, the noise sensitive receptors near the proposed Project site include:

- Single-family residences on Boyle Avenue (north of the Project site) and Oleander Avenue (adjacent to the site's eastern property line)
- Single-family residences west of the Project site across Citrus Avenue

4.3 FEDERAL, STATE, AND LOCAL NOISE REGULATIONS

4.3.1 FEDERAL NOISE AND VIBRATION REGULATIONS

There are no federal noise and vibration regulations that directly apply to the proposed Project, but the FTA's 2018 Transit Noise and Vibration Impact Assessment Manual document sets groundborne vibration annoyance criteria for general assessments. The criteria vary by the type of building being subjected to the vibrations, and the overall number of vibration events occurring each day. The City's General Plan references these criteria or evaluating human annoyance response to groundborne vibration (see Section 4.3.4.2).

4.3.2 STATE NOISE AND VIBRATION REGULATIONS

4.3.2.1 California Building Standards Code

The California Building Standards Code is contained in Title 24 of the California Code of Regulations and consists of 11 different parts that set various construction and building requirements. Part 2, California Building Code, Section 1207, Sound Transmission, establishes sound transmission standards for interior walls, partitions, and floor/ceiling assemblies. Specifically, Section 1207.4 establishes that interior noise levels attributable to exterior noise sources shall not exceed 45 dBA DNL or CNEL (as set by the local General Plan) in any habitable room.

The California Green Building Standards (CALGreen) Code is Part 11 to the California Building Standards Code. Chapter 5, Nonresidential Mandatory Standards, Section, establishes additional standards for interior noise levels:

1. Section 5.507.4.1.1 sets forth that buildings exposed to a noise level of 65 dB L_{eq} (1-hour) during any hour of operation shall have exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composting sound transmission class (STC) rating of at least 45 (or an outdoor indoor transmission class (OITC) of 35, with exterior windows of a minimum STC of 40.
2. Section 5.507.4.2 sets forth that wall and roof assemblies for buildings exposed to a 65 dBA L_{eq} pursuant to Section 5.507.4.1.1, shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed 50 dBA L_{eq} in occupied areas during any hour of operation. This requirement shall be documented by preparing an acoustical analysis documenting interior sound levels prepared by personnel approved by the architect or engineer of record.

4.3.3 CALIFORNIA DEPARTMENT OF TRANSPORTATION

Caltrans' Transportation and Construction Vibration Guidance Manual provides a summary of vibration human responses and structural damage criteria that have been reported by researchers, organizations, and governmental agencies (Caltrans, 2020). These thresholds are summarized in Table 4-4 and Table 4-5.

Table 4-4: Vibration Threshold Criteria for Building Damage		
Structural Integrity	**Maximum PPV (in/sec)**	
	Transient	**Continuous**
Historic and some older buildings	0.50	0.12 to 0.2
Older residential structures	0.50	0.30
New residential structures	1.00	0.50
Modern industrial and commercial structures	2.00	0.50
Source: Caltrans, 2020		

Table 4-5: Vibration Threshold Criteria for Human Response		
Human Response	**Maximum PPV (in/sec)**	
	Transient	**Continuous**
Slightly perceptible	0.035	0.012
Distinctly perceptible	0.24	0.035
Strongly perceptible	0.90	0.10
Severe/Disturbing	2.0	0.7 (at 2 Hz) to 0.17 (at 20 Hz)
Very disturbing	--	3.6 (at 2 Hz) to 0.4 (at 20 Hz)
Source: Caltrans, 2020		

4.3.4 LOCAL NOISE REGULATIONS

4.3.4.1 City of Fontana Municipal Code

Municipal Code Chapter 18, Article II, and Chapter 30, Article VII, implement the goals and objectives of the City's General Plan Noise and Safety Element, establishes community-wide noise standards, and regulates excess noise that may be detrimental to citizen's health, safety, welfare, and quality of life. The Municipal Code includes the following standards that would be applicable to the proposed Project:

- Chapter 18, Article II, Section 18-62 (Prohibited noise generally, penalties, remedies) sets forth certain activities are unlawful, including:
    - It shall be unlawful for any person within the city to make, cause, or to continue to make or cause, loud, excessive, impulsive or intrusive sound or noise that annoys or disturbs persons of ordinary sensibilities.
- Section 18-63 (Scope, enumeration of prohibited noises) sets forth unlawful acts that create loud, excessive, impulsive, or intrusive noise that annoys or disturbs persons of ordinary sensibilities including:
    - *Horns signaling devices, etc.* The sounding of any horn or signaling device on any automobile, motorcycle, streetcar or other vehicle on any street or public place of the city, except as a danger warning; the creation by means of any such signaling device of any unreasonably loud, excessive, impulsive or intrusive noise; and the sounding of any such device for an unnecessary and unreasonable period of time; the use of any signaling device except one operated by hand

or electricity; the use of any horn, whistle or other device operated by engine exhaust; and the use of any such signaling device when traffic is for any reason held up. (Sec 18-63.b.1)

- *Exhausts.* The discharge into the open air of the exhaust of any steam engine, stationary internal combustion engine, motorboat or motor vehicle, except through a muffler or other device which will effectively prevent loud, excessive, impulsive or intrusive noises therefrom; provided, however, that the provisions of this section and article do not apply to any raceway, racetrack or drag strip which is being operated in accordance with the provisions of chapter 17, article IX. (Sec 18-63.b.4)
- *Construction or repairing of buildings or structures.* The erection (including excavating), demolition, alteration or repair of any building or structure other than between the hours of 7:00 a.m. and 6:00 p.m. on weekdays and between the hours of 8:00 a.m. and 5:00 p.m. on Saturdays, except in case of urgent necessity in the interest of public health and safety, and then only with a permit from the building inspector, which permit may be granted for a period not to exceed three days or less while the emergency continues and which permit may be renewed for periods of three days or less while the emergency continues. If the building inspector should determine that the public health and safety will not be impaired by the erection, demolition, alteration or repair of any building or structure or the excavation of streets and highways within the hours of 6:00 p.m. and 7:00 a.m., and if he shall further determine that loss or inconvenience would result to any party in interest, he may grant permission for such work to be done on weekdays within the hours of 6:00 p.m. and 7:00 a.m., upon application being made at the time the permit for the work is awarded or during the progress of the work. (Sec 18-63.b.7)
- *Piledrivers, hammers, etc.* The operation between the hours of 6:00 p.m. and 7:00 a.m. of any piledriver, steamshovel, pneumatic hammer, derrick, steam or electric hoist or other appliance, the use of which is attended by loud, excessive, impulsive or intrusive noise. (Sec 18-63.b.10)
- *Blowers.* The operation of any noise-creating blower or power fan or any internal combustion engine other than from the hours of 7:00 a.m. and 6:00 p.m. on a weekday and the hours of 8:00 a.m. and 5:00 p.m. on a Saturday, the operation of which causes noise due to the explosion of operating gases or fluids, unless the noise from such blower or fan is muffled and such engine is equipped with a muffler device sufficient to deaden such noise. (Sec 18-63.b.11)

- Chapter 30 Article VII Industrial Zoning Districts Section 30-543 (Noise and vibration) specifies noise and vibration level performance standards that shall not be exceeded, as measured at the property line of any residentially zone property:
  - The noise level between 7:00 a.m. and 10:00 p.m. shall not exceed 70 db(A).
  - The noise level between 10:00 p.m. and 7:00 a.m. shall not exceed 65 db(A).
  - *Vibration*. No person shall create or cause to be created any activity which causes a vibration which can be felt beyond the property line with or without the aid of an instrument.

4.3.4.2 City of Fontana General Plan

The City's General Plan Noise and Safety Element identifies noise issues within the City and establishes goals and policies to minimize noise conflicts and further public health, safety, and welfare (City of Fontana, 2018). The City's Noise and Safety Element is closely related to the Land Use, Public and Community Services, Circulation and Mobility, and open Space Elements. The following goals and policies from the Noise Element may be applicable to the proposed Project:

- Goal 8: The City of Fontana protects sensitive land uses from excessive noise by diligent planning through 2035.
    - Policy 4: Noise spillover or encroachment from commercial, industrial and educational land uses shall be minimized into adjoining residential neighborhoods or noise-sensitive uses.
- Goal 9: The City of Fontana provides a diverse and efficiently operated ground transportation system that generates the minimum feasible noise on its residents through 2035.
    - Action B: Development that generates increased traffic and subsequent increases in the ambient noise level adjacent to noise-sensitive land uses shall provide appropriate mitigation measures.
- Goal 10: Fontana's residents are protected from the negative effects of "spillover" noise.
    - Policy 1: Residential land uses and areas identified as noise-sensitive shall be protected from excessive noise from non-transportation sources including industrial, commercial, and residential activities and equipment.
    - Action A: Projects located in commercial areas shall not exceed stationary- source noise standards at the property line of proximate residential or commercial uses.
    - Action C: Non-transportation noise shall be considered in land use planning decisions.
    - Action D: Construction shall be performed as quietly as feasible when performed in proximity to residential or other noise sensitive land uses.

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5 NOISE IMPACT ANALYSIS

This chapter evaluates the potential for the proposed Project to result in direct and indirect changes to the existing noise and vibration environment in the vicinity of the Project area. Refer to Chapter 6 for information and disclosures about the existing noise and vibration environment's effect and overall compatibility on the proposed Project.

5.1 THRESHOLDS OF SIGNIFICANCE

In accordance with Appendix G of the State CEQA Guidelines, the proposed Project could result in potentially significant impacts related to noise and vibration if it would:

- Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of the standards established in:
    - City Municipal Code Section 18-62 and Section 18-63 (Prohibited Noise) and Section 30-543 (Industrial Zoning Districts); or
    - General Plan Noise and Safety; or
- Generate excessive ground-borne vibration or ground-borne noise levels in excess of the standards established in:
    - City Municipal Code Section 30-543; or
- Expose people residing or working in the Project area to excessive airport-related noise levels.

5.2 NOISE IMPACT ANALYSIS METHODOLOGY

The construction and operation of the proposed Project would generate noise and vibration. This section describes the Project's noise sources and the methodologies used to estimate potential Project noise and vibration levels.

5.2.1 CONSTRUCTION NOISE

As described in Section 2.3.4 and shown in Table 2-3, the proposed Project would generate construction noise from the following sources:

- Heavy equipment operations throughout the Project area. Some heavy equipment would consist of mobile equipment such as a loader, excavator, etc. that would move around work areas; other equipment would consist of stationary equipment (e.g., air compressors) that would generally operate in a fixed location until work activities are complete. Heavy equipment generates noise from engine operation, mechanical systems and components (e.g., fans, gears, propulsion of wheels or tracks), and other sources such as back-up alarms. Mobile equipment generally operates at different loads, or power outputs, and produce higher or lower noise levels depending on the operating load. Stationary equipment generally operates at a steady power output that produces a constant noise level.
- Vehicle trips, including worker, vendor, and haul truck trips. These trips would occur on the roads that provide access to the Project site, Slover Avenue, Oleander Avenue, and Boyle Avenue.

Since Project-specific construction equipment information is not available at this time, potential construction-related noise impacts can only be evaluated based on the typical construction activities associated with a typical industrial warehousing development project. This Report estimates heavy-duty construction equipment noise levels using the FHWA's Roadway Construction Noise Model (RCNM), Version 1.1. The RCNM is a computer program that uses empirical data and sound propagation principles to predict noise levels associated with a variety of construction equipment and operations. The equipment assumptions used in this Report are based on, and consistent with, the CalEEMod construction phasing, equipment usage, and operating schedules used to evaluate the proposed Project's potential construction air quality impacts (MIG, 2023).

The RCNM was used to model noise levels at 12 different receptor locations that could be impacted by the project's construction noise levels. The location of the modeled construction noise receptors is shown in Figure 5-1 and summarized in Table 5-1.

Construction noise was modeled for two scenarios:

- **Worst Case Construction Noise Levels:** This scenario models potential short-term construction equipment operations along the Project site's property lines. Such operations are assumed to occur during the Project's demolition, site preparation, grading, and paving phases. This scenario represents the shortest distance between potential Project construction activities and modeled noise receptors.
- **Typical Construction Noise Levels:** This scenario models typical, sustained construction equipment noise levels based on the geographic center of the likely work areas at the site. For site preparation and grading phases, typical construction equipment noise levels were modeled from the center of the Project site. For all other phases except demolition, typical construction equipment noise levels were modeled from the center of the site on the east and west sides of the proposed building.

The RCNM input distance between the closest edge of the work area to the modeled construction noise receptors is shown in Table 5-2.

Figure 5-1: Modeled Construction Noise Receptors

Table 5-1: Modeled Construction Noise Receptors		
RCNM Receptor ID	**Receptor Type**	**Location**
R1	Residence	16112 Boyle Ave
R2	Residence	16174 Boyle Ave
R3	Residence	16201 Boyle Ave
R4	Residence	16262 Boyle Ave(A)
R5	Residence	16310 Boyle Ave(A)
R6	Residence	10408 Oleander Ave
R7	Residence	10446 Oleander Ave
R8	Residence	16292 Slover Ave
R9	Residence	10511 Oleander Ave
R10	Residence	10526 Citrus Ave
R11	Residence	10462 Citrus Ave
R12	Residence	10444 Citrus Ave
(A) As of April 7, 2023, these properties were determined to be vacant.		

Table 5-2: Distance Between Construction Work Areas and Modeled Noise Receptors												
Construction Activity	**Modeled Receptor / Distance to Construction Activity(A),(B)**											
	R1	**R2**	**R3**	**R4**	**R5**	**R6**	**R7**	**R8**	**R9**	**R10**	**R11**	**R12**
Demolition (Typical)	300	160	140	180	300	95	215	150	425	940	585	555
Site Preparation (Worst Case)	145	90	85	95	210	25	30	35	300	380	190	215
Site Preparation (Typical)	490	290	365	265	580	365	370	480	780	860	650	655
Grading (Worst Case)	145	90	85	95	210	25	30	35	300	380	190	215
Grading (Typical)	490	290	365	265	580	365	370	480	780	860	650	655
Trenching (Typical)	340	415	605	350	365	135	130	350	630	680	325	325
Building Construction (Typical)	375	325	115	335	455	230	175	335	620	945	420	420
Paving (Typical)	340	415	605	350	365	135	130	350	630	680	325	325
Architectural Coating (Typical)	375	325	115	335	455	230	175	335	620	945	420	420
Source: MIG (see Appendix B) (A) Worst case distances are measured between the Project property line and the receptor property. (B) Typical distances are measured between the east and west parts of the site and the receptor property line or building façade.												

5.2.2 OPERATIONAL NOISE

Once constructed, the proposed Project would generate noise from the following activities:

- Off-site vehicle travel on Boyle Avenue, Oleander Avenue, Slover Avenue, and Citrus Avenue. The proposed Project would generate 425 total daily passenger car trips and 80 total daily

truck trips (equal to 505 total vehicle trips and 644 total passenger car equivalent (PCE) trips (Ganddini Group, 2023).[2] The following describes the inbound and outbound vehicle travel patterns anticipated for the Project:

- *Inbound Truck Trips*. Sixty percent (60%) of inbound truck trips would access the site traveling southbound on Citrus Avenue and eastbound on Slover Avenue and turning into southcentral driveway. Forty percent (40%) of inbound truck trips would access the site by traveling westbound on Slover Avenue. Five percent (5%) of the truck trips would divert to the north on Oleander Avenue (i.e., at the Slover Avenue and Oleander intersection) before turning west on Boyle Avenue and accessing the site through the northeast driveway. The remaining 35% of truck trips from westbound Solver Avenue (prior to the Solve Avenue and Oleander Avenue intersection) would continue westbound on Slover Avenue and access the site via the southwestern driveway (10% of truck trips), the southcentral driveway (15% of truck trips), or the southeast driveway (10% of truck trips).
- *Outbound Truck Trips*. Sixty percent (60%) of outbound truck trips would exit by traveling westbound on Slover Avenue from the southern driveways (30% from the southwest, 25% from the southcentral, and 5% from the southeast) and turning north on Citrus Avenue at the Citrus-Slover intersection. Forty percent (40%) of outbound truck trips would travel eastbound on Slover Avenue, with 35% of truck trips exiting the site by traveling eastbound on Slover Avenue from the southcentral driveway and 5% of truck trips exiting the site by traveling eastbound on Boyle Avenue from the northwest driveway, turning south on Oleander Avenue, and then turning east on Slover Avenue.
- *Inbound Passenger Vehicle Trips*. Thirty percent (30%) of inbound passenger vehicle trips would access the site traveling southbound on Citrus Avenue. Fifteen percent (15%) of inbound passenger vehicle trips would access the site traveling eastbound on Slover Avenue (originating from west of Citrus Avenue). Five percent (5%) of inbound passenger vehicle trips would access the site traveling northbound on Citrus Avenue. Ten percent (10%) of inbound passenger vehicle trips would access the site traveling northbound on Oleander Avenue. Forty percent (40%) of inbound passenger vehicle trips would access the site traveling westbound on Slover Avenue (originating from east of Oleander Avenue). Sixty percent (60%) of inbound passenger vehicle trips would enter the site via the northern driveways on Boyle Avenue (15% into the northwest and 45% into the northeast). Forty percent (40%) of inbound passenger vehicle trips would enter the site via the southern driveways on Slover Avenue (10% into the southwest and 30% into the southeast).
- *Outbound Passenger Vehicle Trips*. Forty percent (40%) of outbound passenger vehicle trips would exit via the northern driveways on Boyle Avenue (10% from the northwest and 30% from the northeast). Sixty percent (60%) of outbound passenger vehicle trips would exit via the southern driveways on Slover Avenue (20% from the southwest and 40% from the southeast). Thirty percent (30%) of outbound passenger vehicle trips would travel eastbound on Slover Avenue. Five percent (5%) of outbound passenger vehicle trips

[2] Passenger Car Equivalent (PCE) trips calculated to account for the additional capacity used by larger vehicles such as trucks. Truck trips were converted to PCE trips based on an equivalency factor of 2.0 (i.e., one truck trip is equal to approximately two passenger cars). (Ganddini Group, 2023).

would travel southbound on Oleander Avenue. Forty percent (40%) of outbound passenger vehicle trips would travel northbound on Citrus Avenue. Fifteen percent (15%) of outbound passenger vehicle trips would travel westbound on Slover Avenue. Ten percent (10%) of outbound passenger vehicle trips would travel southbound on Citrus Avenue.

- On-site passenger car travel along the site driveways and perimeter road/fire lane, automobile parking, and other miscellaneous automobile noise sources such as doors closing and engine start-up and revving. On-site automobile travel is assumed to occur at low speeds (15 mph).
- On-site truck travel along the site drive aisle to loading dock areas, truck maneuvering into and out of loading docks, and other miscellaneous sources such as engine start-up and revving, cab door closing, and release of compressed air from truck brake systems. Similar to automobiles, on-site truck travel is assumed to occur at low speeds (no more than 15 mph). According to the trip generation assessment prepared for the Project, truck trips are assumed to consist of 2-axle trips (16.7% of all truck trips), 3-axle trips (20.7% of all trips) large, heavy-duty 4-axle or more truck trips (62.6% of all truck trips). On-site idling was assumed to occur for up to 15 minutes per loading/unloading operation.
- Cargo management (i.e., forklifts) operations at truck docks. The proposed project would incorporate up to 43 electric-powered forklifts during operation as described in Section 2.3.3. Forklift operation and backup alarm was assumed to occur at each truck dock for approximately 30 minutes per loading/unloading operation.
- Rooftop mounted HVAC unit, assumed to be rated at 5 tons and generally located in the center of the office portion of the proposed building. The unit would be fully concealed behind a parapet or enclosure that would reduce potential HVAC unit noise levels.
- Other miscellaneous noise sources, such as landscaping equipment, garbage collection services, and other miscellaneous site operations (e.g., occasional electric power jack or pallet lift). These noise sources would be intermittent and would not substantially change overall Project noise levels. Therefore, these noise sources are not discussed further in this Report.

5.2.2.1 Operational Noise Level Estimates

The proposed Project's operational noise levels were estimated using standard theoretical equations for predicting environmental noise levels (Caltrans, 2013). For an ideal point source of sound, the energy contained in a sound pressure wave dissipates and is absorbed by the surrounding environment as the sound wave spreads out in a spherical pattern and travels away from the point source. Theoretically, the sound level attenuates, or decreases, by 6 dB with each doubling of distance from the point source. The change in noise levels between two distances can be calculated according to Equation 1 as follows:

Equation 1

$$dBA2 = dBA1 + 20\log (D1/D2)$$

Where:

dBA1 = Known noise level, such as a reference noise level
D1 = Distance associated with dBA1
dBA2 = Noise level at distance 2
D2 = Distance associated with dBA2

For an ideal line source of sound, the energy contained in a sound pressure wave dissipates and is absorbed by the surrounding environment as the sound wave spreads out in a cylindrical pattern from the source. Theoretically, the sound level attenuates, or decreases, by 3 dB with each doubling of distance from the line source. The change in noise levels between two distances can be calculated according to Equation 2 as follows:

Equation 2

$$dBA2 = dBA1 + 10\log (D1/D2)$$

Where:

dBA1 = Known noise level, such as a reference noise level
D1 = Distance associated with dBA1
dBA2 = Noise level at distance 2
D2 = Distance associated with dBA2

For noise sources that do not operate continuously (e.g., vehicles and trucks that travel on-site, park, and then cease to generate noise),the average, hourly noise level associated with variable (i.e., non-steady) noise source can be calculated using Equation 3 as follows:

Equation 3

$$\text{Hourly } L_{eq} = 10 * \text{Log } (P_h) * 10^{(Lp/10)}$$

Where:

P_h = Percentage or fraction of hour the noise is generated
L_p = The noise level generated during the partial hour (P_h)

Finally, the total combined sound pressure level from multiple, identical sources of noise at a receiver location can be calculated using Equation 4 as follows:

Equation 4

$$SPL_{Total} = SPL_1 + 10 * \text{Log } (N)$$

Where:

SPL_1 = Sound pressure level of one source
N = Number of identical sources to be added

Reference and potential hourly average noise levels associated with the proposed Project's noise sources are summarized in Table 5-3. All reference noise levels are presented at a distance of three (3) feet from the source.

Table 5-3: Project Noise Source – Reference and Hourly L_{eq} Noise Levels			
Noise Source	**Reference dBA(A)**	**Duration(B)**	**Hourly L_{eq}(C)**
Automobile Travel			
Low speed travel (15 mph)/parking	*55*	*30 seconds*	*34.2*
Door closing	*90*	*1 second*	*54.4*
Engine start and revving	*90*	*10 seconds*	*64.4*
Total Combined Noise Level			*64.9*
Truck Travel / Dock Activity			
Low speed travel (15 mph)	*96*	*30 seconds*	*75.2*
Maneuvering (w/ back-up alarm)	*100*	*150 seconds*	*86.2*
Air brake release	*98*	*3 seconds*	*67.2*
Main engine idling	*86*	*900 seconds*	*80.0*
Door closing	*90*	*2 seconds*	*57.4*
Engine start and revving	*100*	*20 seconds*	*77.4*
Forklift Backup Alarm	*100*	*90 seconds*	*84.0*
Total Combined Noise Level			*89.3*
Truck Entrance Way			
Warehouse Noise Measurement	*71.4*	*3,600 seconds*	*71.4*
HVAC Unit			
Operation (5-ton, with parapet wall)	*80*	*2,400 seconds*	*73.2*

Source: MIG (See Appendix C, Sheet 1)

(A) Reference dBA is based on a distance of 3 feet.

(B) Duration is used to estimate the percentage of time the noise is generated per Equation 3 (out of 3,600 seconds in an hour).

(C) Hourly L_{eq} estimated using Equation 3.

5.2.3 GROUND-BORNE VIBRATION

Project construction activities would involve the use of large equipment capable of generating ground-borne vibrations. Since Project-specific construction equipment information is not available at this time, potential construction-related vibration impacts can only be evaluated based on the typical construction activities associated with a typical business park / warehousing development. This Report estimates potential construction vibration levels using methodologies, reference vibration levels, and other factors documented and contained in Caltrans' Transportation and Construction Vibration Guidance Manual and the FTA's Transit Noise and Vibration Impact Assessment Manual (Caltrans 2020 and FTA 2018). Reference vibration levels are vibrations from specific equipment or activity types that are well documented and for which usage is common practice in environmental vibration analyses. The equipment assumptions used in this Report are based on, and consistent with, the CalEEMod construction phasing, equipment usage, and operating schedules used to evaluate the proposed Project's potential construction air quality impacts (MIG, 2023).

Like sound transmission through the air, the transmission of vibrations through the ground decreases with distance from the source of the vibration. Theoretically, the change in vibration levels between two distances can be calculated according to Equation 5 and Equation 6 as follows:

Equation 5

$$PPV_{Equipment} = PPV_{Ref} \times (25/d)^n \text{ (inches/second)}$$

Where:

$PPV_{Equipment}$ = Known peak particle velocity (PPV) level at 25 feet
D = Distance from equipment to the receiver (feet)
n = Vibration attenuation rate given ground characteristics

Equation 6

$$L_{v.distance} = L_{vref} - 30\log(D/25)$$

Where:

$L_{v.distance}$ = The root mean square velocity level adjusted for distance (VdB)
L_{vref} = The source reference vibration level at 25 feet (VdB)
D = Distance from the equipment to the receiver (feet)

5.3 TEMPORARY CONSTRUCTION NOISE AND VIBRATION IMPACTS

The proposed Project's short-term construction-related noise and vibration levels were estimated using project-specific information and standard noise and vibration estimation methodologies recommended by Caltrans, the FHWA, and FTA (see Section 5.2). The results of this modeling, and a discussion regarding the significance of the Project's construction noise and vibration levels, are provided below.

5.3.1 TEMPORARY CONSTRUCTION NOISE LEVELS

Table 5-4 summarizes modeled construction equipment noise levels at residential and non-residential receptors in the vicinity of the Project site for each anticipated Project construction activity.

As shown in Table 5-4, the modeled worst-case construction noise level at any residential receptor location would be 94.4 dBA $L_{eq.}$ This would occur at the residence (R6) located east of the Project site during the Project's grading phase. During typical construction periods, construction noise levels would not exceed 82 dBA L_{eq} at any residential location, and would generally be less than 75 dBA L_{eq}. These noise level estimates are based on peak equipment usage during each construction phase. As construction progresses within each phase, less equipment is usually required to perform activities and, therefore, less equipment noise is generated.

The City's Municipal Code does not establish numeric standards for construction noise levels (e.g., 90 dBA L_{eq}) but does limit construction activities to the hours of 7 AM to 6 PM during weekdays and 8 AM to 5 PM on Saturday (Municipal code Section 18-63). As shown in Table 5-4 and discussed above, the Project's potential exterior construction noise levels would range from approximately 55 dBA L_{eq} to 94 dBA L_{eq} depending on the specific equipment in use and the distance between the equipment and adjacent residential properties. These noise levels would be approximately 9 dB to 38 dB above the existing ambient noise levels measured at the Project site (see Table 4-1 and Table 4-2). Although the City does not maintain a specific construction noise level standard, the temporary increase in noise levels associated with

the proposed construction activities could, at times, be substantial and have the potential to annoy adjacent residential receptors and/or interfere with the receptors normal use and enjoyment of their property.

Table 5-4: Construction Noise Levels at Modeled Noise Receptors

Construction Activity	Days	Estimated Noise Level (dBA L_{eq})[(A),(B)]											
		R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12
Demolition (Typical)	20	71.1	76.6	77.8	75.6	71.1	81.1	74.0	77.2	68.1	61.2	65.3	65.8
Site Preparation (Worst Case)	3	72.8	76.9	77.4	76.4	69.6	88.0	86.5	85.1	66.5	64.4	70.4	69.4
Site Preparation (Typical)	10	62.2	66.8	64.8	67.5	60.7	64.8	64.6	62.4	58.2	57.3	59.7	59.7
Grading (Worst Case)	3	79.1	83.3	83.8	82.8	75.9	94.4	92.8	91.5	72.8	70.7	76.8	75.7
Grading (Typical)	30	68.5	73.1	71.1	73.9	67.1	71.1	71.0	68.7	64.5	63.7	66.1	66.0
Trenching (Typical)	60	64.5	62.7	59.5	64.2	63.8	72.5	72.8	64.2	59.1	58.4	64.9	64.9
Building Construction (Typical)	160	68.7	69.9	78.9	69.7	67.0	72.9	75.3	69.7	64.3	60.6	67.7	67.7
Paving (Typical)	10	62.0	60.2	57.0	61.7	61.4	70.0	70.3	61.7	56.6	55.9	62.4	62.4
Architectural Coating (Typical)	25	56.2	57.4	66.5	57.2	54.5	60.4	62.8	57.2	51.8	48.2	55.2	55.2

Source: MIG, 2023 (see Appendix B)

(A) Worst case distances are measured between the Project property line and the receptor property line.

(B) Typical distances are measured between the east and west parts of the site and the receptor property line or building façade.

Although Project construction may result in a substantial temporary increase in ambient noise levels, it is not anticipated to result in physical harm (e.g., temporary or permanent hearing loss or damage) to any sensitive noise receptor near the Project area for several reasons. First, the construction phases with the most large-equipment operations – site preparation and grading – are anticipated to occur for no more than 40 days (not necessarily consecutive) out of the Project's approximately 10-month construction schedule. Second, during this 40-day period, the estimated worst-case noise levels would only occur at receptor locations during the time when multiple pieces of equipment are operating directly adjacent to that receptor. As equipment moves along the property line and throughout the site, noise levels would decrease at one receptor and increase at a different receptor. These worst-case conditions (i.e., multiple pieces of equipment operating directly adjacent to one specific receptor) are estimated to occur no more than four (4) hours a day for no more than several days. Thus, receptors would not be continuously exposed to the estimated worst-case noise levels (noise levels would decrease as equipment moves away and return to ambient conditions when construction ceases for the day). Finally, the estimated construction noise levels presented in Table 5-4 are exterior noise levels, whereas receptors would be likely to be inside residential buildings during active construction operations. Interior noise levels would be approximately 12 dBA to 30 dBA lower depending on façade construction and whether windows or doors were open or closed. Physiological effects occur when the human ear is subjected to extremely high noise levels (e.g., above 110 dBA) for a short period or prolonged exposure to high noise environments. For example, to protect workers from noise-induced hearing loss, the U.S. Occupational Safety and Health Administration (OSHA) limits worker noise exposure to 90 dBA as averaged over an 8-hour time period (29 CFR 1910.95). Similarly, the National Institute for Occupational Safety and Health (NIOSH) recommends workers limit noise exposure to no more than 85 dBA over an 8-hour period to protect against noise-induced hearing loss (NIOSH, 1998). Although unmitigated hourly construction noise levels may approach 88 dBA L_{eq} to 94 dBA L_{eq} during certain construction phases, such noise levels would not be sustained over an 8-hour period

(due to movement of equipment and changes in operations that occur during daily construction activities). Therefore, at worst-case, noise from construction activities may pose a temporary interference or annoyance effect on nearby sensitive receptors but would not result in adverse physiological effects on human receptors in the surrounding area.

To reduce the potential for Project construction activities to result in a substantial temporary increase in ambient noise levels in the vicinity of the Project site that could annoy adjacent residential receptors and/or interfere with the normal use and enjoyment of residential properties, MIG recommends Mitigation Measure NOI-1 be incorporated into the Project.

Mitigation Measure NOI-1: Reduce Construction Noise Levels. To reduce potential noise levels associated with construction of the proposed Project, the Applicant and/or its designated contractor, contractor's representatives, or other appropriate personnel shall:

6) *Notify Adjacent Land Use of Planned Construction Activities.* This notice shall be provided at least two weeks prior to the start of any construction activities, describe the noise control measures to be implemented by the Project, and include the name and phone number of a designated contact for the Applicant and the City of Fontana responsible for handling construction-related noise complaints (per action #5 below). This notice shall be provided to the owner/occupants of all occupied properties within 250 feet of the Project site.
7) *Restrict work hours/equipment noise.* All construction-related work activities, including material deliveries, shall be subject to the requirements of City Municipal Code Section 18-63. Construction activities, including deliveries, shall only occur during the hours of 7:00 AM to 6:00 PM on weekdays and 8:00 AM to 5:00 PM on Saturdays. The Applicant and/or its contractor shall post a sign at all entrances to the construction site informing contractors, subcontractors, construction workers, etc. of this requirement.
8) *Construction equipment selection, use, and noise control measures*. The following measures shall apply during construction activities:
    a) Contractors shall use the smallest size equipment capable of safely completing work activities.
    b) Construction staging shall occur as far away from the adjacent residential properties as possible.
    c) The Applicant and/or his contractor shall connect to existing electrical service at the site to avoid the use of stationary power generators. This measure shall be subject to the approval of the local electric utility. If electric service is denied, the Applicant shall ensure actions 3a, 3b, and 3d are implemented.
    d) All stationary noise-generating equipment such as pumps, compressors, and welding machines shall be shielded and located as far from residential land uses as possible given site and active work constraints. Shielding may consist of a three- or four-sided enclosure provided the structure/enclosure breaks the line of sight between the equipment and the receptor and provided for proper ventilation and equipment operation.
    e) Heavy equipment engines shall be equipped with standard noise suppression devices such as mufflers, engine covers, and engine/mechanical isolators, mounts, and be maintained in accordance with manufacturer's recommendations during active construction activities.
    f) Pneumatic tools shall include a noise suppression device on the compressed air exhaust.

g) No radios or other amplified sound devices shall be audible beyond the property line of the construction site.

9) *Install Construction Noise Barrier.* During all demolition, site preparation, grading, trenching, and structure foundation work (e.g., excavation, pad pour, etc.), the Applicant shall install and maintain a physical noise barrier along the eastern perimeter of the site. The noise barrier shall extend to a height of eight (8) feet above grade. Potential barrier options capable of reducing construction noise levels could include, but are not limited to:

   a) A plywood or other barrier installed at-grade (or mounted to structures located at-grade, such as a K-Rail), and consisting of a solid material (i.e., free of openings or gaps other than weep holes) that has a minimum rated transmission loss value of 20 dB.

   b) Commercially available acoustic panels or other products such as acoustic barrier blankets that have a minimum sound transmission class (STC) or transmission loss value of 20 dB.

   c) Any combination of noise barriers and commercial products that have a minimum sound transmission class (STC) or transmission loss value of 20 dB.

   The noise barrier may be removed following the completion of building foundation work (i.e., it is not necessary once framing and typical vertical building construction begins provided no other grading, foundation, etc. work is still occurring on-site). Furthermore, the noise barrier shall not be required if the 10-foot-tall perimeter concrete masonry unit wall included in the project's site plan is fully constructed prior to the start of substantial demolition, site preparation, and grading activities at the site (i.e., only clearing and grubbing and grading necessary to access the site and install the perimeter wall may occur).

10) *Prepare a Construction Noise Complaint Plan:* The Applicant shall prepare a Construction Noise Complaint Plan that shall:

   a) Identify the name and/or title and contact information (including phone number and email) for a designated Project and City representative responsible for addressing construction-related noise issues.

   b) Includes procedures describing how the designated Project representative will receive, respond, and resolve construction noise complaints.

   c) At a minimum, upon receipt of a noise complaint, the Project representative shall notify the City contact, identify the noise source generating the complaint, determine the cause of the complaint, and take steps to resolve the complaint.

The implementation of Mitigation Measure NOI-1 would reduce construction noise levels by 5 dBA to 10 dBA at individual receptor locations during the daytime. Based on the estimated worst-case scenario (94 dBA L_{eq}), exterior noise levels at individual receptors could reach 84 dBA L_{eq} to 89 dBA L_{eq} for limited periods of time. Such noise levels would be similar to the maximum measured daytime noise levels in the project vicinity, but noticeably louder (approximately 12 dBA to 30 dBA) than the typical measured daytime noise levels (approximately 57 dBA L_{eq} to 72 dBA L_{eq}, see Table 5-4). Although worst-case noise levels could be noticeably louder than typical hourly daytime noise levels, Mitigation Measure NOI-1 would require the Applicant to provide advance warning of the proposed Project's potentially noisy construction activities, restrict work hours to periods when humans are less sensitive to elevated noise levels in accordance with Municipal Code requirements, implement equipment noise control measures, install a temporary noise barrier between work areas and affected residences, and prepare and plan for potential unanticipated or

unexpected construction noise issues. By providing advanced notice of loud construction activities and implementing equipment control measures and temporary noise barriers, the potential for sensitive residential receptors to be surprised or annoyed by loud exterior noises would be substantially reduced. In addition, daytime noise levels inside potential residential buildings would be approximately 12 dBA to 30 dBA lower, depending on whether windows and doors were open or closed. Thus, interior noise levels at individual receptors locations could potentially reach 54 dBA L_{eq} to 77 dBA L_{eq} during the daytime. At no time would the proposed Project's exterior or interior construction noise be loud enough to result in physical harm to adjacent residential receptors. Finally, although worst-case construction noise levels could be noticeably louder than typical conditions, this impact would occur intermittently (anticipated to be no more than four (4) hours per day) for several days during the Project's anticipated 40-day site preparation and grading phases, which would not constitute sustained or prolonged exposure to substantial temporary noise increases. The implementation of Mitigation NOI-1 would lower overall Project construction noise levels, reduce the potential for Project construction noise levels to surprise or annoy residential receptors, and reduce the potential for Project construction noise levels to interfere with normal use of residential properties. The implementation of Mitigation Measure NOI-1 would, therefore, render the proposed Project's potential construction noise levels less than significant with mitigation.

5.3.2 TEMPORARY CONSTRUCTION VIBRATION LEVELS

The potential for ground-borne vibration and noise is typically greatest when vibratory or large equipment such as rollers, impact drivers, or bulldozers are in operation. For the proposed Project, these types of equipment would primarily operate during demolition, site preparation, grading, and paving work. This equipment would, at worst-case and for very limited period of times, operate adjacent to the site's property lines and within approximately 30 feet of the residential building façade to the east of the site and approximately 35 feet of the Arco gas station building façade to the west of the site; however, most construction activities would generally take place hundreds of feet away from these building locations.[3] A summary of predicted worst-case construction vibration levels is presented in Table 5-5.

As shown in Table 5-5, the proposed Project's construction activities would have the potential to generate worst-case ground-borne vibration levels of approximately 0.145 in/sec PPV at non-residential buildings and 0.172 in /sec PPV at residential buildings, which could be strongly perceptible per the Caltrans criteria for continuous vibration sources identified in Table 4-5 (0.10 in/sec PPV). These vibration levels are associated with the operation of a vibratory roller approximately 10 feet from the Project boundary. As the vibratory roller (and other equipment) moves away from the property line, vibration levels would decrease but, in general, the operation of vibratory and non-vibratory construction equipment could produce vibration levels that may be perceptible to buildings within approximately 400 feet and 100 feet, respectively. It is noted the vibration estimates shown in Table 5-5 do not take into account differences in grade or other subsurface conditions that may limit vibration transmission. In addition, the vibration estimated shown in Table 5-5 do not consider any loss of vibratory energy associated with the transfer of vibrations across different medium (e.g., from the soil to a concrete foundation to a floor or wall assembly). The vibration estimates shown in Table 5-5, therefore, are likely to overestimate potential vibration levels associated with construction equipment.

[3] The worst-case distance between potential vibration generating work areas and nearby building facades is as measured from the edge of paved/hardscaped areas to the building façade.

Table 5-5: Summary of Predicted Construction Vibration Levels			
Scenario / Receptor	**Estimated Duration**	**Maximum PPV, Vibratory Roller (inches/second)(A)**	**Maximum PPV, Typical Equipment (inches/second)(A)**
Worst-Case Construction (30 feet from residential building to the east)	1 day	0.172	0.073
Worst-Case Construction (35 feet from Arco gas station to the west)	1 day	0.145	0.061
Typical Construction (90 feet from residential building to the east)	1 week	0.051	0.022
Typical Construction (100 feet from Arco gas station to the west)	1 week	0.046	0.019

Source: FTA, 2018 and MIG (see Appendix B).
(A) Values represent highest estimated ground-borne vibration level for vibratory roller and typical construction equipment (see Appendix B).

As shown in Table 5-5, the proposed Project's potential construction activities would have the potential to be perceptible at residential and commercial receptor locations; however, the vibration levels that could be generated by potential construction activities would not be considered excessive for several reasons. First, potential worst-case construction vibrations would be intermittent, lasting only a few hours each day at any individual receptor. Second, potential worst-case construction vibrations would occur only when equipment operates directly adjacent to a receptor, which is not anticipated to last more than several days in total. Third, all construction activity would occur during the daytime, when human beings are less sensitive to vibrations, and would not interfere with evening or nighttime use of residences. Finally, potential construction vibrations would not result in physical damage to any building or structure because estimated worst-case vibration levels would be below Caltrans' guidelines for damage to sensitive residential structures and commercial structures (0.3 in/sec and 0.5 in/sec PPV, respectively, see Table 4-4). For these reasons, the proposed Project would not result in excessive ground-borne vibration levels. This impact would be less than significant.

5.4 OPERATIONAL NOISE IMPACTS

Once constructed, the proposed Project would generate noise from on-site and off-site activities. On-site activities would include vehicle and truck travel, HVAC operations, and other miscellaneous site maintenance and operations activities. Off-site noise activities would include vehicle and truck travel on Citrus Avenue, Slover Avenue, Oleander Avenue, and Boyle Avenue. These noise sources are described in Section 5.2.2.

5.4.1 ON-SITE NOISE GENERATION ANALYSIS

The proposed Project's potential noise levels were estimated using the reference and calculated hourly L_{eq} noise levels identified in Table 5-3 above, adjusted for distance (between the noise source and property line) and activity levels (e.g., number of automobile trips, trucks idling, etc.). In general, the estimated noise levels are theoretical predictions; they do not account for potential reflection or partial shielding, atmospheric or ground absorption, or other excess attenuation factors. For multiple noise sources such as cars parking, trucks idling, HVAC units, etc., noise levels were modeled from a single location to conservatively aggregate noise levels from an area (i.e., overestimate noise levels coming from any single point). For the purposes of this analysis, the Project's noise sources (HVAC units, parking areas, drive aisles, and truck dock bays) were treated as stationary noise sources. Although the noise generated

from parking areas, drive aisles, and truck dock bays is primarily generated by cars and trucks (mobile sources) and not stationary sources, this analysis conservatively compares noise from these sources against the City's exterior stationary source noise standards because noise from these areas would generally come from a fixed location (e.g., an idling truck, a parked car, etc.). In addition, it is assumed that all on-site travel would occur at slow speed (15 mph or less), and due to the short distance traveled on-site (as little as 250 feet to some dock locations), on-site truck travel would be similar to a stationary source (as compared to trucks travelling on Citrus Avenue, Slover Avenue, Oleander Avenue, or Boyle Avenue). Project noise levels were estimated at eight (8) property line receiver locations surrounding the site, as shown in Figure 5-2. Only Project noise sources within 700 feet of a noise receiver that had a direct line of sight to the receiver were included in the noise prediction estimates. The distance between property line receiver locations and the Project's noise sources is shown in Table 5-6.

Table 5-6: Summary of Distance Between Project Noise Source and Property Line Receivers

Project Noise Source	Distance in Feet Between Noise Source and Property Line Receiver(A)							
	R1 – R3	R4 – R5	R6	R7	R8	R9	R10	R11 – R12
Truck Entrance 1	115	--	--	--	--	--	--	380
Truck Entrance 2	680	--	--	--	--	--	400	470
Truck Entrance 3	--	--	--	--	535	--	--	--
Truck Entrance 4	--	--	580	385	105	345	--	--
Drive Aisle 1	285	--	--	--	--	--	620	290
Drive Aisle 2	595	--	--	--	--	--	445	430
Drive Aisle 3	--	--	540	345	100	365	--	--
Docks 1-5	--	--	--	--	--	--	690	405
Docks 6 -9	370	--	--	--	--	--	630	390
Docks 10-14	--	--	--	--	--	--	--	--
Docks 15-21	--	--	--	--	--	--	--	--
Docks 22-28	--	--	--	--	670	--	--	--
Docks 29-35	--	--	--	--	570	--	--	--
Docks 36-42	--	--	--	--	475	--	--	--
Docks 43-49	--	--	--	--	380	650	--	--
Docks 50-55	--	--	--	--	--	--	--	--
Parking Area 1	280	--	--	--	--	--	595	235
Parking Area 2	--	315	70	145	460	--	--	--
Parking Area 3	--	--	185	35	335	--	--	--
Parking Area 4	--	--	355	165	175	--	--	--
HVAC 1	--	--	400	235	195	455	--	--

(A) The Project includes several distinct parking areas, truck dock bays, and HVAC equipment locations (see Appendix C). The listed distance reflects the closest distance between the listed noise source and the property line receiver.

(B) "—" indicates noise source does not contribute to noise levels at the property line receiver because it is more than 700 feet away from the receptor or the receiver is shielded from the noise source by the proposed warehouse building.

The following discusses the key assumptions made to estimate potential Project noise levels at noise receiver locations:

- *Truck entrances:* Truck entrances would be located on Boyle Avenue at the northwest portion of the site and Slover Avenue at the southwestern, southcentral, and southeastern portions of the site. Truck entrances include truck turns into and out of the facility and are assumed to produce an average hourly noise level of approximately 71.4 dBA at a distance of 3 feet (see Table 5-3).
- *On-site passenger car parking:* Parking areas were assumed to require vehicle travel/maneuvering, doors closing, and engine start/revving activities that would produce an average hourly noise level of approximately 64.9 dBA at a distance of 3 feet (see Table 5-3).
- *On-site truck travel:* Each on-site truck trip was assumed to travel at low speed (no more than 15 mph) and produce an average hourly noise level of 75.2 dBA at a distance of 3 feet (see Table 5-3). Truck travel lanes would include driveways along Boyle Avenue and Slover Avenue. The amount of peak on-site truck travel activity (34 total trips in the peak hour periods) was determined from the Project's Vehicle Miles Traveled Screening Analysis (Ganddini Group, 2023).
- *On-site truck maneuvering and idling:* Loading dock areas were assumed to require truck travel and maneuvering, back-up alarms, air brake release, and other related activities that would produce an average hourly noise level of approximately 89.3 dBA at a distance of 3 feet (see Table 5-3). Dock areas would be located at least 195 feet from adjacent residential property lines to the east. A 10-foott high concrete screening wall would provide screening from the dock areas to adjacent property lines east of the project site. This wall would provide a minimum of 5 dBA attenuation of noise from the truck dock area.
- *HVAC unit:* An HVAC unit was assumed to operate for 40 minutes of each hour and produce an average hourly noise level of 80 dBA at a distance of 3 feet. HVAC units would be located behind a 3-foot parapet wall that would provide at least 5 dB of attenuation. The HVAC unit would be located in the center of office space area.

Figure 5-2: Operational Noise Sources and Property Line Receiver Locations

5.4.1.1 Compliance with City Exterior Noise Standards

The proposed Project would have a limited potential to generate operational noise levels that exceed City standards because the proposed Project's design and estimated noise levels would be consistent with City's General Plan Noise and Safety policies pertaining to noise. The Project's energy-averaged hourly noise levels at modeled receiver locations care summarized in Table 5-7.

Table 5-7: Comparison of Project Noise Levels to City Exterior Stationary Noise Standards								
Project Noise Source	**Estimated Noise Level at Property Line Receiver(A)**							
	R1 – R3	**R4 – R5**	**R6**	**R7**	**R8**	**R9**	**R10**	**R11 – R12**
Truck Entrance 1	39.7	--	--	--	--	--	--	29.3
Truck Entrance 2	24.3	--	--	--	--	--	31.9	27.5
Truck Entrance 3	--	--	--	--	33.4	--	--	--
Truck Entrance 4	--	--	28.7	32.2	43.5	33.2	--	--
Drive Aisle 1	35.7	--	--	--	--	--	28.9	35.5
Drive Aisle 2	32.3	--	--	--	--	--	34.8	35.1
Drive Aisle 3	--	--	30.1	34.0	44.8	33.5	--	--
Docks 1-5	--	--	--	--	--	--	45.1	49.8
Docks 6 -9	47.5	--	--	--	--	--	45.9	50.1
Docks 10-14	--	--	--	--	--	--	--	--
Docks 15-21	--	--	--	--	--	--	--	--
Docks 22-28	--	--	--	--	45.4	--	--	--
Docks 29-35	--	--	--	--	46.8	--	--	--
Docks 36-42	--	--	--	--	48.4	--	--	--
Docks 43-49	--	--	--	--	50.3	45.6	--	--
Docks 50-55	--	--	--	--	--	--	--	--
Parking Area 1	35.5	--	--	--	--	--	28.9	37.0
Parking Area 2	--	34.4	47.5	41.2	31.1	--	--	--
Parking Area 3	--	--	39.1	53.5	33.9	--	--	--
Parking Area 4	--	--	33.4	40.0	39.5	--	--	--
HVAC 1	--	--	30.7	35.4	37.0	29.6	--	--
Total Combined Noise Level	48.8	34.4	48.4	54.1	55.2	46.2	48.9	53.2
Exterior Standard(B)	65	65	65	65	65	65	65	65
Standard Exceeded?	No	No	No	No	No	No	No	No

Source: MIG (See Appendix C, Sheet 2)

(A) "—" indicates noise source does not contribute to noise levels at the property line receiver because it is more than 700 feet away from the receptor or the receiver is shielded from the noise source by the proposed warehouse building.

(B) See Section 4.3.4.1. Since the proposed Project could be operational for 24 hours a day, the nighttime 65 dBA standard is used for comparison in this table.

As shown in Table 5-7, the proposed Project's stationary noise sources would not generate noise levels that exceed the City's Municipal Code exterior noise standards for residential land uses. This impact would be less than significant.

5.4.1.2 Compliance with City Interior Noise Standards

As shown in Table 5-7, the proposed Project would not generate noise levels that exceed the City's exterior noise standards for residential land uses. The maximum estimated hourly L_{eq} values at any residential receptor (R8) would be 55.2 dBA L_{eq}. Typical residential-type construction achieves a minimum of 12 to 30 db of exterior-to-interior noise reduction, depending on whether windows and doors are open or closed, which would be sufficient to ensure the City's 45 dBA interior noise standard (Municipal Code Section 30-469) is met inside nearby residential buildings. This impact would be less than significant.

5.4.1.3 Compliance with City of Fontana General Plan

The Project's consistency with the applicable policies of the City's General Plan Chapter 11: Noise and Safety is summarized in Table 5-8.

Table 5-8: Project Consistency with Applicable General Plan Noise Policies

General Plan Noise and Safety Goal/Policy	Consistency Analysis
Goal 8: The City of Fontana protects sensitive land uses from excessive noise by diligent planning through 2035.	
Policy 2: Noise-tolerant land uses shall be guided into areas irrevocably committed to land uses that are noise-producing, such as transportation corridors.	Consistent. As discussed in Section 2.1.1, the proposed Project would be located in a light-industrial zoned area.
Policy 4: Noise spillover or encroachment from commercial, industrial and educational land uses shall be minimized into adjoining residential neighborhoods or noise-sensitive uses.	Consistent. As discussed above in Section 5.4.1, the Project operations would not generate noise levels exceeding the City's exterior noise standards for residential or commercial land uses.
Goal 10: Fontana's residents are protected from the negative effects of "spillover" noise.	
Policy 1: Residential land uses and areas identified as noise-sensitive shall be protected from excessive noise from non-transportation sources including industrial, commercial, and residential activities and equipment.	Consistent. As discussed in Section 5.3, the proposed project's temporary construction related noise with mitigation incorporated would not result in a significant impact to the surrounding land uses.

5.4.2 OFF-SITE OPERATIONAL NOISE LEVELS

The proposed Project would generate vehicle trips that would be distributed onto the local roadway system and potentially increase noise levels along travel routes. Caltrans considers a doubling of total traffic volume to result in a three (3) dBA increase in traffic-related noise levels (Caltrans, 2013). If the proposed Project would not result in a doubling of traffic volumes on the local roadway system, it would not result in a substantial permanent increase in traffic-related noise levels.

The proposed Project would result in a net increase in trip generation equal to 363 total vehicle trips, on a daily basis, which would be distributed onto Oleander Avenue, Slover Avenue, and Citrus Avenue (Ganddini Group, 2023). According to the City's General Plan, average daily traffic (ADT) volumes on Citrus Avenue were estimated to be between approximately 5,600 and 34,600 for the road segment near the proposed Project. ADT volumes on Slover Avenue were estimated to be approximately 13,400 for the road segment near the proposed Project. ADT volumes were not described for Boyle Avenue or

Oleander Avenue (City of Fontana, 2018 Exhibit 9.5 Average Daily Trips). The addition of Project trips to these roadways would not result in a doubling of traffic volumes or a substantial change in off-site traffic noise levels. This impact would be less than significant.

5.5 AIRPORT-RELATED NOISE

As described in Section 2.1.2, the proposed Project is located approximately 7.4 miles east of the nearest runway associated with the Ontario International Airport. Therefore, the proposed Project would not expose people to excess continuous or single-event airport-related noise levels.

6 OTHER NOISE AND VIBRATION EFFECTS

The California Supreme Court in *California Building Industry Association v. Bay Area Air Quality Management District*, 62 Cal.4th 369 (2015) ruled that CEQA review is focused on a project's impact on the environment "and not the environment's impact on the project." Per this ruling, a Lead Agency is not required to analyze how existing conditions might impact a project's future users or residents; however, a Lead Agency may elect to disclose information relevant to a project even if it not is considered an impact under CEQA.

This chapter discusses the existing noise environment and the degree to which the existing environment is compatible and consistent with City goals, policies, and standards for the proposed Project's noise environment.

6.1 REVIEW STANDARDS

The existing noise environment described in Section 4.2 is reviewed against the following goals, policies, and standards. Would the Project:

- Expose people working in the project area to existing noise levels that exceed the standards established in:
    - General Plan Noise and Safety; or
    - The California Building Code.

6.2 LAND USE COMPATIBILITY – EXTERIOR NOISE EXPOSURE

The City's General Plan Noise and Safety does not establish noise and land use compatibility standards for industrial land uses because such land uses are not considered to be noise-sensitive uses. As described in Section 4.2.1, the 24-hour CNEL value at LT-1 was determined to be 67.7 dBA CNEL (see Table 4-1). This CNEL value is within the normally acceptable noise level (75 CNEL) identified for industrial land uses in the Governor's Office of Planning and Research (OPR) most recently published General Plan Guidelines (OPR, 2020, Appendix D Figure 2). The proposed Project, therefore, would not be exposed to unacceptable exterior noise levels that exceed City General Plan noise and land use compatibility standards.

6.3 INTERIOR NOISE LEVEL COMPATIBILITY

Part 2, California Building Code, Section 1206.4 establishes that interior noise levels attributable to exterior noise sources shall not exceed 45 dBA DNL or CNEL (as set by the local General Plan) in any habitable room. In addition, Chapter 5 of the California Green Building Standards Code sets forth that buildings exposed to a noise level of 65 CNEL (where noise contours are available) or 65 dBA L_{eq} (1-hour where noise levels are not available) shall: 1) have exterior wall and roof-ceiling assemblies exposed to the noise source that meeting a composite STC rating of at least 50 (or a composite OITC) rating no less than 40, with exterior windows of a minimum STC of 40 or OITC 30 (Section 5.507.4.1); or 2) provide an interior noise environment attributable to exterior sources that does not exceed 50 dBA L_{eq} in occupied areas during any hour of operation. In addition, County Code Section 83.01.080 (h) sets forth that warehousing areas shall be sound attenuated to meet an interior sound level of 65 dBA.

As described above, the proposed building's southern façade would be subjected to noise levels of approximately 70.4 dBA CNEL. Standard construction techniques and materials for new

commercial/industrial buildings are commonly accepted to provide a minimum exterior to interior noise attenuation (i.e., reduction) of 30 to 32 dBA with all windows and doors closed, which would result in interior noise levels of approximately 41 dBA L_{eq} for occupied rooms fronting Slover Avenue.[4] Thus, with standard construction techniques, the proposed Project would satisfy interior building code noise requirements.

4 The U.S. Department of Housing and Urban Development (HUD) Noise Guidebook and supplement (2009a, 2009b) includes information on noise attenuation provided by building materials and different construction techniques. As a reference, a an exterior wall consisting solely of 4 x 8 x 16, 3-cell lightweight concrete masonry units with a density of 17 pounds per block has an STC rating of 40. This reduction may be slightly lower (2-3 dBs) for traffic noise due to the specific frequencies associated with traffic noise.

7 REPORT PREPARERS AND REFERENCES

This Report was prepared by MIG under contract to CHIPT Fontana Citrus Avenue, L.P. This Report reflects the independent, objective, professional opinion of MIG. The following individuals were involved in the preparation and review of this Report:

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7.1 REFERENCES

California Department of Transportation (Caltrans) 2013. *Technical Noise Supplement to the Traffic Noise Analysis Protocol.* Sacramento, California. September 2013.

_____2020. *Transportation and Construction Vibration Guidance Manual*. Sacramento, California. April 2020.

California Office of Planning and Research (OPR) 2020. General Plan Guidelines and Technical Advisories. Updated June 24, 2020. Available online at: https://opr.ca.gov/planning/general-plan/guidelines.html

City of Fontana 2018. *Fontana Forward General Plan Update 2015-2035*. Adopted November 13, 2018.

_____2022a. General Plan Land Use Map. April 20, 2022. Available online at: https://www.fontanaca.gov/854/Zoning-General-Plan-Information-Maps

_____2022b. Zoning District Map. April 20, 2022. Available online at: https://www.fontanaca.gov/854/Zoning-General-Plan-Information-Maps

Ganddini Group 2023. *Citrus Avenue Warehouse Project Level of Service & Vehicle Miles Traveled Screening Analysis*. February 6, 2023.

MIG 2023. Fontana Citrus Industrial Building Air Quality and Health Risk Assessment Report. Riverside, CA. April, 2023.

National Institute of Occupational Safety and Health (NIOSH) 1998. Criteria for a Recommended Standard Occupation Noise Exposure. NIOSH Publication 98-126. Cincinnati, OH. June 1998.

Ontario International Airport – Inter Agency Collaborative (ONT-IAC) 2011. Airport Land Use Compatibility Plan. Adopted by Ontario City Council April 19, 2011. Noise Impact Zones amendment July 2018. Available online at: https://www.ont-iac.com/airport-land-use-compatibility-plan/

South Coast Air Quality Management District (SCAQMD). 2014. SCAQMD High Cube Warehouse Truck Trip Study White Paper Summary of Business Survey Results. June 2014. http://www.aqmd.gov/docs/default-source/ceqa/handbook/high-cube-warehouse-trip-rate-study-for-air-quality-analysis/business-survey-summary.pdf

U.S. Federal Transit Administration (FTA) 2018. *Transit Noise and Vibration Impact Assessment Manual*. FTA Report No. 0123. Prepared by John A. Volpe National Transportation Systems Center. Washington, DC. September 2018.

U.S. HUD. 2009a.HUD Noise Guidebook. Prepared by the Environmental Planning Division, Office of Environment and Energy. March 2009.

_____2009b. HUD Noise Guidebook, Chapter 4 Supplement: Sound Transmission Class Guidance. Prepared by the Environmental Planning Division, Office of Environment and Energy. March 2009.

APPENDIX A: Ambient Noise Monitoring Data

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Fontana Citrus Industrial Building Project
Fontana, CA
Ambient Noise Monitoring Data
Prepared by MIG, July 2023

TABLE 1: SUMMARY OF LONG-TERM NOISE MONITORING DATA (LT01)											
Date	**Time**	**Duration**	**Leq**	**Lmin**	**Lmax**	**L1.70**	**L8.30**	**L16.70**	**L25**	**L50**	**L90**
4/5/2023	11:00 AM	1 hour	57.4	49.3	68.5	61.1	59.6	58.9	58.2	56.9	55.1
4/5/2023	12:00 PM	1 hour	58.0	49.1	75.7	63.7	61.3	59.5	58.3	56.6	54.9
4/5/2023	1:00 PM	1 hour	57.8	48.8	75.9	63.3	61.4	59.6	58.2	56.5	54.0
4/5/2023	2:00 PM	1 hour	57.1	50.0	71.3	61.7	59.5	58.4	57.6	56.3	54.4
4/5/2023	3:00 PM	1 hour	57.2	48.6	72.9	63.1	60.4	58.9	57.8	56.0	53.3
4/5/2023	4:00 PM	1 hour	57.9	48.8	77.5	64.8	61.6	59.5	58.2	55.8	53.6
4/5/2023	5:00 PM	1 hour	59.8	50.2	73.6	64.7	62.5	61.2	60.5	58.8	56.8
4/5/2023	6:00 PM	1 hour	61.6	55.8	81.3	66.7	64.5	63.1	62.3	60.8	58.4
4/5/2023	7:00 PM	1 hour	59.9	54.7	72.1	63.8	62.4	61.4	60.7	59.2	57.3
4/5/2023	8:00 PM	1 hour	57.9	48.0	72.7	62.7	60.7	59.3	58.3	57.0	55.4
4/5/2023	9:00 PM	1 hour	57.1	47.4	71.1	62.6	60.6	58.9	57.9	55.8	53.1
4/5/2023	10:00 PM	1 hour	58.2	49.0	70.9	61.9	60.6	59.7	59.1	57.5	55.6
4/5/2023	11:00 PM	1 hour	58.7	51.3	70.6	61.9	60.5	59.8	59.4	58.4	57.0
4/5/2023	12:00 AM	1 hour	58.1	49.9	74.3	61.6	60.5	59.6	58.6	57.5	55.9
4/5/2023	1:00 AM	1 hour	58.9	52.7	66.4	61.7	60.6	60.1	59.7	58.6	57.0
4/5/2023	2:00 AM	1 hour	59.2	51.7	69.6	62.1	61.1	60.4	59.9	58.8	57.1
4/5/2023	3:00 AM	1 hour	60.7	53.6	71.1	63.9	62.5	61.8	61.4	60.4	58.8
4/5/2023	4:00 AM	1 hour	62.9	57.5	71.6	65.7	64.4	63.9	63.5	62.6	61.3
4/5/2023	5:00 AM	1 hour	64.5	59.6	72.8	66.8	65.9	65.3	65.0	64.3	63.1
4/5/2023	6:00 AM	1 hour	63.9	59.5	71.6	65.8	65.1	64.7	64.4	63.8	62.8
4/5/2023	7:00 AM	1 hour	63.7	59.5	69.9	66.0	65.1	64.6	64.2	63.5	62.5
4/5/2023	8:00 AM	1 hour	62.2	57.3	72.8	64.7	63.7	63.1	62.6	61.9	60.8
4/5/2023	9:00 AM	1 hour	62.8	58.7	69.2	65.1	64.2	63.7	63.3	62.5	61.4
4/5/2023	10:00 AM	50 minutes	63.7	58.7	81.8	67.5	66.2	65.1	64.1	63.0	61.8
	Daytime (7 AM to 7 PM)										
	Evening (7 PM to 10 PM)										
	Nightime (10 PM to 7 AM)										
	24-hour CNEL		***67.7***	-	***24-hour DNL***		-	-	-	-	-

TABLE 2: SUMMARY OF SHORT-TERM NOISE MONITORING DATA											
Site	**Date**	**Start Time**	**Duration**	**Leq**	**Lmin**	**Lmax**	**L1.70**	**L8.30**	**L16.70**	**L25**	**L50**	**L90**
ST01	4/5/2023	11:27 AM	20 minutes	57.5	50.0	70.7	61.9	60.2	59.9	58.3	56.6	54.5
LT01	4/5/2023	11:27 AM	20 minutes	57.8	49.3	68.5	61.9	60.3	59.6	58.7	57.1	54.9
ST02	4/5/2023	12:00 PM	20 minutes	59.6	53.5	70.0	63.4	62.3	61.8	59.9	59.0	57.6
LT01	4/5/2023	12:00 PM	20 minutes	59.0	53.1	74.0	64.9	62.4	60.6	59.4	57.5	55.9
ST03	4/5/2023	12:36 PM	20 minutes	58.0	48.8	79.5	66.1	62.2	61.0	57.0	55.0	53.5
LT01	4/5/2023	12:36 PM	20 minutes	57.4	50.9	65.4	61.3	59.9	58.6	58.0	56.7	55.3
ST04	4/5/2023	1:18 PM	20 minutes	62.3	48.1	87.3	73.9	65.6	63.6	57.7	55.4	52.0
LT01	4/5/2023	1:18 PM	20 minutes	58.2	48.8	75.9	64.9	62.8	60.4	57.8	55.6	53.2
ST05	4/5/2023	2:00 PM	20 minutes	72.3	52.3	90.1	80.4	76.9	76.1	73.0	68.6	60.9
LT01	4/5/2023	2:00 PM	20 minutes	58.0	52.1	67.0	61.9	60.2	59.3	58.5	57.3	55.6

Summary

File Name on Meter	LTCitrus.001.s
File Name on PC	LxT_0005065-20230405 110000-LTCitrus.001.ldbin
Serial Number	0005065
Model	SoundTrack LxT®
Firmware Version	2.404
User	
Location	
Job Description	
Note	

Measurement

Description	April 5, 2023	
Start	2023-04-05	11:00:00
Stop	2023-04-06	11:00:00
Duration	24:00:00.0	
Run Time	24:00:00.0	
Pause	00:00:00.0	
Pre-Calibration	2023-04-05	10:57:17
Post-Calibration	2023-04-06	11:03:43
Calibration Deviation	-0.09	dB

Overall Settings

RMS Weight	A Weighting	
Peak Weight	A Weighting	
Detector	Slow	
Preamplifier	PRMLxT1L	
Microphone Correction	Off	
Integration Method	Exponential	
OBA Range	Normal	
OBA Bandwidth	1/1 and 1/3	
OBA Frequency Weighting	A Weighting	
OBA Max Spectrum	Bin Max	
Overload	122.5	dB

	A	**C**	**Z**	
Under Range Peak	**79.0**	76.0	81.0	dB
Under Range Limit	**24.2**	25.3	31.4	dB
Noise Floor	15.1	16.1	22.2	dB

	First	**Second**	**Third**
Instrument Identificati	L02	MIG INC	6-3802

Results

LA_{Seq}	60.7	
LASE	110.1	
EAS	11.313	mPa^2h
EAS8	3.771	mPa^2h

EAS40		18.855	mPa²h
LApeak (max)	2023-04-05 11:00:59	107.6	dB
LASmax	2023-04-06 10:46:52	81.8	dB
LASmin	2023-04-05 21:14:16	47.4	dB
SEA		-99.9	dB

	Exceedance Counts	Duration	
LAS > 70.0 dB	44	280.0	s
LAS > 80.0 dB	3	5.7	s
LApeak > 115.0 dB	0	0.0	s
LApeak > 135.0 dB	0	0.0	s
LApeak > 140.0 dB	0	0.0	s

Community Noise	Ldn	LDay 07:00-22:00	LNight 22:00-07:00	Lden	LDay 07:00-19:00	LEvening 19:00-22:00	LNight 22:00-07:00	
	67.5	60.3	61.3	67.7	60.7	58.5	61.3	dB

LCSeq	73.1	dB
LASeq	60.7	dB
LCSeq - LASeq	12.4	dB
LAIeq	61.9	dB
LAeq	60.7	dB
LAIeq - LAeq	1.2	dB

	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
Leq	60.7					
LS(max)	81.8	2023/04/06 10:46:52				
LS(min)	47.4	2023/04/05 21:14:16				
LPeak(max)	107.6	2023/04/05 11:00:59				

Overload Count	0	
Overload Duration	0.0	s
OBA Overload Count	0	
OBA Overload Duratior	0.0	s

Dose Settings

Dose Name	OSHA-1	OSHA-2	
Exchange Rate	5	5	dB
Threshold	90	80	dB
Criterion Level	90	90	dB
Criterion Duration	8	8	h

Results			
Dose	-99.94	0.00	%
Projected Dose	-99.94	0.00	%
TWA (Projected)	-99.9	5.0	dB
TWA (t)	-99.9	13.0	dB
Lep (t)	65.5	65.5	dB

Statistics		
LAS 1.67	66.4	dB
LAS 8.34	64.1	dB
LAS 16.70	63.0	dB
LAS 25.00	62.0	dB
LAS 50.00	58.9	dB
LAS 90.00	54.2	dB

APPENDIX B: Construction Noise and Vibration Estimates

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Roadway Construction Noise Model (RCNM),Version 1.1

Report dat ########
Case Desci Demolition

---- Receptor #1 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
R01	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	300	0
Concrete Saw	No	20		89.6	300	0
Excavator	No	40		80.7	300	0
Dozer	No	40		81.7	300	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	74	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Saw	74	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	65.1	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	66.1	62.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	74	71.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
R02	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	160	0
Concrete Saw	No	20		89.6	160	0
Excavator	No	40		80.7	160	0
Dozer	No	40		81.7	160	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	79.5	72.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Saw	79.5	72.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	70.6	66.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	71.6	67.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	79.5	76.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
R03	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	140	0
Concrete Saw	No	20		89.6	140	0
Excavator	No	40		80.7	140	0
Dozer	No	40		81.7	140	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	80.6	73.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Concrete Saw		80.6	73.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		71.8	67.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		72.7	68.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	80.6	77.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R04	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	180	0
Concrete Saw	No	20		89.6	180	0
Excavator	No	40		80.7	180	0
Dozer	No	40		81.7	180	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	78.5	71.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Saw	78.5	71.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	69.6	65.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	70.5	66.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	78.5	75.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R05	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	300	0
Concrete Saw	No	20		89.6	300	0
Excavator	No	40		80.7	300	0
Dozer	No	40		81.7	300	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	74	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Saw	74	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	65.1	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	66.1	62.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	74	71.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R06	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	95	0
Concrete Saw	No	20		89.6	95	0
Excavator	No	40		80.7	95	0
Dozer	No	40		81.7	95	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq

Concrete Saw		84	77	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Saw		84	77	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		75.1	71.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		76.1	72.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	84	81.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R07	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	215	0
Concrete Saw	No	20		89.6	215	0
Excavator	No	40		80.7	215	0
Dozer	No	40		81.7	215	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	76.9	69.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Saw	76.9	69.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	68	64.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	69	65	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	76.9	74	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #8 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R08	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	150	0
Concrete Saw	No	20		89.6	150	0
Excavator	No	40		80.7	150	0
Dozer	No	40		81.7	150	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	80	73	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Saw	80	73	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	71.2	67.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	72.1	68.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	80	77.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #9 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R09	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	425	0
Concrete Saw	No	20		89.6	425	0
Excavator	No	40		80.7	425	0
Dozer	No	40		81.7	425	0

Results

Calculated (dBA)	Noise Limits (dBA)			Noise Limit Exceedance (dBA)		
	Day	Evening	Night	Day	Evening	Night

Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	71	64	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Saw	71	64	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	62.1	58.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	63.1	59.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	71	68.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #10 ----

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
R10	Residentia	55	55	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	940	0
Concrete Saw	No	20		89.6	940	0
Excavator	No	40		80.7	940	0
Dozer	No	40		81.7	940	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	64.1	57.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Saw	64.1	57.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	55.2	51.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	56.2	52.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	64.1	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #11 ----

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
R11	Residentia	55	55	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	585	0
Concrete Saw	No	20		89.6	585	0
Excavator	No	40		80.7	585	0
Dozer	No	40		81.7	585	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	68.2	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Saw	68.2	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	59.3	55.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	60.3	56.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	68.2	65.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #12 ----

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
R12	Residentia	55	55	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	555	0
Concrete Saw	No	20		89.6	555	0
Excavator	No	40		80.7	555	0
Dozer	No	40		81.7	555	0

Results

Calculated (dBA) Noise Limits (dBA) Noise Limit Exceedance (dBA)

			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	68.7	61.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Saw	68.7	61.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	59.8	55.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	60.8	56.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	68.7	65.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

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---- Receptor #1 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
R01	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	490	0
Tractor	No	40	84		490	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	61.8	57.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	64.2	60.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	64.2	62.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
R02	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	290	0
Tractor	No	40	84		290	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	66.4	62.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	68.7	64.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	68.7	66.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
R03	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	365	0
Tractor	No	40	84		365	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	64.4	60.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	66.7	62.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	66.7	64.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
R04	Residentia	55	55	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	265	0
Tractor	No	40	84		265	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	67.2	63.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	69.5	65.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	69.5	67.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R05	Residentia	55	55	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	580	0
Tractor	No	40	84		580	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	60.4	56.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	62.7	58.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	62.7	60.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R06	Residentia	55	55	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	365	0
Tractor	No	40	84		365	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	64.4	60.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	66.7	62.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	66.7	64.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R07	Residentia	55	55	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	370	0
Tractor	No	40	84		370	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	64.3	60.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Tractor		66.6	62.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	Total	66.6	64.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		

*Calculated Lmax is the Loudest value.

---- Receptor #8 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R08	Residentia	55	55	55

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Dozer	No	40		81.7	480	0
Tractor	No	40	84		480	0

		Results											
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)				
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	62	58	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	64.4	60.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	64.4	62.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #9 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R09	Residentia	55	55	55

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Dozer	No	40		81.7	780	0
Tractor	No	40	84		780	0

		Results											
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)				
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	60.1	56.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	60.1	58.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #10 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R10	Residentia	55	55	55

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Dozer	No	40		81.7	860	0
Tractor	No	40	84		860	0

		Results											
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)				
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	57	53	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	59.3	55.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	59.3	57.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #11 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R11	Residentia	55	55	55

			Equipment			
			Spec	Actual	Receptor	Estimated

Description	Impact Device	Usage(%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Dozer	No	40		81.7	650	0
Tractor	No	40	84		650	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	59.4	55.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	61.7	57.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	61.7	59.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #12 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R12	Residentia	55	55	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	655	0
Tractor	No	40	84		655	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	59.3	55.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	61.7	57.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	61.7	59.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

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---- Receptor #1 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
R01	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	145	0
Tractor	No	40	84		145	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	72.4	68.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	74.8	70.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	74.8	72.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
R02	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	90	0
Tractor	No	40	84		90	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	76.6	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	78.9	74.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	78.9	76.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
R03	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	85	0
Tractor	No	40	84		85	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	77.1	73.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	79.4	75.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	79.4	77.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
R04	Residentia	55	55	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	95	0
Tractor	No	40	84		95	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	76.1	72.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	78.4	74.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	78.4	76.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R05	Residentia	55	55	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	210	0
Tractor	No	40	84		210	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	69.2	65.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	71.5	67.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	71.5	69.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R06	Residentia	55	55	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	25	0
Tractor	No	40	84		25	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	87.7	83.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	90	86	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	90	88	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R07	Residentia	55	55	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	30	0
Tractor	No	40	84		30	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	86.1	82.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Tractor		88.4	84.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	Total	88.4	86.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

*Calculated Lmax is the Loudest value.

---- Receptor #8 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R08	Residentia	55	55	55

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Dozer	No	40		81.7	35	0
Tractor	No	40	84		35	0

		Results											
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)				
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	84.8	80.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	87.1	83.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	87.1	85.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #9 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R09	Residentia	55	55	55

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Dozer	No	40		81.7	300	0
Tractor	No	40	84		300	0

		Results											
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)				
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	66.1	62.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	68.4	64.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	68.4	66.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #10 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R10	Residentia	55	55	55

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Dozer	No	40		81.7	380	0
Tractor	No	40	84		380	0

		Results											
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)				
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	64.1	60.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	66.4	62.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	66.4	64.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #11 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R11	Residentia	55	55	55

			Equipment			
			Spec	Actual	Receptor	Estimated

Description	Impact Device	Usage(%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Dozer	No	40		81.7	190	0
Tractor	No	40	84		190	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	70.1	66.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	72.4	68.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	72.4	70.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #12 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R12	Residentia	55	55	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	215	0
Tractor	No	40	84		215	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	69	65	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	71.3	67.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	71.3	69.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

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---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R01	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	490	0
Tractor	No	40	84		490	0
Excavator	No	40		80.7	490	0
Tractor	No	40	84		490	0
Grader	No	40	85		490	0
Grader	No	40	85		490	0
Grader	No	40	85		490	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	61.8	57.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	64.2	60.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	60.9	56.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	64.2	60.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	65.2	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	65.2	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	65.2	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	65.2	68.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R02	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	290	0
Tractor	No	40	84		290	0
Excavator	No	40		80.7	290	0
Tractor	No	40	84		290	0
Grader	No	40	85		290	0
Grader	No	40	85		290	0
Grader	No	40	85		290	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	66.4	62.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	68.7	64.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	65.4	61.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	68.7	64.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	69.7	65.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	69.7	65.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	69.7	65.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	69.7	73.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R03	Residentia	55	55	55

			Equipment			
			Spec	Actual	Receptor	Estimated

Description	Impact Device	Usage(%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Dozer	No	40		81.7	365	0
Tractor	No	40	84		365	0
Excavator	No	40		80.7	365	0
Tractor	No	40	84		365	0
Grader	No	40	85		365	0
Grader	No	40	85		365	0
Grader	No	40	85		365	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	64.4	60.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	66.7	62.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	63.4	59.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	66.7	62.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	67.7	63.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	67.7	63.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	67.7	63.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	67.7	71.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
R04	Residentia	55	55	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	265	0
Tractor	No	40	84		265	0
Excavator	No	40		80.7	265	0
Tractor	No	40	84		265	0
Grader	No	40	85		265	0
Grader	No	40	85		265	0
Grader	No	40	85		265	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	67.2	63.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	69.5	65.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	66.2	62.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	69.5	65.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	70.5	66.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	70.5	66.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	70.5	66.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	70.5	73.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
R05	Residentia	55	55	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	580	0
Tractor	No	40	84		580	0
Excavator	No	40		80.7	580	0
Tractor	No	40	84		580	0
Grader	No	40	85		580	0
Grader	No	40	85		580	0
Grader	No	40	85		580	0

Results

Calculated (dBA)	Noise Limits (dBA)	Noise Limit Exceedance (dBA)

Equipment	*Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Dozer	60.4	56.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	62.7	58.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	59.4	55.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	62.7	58.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	63.7	59.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	63.7	59.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	63.7	59.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	63.7	67.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R06	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	365	0
Tractor	No	40	84		365	0
Excavator	No	40		80.7	365	0
Tractor	No	40	84		365	0
Grader	No	40	85		365	0
Grader	No	40	85		365	0
Grader	No	40	85		365	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Dozer	64.4	60.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	66.7	62.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	63.4	59.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	66.7	62.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	67.7	63.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	67.7	63.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	67.7	63.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	67.7	71.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R07	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	370	0
Tractor	No	40	84		370	0
Excavator	No	40		80.7	370	0
Tractor	No	40	84		370	0
Grader	No	40	85		370	0
Grader	No	40	85		370	0
Grader	No	40	85		370	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Dozer	64.3	60.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	66.6	62.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	63.3	59.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	66.6	62.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	67.6	63.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	67.6	63.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	67.6	63.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	67.6	71	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #8 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R08	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	480	0
Tractor	No	40	84		480	0
Excavator	No	40		80.7	480	0
Tractor	No	40	84		480	0
Grader	No	40	85		480	0
Grader	No	40	85		480	0
Grader	No	40	85		480	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	62	58	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	64.4	60.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	61.1	57.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	64.4	60.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	65.4	61.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	65.4	61.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	65.4	61.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	65.4	68.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #9 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R09	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	780	0
Tractor	No	40	84		780	0
Excavator	No	40		80.7	780	0
Tractor	No	40	84		780	0
Grader	No	40	85		780	0
Grader	No	40	85		780	0
Grader	No	40	85		780	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	60.1	56.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	56.8	52.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	60.1	56.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	61.1	57.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	61.1	57.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	61.1	57.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	61.1	64.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #10 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R10	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	860	0
Tractor	No	40	84		860	0
Excavator	No	40		80.7	860	0

Tractor	No	40	84	860	0
Grader	No	40	85	860	0
Grader	No	40	85	860	0
Grader	No	40	85	860	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	57	53	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	59.3	55.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	56	52	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	59.3	55.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	60.3	56.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	60.3	56.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	60.3	56.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	60.3	63.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #11 ----

		Baselines (dBA)		
Descriptio	Land Use	Daytime	Evening	Night
R11	Residentia	55	55	55

			Equipment Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding
Description	Impact Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Dozer	No	40		81.7	650	0
Tractor	No	40	84		650	0
Excavator	No	40		80.7	650	0
Tractor	No	40	84		650	0
Grader	No	40	85		650	0
Grader	No	40	85		650	0
Grader	No	40	85		650	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	59.4	55.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	61.7	57.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	58.4	54.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	61.7	57.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	62.7	58.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	62.7	58.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	62.7	58.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	62.7	66.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #12 ----

		Baselines (dBA)		
Descriptio	Land Use	Daytime	Evening	Night
R12	Residentia	55	55	55

			Equipment Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding
Description	Impact Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Dozer	No	40		81.7	655	0
Tractor	No	40	84		655	0
Excavator	No	40		80.7	655	0
Tractor	No	40	84		655	0
Grader	No	40	85		655	0
Grader	No	40	85		655	0
Grader	No	40	85		655	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	59.3	55.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	61.7	57.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	58.4	54.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Tractor		61.7	57.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		62.7	58.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		62.7	58.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		62.7	58.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	62.7	66	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

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---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R01	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	145	0
Tractor	No	40	84		145	0
Excavator	No	40		80.7	145	0
Tractor	No	40	84		145	0
Grader	No	40	85		145	0
Grader	No	40	85		145	0
Grader	No	40	85		145	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	72.4	68.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	74.8	70.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	71.5	67.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	74.8	70.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	75.8	71.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	75.8	71.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	75.8	71.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	75.8	79.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R02	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	90	0
Tractor	No	40	84		90	0
Excavator	No	40		80.7	90	0
Tractor	No	40	84		90	0
Grader	No	40	85		90	0
Grader	No	40	85		90	0
Grader	No	40	85		90	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	76.6	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	78.9	74.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	75.6	71.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	78.9	74.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	79.9	75.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	79.9	75.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	79.9	75.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	79.9	83.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R03	Residentia	55	55	55

Equipment

	Spec	Actual	Receptor	Estimated

Description	Impact Device	Usage(%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Dozer	No	40		81.7	85	0
Tractor	No	40	84		85	0
Excavator	No	40		80.7	85	0
Tractor	No	40	84		85	0
Grader	No	40	85		85	0
Grader	No	40	85		85	0
Grader	No	40	85		85	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	77.1	73.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	79.4	75.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	76.1	72.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	79.4	75.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	80.4	76.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	80.4	76.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	80.4	76.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	80.4	83.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R04	Residentia	55	55	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	95	0
Tractor	No	40	84		95	0
Excavator	No	40		80.7	95	0
Tractor	No	40	84		95	0
Grader	No	40	85		95	0
Grader	No	40	85		95	0
Grader	No	40	85		95	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	76.1	72.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	78.4	74.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	75.1	71.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	78.4	74.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	79.4	75.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	79.4	75.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	79.4	75.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	79.4	82.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R05	Residentia	55	55	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	210	0
Tractor	No	40	84		210	0
Excavator	No	40		80.7	210	0
Tractor	No	40	84		210	0
Grader	No	40	85		210	0
Grader	No	40	85		210	0
Grader	No	40	85		210	0

Results

Calculated (dBA)	Noise Limits (dBA)	Noise Limit Exceedance (dBA)

Equipment	*Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Dozer	69.2	65.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	71.5	67.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	68.2	64.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	71.5	67.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	72.5	68.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	72.5	68.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	72.5	68.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	72.5	75.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
R06	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	25	0
Tractor	No	40	84		25	0
Excavator	No	40		80.7	25	0
Tractor	No	40	84		25	0
Grader	No	40	85		25	0
Grader	No	40	85		25	0
Grader	No	40	85		25	0

Results

Equipment	Calculated (dBA) *Lmax	Calculated (dBA) Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Dozer	87.7	83.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	90	86	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	86.7	82.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	90	86	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	91	87	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	91	87	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	91	87	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	91	94.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
R07	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	30	0
Tractor	No	40	84		30	0
Excavator	No	40		80.7	30	0
Tractor	No	40	84		30	0
Grader	No	40	85		30	0
Grader	No	40	85		30	0
Grader	No	40	85		30	0

Results

Equipment	Calculated (dBA) *Lmax	Calculated (dBA) Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Dozer	86.1	82.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	88.4	84.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	85.1	81.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	88.4	84.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	89.4	85.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	89.4	85.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	89.4	85.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	89.4	92.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #8 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R08	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	35	0
Tractor	No	40	84		35	0
Excavator	No	40		80.7	35	0
Tractor	No	40	84		35	0
Grader	No	40	85		35	0
Grader	No	40	85		35	0
Grader	No	40	85		35	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	84.8	80.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	87.1	83.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	83.8	79.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	87.1	83.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	88.1	84.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	88.1	84.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	88.1	84.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	88.1	91.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #9 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R09	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	300	0
Tractor	No	40	84		300	0
Excavator	No	40		80.7	300	0
Tractor	No	40	84		300	0
Grader	No	40	85		300	0
Grader	No	40	85		300	0
Grader	No	40	85		300	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	66.1	62.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	68.4	64.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	65.1	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	68.4	64.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	69.4	65.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	69.4	65.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	69.4	65.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	69.4	72.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #10 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R10	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	380	0
Tractor	No	40	84		380	0
Excavator	No	40		80.7	380	0

Tractor	No	40	84	380	0
Grader	No	40	85	380	0
Grader	No	40	85	380	0
Grader	No	40	85	380	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	64.1	60.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	66.4	62.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	63.1	59.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	66.4	62.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	67.4	63.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	67.4	63.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	67.4	63.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	67.4	70.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #11 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R11	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	190	0
Tractor	No	40	84		190	0
Excavator	No	40		80.7	190	0
Tractor	No	40	84		190	0
Grader	No	40	85		190	0
Grader	No	40	85		190	0
Grader	No	40	85		190	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	70.1	66.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	72.4	68.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	69.1	65.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	72.4	68.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	73.4	69.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	73.4	69.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	73.4	69.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	73.4	76.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #12 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R12	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	215	0
Tractor	No	40	84		215	0
Excavator	No	40		80.7	215	0
Tractor	No	40	84		215	0
Grader	No	40	85		215	0
Grader	No	40	85		215	0
Grader	No	40	85		215	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	69	65	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	71.3	67.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	68	64.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Tractor		71.3	67.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		72.3	68.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		72.3	68.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		72.3	68.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	72.3	75.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report dat ########
Case Desci Trenching

---- Receptor #1 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
R01	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No	20		74.7	340	0
Tractor	No	40	84		340	0
Backhoe	No	40		77.6	340	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Man Lift	58	51.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	67.3	63.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	60.9	56.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	67.3	64.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
R02	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No	20		74.7	415	0
Tractor	No	40	84		415	0
Backhoe	No	40		77.6	415	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Man Lift	56.3	49.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	65.6	61.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	59.2	55.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	65.6	62.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
R03	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No	20		74.7	605	0
Tractor	No	40	84		605	0
Backhoe	No	40		77.6	605	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Man Lift	53	46.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	62.3	58.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	55.9	51.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	62.3	59.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R04	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No	20		74.7	350	0
Tractor	No	40	84		350	0
Backhoe	No	40		77.6	350	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Man Lift	57.8	50.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	67.1	63.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	60.7	56.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	67.1	64.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R05	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No	20		74.7	365	0
Tractor	No	40	84		365	0
Backhoe	No	40		77.6	365	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Man Lift	57.4	50.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	66.7	62.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	60.3	56.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	66.7	63.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R06	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No	20		74.7	135	0
Tractor	No	40	84		135	0
Backhoe	No	40		77.6	135	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Man Lift	66.1	59.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	75.4	71.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	68.9	65	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	75.4	72.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R07	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No	20		74.7	130	0
Tractor	No	40	84		130	0
Backhoe	No	40		77.6	130	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Man Lift	66.4	59.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	75.7	71.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	69.3	65.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	75.7	72.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #8 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R08	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No	20		74.7	350	0
Tractor	No	40	84		350	0
Backhoe	No	40		77.6	350	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Man Lift	57.8	50.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	67.1	63.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	60.7	56.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	67.1	64.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #9 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R09	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No	20		74.7	630	0
Tractor	No	40	84		630	0
Backhoe	No	40		77.6	630	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Man Lift	52.7	45.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	62	58	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	55.6	51.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	62	59.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #10 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R10	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No	20		74.7	680	0

Tractor	No	40	84	680	0
Backhoe	No	40	77.6	680	0

		Results											
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Man Lift	52	45	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	61.3	57.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	54.9	50.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	61.3	58.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #11 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R11	Residentia	55	55	55

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Man Lift	No	20		74.7	325	0
Tractor	No	40	84		325	0
Backhoe	No	40		77.6	325	0

		Results											
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Man Lift	58.4	51.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	67.7	63.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	61.3	57.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	67.7	64.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #12 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R12	Residentia	55	55	55

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Man Lift	No	20		74.7	325	0
Tractor	No	40	84		325	0
Backhoe	No	40		77.6	325	0

		Results											
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Man Lift	58.4	51.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	67.7	63.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	61.3	57.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	67.7	64.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

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---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R01	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	375	0
Man Lift	No	20		74.7	375	0
Man Lift	No	20		74.7	375	0
Generator	No	50		80.6	375	0
Generator	No	50		80.6	375	0
Generator	No	50		80.6	375	0
Tractor	No	40	84		375	0
Tractor	No	40	84		375	0
Welder / Torch	No	40		74	375	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	63	55.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	57.2	50.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	57.2	50.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	63.1	60.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	63.1	60.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	63.1	60.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	66.5	62.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	66.5	62.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	56.5	52.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	66.5	68.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R02	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	325	0
Man Lift	No	20		74.7	325	0
Man Lift	No	20		74.7	325	0
Generator	No	50		80.6	325	0
Generator	No	50		80.6	325	0
Generator	No	50		80.6	325	0
Tractor	No	40	84		325	0
Tractor	No	40	84		325	0
Welder / Torch	No	40		74	325	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	64.3	56.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	58.4	51.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	58.4	51.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	64.4	61.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	64.4	61.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	64.4	61.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	67.7	63.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	67.7	63.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	57.7	53.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	67.7	69.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R03	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	115	0
Man Lift	No	20		74.7	115	0
Man Lift	No	20		74.7	115	0
Generator	No	50		80.6	115	0
Generator	No	50		80.6	115	0
Generator	No	50		80.6	115	0
Tractor	No	40	84		115	0
Tractor	No	40	84		115	0
Welder / Torch	No	40		74	115	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	73.3	65.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	67.5	60.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	67.5	60.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	73.4	70.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	73.4	70.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	73.4	70.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	76.8	72.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	76.8	72.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	66.8	62.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	76.8	78.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R04	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	335	0
Man Lift	No	20		74.7	335	0
Man Lift	No	20		74.7	335	0
Generator	No	50		80.6	335	0
Generator	No	50		80.6	335	0
Generator	No	50		80.6	335	0
Tractor	No	40	84		335	0
Tractor	No	40	84		335	0
Welder / Torch	No	40		74	335	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	64	56.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	58.2	51.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	58.2	51.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	64.1	61.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	64.1	61.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	64.1	61.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	67.5	63.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	67.5	63.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	57.5	53.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	67.5	69.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night

R05	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	455	0
Man Lift	No	20		74.7	455	0
Man Lift	No	20		74.7	455	0
Generator	No	50		80.6	455	0
Generator	No	50		80.6	455	0
Generator	No	50		80.6	455	0
Tractor	No	40	84		455	0
Tractor	No	40	84		455	0
Welder / Torch	No	40		74	455	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	61.4	53.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	55.5	48.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	55.5	48.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	61.4	58.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	61.4	58.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	61.4	58.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	64.8	60.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	64.8	60.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	54.8	50.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	64.8	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

		Baselines (dBA)		
Descriptio	Land Use	Daytime	Evening	Night
R06	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	230	0
Man Lift	No	20		74.7	230	0
Man Lift	No	20		74.7	230	0
Generator	No	50		80.6	230	0
Generator	No	50		80.6	230	0
Generator	No	50		80.6	230	0
Tractor	No	40	84		230	0
Tractor	No	40	84		230	0
Welder / Torch	No	40		74	230	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	67.3	59.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	61.4	54.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	61.4	54.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	67.4	64.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	67.4	64.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	67.4	64.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	70.7	66.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	70.7	66.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	60.7	56.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	70.7	72.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

		Baselines (dBA)		
Descriptio	Land Use	Daytime	Evening	Night
R07	Residentia	55	55	55

Equipment	Spec	Actual	Receptor	Estimated

Description	Impact Device	Usage(%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Crane	No	16		80.6	175	0
Man Lift	No	20		74.7	175	0
Man Lift	No	20		74.7	175	0
Generator	No	50		80.6	175	0
Generator	No	50		80.6	175	0
Generator	No	50		80.6	175	0
Tractor	No	40	84		175	0
Tractor	No	40	84		175	0
Welder / Torch	No	40		74	175	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	69.7	61.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	63.8	56.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	63.8	56.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	69.7	66.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	69.7	66.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	69.7	66.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	63.1	59.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	73.1	75.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #8 ----

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
R08	Residentia	55	55	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	335	0
Man Lift	No	20		74.7	335	0
Man Lift	No	20		74.7	335	0
Generator	No	50		80.6	335	0
Generator	No	50		80.6	335	0
Generator	No	50		80.6	335	0
Tractor	No	40	84		335	0
Tractor	No	40	84		335	0
Welder / Torch	No	40		74	335	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	64	56.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	58.2	51.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	58.2	51.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	64.1	61.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	64.1	61.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	64.1	61.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	67.5	63.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	67.5	63.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	57.5	53.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	67.5	69.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #9 ----

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
R09	Residentia	55	55	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	620	0
Man Lift	No	20		74.7	620	0

Man Lift	No	20		74.7	620	0
Generator	No	50		80.6	620	0
Generator	No	50		80.6	620	0
Generator	No	50		80.6	620	0
Tractor	No	40	84		620	0
Tractor	No	40	84		620	0
Welder / Torch	No	40		74	620	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	58.7	50.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	52.8	45.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	52.8	45.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	58.8	55.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	58.8	55.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	58.8	55.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	62.1	58.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	62.1	58.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	52.1	48.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	62.1	64.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #10 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R10	Residentia	55	55	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	945	0
Man Lift	No	20		74.7	945	0
Man Lift	No	20		74.7	945	0
Generator	No	50		80.6	945	0
Generator	No	50		80.6	945	0
Generator	No	50		80.6	945	0
Tractor	No	40	84		945	0
Tractor	No	40	84		945	0
Welder / Torch	No	40		74	945	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	55	47.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	49.2	42.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	49.2	42.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	55.1	52.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	55.1	52.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	55.1	52.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	58.5	54.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	58.5	54.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	48.5	44.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	58.5	60.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #11 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R11	Residentia	55	55	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	420	0
Man Lift	No	20		74.7	420	0
Man Lift	No	20		74.7	420	0
Generator	No	50		80.6	420	0
Generator	No	50		80.6	420	0
Generator	No	50		80.6	420	0

Tractor	No	40	84		420	0
Tractor	No	40	84		420	0
Welder / Torch	No	40		74	420	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	62.1	54.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	56.2	49.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	56.2	49.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	62.1	59.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	62.1	59.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	62.1	59.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	65.5	61.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	65.5	61.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	55.5	51.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	65.5	67.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #12 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R12	Residentia	55	55	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	420	0
Man Lift	No	20		74.7	420	0
Man Lift	No	20		74.7	420	0
Generator	No	50		80.6	420	0
Generator	No	50		80.6	420	0
Generator	No	50		80.6	420	0
Tractor	No	40	84		420	0
Tractor	No	40	84		420	0
Welder / Torch	No	40		74	420	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	62.1	54.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	56.2	49.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	56.2	49.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	62.1	59.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	62.1	59.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	62.1	59.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	65.5	61.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	65.5	61.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	55.5	51.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	65.5	67.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

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Case Desci Paving

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R01	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	340	0
Roller	No	20		80	340	0
Paver	No	50		77.2	340	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	60.6	57.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	63.3	56.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	60.6	57.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	63.3	62	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R02	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	415	0
Roller	No	20		80	415	0
Paver	No	50		77.2	415	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	58.8	55.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	61.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	58.8	55.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	61.6	60.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R03	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	605	0
Roller	No	20		80	605	0
Paver	No	50		77.2	605	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	55.6	52.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	58.3	51.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	55.6	52.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	58.3	57	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R04	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	350	0
Roller	No	20		80	350	0
Paver	No	50		77.2	350	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Paver	60.3	57.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	63.1	56.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	60.3	57.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	63.1	61.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R05	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	365	0
Roller	No	20		80	365	0
Paver	No	50		77.2	365	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Paver	60	56.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	62.7	55.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	60	56.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	62.7	61.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R06	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	135	0
Roller	No	20		80	135	0
Paver	No	50		77.2	135	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Paver	68.6	65.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	71.4	64.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	68.6	65.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	71.4	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R07	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	130	0
Roller	No	20		80	130	0
Paver	No	50		77.2	130	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	68.9	65.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	71.7	64.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	68.9	65.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	71.7	70.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #8 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R08	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	350	0
Roller	No	20		80	350	0
Paver	No	50		77.2	350	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	60.3	57.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	63.1	56.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	60.3	57.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	63.1	61.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #9 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R09	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	630	0
Roller	No	20		80	630	0
Paver	No	50		77.2	630	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	55.2	52.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	58	51	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	55.2	52.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	58	56.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #10 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R10	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	680	0

Roller	No	20	80	680	0
Paver	No	50	77.2	680	0

		Results													
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)						
			Day		Evening		Night		Day		Evening		Night		
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	
Paver	54.5	51.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Roller	57.3	50.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Paver	54.5	51.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Total	57.3	55.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

*Calculated Lmax is the Loudest value.

---- Receptor #11 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R11	Residentia	55	55	55

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Paver	No	50		77.2	325	0
Roller	No	20		80	325	0
Paver	No	50		77.2	325	0

		Results													
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)						
			Day		Evening		Night		Day		Evening		Night		
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	
Paver	61	58	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Roller	63.7	56.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Paver	61	58	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Total	63.7	62.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

*Calculated Lmax is the Loudest value.

---- Receptor #12 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R12	Residentia	55	55	55

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Paver	No	50		77.2	325	0
Roller	No	20		80	325	0
Paver	No	50		77.2	325	0

		Results													
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)						
			Day		Evening		Night		Day		Evening		Night		
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	
Paver	61	58	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Roller	63.7	56.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Paver	61	58	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Total	63.7	62.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

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---- Receptor #1 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
R01	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	375	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	60.2	56.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	60.2	56.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
R02	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	325	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	61.4	57.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	61.4	57.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
R03	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	115	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	70.4	66.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	70.4	66.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Descriptio	Land Use	Baselines (dBA) Daytime	Evening	Night
R04	Residentia	55	55	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	335	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)		61.1	57.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	61.1	57.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R05	Residentia	55	55	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	455	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)		58.5	54.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	58.5	54.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R06	Residentia	55	55	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	230	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)		64.4	60.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	64.4	60.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R07	Residentia	55	55	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	175	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)		66.8	62.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	66.8	62.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #8 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R08	Residentia	55	55	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	335	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	61.1	57.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	61.1	57.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #9 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R09	Residentia	55	55	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	620	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	55.8	51.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	55.8	51.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #10 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R10	Residentia	55	55	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	945	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	52.1	48.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	52.1	48.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #11 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R11	Residentia	55	55	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	420	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	59.2	55.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	59.2	55.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #12 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R12	Residentia	55	55	55

Equipment

Impact	Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding

Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Compressor (air)	No	40		77.7	420	0

	Calculated (dBA)		Results						Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	59.2	55.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	59.2	55.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

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APPENDIX C: Operational Noise Level Estimates

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Fontana Citrus Warehouse Project
Citrus Avenue and Slover Avenue Fontana, CA

Appendix: On-Site Operational Noise Level Estimates
Prepared by: MIG, Inc.
March 2023

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Sheet 1: Reference Noise Level Information

Noise Source	Reference dBA @ 3 Feet	Duration (Seconds)	Estimated Hourly Leq @ 3 Feet
Automobile Travel			
Low speed travel (15 mph)/parking	*55*	*30*	*34.2*
Door closing	*90*	*1*	*54.4*
Engine start/rev	*90*	*10*	*64.4*
Total Combined Noise Level			*64.9*
Truck Travel / Dock Activity			
Low speed travel (15 mph)	*96*	*30*	*75.2*
Maneuvering (with backup alarm)	*100*	*150*	*86.2*
Air brake release	*98*	*3*	*67.2*
Main engine idling	*86*	*900*	*80.0*
Door closing	*90*	*2*	*57.4*
Engine start/rev	*100*	*20*	*77.4*
Forklift Backup Alarm	*100*	*90*	*84.0*
Total Combined Noise Level			*89.3*
Truck Entrance Way			
Warehouse Noise Measurement	*71.4*	*3600*	*71.4*
HVAC Unit			
Operation (5 Ton, with parapet wall)	*80*	*2,400*	*73.2*

Note: 3 feet parapet wall assumed to provide 5 dBA shielding from HVAC units

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Sheet 2: Project Noise Level Estimates (dBA Leq)

Table 1: Estimated Noise Levels at Property Line Northwest R1						
On-Site Noise Source	**Reference Noise Data**		**Property Line (Single Source)**		**Property Line (Multiple Sources)**	
	Distance	**Hourly Leq dBA**	**Distance**	**Hourly Leq dBA**	**No. Sources**	**Hourly Leq dBA**
Truck Entrance 1	3	71.4	115	39.7	1	39.7
Truck Entrance 2	3	71.4	680	24.3	1	24.3
Truck Entrance 3	3	71.4	*Source does not contribute to noise levels at receptor location.*			
Truck Entrance 4	3	71.4	*Source does not contribute to noise levels at receptor location.*			
Drive Aisle 1	3	75.2	285	35.7	1	35.7
Drive Aisle 2	3	75.2	595	29.3	2	32.3
Drive Aisle 3	3	75.2	*Source does not contribute to noise levels at receptor location.*			
Docks 1-5	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 6-9	3	89.3	370	47.5	1	47.5
Docks 10-14	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 15-21	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 22-28	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 29-35	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 36-42	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 43-49	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 50-55	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Parking Area 1	3	64.9	280	25.5	10	35.5
Parking Area 2	3	64.9	*Source does not contribute to noise levels at receptor location.*			
Parking Area 3	3	64.9	*Source does not contribute to noise levels at receptor location.*			
Parking Area 4	3	64.9	*Source does not contribute to noise levels at receptor location.*			
HVAC 1	3	73.2	*Source does not contribute to noise levels at receptor location.*			
					Combined Noise Level	**48.8**

Table 2: Estimated Noise Levels at Property Line North R4						
On-Site Noise Source	**Reference Noise Data**		**Property Line (Single Source)**		**Property Line (Multiple Sources)**	
	Distance	**Hourly Leq dBA**	**Distance**	**Hourly Leq dBA**	**No. Sources**	**Hourly Leq dBA**
Truck Entrance 1	3	71.4	*Source does not contribute to noise levels at receptor location.*			
Truck Entrance 2	3	71.4	*Source does not contribute to noise levels at receptor location.*			
Truck Entrance 3	3	71.4	*Source does not contribute to noise levels at receptor location.*			
Truck Entrance 4	3	71.4	*Source does not contribute to noise levels at receptor location.*			
Drive Aisle 1	3	75.2	*Source does not contribute to noise levels at receptor location.*			
Drive Aisle 2	3	75.2	*Source does not contribute to noise levels at receptor location.*			
Drive Aisle 3	3	75.2	*Source does not contribute to noise levels at receptor location.*			
Docks 1-5	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 6-9	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 10-14	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 15-21	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 22-28	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 29-35	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 36-42	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 43-49	3	89.3	*Source does not contribute to noise levels at receptor location.*			

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Sheet 2: Project Noise Level Estimates (dBA Leq)

Docks 50-55	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Parking Area 1	3	64.9	*Source does not contribute to noise levels at receptor location.*			
Parking Area 2	3	64.9	315	24.4	10	34.4
Parking Area 3	3	64.9	*Source does not contribute to noise levels at receptor location.*			
Parking Area 4	3	64.9	*Source does not contribute to noise levels at receptor location.*			
HVAC 1	3	73.2	*Source does not contribute to noise levels at receptor location.*			
					Combined Noise Level	**34.4**

Table 3: Estimated Noise Levels at Property Line Northeast R6

On-Site Noise Source	Reference Noise Data		Property Line (Single Source)		Property Line (Multiple Sources)	
	Distance	Hourly Leq dBA	Distance	Hourly Leq dBA	No. Sources	Hourly Leq dBA
Truck Entrance 1	3	71.4	*Source does not contribute to noise levels at receptor location.*			
Truck Entrance 2	3	71.4	*Source does not contribute to noise levels at receptor location.*			
Truck Entrance 3	3	71.4	*Source does not contribute to noise levels at receptor location.*			
Truck Entrance 4	3	71.4	580	25.7	2	28.7
Drive Aisle 1	3	75.2	*Source does not contribute to noise levels at receptor location.*			
Drive Aisle 2	3	75.2	*Source does not contribute to noise levels at receptor location.*			
Drive Aisle 3	3	75.2	540	30.1	1	30.1
Docks 1-5	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 6-9	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 10-14	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 15-21	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 22-28	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 29-35	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 36-42	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 43-49	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 50-55	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Parking Area 1	3	64.9	*Source does not contribute to noise levels at receptor location.*			
Parking Area 2	3	64.9	70	37.5	10	47.5
Parking Area 3	3	64.9	185	29.1	10	39.1
Parking Area 4	3	64.9	355	23.4	10	33.4
HVAC 1	3	73.2	400	30.7	1	30.7
					Combined Noise Level	**48.4**

Table 4: Estimated Noise Levels at Property Line East R7

On-Site Noise Source	Reference Noise Data		Property Line (Single Source)		Property Line (Multiple Sources)	
	Distance	Hourly Leq dBA	Distance	Hourly Leq dBA	No. Sources	Hourly Leq dBA
Truck Entrance 1	3	71.4	*Source does not contribute to noise levels at receptor location.*			
Truck Entrance 2	3	71.4	*Source does not contribute to noise levels at receptor location.*			
Truck Entrance 3	3	71.4	*Source does not contribute to noise levels at receptor location.*			
Truck Entrance 4	3	71.4	385	29.2	2	32.2
Drive Aisle 1	3	75.2	*Source does not contribute to noise levels at receptor location.*			
Drive Aisle 2	3	75.2	*Source does not contribute to noise levels at receptor location.*			
Drive Aisle 3	3	75.2	345	34.0	1	34.0

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Docks 1-5	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 6-9	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 10-14	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 15-21	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 22-28	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 29-35	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 36-42	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 43-49	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 50-55	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Parking Area 1	3	64.9	*Source does not contribute to noise levels at receptor location.*			
Parking Area 2	3	64.9	145	31.2	10	41.2
Parking Area 3	3	64.9	35	43.5	10	53.5
Parking Area 4	3	64.9	165	30.0	10	40.0
HVAC 1	3	73.2	235	35.4	1	35.4
					Combined Noise Level	**54.1**

Table 5: Estimated Noise Levels at Property Line Southeast R8

On-Site Noise Source	**Reference Noise Data**		**Property Line (Single Source)**		**Property Line (Multiple Sources)**	
	Distance	**Hourly Leq dBA**	**Distance**	**Hourly Leq dBA**	**No. Sources**	**Hourly Leq dBA**
Truck Entrance 1	3	71.4	*Source does not contribute to noise levels at receptor location.*			
Truck Entrance 2	3	71.4	*Source does not contribute to noise levels at receptor location.*			
Truck Entrance 3	3	71.4	535	26.4	5	33.4
Truck Entrance 4	3	71.4	105	40.5	2	43.5
Drive Aisle 1	3	75.2	*Source does not contribute to noise levels at receptor location.*			
Drive Aisle 2	3	75.2	*Source does not contribute to noise levels at receptor location.*			
Drive Aisle 3	3	75.2	100	44.8	1	44.8
Docks 1-5	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 6-9	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 10-14	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 15-21	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 22-28	3	89.3	670	42.4	2	45.4
Docks 29-35	3	89.3	570	43.8	2	46.8
Docks 36-42	3	89.3	475	45.4	2	48.4
Docks 43-49	3	89.3	380	47.3	2	50.3
Docks 50-55	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Parking Area 1	3	64.9	*Source does not contribute to noise levels at receptor location.*			
Parking Area 2	3	64.9	460	21.1	10	31.1
Parking Area 3	3	64.9	335	23.9	10	33.9
Parking Area 4	3	64.9	175	29.5	10	39.5
HVAC 1	3	73.2	195	37.0	1	37.0
					Combined Noise Level	**55.2**

Table 6: Estimated Noise Levels at Property Line Southeast R9

On-Site Noise Source	**Reference Noise Data**		**Property Line (Single Source)**		**Property Line (Multiple Sources)**	
	Distance	**Hourly Leq dBA**	**Distance**	**Hourly Leq dBA**	**No. Sources**	**Hourly Leq dBA**

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Truck Entrance 1	3	71.4	*Source does not contribute to noise levels at receptor location.*			
Truck Entrance 2	3	71.4	*Source does not contribute to noise levels at receptor location.*			
Truck Entrance 3	3	71.4	*Source does not contribute to noise levels at receptor location.*			
Truck Entrance 4	3	71.4	345	30.2	2	33.2
Drive Aisle 1	3	75.2	*Source does not contribute to noise levels at receptor location.*			
Drive Aisle 2	3	75.2	*Source does not contribute to noise levels at receptor location.*			
Drive Aisle 3	3	75.2	365	33.5	1	33.5
Docks 1-5	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 6-9	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 10-14	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 15-21	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 22-28	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 29-35	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 36-42	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 43-49	3	89.3	650	42.6	2	45.6
Docks 50-55	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Parking Area 1	3	64.9	*Source does not contribute to noise levels at receptor location.*			
Parking Area 2	3	64.9	*Source does not contribute to noise levels at receptor location.*			
Parking Area 3	3	64.9	*Source does not contribute to noise levels at receptor location.*			
Parking Area 4	3	64.9	*Source does not contribute to noise levels at receptor location.*			
HVAC 1	3	73.2	455	29.6	1	29.6
					Combined Noise Level	**46.2**

Table 7: Estimated Noise Levels at Property Line Southwest R10						
On-Site Noise Source	**Reference Noise Data**		**Property Line (Single Source)**		**Property Line (Multiple Sources)**	
	Distance	**Hourly Leq dBA**	**Distance**	**Hourly Leq dBA**	**No. Sources**	**Hourly Leq dBA**
Truck Entrance 1	3	71.4	*Source does not contribute to noise levels at receptor location.*			
Truck Entrance 2	3	71.4	400	28.9	2	31.9
Truck Entrance 3	3	71.4	*Source does not contribute to noise levels at receptor location.*			
Truck Entrance 4	3	71.4	*Source does not contribute to noise levels at receptor location.*			
Drive Aisle 1	3	75.2	620	28.9	1	28.9
Drive Aisle 2	3	75.2	445	31.8	2	34.8
Drive Aisle 3	3	75.2	*Source does not contribute to noise levels at receptor location.*			
Docks 1-5	3	89.3	690	42.1	2	45.1
Docks 6-9	3	89.3	630	42.9	2	45.9
Docks 10-14	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 15-21	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 22-28	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 29-35	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 36-42	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 43-49	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 50-55	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Parking Area 1	3	64.9	595	18.9	10	28.9
Parking Area 2	3	64.9	*Source does not contribute to noise levels at receptor location.*			
Parking Area 3	3	64.9	*Source does not contribute to noise levels at receptor location.*			

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Parking Area 4	3	64.9	*Source does not contribute to noise levels at receptor location.*	
HVAC 1	3	73.2	*Source does not contribute to noise levels at receptor location.*	
			Combined Noise Level	**48.9**

Table 8: Estimated Noise Levels at Property Line West R12

On-Site Noise Source	Reference Noise Data		Property Line (Single Source)		Property Line (Multiple Sources)	
	Distance	Hourly Leq dBA	Distance	Hourly Leq dBA	No. Sources	Hourly Leq dBA
Truck Entrance 1	3	71.4	380	29.3	1	29.3
Truck Entrance 2	3	71.4	470	27.5	1	27.5
Truck Entrance 3	3	71.4	*Source does not contribute to noise levels at receptor location.*			
Truck Entrance 4	3	71.4	*Source does not contribute to noise levels at receptor location.*			
Drive Aisle 1	3	75.2	290	35.5	1	35.5
Drive Aisle 2	3	75.2	430	32.1	2	35.1
Drive Aisle 3	3	75.2	*Source does not contribute to noise levels at receptor location.*			
Docks 1-5	3	89.3	405	46.7	2	49.8
Docks 6-9	3	89.3	390	47.1	2	50.1
Docks 10-14	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 15-21	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 22-28	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 29-35	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 36-42	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 43-49	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Docks 50-55	3	89.3	*Source does not contribute to noise levels at receptor location.*			
Parking Area 1	3	64.9	235	27.0	10	37.0
Parking Area 2	3	64.9	*Source does not contribute to noise levels at receptor location.*			
Parking Area 3	3	64.9	*Source does not contribute to noise levels at receptor location.*			
Parking Area 4	3	64.9	*Source does not contribute to noise levels at receptor location.*			
HVAC 1	3	73.2	*Source does not contribute to noise levels at receptor location.*			
					Combined Noise Level	**53.2**