Appendix K

Noise Study
MIG, Inc.

Oasis at Indio Specific Plan

Noise Impact Analysis Report

November 22, 2023

CEQA Lead Agency:

City of Indio
Planning Department
100 Civic Center Drive
Indio, CA 92201

Project Applicant:

BH Properties
11111 Santa Monica Boulevard, Suite 600
Los Angeles, CA 90025

Prepared by:

1650 Spruce Street, Suite 106
Riverside, California 92507

This page was intentionally left blank.

Table of Contents

List of Tables

List of Figures

Appendices

List of Acronyms, Abbreviations, and Symbols	
Acronym / Abbreviation	Full Phrase or Description
AB	Assembly Bill
ALUC	Airport Land Use Commission
ALUCP	Airport Land Use Compatibility Plan
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
CFR	Code of Federal 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
DU	Dwelling Units
FAR	Floor Area Ratio
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
IID	Imperial Irrigation District
In/sec	Inches per Second
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
MUN	Mixed-Use Neighborhood
MU-SP	Mixed-Use Specific Plan
OITC	Outside-Indoor Transmission Class
OPR	Office of Planning and Research

List of Acronyms, Abbreviations, and Symbols	
Acronym / Abbreviation	Full Phrase or Description
PA	Planning Area
PRC	Public Resources Code
PPV	Peak Particle Velocity (inches/second)
R	Receptor
RC	Regional Commercial
RCNM	Roadway Construction Noise Model
ROW	Right-of-Way
Report	Noise and Vibration Impact Analysis Report (this document)
SCAQMD	South Coast Air Quality Management District
SF	Square Footage
SPR	Site Preparation
ST	Short-term
STC	Sound Transmission Class
TDM	Transportation Demand Management
TIA	Traffic Impact Analysis
TNM	Traffic Noise Model
UPRR	Union Pacific Railroad
VdB	Velocity Decibels
§	Section

EXECUTIVE SUMMARY

This Noise Impact Analysis Report (Report) evaluates and documents the potential noise and vibration impacts associated with the construction and operation of the proposed Oasis at Indio Specific Plan (proposed Project), a new specific plan that would guide land use and development decisions for an approximately 183-acre area in the north-central part of the City of Indio, in the Coachella Valley region of Riverside County, California. If approved, the proposed Project would support the sustainable development of both residential and non-residential land uses.

This Report is intended to assist the California Environmental Quality Act (CEQA) Lead Agency (the city of Indio) 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

The proposed Project would be located between Avenue 42 and Interstate 10 (I-10), in the north-central part of the City of Indio. The Project area is an approximately 183-acre, irregularly shaped, undeveloped area generally surrounded by a mix of agricultural, commercial, residential, and undeveloped, land uses. There are no schools within ¼ mile of the proposed Project area.

The proposed Project includes two primary land use districts in four planning areas (PA). A Mixed-Use District would permit multi-family residential uses (20 to 50 dwelling units (DU) per acre) and a variety of commercial non-residential uses (up to 0.50 floor to area ratio, or FAR), including lodging (i.e., a hotel or motel), in PA 1, PA 2, and PA 3. An Industrial District would allow a variety of light-industrial land uses (up to 0.60 FAR) in PA 4. The proposed Project would also set aside land for public right-of-way (ROW) dedication and internal circulation needs.

For analysis purposes, two possible development patterns have been developed, each of which are consistent with the Specific Plan. Both development patterns are conceptual in nature and are not necessarily indicative of the Project's actual final development pattern. Nonetheless, these two development patterns, referred to as the Maximum Buildout Scenario and Scenario 2, help contextualize, describe, and assess potential impacts that could be associated with future development in the Project area. Both land use options are consistent with the proposed Project's maximum allowable development density and other applicable standards. The Maximum Buildout Scenario and Scenario 2 would result in the same amount of industrial non-residential development in PA 4 (1,806,290 square feet), as well as the same amount of acreage allocated for public ROW and internal circulation needs. The primary difference between the two options is the amount of residential and commercial development. Whereas the Maximum Buildout Scenario assumes maximum residential development in PA 1, PA 2, and PA 3, resulting in 3,240 dwelling units and 20,000 square feet of commercial non-residential space, Scenario 2 assumes less residential development and more non-residential development in PA 1, PA 2, and PA 3, resulting in 1,237 dwelling units, 71,600 square feet of commercial non-residential space, and a 128-key hotel or motel development. The proposed Project is anticipated to be fully developed by 2033.

S.2 POTENTIAL OFF-SITE CONSTRUCTION NOISE AND VIBRATION IMPACTS

The proposed Project's construction noise 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 RCNM was used to model noise levels at sensitive receptor locations outside the Project area (i.e., "off-site") 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 and compared against the daytime (80 dBA L_{eq}) noise criterion recommended by the Federal Transit Administration (FTA); the proposed Project would include nighttime construction activities and would not exceed the FTA's nighttime criterion of 70 dBA L_{eq}).

The closest existing off-site residential receptors in the vicinity of the proposed Project are the residences on Avenida Celaya in the Sun City Shadow Hills Neighborhood. The rear yards of these properties are located at least 650 feet north of the Project's closest construction activities. As estimated using the RCNM, modeled construction noise levels at this receptor could be up to 64.5 dBA L_{eq} when equipment operates closest to this receptor. The proposed Project would not generate construction noise levels that could exceed the FTA's daytime (80 dBA L_{eq}) construction noise criteria at existing off-site residential receivers. This impact would be less than significant.

As indicated, construction activities in the Project area would occur at least 650 feet from existing off-site residential buildings. At this distance, the bulldozers, jackhammers, loaded trucks, and vibratory rollers that are expected to be used in the Project area would not generate groundborne vibration levels that would be perceptible or have the potential to result in damage to existing structures. In addition, the proposed Project would not include the use of pile drivers or require any blasting activities. For these reasons, the proposed Project would not have the potential to generate excessive construction-related vibrations at off-site receptor locations. This impact would be less than significant.

S.3 POTENTIAL ON-SITE CONSTRUCTION NOISE AND VIBRATION IMPACTS

Future residential receptors inside the Project area (i.e., "on-site") would range in distance from potential construction work areas. Most future on-site residential receptors would be several hundred feet or more from potential construction activities due to the overall size of the Project area. Certain future receptors, however, could be located directly adjacent to and within 25 feet of construction activities. As estimated using the RCNM, the on-site receptors located closest to potential construction activities could be exposed to daytime construction noise levels up to approximately 93 dBA L_{eq} for limited periods of time. This is considered a potentially significant impact. To reduce the potential for Project construction activities to result in a substantial temporary increase in construction noise levels, MIG recommends the proposed Project incorporate Mitigation Measures NOI-1A (Provide Notification of Construction Activities), NOI-1B (Restrict Construction Work Hours), NOI-1C (Reduce Construction Traffic and Equipment Noise Levels), NOI-1D (Install Temporary Noise Barriers), and NOI-1E (Owner/Occupant Disclosure) into all future development projects in the Project area. These measures require future development in the Project area to provide advanced notification of potential construction activities, restrict work hours to periods when period humans are less sensitive to elevated noise levels in accordance with Municipal Code requirements, implement equipment noise control measures, install temporary noise barriers, and disclose to future owners, occupants, and tenants in the Project area that properties may be subjected to elevated construction noise levels from development near their properties. The use of equipment in good working order with standard noise suppression devices and the shielding of stationary noise generating equipment per Mitigation Measure NOI 1-C is estimated to result in a 2 dBA to 5 dBA reduction in modeled equipment noise levels. In addition, the installation of a 6 to 10-foot-tall temporary noise barrier per Mitigation Measure NOI-1D is anticipated to result in an additional 5 dBA to 13 dBA reduction in modeled equipment noise

levels, depending on the specific type of equipment used, the distance between the equipment and the barrier and the receiver and the barrier, and the elevation of the residential noise receiver. All other mitigation measures would reduce the potential for receiver annoyance but would not physically reduce construction noise levels. The combined reduction in construction noise levels achieved by Mitigation Measures NOI-1A to NOI-1E, therefore, is estimated to range from 7 dBA L_{eq} to 16 dBA L_{eq}. With mitigation, the on-site receivers located closest to potential construction activities would not be exposed to daytime noise levels that exceed the FTA's 80 dBA L_{eq} daytime noise criterion. Thus, the implementation of Mitigation Measures NOI-1A to NOI-1E would render the proposed Project's potential construction noise levels a less than significant impact with mitigation.

The future residential land uses envisioned by the proposed Project could be located near construction work areas within the Project area. At worst case, it is possible construction equipment could operate within approximately 25 feet of building façades in the Project area. The proposed Project's construction activities would not have the potential to result in physical damage to any future building inside the Project area and most equipment that would be used to construct the proposed Project would not generate annoying vibrations because equipment operations would be intermittent (not occur every day), limited in duration (equipment would move throughout work areas and not operate in the same location for a prolonged amount of time), and occur during the daytime (when receptors would not be sleeping and, therefore, are considered less sensitive to vibration levels). The specific use of a vibratory roller during paving and other activities, however, could result in ground-borne vibration levels that exceed Caltrans' strongly perceptible annoyance criterion (0.10 in/sec) if such operations were to occur within 50 feet of a future building façade. Although this is unlikely to occur, the generation of strongly perceptible ground-borne vibration levels would be a potentially significant impact. To reduce the potential for Project construction activities to result in substantial temporary construction vibration levels, MIG recommends the proposed Project incorporate NOI-2, which prohibits the use of vibration-generating equipment within 50 feet of occupied residential dwelling unit or, if such prohibition is not feasible, to prepare a project-specific vibration plan that ensures equipment and work activities would not result in vibrations that exceed Caltrans' strongly perceptible human annoyance criterion of 0.1 in/sec PPV. The implementation of Mitigation Measure NOI-2 would render the proposed Project's potential on-site construction vibration levels a less than significant impact with mitigation.

S.4 POTENTIAL OPERATIONAL NOISE AND VIBRATION IMPACTS

Once constructed, the proposed Project would generate noise from the operation of new residential, commercial, and industrial land uses. These land uses would include on-site noise sources and activities and off-site traffic noise. In general, the proposed Project would have a limited potential to generate noise levels that could exceed the City's noise compatibility guidelines because both the City Municipal Code and the proposed Project include provisions that generally limit nighttime noise activities and operations. In addition, the proposed Project includes design standards and guidelines that separate and shield noise generating equipment, activities, and land uses away from sensitive noise receptors. These standards and guidelines include the installation of noise barriers between commercial and industrial development and residential areas.

The on-site noise sources that would have the potential to generate the highest noise levels would be unenclosed backup generators, car wash dryers and vacuums, and other large mechanical equipment that could be associated with standalone commercial activities. For analysis purposes, these noise sources were assumed to be capable of generating uncontrolled noise levels between approximately 79 dBA L_{eq} to 89 dBA L_{eq} at 50 feet which, if sustained on a daily basis, would be above the city's acceptable (60 CNEL)

and conditionally acceptable noise guidelines for single-family uses and the city's acceptable (65 CNEL) and conditionally acceptable (75 CNEL) noise guidelines for multi-family residential land uses. The actual noise levels generated by commercial and industrial development at adjacent land uses would depend on actual equipment noise levels and operating characteristics, the actual distance to the receptor, and the presence or absence of noise barriers or other screening features between the noise source(s) and the receptor; however, noise levels that could potentially exceed the City's acceptable and conditionally acceptable noise levels would be considered a potentially significant impact. Exterior noise levels above 65 CNEL could also result in interior noise levels that exceed the City and State interior noise standard of 45 CNEL. To reduce the potential for the Project's potential on-site noise sources to result in a substantial permanent increase in ambient noise levels above city standards, MIG recommends the proposed Project incorporate Mitigation Measures NOI-3A (Planning Area 3 and Planning Area 4 Noise Barrier) and NOI-3B (Control On-site Noise Generating Sources and Activities) into future development projects in the Project area. These measures limit the potential for industrial-related development in Planning Area 4 to impact residential development in Planning Area 3 and require future development in the Project area to prepare a project-specific noise analysis that demonstrates the proposed Project would not result in on-site noise levels that exceed City standards with the incorporation of setback, noise barrier, or other site or operating design characteristics. The implementation of this measure would render the Project's on-site operational noise levels a **less than significant impact with mitigation**.

The proposed Project would generate vehicle trips that would be distributed onto the local roadway system, primarily Avenue 42 and Monroe Street. The Project's increase in vehicle trips on the local roadway system would not, under buildout conditions in 2033, cause a change in land use compatibility conditions. Modeled traffic noise levels with and without the Project would remain conditionally acceptable and would not increase by 3 dBA or more on Avenue 42 between Madison Street and Monroe Street and on Monroe Street between Avenue 42 and Fred Waring Drive. This impact would be **less than significant**.

The Project does not propose or support any large vibration-inducing equipment or land use activities and would not result in excessive ground-borne vibration levels. This impact would be **less than significant.**

S.5 AIRPORT NOISE-RELATED IMPACTS

The proposed Project is located approximately one mile east of Bermuda Dunes Airport. The entirety of the Project area is within the Bermuda Dunes Airport Influence Area, and parts of the Project area are within Compatibility Zone C (Extended Inner Approach/Departure Zone), D (Primary Traffic Patterns and Runway Buffer Area), and E (Other Airport Environs). In addition, a small part of the southwest corner of the Project area is located within the 55 CNEL to 60 CNEL airport noise contour. The proposed Project would not conflict with the requirements of the applicable Airport Land Use Compatibility Plan (ALUCP) nor have the potential to expose people living or working in the Project area because the Project's planned uses are compatible with the ALUCP zone restrictions, standard construction would achieve necessary noise reductions, and the Project includes development standards that require compliance with the real estate disclosures and deed noticing requirements established by State law and the ALUCP. Therefore, the proposed Project would not expose people working in the Project area to excessive airport-related noise levels.

S.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. 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 ambient noise levels near future multi-family housing development in the Project area will vary depending on location. Noise levels in the Project area are highest closest to the I-10 and Monroe Street, and lowest in the center and western parts of the Project area, which are away from transportation noise sources. In general, noise levels in the vicinity of the Project are, particularly within approximately 200 feet of Avenue 42, Monroe Street, and the I-10, are above the City's acceptable noise levels for multi-family and mixed-use land uses (65 CNEL) and commercial and industrial land uses (70 CNEL). In addition, 2033 traffic noise levels with the Project are expected to increase on Avenue 42 (between Madison Street and Monroe Street) and Monroe Street (between Avenue 42 and Fred Waring Drive) but remain within the city's conditionally acceptable limit for all land uses (75 CNEL). As described above, exterior noise levels above 65 CNEL could also result in interior noise levels that exceed the City and State interior noise standard of 45 CNEL, and exterior noise levels above 70 CNEL could result in noise level that exceed the City and State non-residential interior noise standard of 50 dBA L_{eq}.

Although the Project includes residential and non-residential development that may be exposed to traffic noise levels above acceptable and conditionally acceptable levels; the General Plan includes policies and programs to protect existing and future land uses from excessive noise levels by ensuring new development projects meet City noise standards through appropriate, project-specific evaluation and design considerations. For this reason, the Project would not expose existing or future noise sensitive land uses to unacceptable traffic noise levels.

The closest railroad to the Project area is a Union Pacific Railroad line located southwest of the Project area. This rail line is estimated to generate noise levels of 65 CNEL up to 585 feet from the center of the rail line. The proposed Project boundary is, at closest, located 590 feet from the center of the railroad corridor. For this reason, the proposed Project would not expose existing or future noise sensitive land uses to unacceptable rail noise levels.

S.7 RECOMMENDED NOISE CONTROL MEASURES

MIG recommends the following mitigation measures be incorporated into the Project to reduce the potential for the Project's construction and operational activities to result in a substantial temporary and permanent increase in noise levels in the vicinity of the Project.

Mitigation Measure NOI-1A: Provide Notification of Construction Activities. To ensure receptors in the vicinity of the Project area are aware of the Project and its planned construction activities, all future development in the Project area shall notify occupied residential land uses of planned construction activities.

1) The notice shall be provided at least 14 calendar days prior to the start of any construction activities, describe the planned phasing and schedule of construction activities, including any nighttime activities allowed by the city of Indio, describe the noise control measures to be implemented during construction, and include the name and phone number of a designated contact for the construction contractor and the city of Indio responsible for handling construction-related noise complaints.

2) The notice shall be provided to the owner/occupants of all occupied dwelling units within 200 feet of planned construction work areas.

Mitigation Measure NOI-1B: Restrict Construction Work Hours. To reduce the potential for construction activities to generate noise during times when receptors are more sensitive to changes in noise and the use of construction tools and machinery is restricted by the City of Indio Municipal Code, all future development in the Project area shall:

1) *Restrict Motor Vehicle Standing/Idling .* All motor vehicles with a gross vehicle weight rating more than 10,000 pounds, and any auxiliary equipment attached to such a vehicle, shall be subject to the requirements of Municipal Code Section 95C.08.A. Such vehicles shall not operate for a period longer than 15 minutes in any hour while stationary and within 150 feet of a residential area between the hours of 7 PM and 7 AM.

2) *Restrict Construction Equipment Hours.* All construction activities shall be subject to the requirements of Municipal Code Section 95C.08.B.2 and 95C.08.B.3. Unless otherwise approved by the City, the loading and unloading of vehicles and the operating of fork lifts or cranes within 1,000 feet of a residence and the use of construction tools and machinery shall occur only during the following times:

    a. Pacific Standard Time

    i. Monday through Friday: 7 AM through 6 PM

    ii. Saturday: 8 AM through 6 PM

    iii. Sunday and Government Holidays: 9 AM through 5 PM

    b. Pacific Daylight Time

    i. Monday through Friday: 6 AM through 6 PM

    ii. Saturday: 7 AM through 6 PM

    iii. Sunday and Government Holidays: 9 AM through 5 PM

3) *Post Restricted Work Hours.* Each development project shall post a sign at all entrances to and exits from the construction site informing contractors, subcontractors, construction workers, etc. of the allowable work hours pursuant to sections 1) and 2) of this mitigation measure.

Mitigation Measure NOI-1C: Reduce Construction Traffic and Equipment Noise Levels. To reduce potential noise levels associated with Project construction activities, all future development in the Project area shall:

1) *Control Construction Traffic and Site Access.* Construction truck traffic, including soil and debris hauling, equipment deliveries, and concrete and other vendor deliveries shall follow City of Indio-designated truck routes, including Monroe Street and Avenue 42.

2) *Construction Equipment Selection, Use, and Noise Control Measures.* The following measures shall apply to all future development in the Project area:

    a. Construction staging activities such as receipt of deliveries, equipment and material storage, etc., shall occur as far away from residential land uses as possible.

    b. All stationary noise generating equipment such as pumps, compressors, and welding machines shall be shielded and located as far from sensitive receptor locations as

practical. Shielding may consist of trailers, stored materials, or a three- or four-sided enclosure provided the structure/barrier breaks the line of sight between the equipment and the receptor, provides for proper equipment ventilation and operations, and complies with all other applicable occupational safety and health requirements.

c. Heavy equipment shall include standard noise suppression devices such as mullers, engine covers, and engine/mechanical isolators, mounts, etc. Equipment and noise suppression devices shall be maintained in accordance with manufacturer's recommendations while on-site.

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

e. Connect to existing electrical service to power stationary and portable equipment (e.g., pumps, generators, compressors, and welding sets). This measure shall be subject to the approval of the local electric utility. If it is not feasible to connect to electrical service and/or extend electrical service to all work sites, Mitigation Measure NOI-1C, items 2.a and 2.b are implemented.

Mitigation Measure NOI-1D: Install Temporary Noise Barriers. To reduce potential construction noise levels at receptors near active work areas, all future development in the Project area shall install a temporary noise barrier during all site preparation, grading, and paving work activities that have a line of sight to and occur within 150 feet of an occupied dwelling unit.

1) The barrier shall only be required along the portion of the job site perimeter that lies between the active work area and the affected dwelling unit(s). In addition, a temporary barrier shall not be required if a permanent barrier is already present between the work area and the affected dwelling unit (e.g., if a permanent barrier has been installed pursuant to Mitigation Measure NOI-3A).

2) The barrier shall consist of the following:

   a. When activities occur no closer than 50 feet from an occupied dwelling unit, the physical noise barrier shall extend to a height of 6 feet above grade and consist of nominal 0.5-inch plywood with a minimum material density of 1.7 pounds per square foot installed. Alternatively, the barrier may consist of commercially available acoustic panels, blankets, etc. that have a minimum sound transmission class (STC) or transmission loss value of 20 dB.

   b. When activities occur within 25 to 50 feet of an occupied dwelling unit, the physical noise barrier shall extend to a height of 8 feet above grade and consist of nominal 0.5-inch plywood with a minimum material density of 1.7 pounds per square foot installed. Alternatively, the barrier may consist of commercially available acoustic panels, blankets, etc. that have a minimum STC or transmission loss value of 20 dB.

   c. When activities occur within 25 feet of an occupied dwelling unit, the physical noise barrier shall extend to a height of 10 feet above grade and consist of nominal 1.0-inch plywood with a minimum material density of approximately 3 pounds per square foot installed. Alternatively, the barrier may consist of commercially available acoustic panels, blankets, etc. that have a minimum STC or transmission loss value of 23 dB or higher.

3) The barrier shall be installed at grade, or mounted to structures located at grade, such as a K-rail, and be maintained free of openings or gaps other than weep holes. Construction

ingress/egress shall not be permitted through the barrier unless there is no other viable access point due to specific project constraints or other access requirements.

4) The noise barrier may be removed following the completion of all site preparation, grading, and paving activities (i.e., it is not necessary once framing and typical vertical building construction begins provided no other site preparation, grading, or paving work is still occurring in the area).

Mitigation Measure NOI-1E: Owner/Occupant Disclosure. Future owners, occupants, and tenants of residential and commercial properties in the Project area shall receive disclosures that properties in the Project area may be subjected to elevated construction noise levels from development in the Project area. This disclosure shall be provided as part of the mortgage, lease, sub-lease, and/or other contractual real-estate transaction associated with the subject property.

Mitigation Measure NOI-2: Prohibit Vibratory Equipment. To reduce the potential for construction equipment to generate substantially perceptible groundborne vibrations, the use of vibratory rollers, vibratory/impact hammers and other potential large vibration-generating equipment (e.g., hydraulic breakers/hoe rams) shall be prohibited within 50 feet of any occupied residential dwelling unit. Plate compactors and compactor rollers are acceptable. Deep foundation piers or caissons shall be auger drilled.

1) If it is not feasible to prohibit the use of vibratory equipment within 50 feet of a residential building façade due to site- or project-specific conditions or design considerations, a project-specific construction vibration evaluation plan shall be prepared that identifies planned vibration-generating construction activities and potential ground-borne vibration levels (given specific equipment and soil conditions) at specific receptor locations and the vibration control measures that will be employed to ensure equipment and work activities would not result in vibrations that exceed Caltrans' strongly perceptible human annoyance criterion of 0.1 inches/second peak particle velocity. Such measures may include but are not limited to the use of vibration monitoring to measure actual vibration levels, the use of photo monitoring or documentation of building conditions prior to, during, and after construction activities, and/or the use of trenches or barriers that attenuate ground-borne vibration.

Mitigation Measure NOI-3A: Planning Area 3 and Planning Area 4 Noise Barrier. The City shall not approve any residential development in Planning Area 3 unless one of the following conditions is satisfied:

1) Planning Area 4 is not yet developed (i.e., constructed and awaiting occupancy or already occupied), in which case the residential project design shall include an 8-foot-tall concrete masonry unit noise barrier along the western boundary of Planning Area 3.

    a. The barrier shall extend to a height of 8 feet above the finished elevation of the development and shall extend in a north-south direction at least 100 feet past the northernmost and southernmost dwelling unit (if the project develops only a part of Planning Area 3).

2) The part of Planning Area 4 that borders Planning Area 3 is already developed, and a project-specific noise analysis required by Mitigation Measure NOI-3B (prepared by either the industrial or residential project) indicates Planning Area 4 industrial development would not generate noise levels in Planning Area 3 that exceed applicable City standards.

Mitigation Measure NOI-3B: Control On-site Noise Generating Sources and Activities. To ensure on-site, operations-related equipment and activities associated with the future development

in the Project area do not generate noise levels that exceed City standards, future mixed-use residential/commercial, commercial, and industrial development shall submit a project-specific operational noise analysis to the City for review and approval prior to the issuance of the first building permit for the project, or as otherwise determined by the City. The noise analysis shall be prepared by a qualified acoustical consultant and shall:

1) Identify surrounding land uses and noise-sensitive receptors in the vicinity of the project.
2) Identify the ambient noise level at and in the vicinity of the project, including at noise-sensitive receptors that could be impacted by the project. Ambient noise levels may be based on Indio General Plan traffic noise modeling, information in the Oasis at Indio Specific Plan EIR, or new ambient noise measurements conducted for the project.
3) Describe the noise levels generated by the project's on-site noise sources, including all stationary equipment (e.g., pumps, compressors, generators, dryers, heating, ventilation, and air conditioning equipment, etc.), truck docks/dedicated loading areas, waste collection areas, and vehicle parking areas included in the final project design/site plan.
4) Demonstrate how project noise sources and activities will comply with the exterior sound limits established in Municipal Code Chapter 95C, Noise Control, the noise compatibility guidelines in General Plan Table 11-1, and applicable interior sound limits for residential (45 CNEL in habitable rooms) and non-residential (50 dBA L_{eq} in occupied areas or application of prescriptive requirements) project components. Measures for reducing project noise to may include, but are not limited to, setbacks, equipment enclosures, noise barriers or other means of shielding on-site noise levels from surrounding land uses and noise-sensitive receptors, and operating restrictions (e.g., prohibiting certain equipment or activities from operating at certain times such as nighttime hours).

This page was intentionally left blank.

1 INTRODUCTION

BH Properties Inc., (the Applicant) has submitted the proposed Oasis at Indio Specific Plan (proposed Project) to the city of Indio for review and approval. This new specific plan would guide land use and development decisions for an approximately 183-acre area in the north-central part of the city and, if approved, would support the sustainable development of both residential and non-residential land uses.

MIG, Inc. (MIG) has prepared this Noise Impact Analysis Report (Report) to evaluate the potential construction- and operations-related noise and vibration impacts of the proposed Project. MIG has prepared this Report using Project-specific information contained in the specific plan, as well as supplemental materials prepared in support of the specific plan (e.g., site plans, transportation study, etc.). In general, this Report evaluates the potential "worst-case" conditions associated with the proposed Project's construction and operational noise and vibration levels to ensure potential noise and vibration impacts are not underestimated.

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, Proposed 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 and vibration levels.
- Chapter 4, Environmental and Regulatory Setting, describes the existing noise and vibration setting of the proposed Project and provides information on the federal, state, and local regulations that govern the Project's setting and its potential noise and vibration impacts.
- Chapter 5, CEQA Noise and Vibration Impact Analysis, identifies the methods used to estimate the proposed Project's potential construction and operational noise and vibration levels and evaluates the Project's noise and vibration impacts in accordance with Appendix G of the State CEQA Guidelines.
- Chapter 6, Other Noise and Vibration Considerations, discloses other potential noise and vibration issues that have been adjudicated outside the scope of CEQA but which may nonetheless be disclosed by a lead agency for information and/or disclosure purposes.
- Chapter 7, Report Preparers and References, list the individuals involved, and the references used, in the preparation of this Report.

This page was intentionally left blank.

2 PROJECT DESCRIPTION

The proposed Project is a new specific plan that would establish land use plans, regulations, and design guidelines for the sustainable residential and non-residential development of an approximately 183-acre area in the north-central part of Indio, in the Coachella Valley area of Riverside County, California. The proposed Project characteristics that are relevant to the evaluation of potential noise and vibration impacts are described in detail below.

2.1 PROJECT LOCATION

The proposed Project would be located between Avenue 42 and Interstate 10 (I-10), in the north-central part of Indio. The Project area is an approximately 183-acre, irregularly shaped, undeveloped area comprised of 7 parcels of land (Assessor's Parcel Numbers (APN) 610-020-001, -010, -012, -013, -021, -034 and -036). It is bound by Avenue 42 on the north, I-10 on the south, Monroe Street on the east, and the All-American Canal on the west. The Project area is, at closest, approximately 65 feet north of I-10.[1] The proposed Project area is shown in Figure 2-1.

Figure 2-1: Aerial View of Project Area

[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 area's closest property line.

2.1.1 PROJECT AREA LAND USE AND ZONING

The Indio General Plan designates the proposed Project area as Mixed-Use Neighborhood (MUN) and Regional Commercial (RC); the area is also within the General Plan's Avenue 42 Corridor subarea (City of Indio, 2023a). The Indio Zoning Map classifies the Project area as Specific Plan Mixed Use (MU-SP), MUN, and RC (City of Indio, 2023a). Approximately 80 acres of the western part of the Project area is within the existing Gateway Conceptual Specific Plan and designated for mixed-use development. Two master plans authorizing development of residential, recreation, commercial, and light industrial and business park uses have also been approved on the western part of the Project area; however, neither master plan was implemented. If approved, the proposed Project would result in the redesignation and reclassification of the Project area to Specific Plan.

2.1.2 SURROUNDING LAND USES

The proposed Project area is generally surrounded by a mix of agricultural, commercial, residential, and undeveloped lands all located in Indio (see Figure 2-1). The land uses surrounding the Project area are described below and summarized in Table 2-1.

- North: Land uses to the north, across Avenue 42, include agricultural and undeveloped lands. The Sun City Shadow Hills and Palazzo residential neighborhoods are located approximately 650 feet and 1,300 feet north of Avenue 42, respectively.
- South: Land uses to the south, across I-10, include the Whitewater River channel.
- East: Land uses to the east, across Monroe Street, include The Palms at Indio, which includes a mix of developed and undeveloped commercial and retail land, including a Circle K fueling station with a convenience store and car wash, a drive-thru Arby's restaurant, a drive-thru Starbucks, a Walmart Supercenter, and other commercial/retail businesses.
- West: Land uses to the west, which border the Project site, include the All-American Canal, Madison Street, a landscaping supply facility, and undeveloped land.

There are no schools within 1,000 feet of the Project area; the nearest schools are Richard Oliphant Elementary School, approximately 2,400 feet (0.5 miles) northeast of the Project area, across Avenue 42 and Monroe Street, and Carillo Ranch Elementary School, approximately 2,500 feet (0.5 miles) south of the Project area, across the I-10 and the Whitewater River channel.

Table 2-1: Summary of Land Uses Surrounding the Project Site			
Direction	Land Use Description	Zoning	General Plan
North (Across Avenue 42)	Agricultural, Undeveloped, Residential	Mixed-Use Neighborhood, Specific Plan – Mixed Use, Project Master Plan, Suburban Neighborhoods-8	Mixed-Use Neighborhood, Suburban Neighborhood High
South (Across I-10)	Whitewater River	Parks and Open Space	Parks and Open Space
East (Across Monroe Street)	Commercial/Retail, Undeveloped	Regional Commercial	Regional Commercial
West (Bordering the Site)	All-American Canal	Parks and Open Space	Parks and Open Space
West (Across Madison Street)	Commercial, Undeveloped	Specific Plan – Mixed Use	Workplace Employment District
Source: City of Indio, 2023a.			

2.2 EXISTING PROJECT AREA DESCRIPTION AND OPERATIONS

The Project area is mostly undeveloped with some existing vegetation. It contains a few remnants of former development/structures used for agricultural purposes, including several concrete pads in the north-central portion of the site and two agricultural standpipes in the northwest corner and central portion of the site. Aside from occasional disking and weed abatement, the site has no operational activities associated with it.

2.3 PROPOSED PROJECT CHARACTERISTICS

The proposed Project is a new specific plan that establishes land use and development regulations and implementation strategies to provide balanced and sustainable residential and non-residential development with a range of employment-generating activities and medium to high-density residential uses that will complement surrounding neighborhoods, centers, and districts.

2.3.1 LAND USE PLAN

The proposed Project includes two primary land use districts in four planning areas (PA). A Mixed-Use District would permit multi-family residential uses (up to 50 dwelling units (DU) per acre) and a variety of commercial non-residential uses (up to 0.50 floor to area ratio, or FAR), including lodging (i.e., a hotel or motel), in PA 1, PA 2, and PA 3. An Industrial District would allow a variety of light-industrial land uses (up to 0.60 FAR) in PA 4. The proposed Project would also dedicate land for public ROW, an Imperial Irrigation District (IID) substation, and internal circulation needs. A general description of the location and potential development that may occur in each planning area is provided below.

- PA 1: This area would occupy most of the northern part of the Project area and allow mixed-use residential and commercial development. The northern part of PA 1 would border Avenue 42, while the southern part would include a 68-foot-wide landscape transition zone that separates development in PA 1 from "A" Street and the industrial development allowed in PA 4. The western extent of PA1 includes a buffer that prohibits development within 250 feet of the

All-American Canal. PA 1 is anticipated to consist mostly or entirely of residential development because it is furthest from I-10 and Monroe Street.

- PA 2: This area would occupy the northeastern corner of the Project area, at the intersection of Avenue 42 and Monroe Street. While PA 2 would allow mixed-use residential and commercial development, its proximity and direct access to I-10 via Monroe Street make it more likely to attract commercial development.
- PA 3: This area would occupy the southeastern corner of the Project area. PA 3 would allow mixed-use residential and commercial development but, like PA 2, is more likely to attract commercial development due to its proximity to, and prominent visibility from, I-10. In addition, the hotel identified as part of Scenario 2 is envisioned to occur in PA 3.
- PA 4: This area would occupy most of the southern part of the Project area and allow industrial development, including a new IID electrical substation. The western extent of PA 4 includes a buffer that prohibits development within 250 feet of the All-American Canal.

The proposed Project's land use plan is summarized in Table 2-2 and shown in Figure 2-2.

Table 2-2: Proposed Project Land Use Plan Summary

Land Use and PA	Development Acreage (Approximately)	Maximum Development Intensity	
		Multi-Family Residential	Non-Residential
Mixed Use District (Residential and Commercial)			
PA 1	61.9	50 DU/acre	0.50 FAR
PA 2	4.2		
PA 3	9.4		
Subtotal	75.5		
Industrial District			
PA 4	92.8	Not allowed	0.60 FAR
Other Dedications			
Public ROW	1.8	Not applicable	Not applicable
IID Substation	2.4		
"A" Street	10.4		
Subtotal	14.6		
Total	182.9	--	--

Source: City of Indio, 2023b, Table 2-1

Figure 2-2: Proposed Project Land Use Plan

Source: City of Indio, 2023b, Figure 2-1

2.3.2 DEVELOPMENT PATTERN CAPACITIES

As shown in Table 2-2, the proposed Project establishes maximum development intensities for the proposed Mixed-Use and Industrial Districts; however, the proposed Project is a programmatic guide to land use and development in the Project area that is intended to be flexible and responsive to market conditions. For this reason, two possible development patterns were developed for the Project for the purposes of evaluating the Project's potential environmental effects. Both development patterns are conceptual in nature and are not indicative of the Project's actual final development pattern. Nonetheless, these two development patterns, referred to as the Maximum Buildout Scenario and Scenario 2, help contextualize, describe, and assess potential impacts that could be associated with future development in the Project area:

- Maximum Buildout Scenario. This development option maximizes residential development in PA 1, PA 2, and PA 3. Given the proposed allowable development density for residential land uses (up to 50 DU/acre), this option is considered the most intensive development scenario that could occur in the Project area. It is also reflective of the Specific Plan development maximums, which represent the most intensive development that could occur within the Project area.
- Scenario 2. This development option assumes less residential development and greater commercial development in PA 2 and PA 3, consistent with the equivalency factors outlined in Chapter 5 of the Specific Plan. Although this option increases commercial development, it would result in much less total residential development and is therefore considered less intensive than the Maximum Buildout Scenario. Scenario 2 is illustrative of a development scenario that could occur consistent with the Specific Plan development standards.

Both possible development patterns are consistent with the proposed Project's maximum allowable development density and other applicable standards. The proposed Project's assumed development capacities for the Maximum Buildout Scenario and Scenario 2 are summarized in Table 2-3 and Table 2-4. Both development patterns would result in the same amount of industrial development in PA 4 (1,806,290 square feet, or SF), as well as the same amount of acreage allocated for public ROW, IID substation, and internal circulation needs (i.e., "A" Street). The primary difference between the two patterns is the amount of residential and commercial development. Whereas the Maximum Buildout Scenario assumes development in PA 1, PA 2, and PA 3, up to the Specific Plan maximum of 3,240 DU and 20,000 SF of commercial non-residential space, Scenario 2 assumes greater commercial development and lesser residential development in PA 1, PA 2, and PA 3, resulting in 1,237 DU, 71,600 SF of commercial non-residential space, and a 128-key hotel or motel development.

Table 2-3: Maximum Buildout Scenario Development Capacity				
Land Use District	PA	Acreage (Approximately)	Development Capacity	
			Multi-Family Residential	Non-Residential
Mixed-Use	1	61.9	3,240 DU	20,000 SF -
Mixed-Use	2	4.2		
Mixed-Use	3	9.4		
Industrial	4	92.8	Not allowed	1,806,290 SF
Public ROW	N/A	1.8	N/A	
IID Substation	N/A	2.4	N/A	
Interior ROW	N/A	10.4	N/A	
Total	N/A	182.9	3,240 DU	1,826,290 SF
Source: City of Indio, 2023b, Table 2-2				

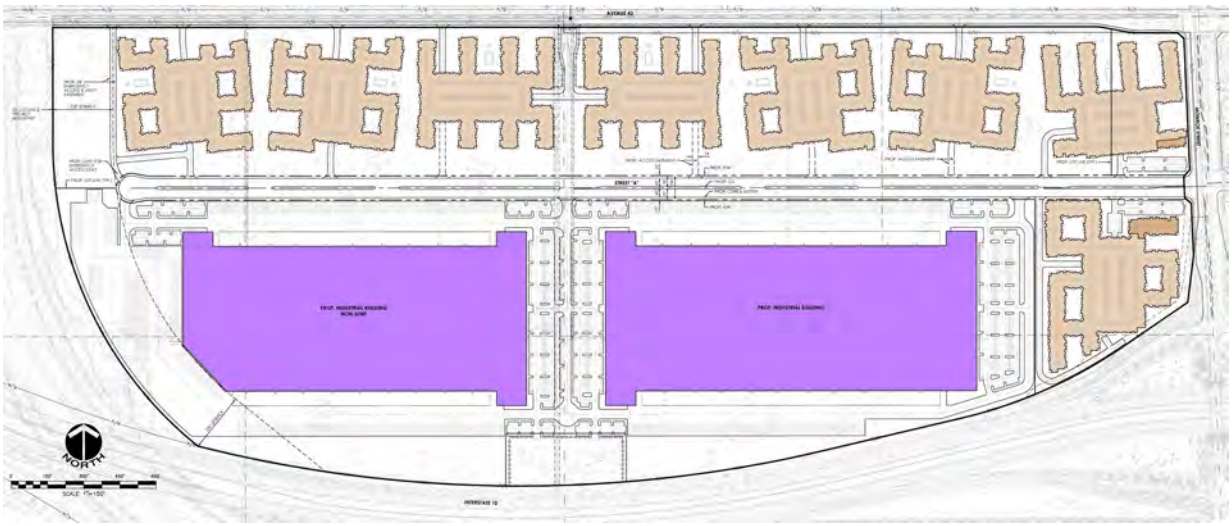
Table 2-4: Scenario 2 Development Capacity					
Land Use District	PA	Acreage (Approximately)	Development Capacity		
			Multi-Family Residential	Non-Residential	
Mixed-Use	1	61.9	1,237 DU	71,600 SF	128 Key Hotel/Motel
Mixed-Use	2	4.2			
Mixed-Use	3	9.4			
Industrial	4	92.8	Not allowed	1,806,290 SF	Not allowed
Public ROW	N/A	1.8	N/A		
IID Substation	N/A	2.4	N/A		
Interior ROW	N/A	10.4	N/A		
Total	N/A	182.9	1,237 DU	1,877,890 SF	128 Keys
Source: City of Indio, 2023b, Table 2-3					

2.3.2.1 Conceptual Site Plans

Conceptual site plans were developed for the Maximum Buildout Scenario and Scenario 2 for the purposes of characterizing and evaluating the proposed Project's potential environmental effects. The conceptual site plan and associated development assumptions for the Maximum Buildout Scenario are shown in Figure 2-3, while the conceptual site plan and associated development assumptions for Scenario 2 are shown in Figure 2-4. The conceptual site plans are consistent with the development intensities listed in Table 2-2 and the overall development capacities shown in Table 2-3 (Maximum Buildout Scenario) and Table 2-4 (Scenario 2). It is noted that the site plans shown in Figure 2-3 and Figure 2-4 are conceptual only and exemplify possible layouts consistent with the proposed Project's development intensities and potential development capacities. Likewise, the specific development assumptions associated with each site plan were only used to characterize and evaluate the Project's potential environmental effects. The

actual layout, orientation, type, and amount of residential and non-residential development that could occur in the Project area would be subject to market conditions.

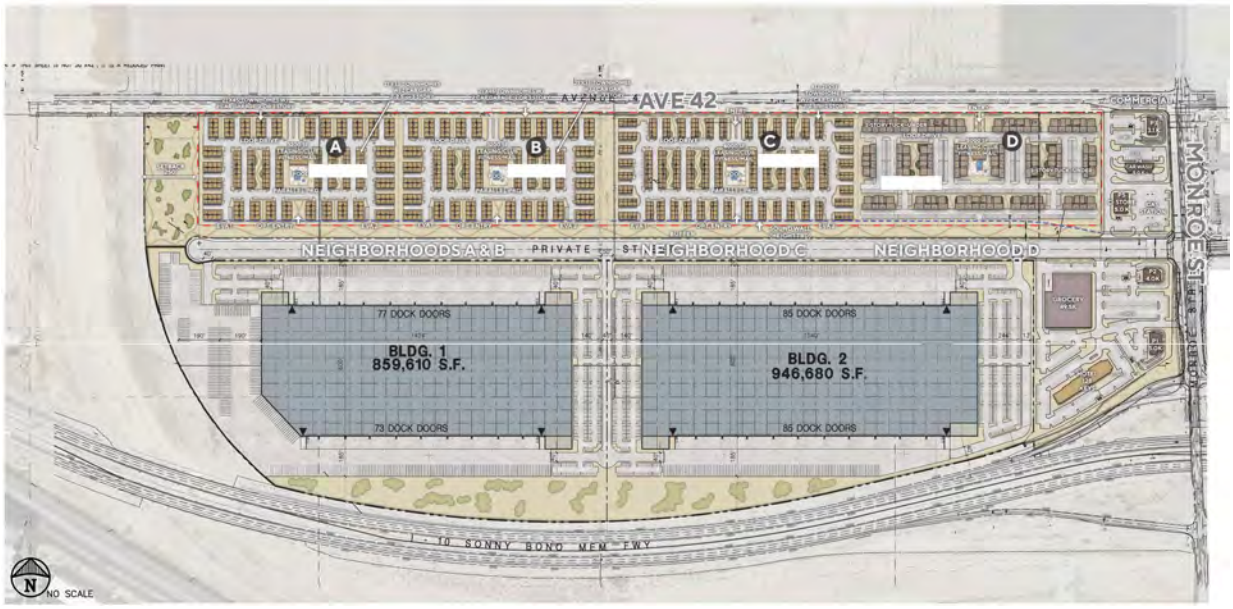
Figure 2-3: Maximum Buildout Scenario Conceptual Site Plan and Development Assumptions



Land Use District, PA, and Development Type	Development Assumption	
	Residential	Non-Residential
Mixed-Use District – PA 1, PA 2, and PA 3		
Low-rise Multi-Family Housing	3,240 DU	-
Strip Retail		20,000 SF
Industrial District – PA 4		
High Cube Fulfillment Center Warehouse Building 1 (Non-Sort)	-	859,610 SF
High Cube Fulfillment Center Warehouse Building 2 (Sort)	-	946,680 SF
Total Development	3,240 DU	1,826,290 SF

Source: MSA Consulting, 2023a and LLG, 2023

Figure 2-4: Scenario 2 Conceptual Site Plan and Development Assumptions



Land Use District, PA, and Development Type	Development Assumption	
	Residential	Non-Residential
Mixed-Use District – PA 1		
Low-rise Multi Family Housing	1,237 DU	-
Mixed-Use District – PA 2		
Fast Food Restaurant (with Drive Thru)	-	3,100 SF
Gasoline Service Station (with Convenience Store)	-	5,000 SF
Automated Car Wash	-	5,000 SF
Mixed-Use District – PA 3		
Fast Food Restaurant (with Drive Thru)	-	9,000 SF
Supermarket	-	49,500 SF
Hotel	-	128 Keys
Industrial District – PA 4		
High Cube Fulfillment Center Warehouse Building 1 (Non-Sort)	-	859,610 SF
High Cube Fulfillment Center Warehouse Building 2 (Sort)	-	946,680 SF
Total Development	1,237 DU	1,877,890 SF
		128 Keys

Source: MSA Consulting, 2023b and LLG, 2023

2.3.3 ACCESS, CIRCULATION, AND PARKING

The proposed Project includes a circulation plan to provide direct, safe, and convenient vehicular and non-vehicular access for residents, visitors, and employes travelling to, from, and through the Project area. The circulation plan was prepared in accordance with the results of a comprehensive traffic analysis that recommended roadway segment and intersection improvements to necessary to support the proposed Project (LLG, 2023). Although specific access points and internal connection and circulation routes could vary depending on how the Project area is developed, access to and circulation within the Project site would primarily be provided via I-10, Monroe Street, Avenue 42, and newly constructed internal roads such as "A" Street, development driveways, etc. (see Figure 2-1 to Figure 2-4).

- I-10 provides regional access to the Project area with ramps that connect to Monroe Street and other roads to the north and south of the Project area. The California Department of Transportation (Caltrans) plans to improve the Monroe Street I-10 westbound on-ramp, which will require a portion of the land along the southeastern corner of the Project area, in PA 3, and result in the widening of Monroe Street south of the Showcase Parkway intersection. The proposed Project would not affect Caltrans' planned improvements to this I-10 on-ramp.
- Monroe Street forms the eastern boundary of the Project area. It connects to I-10, Showcase Parkway, and Avenue 42 and is a designated truck route. Monroe Street would provide direct access to PA 2 and PA 3 via new private driveways or development roads. It would also connect to the proposed new "A" Street that would run east-west across the Project area.
- Avenue 42 forms the northern boundary of the Project area. It connects to Monroe Street on the east and Madison Street on the west and is also a designated truck route. Avenue 42 would provide direct access to PA 1 via new private driveways or development roads.
- "A" Street would run east-west across the site and separate PA 1 and PA 2 from PA 3 and PA 4. It would connect to Monroe Street opposite Showcase Parkway. "A" Street would provide primary access to PA 2, PA 3, and PA 4 and secondary access to PA 1 via new private driveways or development roads. Driveways and roads on the north side of A Street would provide access to PA 1 and PA 2. Driveways and internal circulation routes on the south side of A Street would provide access to PA 3 and 4 and would be restricted to left-in/right out turning movements only. These restrictions would safely direct residential trips to Avenue 42 and provide commercial and industrial trucks a direct route to and from I-10 via Monroe Street, thereby limiting truck traffic on Avenue 42.

As development proceeds, the proposed Project would make improvements to Monroe Street and Avenue 42 that are consistent with improvements identified in the City's General Plan Mobility Element. These improvements may include, but not be limited to, road widening, restriping, installation of sidewalks and bike lanes, and other mobility improvements.

Residential and commercial parking in PA 1, PA 2, and PA 3 would be provided for each individual future project in accordance with applicable development standards. Industrial parking in PA 4 would include truck, trailer, and employee vehicle parking areas around the perimeter of individual industrial buildings.

2.3.4 INFRASTRUCTURE AND UTILITIES

The proposed Project would require the installation of water, sewer, electric, natural gas, drainage, and other utility infrastructure. These utilities would generally be extended onto the site from existing

mains/services lines located under or along Monroe Street and Avenue 42. Within the Project area, utility mains would underly "A" Street and other private roadways, with spurs provided to individual development projects as needed.

2.4 PROJECT OPERATIONS

The proposed Project's land use plan (see Section 2.3.1) would support residential and non-residential development and is anticipated to be fully developed by 2033. Although specific details about future individual development projects are uncertain, the proposed Project is anticipated to have the following key operational characteristics that are relevant to the evaluation of potential noise and vibration impacts. These characteristics are based on the proposed Project's planning standards and the potential development patterns and conceptual site plans for the Maximum Buildout Scenario and Scenario 2.

- Mixed-Use Commercial and Retail Hours of Operation: The proposed Project includes a performance standard that limits the operation of commercial and retail uses in a mixed-used development in PA 1, PA 2, or PA 3 to the hours of 7 AM to 10 PM daily unless modified by an administrative or conditional use permit. This limitation does not apply to developments consisting solely of commercial or retail uses.
- Industrial Hours of Operation: The Industrial District could operate 24 hours per day, 7 days per week. For 24-hour operations, employee shift changes are assumed to 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 Traffic Impact Analysis (TIA) prepared for the Project, is summarized in Table 2-5 (Maximum Buildout Scenario) and Table 2-6 (Scenario 2; LLG, 2023). The trip generation estimates presented in these tables are consistent with the conceptual site plan and associated development assumptions shown in Figure 2-3 and Figure 2-4. Both land use options would result in the same amount of total daily industrial truck trips (1,720 daily truck trips); however, the Maximum Buildout Scenario would result in more total daily vehicle trips (31,505 daily vehicle trips) than Scenario 2 (21,669 daily vehicle trips).
- Industrial Truck Trip Distribution: The TIA prepared for the proposed Project identifies that 10% of in- and out-bound industrial truck traffic would come from Monroe Street south of the I-10 while the remaining 90% of industrial truck traffic would come from the I-10 (45% in each direction). North of the Monroe Street/I-10 ramps, the traffic analysis assumes 100% of industrial truck traffic would use "A" Street to access the Project area (LLG, 2023).
- Yard Equipment: The Project could include the operation of up to 217 electric-powered forklifts, pallet jacks, and other material handling equipment, as well as up to 8 yard hostlers. This estimate is based on the average equipment usage at high cube warehouses as determined via survey (SCAQMD, 2014). Forklifts and pallet jacks equipment would primarily operate inside of industrial buildings and at dock areas, while yard hostlers would operate in truck and trailer parking areas.

Table 2-5: Project Trip Generation Rates for the Maximum Buildout Scenario			
Land Use Type	AM Peak Hour	PM Peak Hour	Daily Trips
Residential			
Low-rise Multi Family	1,296	1,652	21,838
Retail			
Strip Retail	*47*	132	1,089
Pass-by Trips	*-5*	*-53*	*-109*
Retail Total	42	79	980
Industrial Building 1 – High Cube Fulfillment Center Warehouse (Non-Sort)			
Passenger Cars	129	138	1,410
Truck Trips			
2-axle	0	0	39
3-axle	0	0	69
4-axle	0	0	258
Truck Subtotal	0	0	366
Building 1 Total	129	138	1,776
Industrial Building 2 – High Cube Fulfillment Center Warehouse (Sort)			
Passenger Cars	805	1,127	5,557
Truck Trips			
2-axle	0	0	142
3-axle	19	0	246
4-axle	28	28	966
Truck Subtotal	47	28	1,354
Building 2 Total	852	710	6,911
Total Project Trips	2,319	3,024	31,505
Source: LL&G 2023. Table 5-2			

Table 2-6: Project Trip Generation Rates for Scenario 2			
Vehicle Type	AM Peak Hour	PM Peak Hour	Daily Trips
Residential			
Low-rise Multi Family	495	631	8,337
Internal Capture	*-47*	*-204*	*-2,313*
Residential Total	448	427	6,024
Retail			
Fast Food Restaurant with Drive-Through	540	400	5,657
Supermarket	142	443	4,645
Hotel	59	76	1,023
Gas Station with Convenience Store	433	364	4,114
Car Wash	71	71	710
Retail Subtotal	1,245	1,354	16,149
Internal Capture	*-404*	*-525*	*-6,736*
Pass-by Trips	*-421*	*-361*	*-1,688*
Retail Total	420	4,688	7,725
Industrial Building 1 – High Cube Fulfillment Center Warehouse (Non-Sort)			
Passenger Cars	129	138	1,410
Truck Trips			
2-axle	0	0	39
3-axle	0	0	69
4-axle	0	0	258
Truck Subtotal	0	0	366
Building 1 Total	129	138	1,776
Internal Capture	*-31*	*-6*	*-170*
Building 1 Total	98	132	1,606
Industrial Building 2 – High Cube Fulfillment Center Warehouse (Sort)			
Passenger Cars	805	1,127	5,557
Truck Trips			
2-axle	0	0	142
3-axle	19	0	246
4-axle	28	28	966
Truck Subtotal	47	28	1,354
Building 2 Subtotal	852	1,155	6,911
Internal Capture	*-201*	*-60*	*-597*
Building 2 Total	651	1,095	6,314
Total Project Trips	1,617	2,122	21,669
Source: LL&G 2023. Table 16-2			

2.5 PROJECT CONSTRUCTION

The adoption of the proposed Specific Plan would not directly approve construction of any specific infrastructure or development project. Therefore, the specific construction means, methods, and phasing of future development projects in the Project area are not known for certain. Future project-specific construction activities would depend on the project type, size, and other factors; however, construction activities associated with typical development usually include mass grading, site preparation/fine grading, building construction, paving, and architectural coating operations.

Although detailed construction information is not available at this time, the Applicant anticipates certain construction activities that would facilitate future development in the Project area would proceed first, including mass grading of the approximately 183-acre Project area, the installation of A Street and utility mains, and the construction of the IID substation. These activities would level the Project area, provide access to the interior of the Project area, and ensure adequate utility infrastructure is in place to support the timely development of future projects. The mass grading of the Project area is estimated to require the net import of up to approximately 2,525 cubic yards of soil.

2.5.1.1 Construction Schedule and Modeling Assumptions

Mass grading activities are assumed to begin as soon as the first quarter of 2025, followed closely by the installation of "A" Street and utility mains, and then the IID substation. The development of the Project area is likely to occur over multiple years, with full development anticipated to occur by the end of 2033. For the purposes of evaluating the potential environmental impacts that could result from Project-related construction activities, a series of different construction activity models were developed based on the conceptual site plan and associated development assumptions for the Maximum Buildout Scenario (see Figure 2-3) and Scenario 2 (see Figure 2-4). Like the conceptual site plans, the conceptual construction models are only used to characterize and evaluate the Project's potential construction impacts. The actual layout, orientation, type, and amount of residential and non-residential development that could occur in the Project area would be subject to market conditions. In addition, although full development of the Project area is not anticipated to occur before 2033, the construction modeling conducted for the Project assumes concurrent construction in PA 1, PA 2, PA 3, and PA 4. In actuality, it is possible that no construction could be occurring at any given time, or multiple projects could be occurring within the Project Area simultaneously. This approach (i.e., modeling a series of concurrent construction activities instead of one large, 186-acre construction project) was used because:1) the proposed Project area would not be developed as a single project due to its size and different allowable land uses; 2) the modeling of concurrent construction activities in a shorter-time period results in a worst-case construction impact analysis, and 3) modeling of different individual construction activities at the same time supported the identification of potential on- and off-site impacts.

The proposed Project's construction model assumptions are summarized in Table 2-7 and each construction model's geographic limits are shown in Figure 2-5 (Maximum Buildout Scenario) and Figure 2-6 (Scenario 2).

Table 2-7: Summary of Construction Modeling Assumptions			
Model Run	Size	Modeled Development	
		Residential	Non-Residential
General Site Development and PA 4			
01: Mass Grading	182.9 Acres	N/A	N/A
02: "A" Street	10.4 Acres	N/A	N/A
03: IID Substation	2.4 Acres	N/A	N/A
04: PA4 Southwest Industrial	48.8 Acres	N/A	859,510 SF
05: PA4 Southeast Industrial	44.0 Acres	N/A	946,680 SF
Maximum Buildout Scenario – PA 1, PA 2, and PA 3			
06: MBS PA1 Northwest Residential	28.5 Acres	1,215 DU	0 SF
07: MBS PA1 Northeast and PA2 Mixed-Use	39.2 Acres	1,620 DU	20,000 SF
Residential	*38.7 Acres*	*1,620 DU*	*N/A*
Strip Retail	*0.5 Acres*	*N/A*	*20,000 SF*
08: MBS PA3 Residential	9.5 Acres	405 DU	0 SF
Scenario 2 – PA 1, PA 2, and PA 3			
09: S2 PA1 Northwest Residential	28.5 Acres	446 DU	0 SF
10: S2 PA1 Northeast Residential	34.4 Acres	794 DU	0 SF
11: S2 PA2 Commercial	4.6 Acres	0 DU	13,100 SF
Convenience Market with 16 Gas Pumps	*0.1 Acres*	*N/A*	*5,000 SF*
Fast Food Restaurant with Drive Thru	*0.1 Acres*	*N/A*	*3,100 SF*
Carwash	*0.1 Acres*	*N/A*	*5,000 SF*
12: S2 PA3 Commercial	*9.9 Acres*	*0 DU*	*58,500 SF*
Supermarket	*1.1 Acres*	*N/A*	*49,500 SF*
Fast Food Restaurant with Drive Thru	*0.2 Acres*	*N/A*	*9,000 SF*
128-Key Hotel	*4.3 Acres*	*N/A*	*185,856 SF(C)*

Source: MIG 2023 and BH Properties 2023.
(A) Duration reflects total calendar days.
(B) These development assumptions and construction model runs are the same under both scenarios.
(C) Square footage estimate for the 128-key hotel was generated using CalEEMod default assumptions.

Figure 2-5: Maximum Buildout Scenario Construction Models

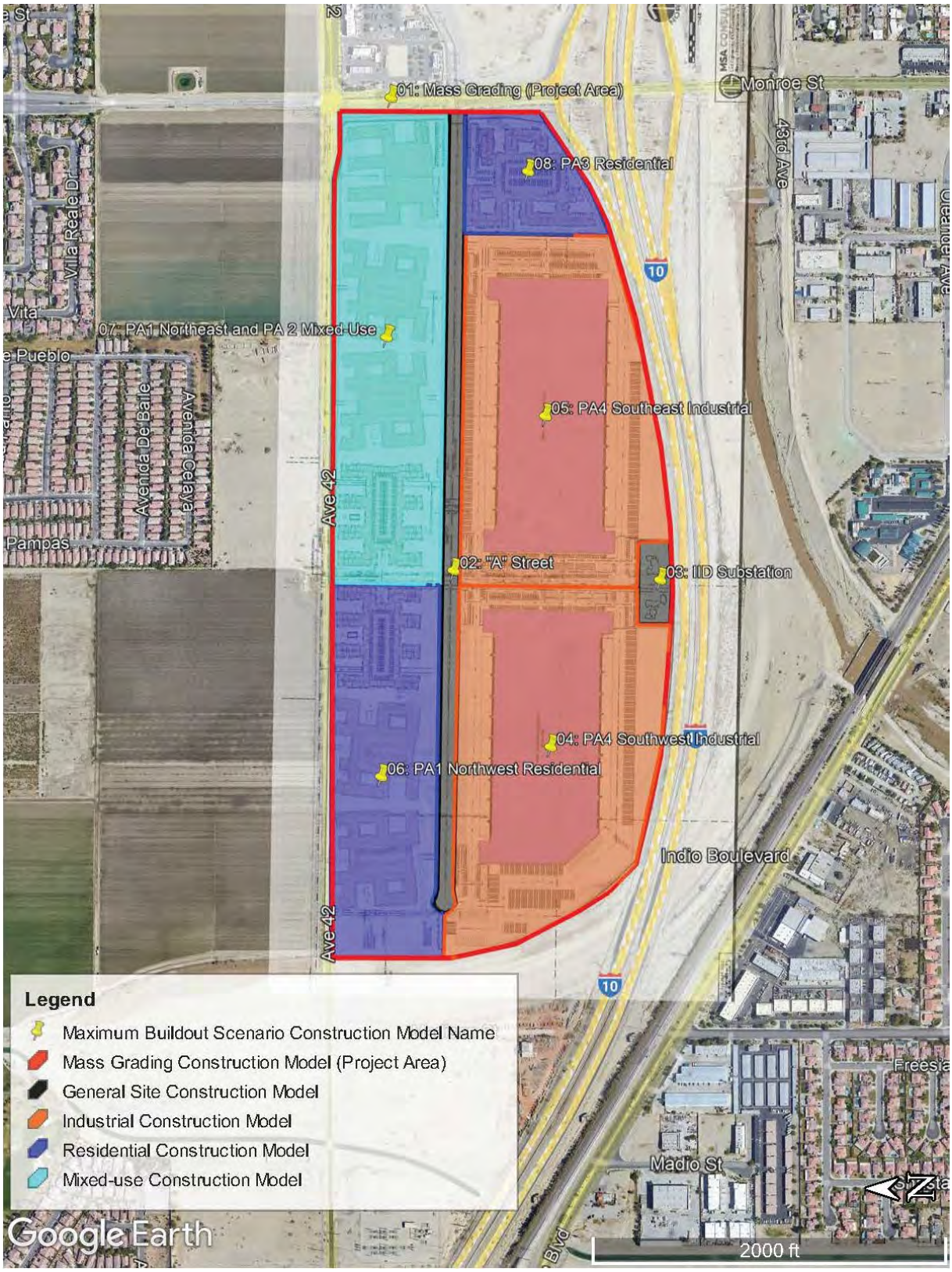
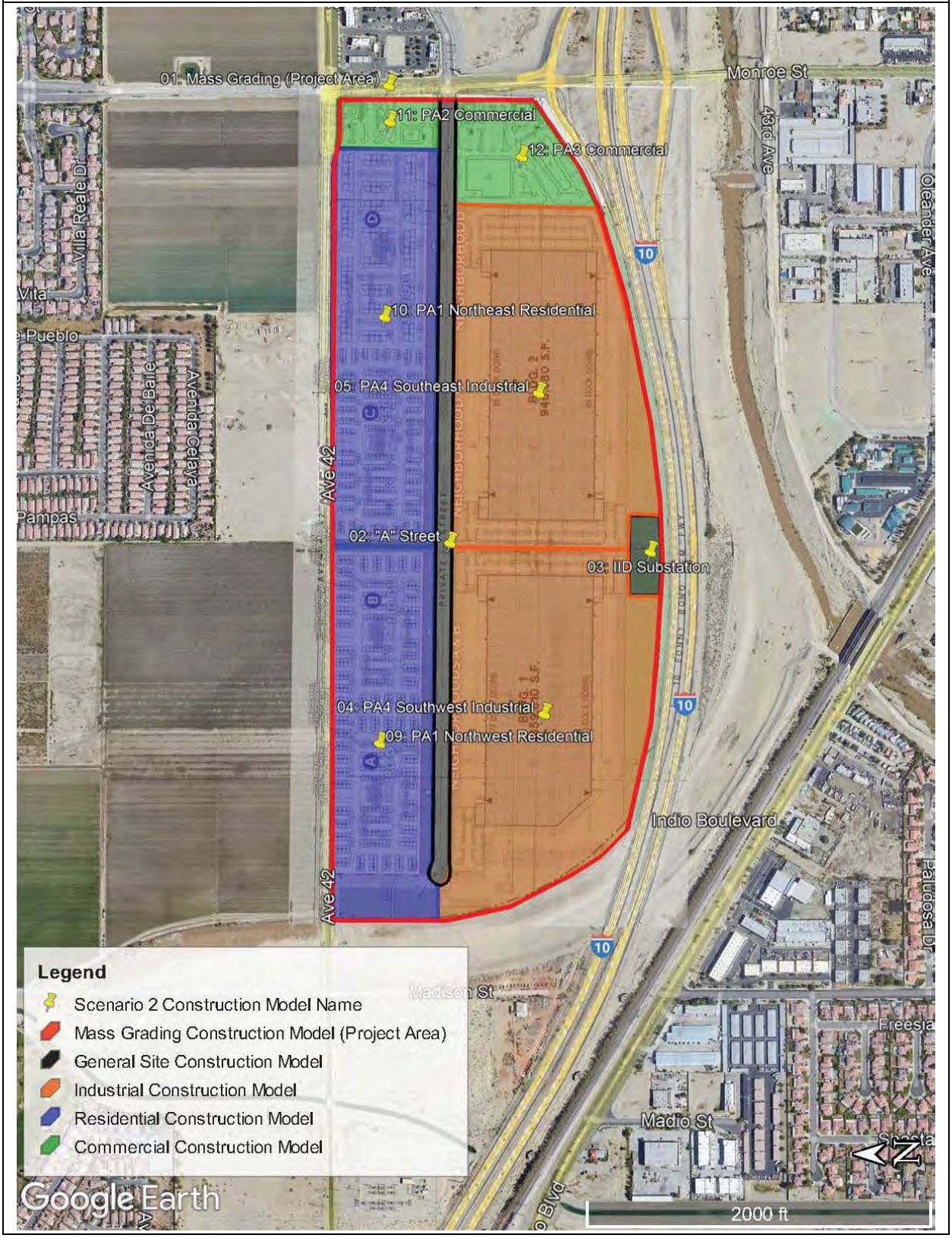


Figure 2-6: Scenario 2 Construction Models



2.6 SPECIFIC PLAN COMPONENTS THAT REDUCE NOISE AND VIBRATION EFFECTS

The proposed Project includes goals, standards and design guidelines that would reduce potential noise and vibration effects.

Section 1.4 of the Oasis at Indio Specific Plan includes the following goals that are related to noise and vibration:

- Goal: Where industrial uses are near existing and planned residential development, ensure that industrial projects be designed to limit the impact of truck traffic, air, and noise pollution.
    - Create a high-quality development that provides industrial land use activity adjacent to I-10.
    - Encourage site plan designs to provide appropriate setbacks and/or design features that reduce negative impacts at the source.
    - Encourage industrial land uses that accommodate buildings with loading bays that have a short direct access route to I-10 on- and off-ramps.
    - Design safe and efficient vehicle access to commercial land uses from arterial streets to ensure efficient vehicular ingress and egress.
    - Utilize existing designated truck routes and develop a safe and efficient system for delivering goods and services.
- Goal: Ensure the circulation network provides a safe and efficient level of connectivity for commercial and passenger vehicles, bicyclists, and pedestrians.
    - Establish pedestrian connections between residential and retail commercial developments.
    - Develop sidewalks for pedestrian use where existing gaps exist.
    - Establish the opportunity for a Multi-Modal Transportation Network that serves all users and modes in a healthy, equitable manner. \
    - Encourage commercial/retail developments to have common driveways to minimize the number of curb cuts along any given block to improve pedestrian safety.
    - Encourage residential and non-residential developments within a ½ mile radius of existing or planned transit stops, particularly along Avenue 42, to facilitate and take advantage of transit service, reduce vehicle trips, and allow residents without private vehicles to access services.
    - Design a circulation network that provides pedestrians and bicyclists safe transit on existing designated arterial and boulevard truck routes.
- Goal: Provide a stand-alone regulatory instrument that will plan for the orderly and efficient buildout of the Specific Plan Area:
    - Establish appropriate land uses and development standards that optimizes the Specific Plan Area potential and facilitates the achievement of project objectives.
    - Establish appropriate land uses and development standards within the Airport Influence Area consistent with the densities, intensities, prohibited uses, and other development conditions defined in the Bermuda Dunes Airport Land Use Compatibility Plan.

Chapter 3 of the Specific Plan establishes the following use restrictions and standards for development in the Project area:

- 3.3.2 Noise and Ventilation: Residential units shall comply with the City's Noise Ordinance, which may include design to limit the interior noise caused by non-residential uses, overhead flights, and/or freeway adjacency, to a maximum of forty-five (45) db in any habitable room with windows closed. Proper design may include, but shall not be limited to, building orientation, sound-rated windows, wall and ceiling insulation, and orientation and insulation of vents. Where it is necessary that windows be closed in order to achieve the required level, means shall be provided for ventilation/cooling to provide a habitable environment.
- 3.3.5 Limitations on Use within a Mixed-Use Development: Any activity or use as determined by the Director not to be compatible with residential uses in a mixed-use development and/or to have the possibility of affecting the health or safety of residents due to the potential for the use to create dust, glare, heat, noise, noxious gases, odor, smoke, traffic, vibration, or other impacts, or create a hazard because of materials, processes, products, or wastes, shall not be permitted within any mixed-use development. This includes but is not limited to, storage or shipping of flammable liquids or hazardous materials beyond that normally associated with residential use and welding, machining, or open flame work.
- 3.3.7 Hours of Operation: The hours of operation for commercial/retail uses in a mixed-use development shall be no earlier than 7 AM and no later than 10 PM daily unless modified by an administrative or conditional use permit. The hours of operation for industrial warehouse use may operate 24 hours daily.
    - Construction hours of operation: It shall be unlawful for any person to operate, permit, use, or cause to operate construction equipment outside the hours listed in Table 2-8. However, the Community Development Director and/or City Engineer shall have the authority to allow hours for construction as needed.

Table 2-8: Proposed Project Construction Hours of Operation		
Day	Pacific Standard Time	Pacific Daylight Time
Monday thru Friday	7 AM through 6 PM	6 AM through 6 PM
Saturday	8 AM through 6 PM	7 AM through 6 PM
Sunday and Government Holidays	9 AM through 5 PM	9 AM through 5 PM
Source: City of Indio, 2023b, Section 3.3.7		

- 3.3.8 Loading: Loading, unloading, and all service and maintenance activities shall be conducted within the hours of operation for commercial/retail uses in a mixed-use development (no earlier than 7 AM and no later than 10 PM unless modified by administrative or conditional use permit).
- 3.5.1: Supplemental Development Standards
    - As part of certain real estate transactions involving residential property within any compatibility zone, information regarding airport proximity and the existence of aircraft overflights must be disclosed. This requirement is set by California state statutes (Business and Professional Code Section 11010 and Civil Code Sections 1106.6, 1103.4,

and 1353). With certain exceptions, these state requirements apply both to the sale or lease of newly subdivided lands and to the sale of existing residential property.

- Deed Notices. A deed notice shall be recorded for each parcel associated with any discretionary land use action affecting property within an airport influence area. The notice shall include the language indicated below with respect to real estate transfer disclosures.
- Notice of Airport in Vicinity: This property is presently located in the vicinity of an airport, within what is known as an airport influence area. For that reason, the property may be subject to some of the annoyances or inconveniences associated with proximity to airport operations (for example: noise, vibration, or odors). Individual sensitivities to those annoyances can vary from person to person. You may wish to consider what airport annoyances, if any, are associated with the property before you complete your purchase and determine whether they are acceptable to you.

- 3.5.1.1: Supplemental Multiple-Family and Mixed-Use Development Standards (PA 1, PA 2, and PA 3):
  - Where a non-residential zoned property abuts a residential or mixed-use zoned property, a solid masonry wall shall be installed along the adjacent interior property lines with a minimum height of six feet and a maximum height of eight feet.
- 3.5.1.3: Supplemental Industrial Development Standards (PA 4):
  - A 20-foot-wide landscaped area from back of curb shall be provided along the internal east-west roadway.
  - Loading docks shall be permitted on building facades that directly face the internal east-west roadway.
  - Loading docks and truck parking areas shall be visually screened from view along the internal east-west roadway with a 14-foot-high wall, landscaping, and/or other screening features or barriers (such as berms).
  - Outdoor storage may not be located within any required front or street-side yard. Outdoor storage areas shall be screened from view.
  - Outdoor loading and storage areas and loading doors shall be screened from public view by decorative concrete or masonry walls with lockable view obstructing gates. Such walls shall be a minimum of eight feet in height and shall be of sufficient height to screen all outdoor materials and equipment, tractors and trailers, and loading doors from public view.
  - Semi-truck idling shall be restricted to five minutes.

Chapter 4 of the Specific Plan establishes design guidelines for development in the Project area, including:

- 4.2 Commercial and Mixed-Use Guidelines
  - Site Design: Where reasonably possible, commercial loading docks and storage areas should be located to the rear or side of the building served.
  - Exterior Design: Utilities and equipment, service, refuse and recycling collection or storage areas, and non-passenger loading areas should be located on non-primary street frontages, alleys, parking areas, and/or at the rear or side of buildings.

- Exterior Design: Refuse collection areas to the extent possible shall be located as far as possible from the residential portion of mixed-use buildings and open space areas.
- Exterior Design: All service and storage areas, utilities, and equipment not housed inside buildings shall be screened so that it is not visible from unobstructed pedestrian-level views from public streets or walkways in accordance with utility requirements. Screening may be achieved by the building itself, a screen wall designed as an integral architectural feature of the building, landscaping, or other design element that best blends with the overall development.
- Exterior Design: Roof-mounted equipment shall be screened so that it is not visible from unobstructed pedestrian-level views from public streets, walks, or parking lots. Screening of rooftop equipment may be achieved by the building parapet or other similar screen wall component that is consistent with the structure's architecture. This applies to all types of equipment, including mechanical equipment, communication dishes, skylights, exhaust fans, ducts, or any other non-architectural elements.

- 4.3 Industrial Guidelines

The Specific Plan includes the same exterior design guidelines for screening industrial refuse, recycling, utility equipment, and mechanical equipment as it does for commercial and mixed-use projects. It also includes the following relevant guidelines:

- Exterior Design: Truck loading docks shall be screened from pedestrian-level, public view from the streets as detailed in Chapter 3, Development Standards. Screening may be aesthetically compatible landscaping or comparable materials that blend with the architectural and landscape treatments of the site and perimeter landscaping.

The proposed Project's development standards and design guidelines are part of the proposed Project and are reflected in the noise and vibration estimates and impact analyses contained in this Report, where possible; they are not mitigation measures.

This page was intentionally left blank.

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. 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 dBs 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 dBs) 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.

This page was intentionally left blank.

4 ENVIRONMENTAL AND REGULATORY SETTING

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

4.1 PROJECT LOCATION AND SITE DESCRIPTION

The proposed Project would be located on undeveloped land in the north-central part of the City of Indio. Refer to Section 2.1 for a description of the Project area and its surroundings.

4.2 EXISTING NOISE ENVIRONMENT

The City's General Plan Noise Element identifies that transportation noise sources, including roadways, rail, and the Bermuda Dunes Airport, are the most dominant sources of noise in Indio. Non-transportation noise sources associated with festivals, manufacturing, industrial, and agricultural operations, mechanical and landscaping equipment, and human speech can also contribute to the local noise environment (City of Indio, 2019a, p. 11-3). The proposed Project is located south of Avenue 42, west of Monroe Street, and north of I-10. Traffic noise modeling conducted for the City's General Plan indicates existing traffic noise levels from the I-10 range from 70 CNEL in the southern part of the Project area closest to the I-10 to 60 CNEL in the northern part of the Project area farthest from the I-10 (City of Indio, 2019b, Figure 4.12-1). By 2040, the General Plan predicts future I-10 noise levels will be above 65 CNEL in the northern part of the Project area and above 70 CNEL in the southern part of the Project area (City of Indio, 2019b, Figure 4.12-4). Avenue 42 and Monroe Street would also generate traffic noise up to 65 CNEL within approximately 150 feet of each road's respective centerline (City of Indio, 2019b, Appendix G-3). In addition to traffic noise, the Project area is located approximately one mile east of the Bermuda Dunes Airport (see Section 4.2.1.1) and approximately 590 feet northeast from the center of an existing Union Pacific Railroad (UPRR) rail corridor. There are no large stationary noise sources in the vicinity of the Project area.

4.2.1 AMBIENT NOISE LEVELS AT PROJECT AREA

MIG conducted ambient noise level monitoring at and near the proposed Project area from approximately 9 AM on Sunday, November 13, 2022, to approximately 9 AM on Tuesday, November 15, 2022 (see Appendix A). The ambient noise levels were digitally measured and stored using two (2) Larson Davis SoundTrack LxT sound level meters that meet American National Standards Institute requirements for a Type 1 integrating sound level meter. Each 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 short-term noise events and increases in noise levels above typical 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 the high 40's (overnight) to the 70's (in the later afternoons). Winds were high on Sunday, November 13, reaching approximately 13 miles per hour (mph) during the daytime. Wind conditions were calmer on Monday, November 14, reaching approximately 5 mph during the daytime. The wind conditions are considered representative of the Project area.

The ambient noise monitoring conducted for this Report included one (1) long-term (LT) and three (3) short-term (ST) measurements at locations selected to:

- Provide direct observations and measurements of existing noise sources at and in the vicinity of the proposed Project;
- Determine 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 4.2.1.3).

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

- LT-01 was near the geographic center of the Project area, approximately 1,325 feet north of the centerline of the I-10 westbound, 680 feet south of the centerline of Avenue 42, and 2,700 feet west of the centerline of Monroe Street. Ambient noise levels at this location were measured from approximately 9:15 AM on Sunday, November 13, 2022, to 9:15 AM on Tuesday, November 15, 2022. The ambient noise levels measured at LT-01 are representative of the typical noise levels in the central part of the Project area.
- ST-01 was in the south-central part of the Project area, approximately 175 feet north of the centerline of the I-10 westbound. Ambient noise levels at this location were measured from approximately 9:15 AM to 11:10 AM on Monday, November 14, 2022. The ambient noise levels measured at ST-01 are representative of the typical daytime noise levels in the southern portion of the Project area.
- ST-02 was in the western part of the Project area, approximately 1,000 feet north of the centerline of the I-10 westbound and 790 feet south of the centerline of Avenue 42. Ambient noise levels at this location were measured from approximately 11:30 AM to 1:30 PM on Monday, November 14, 2022. The ambient noise levels measured at ST-02 are representative of the typical daytime noise levels in the western portion of the Project site.
- ST-03 was in the northeastern corner of the Project area, approximately 1,440 feet north of the centerline of the I-10 westbound, 120 feet south of the centerline of Avenue 42, and 100 feet west of the centerline of Monroe Street. Ambient noise levels at this location were measured from approximately 1:45 PM to 3:45 PM on Monday, November 14, 2022. The ambient noise levels measured at ST-03 are representative of the typical daytime noise levels in the eastern portion of the Project site and at the intersection of Avenue 42 and Monroe Street.

Figure 4-1: Ambient Noise Monitoring Locations

Table 4-1Table 4-2 and Table 4-2 summarize the results of the LT and ST ambient noise monitoring conducted for this Report. Refer to Appendix A for detailed ambient noise monitoring results.

Table 4-1: Measured Long-Term Ambient Noise Levels (dBA) in the Project Area

Day / Site	Duration	Measured Range in Hourly Noise Levels (dBA L_{eq})(A)			
		Daytime (7 AM to 7 PM)	Evening (7 PM to 10 PM)	Nighttime (10 PM to 7 AM)	Calculated CNEL(B)
Sunday, November 13, 2022, to Monday, November 14, 2022					
LT-01	24 hours	54.8 – 67.0	60.4 – 64.1	60.5 – 67.9	70.4
Monday, November 14, 2022, to Tuesday, November 15, 2022					
LT-01	24 hours	57.6 – 63.9	63.7 – 64.9	61.5 – 65.3	69.8

Source: MIG (See Appendix A)

(A) The L_{eq} value represents the equivalent steady-state noise level that would contain the same amount of acoustical energy as the time-varying noise level during the listed hour. Values are the lowest and highest measured hourly L_{eq} values during the listed period.

(B) The 24-hour CNEL value is calculated by applying a 5 dB penalty to measured evening noise levels and a 10 dB penalty to measured nighttime noise levels. The CNEL is calculated for the following times: 9:15 AM on Sunday, November 13 to 9:15 AM on Monday, November 14 and 9:15 AM on Monday, November 14 to 9:15 AM on Tuesday, November 15.

Table 4-2: Measured Short-Term Ambient Noise Levels (dBA) in the Project Area

Day / Site	Duration	Measured Noise Level (dBA)					
		L_{eq}(A)	L_{min}(B)	L_{90}(C)	L_{50}(C)	$L_{8.3}$(C)	L_{max}(B)
Monday, November 14, 2022 (9:10 AM to 11:10 AM)							
ST-01	2 hours	73.6	58.4	70.3	73.0	76.2	87.6
LT-01	2 hours	57.5	51.0	55.6	56.9	59.5	79.1
Monday, November 14, 2022 (11:30 AM to 1:30 AM)							
ST-02	2 hours	58.9	51.2	56.9	58.5	60.8	70.8
LT-01	2 hours	58.3	52.1	56.5	58.0	60.1	74.4
Monday, November 14, 2022 (1:45 PM to 3:45 PM)							
ST-03	2 hours	67.2	52.1	60.0	64.1	71.6	89.4
LT-01	2 hours	57.9	50.6	56.7	57.7	59.3	65.8

Source: MIG (See Appendix A)

(A) The L_{eq} value represents the equivalent steady-state noise level that would contain the same amount of acoustical energy as the time-varying noise level during the listed period.

(B) The L_{min} and L_{max} represent the lowest and highest instantaneous noise levels measured during the listed period, respectively.

(C) Values represent the noise level exceed a certain percentage of the period, e.g., L_{90} is the noise level that was exceeded 90% of the time for the listed period.

As shown in Table 4-1 and Table 4-2, the measured ambient noise levels in the Project area vary depending on the proximity of the I-10 and local roads. Measured noise levels were above 73 dBA L_{eq} in the southern part of the Project area, closest to the I-10 (ST-01), and above 67 dBA L_{eq} in the northeastern

part of the Project area near the intersection of Monroe Street and Avenue 42. Measured noise levels were lowest in the center and wester parts of the Project area (LT-01 and ST-02, respectively), usually between 57 dBA L_{eq} and 65 dBA L_{eq}. The calculated CNEL at LT-01 ranged from 69.8 CNEL to 70.4 CNEL, which is generally consistent with existing traffic volumes predicted along the I-10 in the City's General Plan (see Section 4.2).

Based on observations during the monitoring, vehicle traffic on I-10 and Monroe Street and aircraft overflights are the predominant ambient noise sources in the Project area.

4.2.1.1 Rail Noise Levels

The southwestern boundary of the proposed Project area is, at closest, located approximately 590 feet from the center of a Union Pacific Railroad corridor that runs adjacent to Indio Boulevard. Rail noise modeling conducted for the City's General Plan EIR indicates this railroad corridor generates a total combined passenger and freight rail noise level of 77 CNEL at 100 feet from the center of the railroad, decreasing to 65 CNEL at a distance of 585 feet from the center of the railroad (City of Indo, 2019b, Table 4.12-5).

4.2.1.2 Airport Noise Levels

As described in Section 2.1, the proposed Project is located approximately one mile east of the nearest runway associated with the Bermuda Dunes Airport. According to the Riverside County Airport Land Use Compatibility Plan (ALUCP), the proposed Project area is entirely within the Bermuda Dunes Airport Influence Area (Riverside County, 2004, Map BD-1). The eastern part of the Project area is located primarily in Compatibility Zone E. The western part of the Project area is located in Compatibility Zones C and D. Bermuda Dunes airport traffic is anticipated to ultimately reach approximately 75,000 annual operations, although activity is highly seasonal with the peak winter season experience much greater daily activity. The Bermuda Dunes Airport noise contours are based on the planned activity levels on the average day during the peak season. According to the Bermuda Dunes Airport Noise Compatibility Contours Map, a small part of the southwest corner of the Project area is located within the 55 CNEL to 60 CNEL airport noise contour (Riverside County, 2004, Map BD-3).

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

In addition to collecting ambient noise data at the Project site, MIG previously conducted ambient noise level monitoring at an existing, approximately 80,000 square-foot warehouse/business park use located at 1900 East Alessandro Boulevard in the City of Riverside. This 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. 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 ST measurements at locations selected to:

- Provide direct observations and measurements of existing noise sources at and in the vicinity of an existing warehouse; and
- Determine typical ambient noise levels at and in the vicinity of the proposed Project.

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 100 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	6.5 Hours	42.9	88.5	62.8	71.0	66.2	62.7	60.2	58.1
WH-2	6.0 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 approximately 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 identifies residential dwellings, hotels, hospitals, nursing homes, educational facilities, libraries, biological open space, and churches to be sensitive noise receptors and requires that they are protected from excessive noise levels through land use capability/adjacency, build design, and noise ordinance enforcement (City of Indio 2019a, pp. 11-2 and 11-9).

The existing noise sensitive receptors within 1,000 feet of the proposed Project site include:

- Single-family residences in the Sun City Shadow Hills neighborhood approximately 650 feet north of the Project area
- Single-family residences in the Palazzo residential neighborhood approximately 1,300 feet north of Avenue 42

In addition to the existing receptors described above, the proposed Project would also result in new noise-sensitive receptors within the Project area, including residential, open space, and, potentially, hotel receptors.

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; however, the Federal Transit Administration (FTA) has published guidance on predicting and assessing the noise and vibration impacts of proposed transit projects, including guidance for assessing noise and vibration during construction of such projects. This guidance is summarized below.

4.3.1.1 Federal Transit Administration

The FTA's 2018 Transit Noise and Vibration Impact Assessment Manual provides guidance on when a construction noise assessment may be needed for a project, whether a qualitative or quantitative noise assessment may be required, and what construction-related noise impact criteria may be appropriate for a project. The FTA guidance identifies that a construction noise assessment may not be required for small projects such as small building construction that is similar in scale to surrounding development. The guidance also identifies that a qualitative assessment may be required for projects with less than one month of construction time in a noise sensitive area, while a quantitative assessment may be required for projects more than one month of construction in noise sensitive areas or if particularly noise equipment will be used. Finally, for quantitative assessments, the FTA manual recommends construction noise impact criteria, expressed in dBA, that vary based on the type of construction noise assessment conducted for a project. The FTA's construction noise impact criteria are summarized in Table 4-4.

Table 4-4: FTA Construction Noise Criteria

Land Use	General Analysis Criteria(A)		Detailed Analysis Criteria(B)		
	Daytime $L_{eq(1hr)}$	Nighttime $L_{eq(1hr)}$	Daytime $L_{eq(8hr)}$	Nighttime $L_{eq(8hr)}$	30-Day Average L_{dn}
Residential	90 dBA	80 dBA	80 dBA	70 dBA	75 dBA
Commercial	100 dBA	100 dBA	85 dBA	85 dBA	80 dBA(C)
Industrial	100 dBA	100 dBA	90 dBA	90 dBA	85 dBA(C)

Source: FTA 2018, Table 7-2 and Table 7-3

(A) A general analysis is warranted for projects in an early assessment stage when the equipment roster and schedule are undefined and only a rough estimate of construction noise levels is practical.

(B) A detailed analysis is warranted when many noise sensitive sites are adjacent to a construction project or where contractors are faced with stringent local ordinances or heightened public concerns expressed in early outreach efforts.

(C) Standard is $L_{eq(24hr)}$ instead of L_{dn}.

4.3.2 STATE NOISE AND VIBRATION REGULATIONS

4.3.2.1 Assembly Bill 1307

Assembly Bill (AB) 1307 was signed into law in September 2023. The bill adds new Section 20185 to the Public Resources Code, establishing that, for the purposes of CEQA, for residential projects, "the effects of noise generated by project occupants and their guests on human beings is not a significant effect on the environment." AB 1307 defines residential or mixed-use housing projects to mean a project consisting of residential uses only or a mix of residential and non-residential uses, with at least two-thirds of the square footage of the development designated for residential uses.

4.3.2.2 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 1206, Sound Transmission, establishes sound transmission standards for interior walls, partitions, and floor/ceiling assemblies between adjacent dwelling units and sleeping units and between dwelling units and sleeping units and adjacent public areas. In summary, this code section requires:

- Airborne Sound: Walls, partitions, and floor-ceiling assemblies separating dwelling units and sleeping units from each other or from public or service areas shall have a sound transmission class (STC) of not less than 50 if laboratory tested or have a Normalized Isolation Class of not less than 45 if field tested (Section 1206.2).
- Structure-borne Sound: Floor-ceiling assemblies between dwelling units and sleeping units or between a dwelling unit or sleeping unit and a public or service area within the structure shall have an impact insulation class rating of not less than 50 if laboratory tested or have a Normalized Impact Sound Rating of not less than 45 if field tested. Impact sound insulation is not required for floor-ceiling assemblies over nonhabitable rooms or spaces not designed to be occupied such as garages, mechanical rooms, and storage areas (Section 1206.3).
- Allowable Interior Noise Levels: Interior noise levels attributable to exterior noise sources shall not exceed 45 DNL or CNEL (as set by the local General Plan) in any habitable room.[2].

The California Green Building Standards (CALGreen) Code is Part 11 to the California Building Standards Code. Chapter 5, Nonresidential Mandatory Standards, Section, establishes acoustical control requirements for non-residential buildings.[3] In summary, this code section requires:

- Prescriptive Exterior Noise Transmission Control: Wall and roof-ceiling assemblies that are part of the building envelope within the 65 CNEL noise contour of an airport or within the 65 DNL or 65 CNEL noise contour of a freeway, expressway, railroad, industrial source, or fixed-guideway source, shall meet a composite STC rating of at least 50 (with exterior windows a minimum STC of 40) or a composite Outdoor-Indoor Sound Transmission Class (OITC) of no less than 40 (with exterior windows a minimum OITC of 30) (Section 5.507.4.1). Buildings exposed to a noise of 65 dB L_{eq} (1-hour) during any hour of operation shall have wall and roof-ceiling assemblies meeting a composite STC of at least 45 (or OITC of at least 35), with exterior windows a minimum STC of 40 (or OITC 30) (Section 5.507.4.1.1).
- Performance Method Exterior Noise Transmission Control: For buildings located within the 65 DNL, 65 CNEL, or 65 db L_{eq} (1-hour) areas described above, wall and roof-ceiling assemblies shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an L_{eq} (1-hour) of 50 dBA in occupied areas during any hour of operation (Section 5.507.4.2). This requirement shall be documented by preparing an acoustical analysis

[2] Title 24, Part 2, Section 202, Definitions, defines "habitable space" to be "space for living, sleeping, eating, or cooking." Bathrooms, toilet rooms, closets, halls, storage or utility spaces and similar areas are not considered habitable spaces.

[3] Section 5.507.4 excepts buildings with few or no occupants or where occupants are not likely to be affected by exterior noise from the non-residential acoustical control requirements, as determined by the enforcement authority, such as factories, stadiums, storage, enclosed parking structures, and utilities buildings.

documenting interior sound levels prepared by personnel approved by the architect or engineer of record.

- Interior Sound Transmission: Wall and floor assemblies separating tenant spaces and tenant spaces and public spaces shall have an STC of at least 40 (Section 5.507.4.3).

4.3.3 CALIFORNIA DEPARTMENT OF TRANSPORTATION

The California Department of Transportation's (Caltrans) Transportation and Construction Vibration Guidance Manual provides a summary of vibration criteria that have been reported by researchers, organizations, and governmental agencies and provides recommended guidelines for evaluating potential vibration impacts on buildings (i.e., structural damage) and humans (i.e., annoyance) from transportation and construction projects. These thresholds are summarized in Table 4-5 and Table 4-6. The thresholds vary depending on whether the vibration source is continuous or transient in nature. A transient source creates an isolated vibration event, such as blasting. Continuous sources could also include sources with intermittent but frequent vibration events, such as impact pile drivers and compactors. While vehicle traffic is considered a continuous vibration source, many types of construction activities fall between continuous and transient in nature.

Table 4-5: Caltrans' Vibration Threshold Criteria for Building Damage

Structural and Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some older buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial and commercial structures	2.0	0.5

Source: Caltrans, 2020

Table 4-6: Caltrans' Vibration Threshold Criteria for Human Response		
Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4
Source: Caltrans, 2020		

4.3.4 LOCAL NOISE REGULATIONS

4.3.4.1 Riverside County Airport Land Use Commission

The Riverside County Airport Land Use Commission (ALUC) protects public health, safety and welfare by ensuring the orderly expansion of airports and the adoption of land use measures that minimize the public's exposure to extensive noise and safety hazards within areas around airports. The Riverside County ALUC reviews land use compatibility issues for development surrounding airports in the County, including safety, noise, overflight and airspace protection. These compatibility issues are identified and analyzed in the ALUCP for each airport, and the implementation of these plans promotes compatible development around the airports. The proposed Project is subject to Riverside County ALUC review pursuant to state law (Public Utilities Code Section 21676(b)) because the Project is a specific plan that could affect the property within the Bermuda Dunes Airport Influence Area. The Riverside County ALUC will review the proposed Project for consistency with the applicable policies pertaining to Bermuda Dunes Airport. Otherwise, the proposed Project does not include a specific development proposal and is not considered a major land use action or other land use action subject to ALUC review pursuant to Section 1.5, Types of Actions Reviewed, of Chapter 2, Countywide Policies, of the Riverside County ALUCP Policy Document (Riverside County ALUC, 2004).

Bermuda Dunes Airport Land Use Compatibility Plan

The Riverside County ALUCP does not establish individual land use compatibility policies for Bermuda Dunes. Accordingly, Tables 2A and 2B Riverside County ALUCP establish basic compatibility factors and criteria for the Bermuda Dune Airport Influence Area, including Zones C, D, and E in which the proposed Project area is located. The proposed Project includes both residential and non-residential land uses standards and thus could include noise sensitive land uses and, potentially, noise-sensitive exterior non-residential use areas. The Riverside County ALUCP basic compatibility criteria for Compatibility Zones C, D, and E that are relevant to the proposed Project are reproduced in Table 4-7 below.

Table 4-7: Summary of Relevant Riverside County ALUCP Compatibility Factors and Criteria[A]						
Zone and Location	Maximum Density/Intensity			Required Open Land	Prohibited Uses	Other Conditions
	DU Per Acre[B]	Average People per Acre[C]	Single Acre[C]			
C - Extended Inner Approach / Departure Zone	0.2 (Average parcel size ≥ 5.0 acres	75	150	Max 20% lot coverage	Children's schools, day care centers, libraries, hospitals, and nursing homes	Minimum outside to inside noise level reduction of 20 dB in residences (including mobile homes) and office buildings
					Buildings with more than 3 aboveground habitable floors	
					Highly noise-sensitive outdoor non-residential uses[D]	Deed notice required[D]
D - Primary Traffic Patterns and Runway Buffer Area	0.2 (Average parcel size ≥ 5.0 acres or ≥ 5.0 (Average parcel size ≤ 0.2 acres	100	300	Max 10% lot coverage	Highly noise-sensitive outdoor nonresidential uses[D]	Children's schools, hospitals, nursing homes discouraged[E]
						Deed notice required
E - Other Airport Environs	No Limit	No Limit		None	None related to noise	

Source: Riverside County, 2004, Table 2A

(A) This table is not exhaustive. It only lists the compatibility factors and criteria that are relevant to the noise analysis of the proposed Project, which is a Specific Plan what would support residential and non-residential land uses. The listed standards are consistent with Table 2A from the Riverside County ALUCP.

(B) Mixed-use development in which residential uses are proposed to be located in conjunction with nonresidential uses in the same or adjoining buildings on the same site shall be treated as nonresidential development. .

(C) Usage intensity calculations shall include all people (employees, customers/visitors, etc.) who may be on the property at a single point in time, whether indoors or outside.

(D) Examples of noise-sensitive outdoor nonresidential uses that should be prohibited include major spectator-oriented sports stadiums, amphitheaters, concert halls and drive-in theaters.

(E) Discourages uses should generally not be permitted unless no feasible alternative is available.

Section 4.1 of the Riverside County ALUCP establishes supplemental compatibility criteria related to noise intended to avoid the establishment of noise sensitive land uses in portions of airport environs that are exposes to significant levels of aircraft noise. The ALUCP establishes the maximum exterior CNEL considered normally acceptable for new multi-family residential land uses in the vicinity of an airport is 60 dB, while the maximum CNEL for commercial uses is generally 65 db. Refer to Table 4-8 for the ALUCP's noise and land use compatibility criteria. The ACLUP establishes the maximum, aircraft-related, interior noise level that shall be considered acceptable is 45 CNEL for the following land uses: any habitable room of single- or multi-family residences; hotels and motels; hospitals and nursing homes; churches, meeting halls, theaters, and mortuaries; office buildings; and schools, libraries, and museums.

Table 4-8: Riverside County ALUCP Exterior Noise Compatibility Criteria					
Land Use	CNEL (dBA)				
	50-55	55-60	60-65	65-70	70-75
Residential: Single-family, nursing homes, mobile homes	++	O	-	--	--
Residential: Multi-family, apartments, condominiums	++	+	O	--	--
Commercial and Industrial: Offices, Retail Trade	++	+	O	O	-
Commercial and Industrial: Service, Wholesale Trade, Warehousing, Light Industrial	++	+	+	O	O
Commercial and Industrial: General Manufacturing, Utilities, Extractive Industrial	++	++	++	+	+
Recreational: Parks, Playgrounds	++	+	+	O	-

Compatibility Definitions:		
++	Clearly Acceptable	The activities associated with the specific land use can be carried out with essentially no interference from the noise exposure.
+	Normally Acceptable	Noise is a factor to be considered in that slight interference with outdoor activities may occur. Conventional construction methods will eliminate most noise intrusions upon indoor activities.
O	Marginally Acceptable	The indicated noise exposure will cause moderate interference with outdoor activities and with indoor activities when windows are open. The land use is acceptable on the conditions that outdoor activities are minimal and construction features which provide sufficient noise attenuation are used (e.g., installation of air conditioning so that windows can be kept closed). Under other circumstances, the land use should be discouraged.
-	Normally Unacceptable	Noise will create substantial interference with both outdoor and indoor activities. Noise intrusion upon indoor activities can be mitigated by requiring special noise insulation construction. Land uses which have conventionally constructed structures and/or involve outdoor activities which would be disrupted by noise should generally be avoided.
--	Clearly Unacceptable	Unacceptable noise intrusion upon land use activities will occur. Adequate structural noise insulation is not practical under most circumstances. The indicated land use should be avoided unless strong overriding factors prevail and it should be prohibited if outdoor activities are involved.

Source: Riverside County, 2004, Table 2B

Section 4.4 of the Riverside County ALUCP establishes overflight compatibility policies intended to help notify people about the presence of overflights near airports so that they can make more informed decisions regarding acquisition or lease of property in areas potentially affected by airport and individual aircraft noise. These include a policy (4.4.2) consistent with State law requiring information be disclosed whether a property is situated within an airport influence area as part of real estate transactions, and a policy (4.4.3) requiring a deed notice to be recorded for each parcel associated with any discretionary land use action affecting property within an airport influence area, and a policy (4.4.4) discouraging the conversion of land from existing or planned open space to residential uses within Compatibility Zone C and encouraging the careful evaluation of aircraft overflight impacts in Compatibility Zone D as part of a general Plan amendment. As noted above, the Project area is largely outside of the Bermuda Dunes Airport noise compatibility contours, except for a minor portion of the area's southwest corner within the 55 CNEL to 60 CNEL contour.

4.3.4.2 City of Indio Municipal Code

Title IX of the Indio Municipal Code, General Regulations, Chapter 95C, Noise Control, sets forth regulations and procedures that control and abate unnecessary, excessive, or annoying noise land

vibration levels that may be detrimental to the peace, health, safety, welfare, and quality of life of the City's citizens. This chapter includes the following standards relevant to the proposed Project:

- Section 95C.03, General Prohibitions, sets forth no person shall make or cause to be made within the city limits any disturbing, excessive, or offensive noise or vibration which causes discomfort or annoyance to any reasonable person of normal sensitivity in the area that is plainly audible at a distance greater than 50 feet from the source point for any purpose. The characteristics and conditions that should be considered in determining whether a violation of this code section occurs should include, but are not limited to: the level of the noise, whether the nature of the noise is usual or unusual, whether the origin of the noise is natural or unnatural, the level of the ambient noise, the proximity of the noise to sleeping facilities, the nature and zoning of the area from which the noise emanates and the area where it is received, the time of day or night the noise occurs, the duration of the noise, and whether the noise is recurrent, intermittent, or constant.
- Section 95C.04, Disturbing, Excessive, Offensive Noises, Declaration of Certain Acts Constituting, sets forth the following activities cause disturbing, excessive, or offensive noises and are unlawful:
    - Unnecessary use or operation of horns, signaling devices, or other similar devices on automobiles, motorcycles, or any other vehicle (Section 95C.04(A)).
    - The use or operation of any sound production or reproduction device, radio receiving set, musical instrument, drums, phonograph, television set, loud speakers, sound amplifier or other similar machine or device for the producing or reproducing of sound in such a manner as to disturb the peace, quiet or comfort of any reasonable person of normal sensitivity, in any area of the city is prohibited. The operation of such equipment in such a manner as to be plainly audible at a distance of 50 feet from the building, structure, or vehicle in which located, or from the source point shall constitute evidence of a violation of this requirement (Section 95C.04(B)).
    - Excessive animal noises which are disturbing or offensive, including, but not limited to, loud persistent or habitual dog barking, howling or yelping (Section 95C.04(C)).
    - Noise which reasonably interferes with the workings of or which disturbs or unduly annoys occupants in a hospital, school, library, rest home, or long-term medical or mental care facility Section 95C.04(D)).
    - Leaf blowers shall only be operated between the hours of 7 AM and 8 PM on any day except Sunday when they may only be operated between the hours of 10 AM and 8 PM. Leaf blowers shall be equipped with functional mufflers and an approved sound limiting device required to ensure that the leaf blower is not capable of generating a sound level exceeding any limit in Municipal Code Chapter 95c (Section 95C.04(F)).
    - Yelling, shouting, hooting, whistling, or singing on public streets or on any publicly owned property between the hours of 10 PM and 8 AM, or at any time or place so as to disturb the quiet comfort or repose of persons in any office, or in any dwelling, hotel, or other type of residence or persons in close proximity.

- Section 95C.08, Disturbing, Excessive, Offensive Noises or Vibration Created by Vehicles, Tools, Machinery, sets forth that the following activities cause disturbing, excessive, or offensive noise or vibration:
  - The operation of any motor vehicle with a gross vehicle weight rating in excess of 10,000 pounds, or any auxiliary equipment attached to such a vehicle, including but not limited to refrigerated truck compressors, for a period longer than 15 minutes in any hours while the vehicle is stationary and within 150 feet of a residential area between the hours of 7 PM and 7 AM, except when movement of said vehicle is restricted by other traffic (Section 95C.08(A)).
  - The loading and unloading of vehicles, operating of forklifts or cranes within 1,000 feet of a residence unless reduced by the Planning Commission during the design review or conditional use permit process (Section 95C.08(B)(2)).
  - Construction tools and machinery, other than between the hours of:
    - Pacific Standard Time: Monday through Friday (7 AM to 6 PM), Saturday (8 AM to 6 PM), Sunday (9 AM to 5 PM), and Government Holidays (9 AM to 5 PM) (Section 95C.08(B)(3)(1)).
    - Pacific Daylight Time: Monday through Friday (6 AM to 6 PM), Saturday (7AM to 6 PM), Sunday (9 AM to 5 PM), and Government Holidays (9 AM to 5 PM) (Section 95C.08(B)(3)(2)).
- Section 95C.09, Special Provisions, Exemptions, sets forth the following activities are exempt from the City's noise control provisions:
  - Those noise events in the community (e.g., arterial traffic noise, railroad noise) that are more accurately measured by application of the general plan noise element policy using the CNEL method (Section 95C.09(A)).
  - Activities conducted in public parks and public playgrounds with a valid city permit (Section 95C.09(D)).
  - All mechanical device, apparatus, or equipment which are utilized for the protection or salvage of agricultural crops during periods of potential or actual frost damage or other adverse weather conditions Section 95C.09(F)).
  - Mobile noise sounds associated with agricultural operations provided such operations do not take place between the hours of 8 PM and 7 AM on weekdays, including Saturday, or at any time on Sunday or a Federal holiday Section 95C.09(G)).
  - Mobile noise sources associated with agricultural pest control through pesticide application (Section 95C.09(H)).
  - The construction, operation, maintenance and repairs of equipment, apparatus, or facilities of park and recreation departments, public work projects, or essential public services and facilities, including trash collection and those activities of public utilities subject to the regulatory jurisdiction of the California Public Utilities Commission (Section 95C.09(I)).
  - Noise sources associated with minor maintenance or improvement of property used either in part or in whole for residential purposes provided said activities take place between the

hours of 7 AM and 8 PM on any day except Sunday or between the hours of 10 AM and 8 PM on Sunday Section 95C.09(J)).

- Any activity to the extent regulation thereof has been preempted by state or federal law or which is necessary or appropriate means of complying with health or safety requirements imposed by state or federal law (Section 95C.09(K)).

In addition to noise control requirements, Title XV of the Indio Municipal Code, Land Usage, Chapter 160, Transportation Demand Management, requires all new development projects and or change of use projects that are estimated to employ at total of 100 or more persons to submit a Transportation Demand Management (TDM) Plan that reduces work related vehicle trips by 10% from the expected number of trips related to the project.

4.3.4.3 City of Indio Unified Development Code

The City of Indio Unified Development Code implements the City's General Plan and protects, promotes, and enhances the public health, safety, peace, comfort, convenience, prosperity, and general welfare of the City and its residents. The Uniform Development Code includes the following requirements related to noise and vibration that may be relevant to the proposed Project:

- Article 2, Zone Regulations, Chapter 2.03, Mixed-Use Districts: Sections K.3 and K4 establishes that the hours of operation for non-residential uses in mixed-use zones, and the non-residential component of mixed-use developments in any zone in the City, including loading, unloading, and all service and maintenance activities, shall be no earlier than 7 AM and no later than 10 PM daily, unless modified by an administrative or conditional use permit.
- Article 3, Citywide Use Regulations, Chapter 3.04, Performance Standards: Section 3.04.08, Noise and Vibration, establishes the following standards:
  - Development Noise: No development project shall generate noise exceeding the maximum levels permitted in Table 11-1: Noise Compatibility Guidelines in the Noise Element of the City of Indio General Plan. An acoustic study shall be required for any proposed project which could create or be subject to a noise that exceeds the levels contained in Table 11-1 Noise Compatibility Guidelines of the General Plan should the Director determine that such a study is needed.
  - Vibration. No vibration shall be produced that is transmitted through the ground and is discernible without the aid of instruments by a reasonable person at the lot lines of the site. Vibrations from temporary construction, demolition, and vehicles that enter and leave the subject parcel (e.g., construction equipment, trains, trucks, etc.) are exempt from this standard. Where vibration dampeners are proposed, project applications shall include an engineered study establishing the effectiveness of the dampeners based on actual conditions.
  - Other Noise and Vibration Sources. All land uses shall be subject to regulations and standards in Chapter 95C: Noise Control of the City of Indio Municipal Code.

4.3.4.4 City of Indio General Plan

The City's General Plan Noise Element describes the City's existing and future noise environment and sets forth the steps the City will take to minimize exposure to excessive noise levels. Below is a summary

of the Noise Element goals, policies, and implementation actions that may be relevant to the proposed Project (City of Indio 2019a):

- Goal NE-1: Land Use Compatibility. A City where noise exposure is minimized for those living, working, and visiting the community.
    - Policy NE-1.1 Sensitive Receptors: Protect noise-sensitive uses, such as residences, schools, health care facilities, hotels, libraries, and churches from excessive noise levels through land use compatibility/adjacency, build design, and noise ordinance enforcement.
    - Policy NE-1.2 Noise Compatibility: Apply the Noise Compatibility Matrix, shown in Table 11-1, as a guide for planning and development decisions. The City will require projects involving new development or modifications to existing development to implement mitigation measures, where necessary, to reduce noise levels to at least the normally compatible range shown in the City's Noise Compatibility Matrix shown in Table 11-1. Mitigation measures should focus on architectural features and building design and construction, rather than site design features, such as excessive setbacks, berms, and sound walls, to maintain compatibility with adjacent and surrounding uses.
    - Policy NE-1.3 Airport Land Use Planning: Implement all applicable noise-related policies contained in the Bermuda Dunes Airport Land Use Plan.
    - Policy NE-1.6 Limit on Hours of Operation: Limit delivery or service hours for stores and businesses with loading areas, docks, or trash bins that front, side, border, or gain access on driveways next to residential and other noise sensitive areas, such as residences, schools, hospitals, religious meeting spaces, and recreation areas.
    - Policy NE-1.7 Land Use and Community Design: Prioritize the building design and character policies in the Land Use and Community Character Element over those in the Noise Element to ensure that new development meets the design vision of the city. This policy will not apply when noise levels are clearly in the incompatible range as shown in the City's Noise Compatibility Matrix shown in Table 11-1.
- Goal NE-2: Mobile Noise Sources. A City with minimal mobile source-generated noise levels.
    - Policy NE-2.1 Freeway noise. Work with Caltrans and the Federal Highway Administration to reduce noise impacts to sensitive receptors along I-10.
    - Policy NE-2.2 Truck routes. Regulate traffic flow to enforce speed limits to reduce traffic noise. Periodically evaluate and enforce established truck and bus routes to avoid noise impacts on sensitive receptors.
    - Policy NE-2.3 Railway noise. Ensure that noise and vibration from rail lines is taken into account during the land use planning and site development processes.
    - Policy NE-2.4 Roadway noise. Implement the policies listed under Goal 1 to reduce the impacts of roadway noise on noise-sensitive receptors where roadway noise exceeds the normally compatible range shown in the City's Noise Compatibility Matrix shown in Table 11-1.
    - Policy NE-2.5 Traffic calming. Require the use of traffic calming measures such as reduced speed limits or roadway design features to reduce noise levels where roadway

noise exceeds the normally compatible range shown in the City's Noise Compatibility Matrix shown in Table 11-1.

- Policy NE-2.6 Noise-reducing paving. Encourage the use of noise-reducing paving materials, such as open-grade or rubberized asphalt, for public and private road surfacing projects in proximity to existing and proposed residential land uses.

- Goal NE-3: Stationary Noise Sources. A City with minimal stationary source-generated noise levels.
  - Policy NE-3.1 Noise ordinance. Minimize noise conflicts between neighboring properties through enforcement of applicable regulations, such as the City's Noise Control Ordinance.
  - Policy NE-3.2 Noise complaints. Respond timely to noise complaints and conduct field monitoring compliance checks to regulate noise violators.
  - Policy NE-3.3 Entertainment uses. Require noise generating uses, such as restaurants, bars, entertainment venues, and industrial manufacturing operations to minimize noise impacts on adjacent noise-sensitive receptors when there is a potential for adverse noise impacts to occur.
  - Policy NE-3.4 Construction noise. Require development to minimize the exposure of neighboring properties to excessive noise levels from construction-related activity during all phases of construction.
- Noise Element Implementation Actions
  - Construction Noise Limits: Review the hours of allowed construction activity to ensure they effectively lead to compliance within the limits (maximum noise levels, hours and days of allowed activity) established in the City's noise regulations.
  - Noise studies: Require submittal of applicable technical reports prepared by qualified professionals as part of the development review process. Depending on the location, size, or type of development proposed, technical could be required, including a noise impact analysis.

The City's noise compatibility matrix referenced in policies such as Policy NE-1.2, NE-1.7, NE-2.4, and NE-2.5 is reproduced below as Table 4-9.

Table 4-9: Noise Compatibility Guidelines			
Land Use Category	Exterior Noise Level (CNEL dBA))		
	Acceptable	Conditionally Acceptable	Unacceptable
Residential – Single Family Residences, Mobile Homes, Senior Housing, Convalescent Homes	60	75	75+
Residential – Multiple Family Residences, Mixed-Use Commercial/Residences	65	75	75+
Transient Lodging – Hotels, Motels, Resorts	65	75	75+
Schools, Churches, Hospitals, Nursing Homes, Child Care Facilities	65	75	75+
Passive Recreational Parks, Nature Preserves, Contemplative Spaces, Cemeteries	65	75	75+
Active Parks, Golf Courses, Athletic Fields, Outdoor Spectator Sports, Water Recreation	70	75	75+
Office/professional, Government, Medical/Dental, Commercial, Retail, Laboratories	70	75	75+
Industrial, Manufacturing, Utilities, Agriculture, Mining, Stables, Ranching, Warehouse, Maintenance/Repair	70	75+	--
Compatibility Definitions:			
Acceptable:	Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal construction, without any special noise insulation requirements.		
Conditionally Acceptable:	New construction or development should be undertaken only after a detailed noise analysis is conducted to determine if noise reduction measures are necessary to achieve acceptable levels for land use. Criteria for determining exterior and interior noise levels are listed in Table N-2, Noise Standards. If a project cannot mitigate noise to a level deemed Acceptable, the appropriate county decision-maker must determine that mitigation has been provided to the greatest extent practicable or that extraordinary circumstances exist.		
Unacceptable:	New construction or development shall not be undertaken.		
Source: City of Indio, 2019a, Table 11-1.			

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 potential effects 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:

(A) Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of applicable standards.

(B) Generate excessive ground-borne vibration or ground-borne noise levels.

(C) Expose people residing or working in the Project area to excessive airport-related noise levels.

With regard to criterion (A), the proposed Project would result in a significant construction noise impact if it would:

- Violate or conflict with the controlled hours of operation for construction tools and machinery established in Municipal Code Section 95C.08(B); or
- Generate construction noise levels at residential receptors above the FTA's daytime (80 dBA L_{eq}) or nighttime (70 dBA L_{eq}) detailed construction noise analysis criteria.

In addition, the proposed Project would result in a significant operational noise impact if it would:

- Result in on-site noise levels that violate or conflict with an applicable provision of Municipal Code Chapter 95C.(Noise Control); or
- Result in on- or -off-site noise levels that violate or conflict with an applicable standard or policy in the City's General Plan Noise Element; or
- Cause or contribute to an increase in traffic noise levels at off-site locations by:
    - 5 dBA or more where the ambient noise level would remain acceptable per the City's General Plan Noise and Land Use Compatibility Matrix (see Table 4-9); or
    - 3 dBA or more where the ambient noise would change from acceptable to conditionally acceptable or remain conditionally acceptable per the City's General Plan Noise and Land Use Compatibility Matrix (see Table 4-9); or
    - 1 dBA or more where the ambient noise level would change from conditionally acceptable to unacceptable or remain unacceptable per the City's General Plan Noise and Land Use Compatibility Matrix (see Table 4-9).

With regard to criterion (B), the proposed Project would result in a significant vibration impact if it would:

- Result in construction activities that violate or conflict with the controlled hours of operation for construction tools and machinery established in Municipal Code Section 95C.08(B); or

- Generate construction-related vibration levels that exceed Caltrans' Guidelines for Vibration Damage (see Table 4-5); or
- Generate construction-related vibration levels that exceed Caltrans' strongly perceptible vibration annoyance criterion (0.10 in/sec PPV, see Table 4-6); or
- Generate operations-related vibration levels that violate or conflict with the vibration performance standard in Unified Development Section 3.08.04.

With regard to criterion (C), the proposed Project would expose people living or working in the Project area to excessive airport-related noise levels if it would conflict with an applicable ALUP or otherwise expose people to excessive airport-related noise levels from a public or private air facility.

5.2 NOISE IMPACT ANALYSIS METHODOLOGY

The proposed Project would not directly result in the construction or operation of any specific project; however, the proposed Project's land use plan allows for new residential, commercial, industrial, and infrastructure development projects that could generate construction and operational noise and vibrations. This section summarizes the proposed Project's noise and vibration sources and the methods used to estimate and evaluate potential the Project's noise and vibration levels.

5.2.1 CONSTRUCTION NOISE

MIG estimated the proposed Project's potential construction noise impacts using the Federal Highway Administration's (FHWA) 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. Although future project-specific characteristics are not known, construction activities associated with typical residential, commercial, industrial, and infrastructure development projects in undeveloped areas can include site preparation, grading, trenching, building construction (including foundation work, vertical building work, mechanical, electrical, and plumbing work, and finishing work), paving, and architectural coating activities.[4] These types of construction activities could generate 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, Monroe Street, Avenue 42, and, in the future, "A" Street.

[4] The proposed Project would not require demolition activities because the Project area is not currently developed with any buildings or structures.

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 typical residential, commercial, industrial, and infrastructure development projects. As described in Section 2.5.1.1, a series of different construction activity models were developed for the purposes of evaluating potential environmental impacts from Project-related construction activities, including construction noise and vibration effects. The construction models are based on the conceptual site plan and associated development assumptions for the Maximum Buildout Scenario and Scenario 2, and the construction phasing and equipment assumptions input into the RCNM to estimate potential construction noise levels are consistent with the California Emissions Estimator Model, or CalEEMod, inputs used to evaluate the proposed Project's potential construction air quality impacts (MIG, 2023).

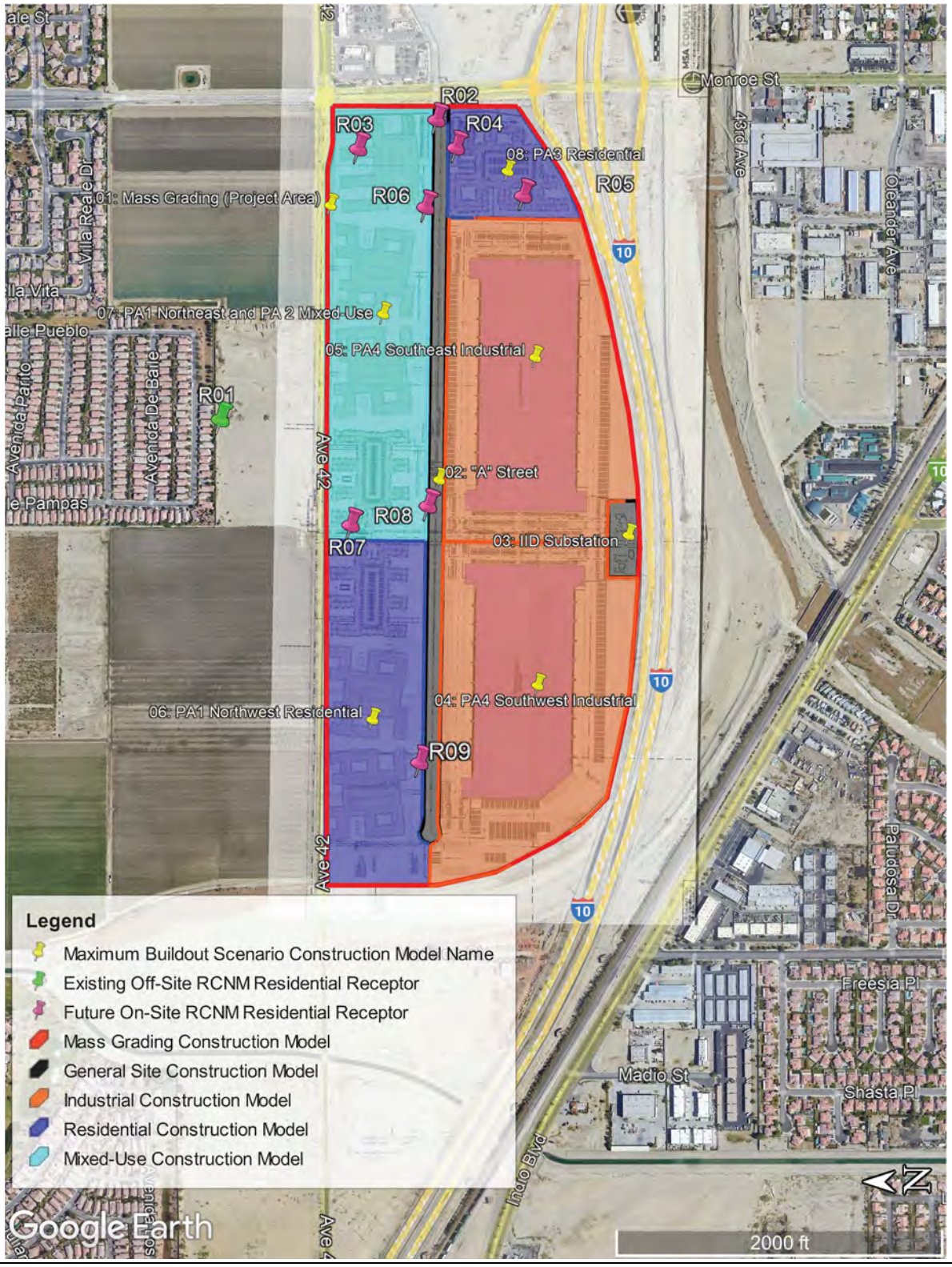
MIG used the RCNM to estimate construction noise levels at 9 different residential receptors that could be located within 1,250 feet (0.25 miles) of potential Project construction activities, as summarized in Table 5-1 and shown in Figure 5-1.[5]

Table 5-1: Modeled Construction Noise Receptors

ID	Receptor Type	Location
R01	Existing Off-Site Residential	Sun City Shadow Hills Neighborhood Property Line (Avenida Celaya)
R02	Future On-Site Residential	PA 2 Southern Boundary
R03	Future On-Site Residential	PA 1 / PA 2 Boundary
R04	Future On-Site Residential	PA 3 Northern Boundary
R05	Future On-Site Residential	PA 3 Western Boundary
R06	Future On-Site Residential	PA 1 Southern Boundary
R07	Future On-Site Residential	PA 1 Interior Lot Line
R08	Future On-Site Residential	PA 1 Southern Boundary
R09	Future On-Site Residential	PA 1 Southern Boundary

[5] While construction equipment and other sources of noise may theoretically be audible far from the source, in practice ambient noise from wind, roadway traffic, and other land uses is louder than equipment operating hundreds or thousands of feet away. For example, the noise from a bulldozer (85 dBA L_{max} at 50 feet) would theoretically attenuate with distance to 57 dBA L_{max} at 1,250 feet, but this noise level assumes no additional attenuation occurs due to ground cover, atmospheric effects, or shielding by walls, buildings, etc. For this reason, at 1,250 feet the noise environment at a potential receiver would primarily be a function of the local noise sources that would not be affected by construction equipment noise.

Figure 5-1: Modeled Construction Noise Receptors



Note: The Maximum Buildout Scenario is shown because it includes more residential development than Scenario 2.

Construction noise was modeled for typical and worst-case conditions as follows:

- *Worst Case Construction Noise Levels:* This modeling assumes potential short-term construction equipment operations along construction model boundaries. Such operations are assumed to occur during potential mass grading and all site preparation and paving phases (except for the "A" Street Model, which is a linear project and modeled as typical construction noise). This modeling represents the shortest distance between potential modeled construction activities and modeled residential receptors and is based on the three noisiest pieces of equipment operating near the project boundary at the same time.
- *Typical Construction Noise Levels:* This modeling assumes sustained construction noise levels from all equipment emanates from the geographic center of the construction model area (see Figure 5-1). Typical noise levels for paving operations were not estimated because paving activities usually only occur around the perimeter of a project area (and not in the center where buildings are usually located).

As indicated, the type and amount of construction equipment input into the RCNM to estimate potential construction noise levels for each construction model is consistent with the CalEEMod inputs used to evaluate the proposed Project's potential construction air quality impacts (MIG, 2023). Equipment included, but is not limited to, graders, backhoes, tractors, excavators, etc.

Not all construction models were evaluated for every modeled receptor, as follows:

- The Mass Grading, "A" Street, and IID Substation Construction Models were all assumed to be completed first, before any on-site receptors would be present. These construction models, therefore, would only affect off-site receptor R01.
- Receptors R02, R04, and R05 could only be present under the Maximum Buildout Scenario. Under Scenario 2, PA 2 and PA 3 would be commercial development that would not include residential receptors. Therefore, construction noise levels at R02, R04, and R05 are not estimated for Scenario 2.
- As previously indicated, only construction activities occurring within 1,250 feet of a modeled receptor were evaluated because at this distance construction activities are not anticipated to result in a substantial temporary increase in noise levels. The RCNM input distances between the modeled construction noise receptors and construction work areas for the Maximum Buildout Scenario and Scenario 2 are shown in Table 5-2 and Table 5-3, respectively.

With regard to future on-site receptors R02 to R09, the construction noise analysis assumes that each future individual RCNM receptor location would be occupied prior to the start of all other construction activities that could occur in the Project area (i.e., construction noise levels are estimated assuming each residential receptor location is the first occupied residential receptor in the Project area). Since it would take time to construct the residential project associated with any individual receptor location, some construction activities may already be completed before the receptor location is occupied. In addition, as development proceeds in a planning area, the landscaping, perimeter walls, and buildings constructed in the planning area would serve to shield and attenuate noise levels from construction activities occurring farther away. The RCNM modeling conducted for the Project does not take into account any shielding that may be provided by new buildings in the Project area. For these reasons, the analysis of potential construction activity noise levels on future on-site receptors is a worst-case analysis that overestimates potential noise impacts at such receptors. Refer to Appendix B for detailed RCNM construction noise modeling input parameters and modeling results.

Table 5-2: Distance Between RCNM Receptor and Maximum Buildout Scenario Work Area									
Model Run and Construction Activity[A]	Distance (Feet) to Modeled Noise Receptor[B]								
	R01	R02	R03	R04	R05	R06	R07	R08	R09
01: Mass Grading									
Site Preparation and Grading (Worst Case)	650	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Site Preparation and Grading (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02: "A" Street									
Site Preparation, Utility, Paving (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
03: IID Substation									
Site Preparation and Paving (Worst Case)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Construction Activities (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
04: PA4 Industrial Southwest									
Site Preparation and Paving (Worst Case)	--	--	--	--	--	--	580	180	170
All Construction Activities (Typical)	--	--	--	--	--	--	--	1,250	870
05: PA4 Industrial Southeast									
Site Preparation and Paving (Worst Case)	--	545	660	330	25	170	580	170	--
All Construction Activities (Typical)	--	--	--	--	975	1,120	--	1,150	--
06: MBS PA1 Northwest Residential									
Site Preparation and Paving (Worst Case)	650	--	--	--	--	--	N/A	110	N/A
All Construction Activities (Typical)	--	--	--	--	--	--	N/A	--	N/A
07: MBS PA1 Northeast and PA2 Mixed-Use									
Site Preparation and Paving (Worst Case)	650	N/A	N/A	100	550	N/A	25	N/A	--
All Construction Activities (Typical)	1,020	N/A	N/A	1,110	1,100	N/A	--	N/A	--
08: MBS PA3 Residential									
Site Preparation and Paving (Worst Case)	--	100	565	N/A	N/A	170	--	--	--
All Construction Activities (Typical)	--	525	930	N/A	N/A	570	--	--	--

(A) "All Construction Activities" includes site preparation, building construction, paving, and architectural coating activities.
(B) N/A/" indicates the activity does not occur when the receptor is occupied. "—" indicates the activity is more than 1,250 feet from the receptor.

Table 5-3: Distance Between RCNM Receptor and Scenario 2 Work Area									
Model Run and Construction Activity[A]	Distance (Feet) to Modeled Noise Receptor[B]								
	R01	R02	R03	R04	R05	R06	R07	R08	R09
01: Mass Grading									
Site Preparation and Grading (Worst Case)	650	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Site Preparation and Grading (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02: "A" Street									
Site Preparation, Utility, Paving (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
03: IID Substation									
Site Preparation and Paving (Worst Case)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Construction Activities (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
04: PA4 Industrial Southwest									
Site Preparation and Paving (Worst Case)	--	--	--	--	--	--	580	180	170
All Construction Activities (Typical)	--	--	--	--	--	--	--	1,250	870
05: PA4 Industrial Southeast									
Site Preparation and Paving (Worst Case)	--	545	660	330	25	170	580	170	--
All Construction Activities (Typical)	--	--	--	--	975	1,120	--	1,150	--
09: S2 PA1 Northwest Residential									
Site Preparation and Paving (Worst Case)	650	N/A	--	N/A	N/A	--	N/A	110	N/A
All Construction Activities (Typical)	--	N/A	--	N/A	N/A	--	N/A	--	N/A
10: S2 PA1 Northeast Residential									
Site Preparation and Paving (Worst Case)	650	N/A	N/A	N/A	N/A	N/A	25	N/A	--
All Construction Activities (Typical)	1,020	N/A	N/A	N/A	N/A	N/A	--	N/A	--
11: S2 PA2 Commercial									
Site Preparation and Paving (Worst Case)	1,175	N/A	25	N/A	N/A	350	--	--	--
All Construction Activities (Typical)	--	N/A	150	N/A	N/A	600	--	--	--
12: S2 PA3 Commercial									
Site Preparation and Paving (Worst Case)	--	N/A	565	N/A	N/A	170	--	--	--
All Construction Activities (Typical)	--	N/A	930	N/A	N/A	570	--	--	--

(A) "All Construction Activities" includes site preparation, building construction, paving, and architectural coating activities.
(B) N/A/" indicates the activity does not occur when the receptor is occupied. "—" indicates the activity is more than 1,250 feet from the receptor.

5.2.2 OPERATIONAL NOISE

The proposed Project would generate noise from the operation of new residential, commercial, industrial, and infrastructure land uses. These land uses would include on-site noise sources and activities and off-site traffic noise. On-site noise is generated from mobile and stationary sources and activities that operate or occur within a specific development footprint (including driveways and perimeter roads). On-site noise sources and activities primarily affect land uses that border or are directly adjacent to the noise source or activity. In contrast, off-site traffic noise is generated by vehicle and truck trips on private and public roads used to access a particular area. Traffic noise affects all land uses along the identified travel or access routes.

5.2.2.1 On-Site Noise Sources

The proposed Project would generate noise from a variety of on-site noise sources, including:

- Vehicle parking areas in residential, commercial, and industrial development would generate noise from low-speed (15 miles per hour (mph), or less) passenger vehicle travel along driveways and perimeter roads/fire lanes, vehicle maneuvering into and out of parking spaces, and other miscellaneous noise sources such as doors closing and engine start-up and revving.
- Residential amenities and public or private open space areas would generate noise from human speech and recreational activities.
- Commercial and industrial loading docks would generate noise from low-speed (15 mph or less) van and/or truck travel on driveways and interior access routes, maneuvering into and out of loading docks, back-up alarms, and other miscellaneous noise sources such as engine start-up and revving, door closings, creaks and squeals from chassis and trailer movements, and release of air from truck brake systems. As described in Section 2.6, the proposed Project includes commercial and mixed-use site design guidelines that would place commercial loading docks and storage areas to the rear or side of the building served, with requirements that industrial loading docks to be screened from views of "A" street by concrete masonry unit wall.
- Commercial and industrial cargo/goods movement would generate noise, including back-up alarms, from the operation of pallet jacks and forklifts in loading dock and storage areas.
- Stationary equipment and machinery would generate noise from combustion and the movement of air, fluids, gears, parts, etc. Potential stationary equipment and machinery could include:
    - *Heating, ventilation, and air conditioning (HVAC) equipment* could be roof-mounted or located at grade. Such equipment would be tailored in size to match specific air handling and conditioning needs. As described in Section 2.6, the proposed Project includes design guidelines that requires all equipment not housed inside a building to be screened so that it is not visible from unobstructed pedestrian level views.
    - *Fans* could be used to cool equipment or ventilate enclosed or partially enclosed areas.
    - *Potential back-up generators* that could be used to support necessary building systems (e.g., supermarket refrigeration systems) during emergency conditions or emergency safety power shut offs.
    - *Speaker boxes* associated with drive-thru restaurant operations.
- Potential car wash operations would generate noise from vehicles maneuvering into and out of the car wash and from the operation of the automated water spraying/washing and drying cycles.
- Other operations, including solid waste collection activities, landscaping activities, and maintenance activities.

The proposed Project's operational noise levels were estimated using standard theoretical equations for predicting environmental noise levels. 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

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

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 receptor location can be calculated using Equation 4 as follows:

Equation 4

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

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 5-4. All reference noise levels are presented at a distance of three feet from the source. Refer to Appendix C for detailed operational noise information.

Table 5-4: Potential Project Noise Source – Reference and Hourly L_{eq} Noise Levels				
Noise Source	Reference dBA at 3 Feet	Duration(A)	Hourly dBA L_{eq}(B)	
			3 Feet	50 Feet
Vehicle Parking Areas				
Low speed travel (15 mph)/parking	*55*	*30*	*34.2*	*9.8*
Door closing	*90*	*1*	*54.4*	*30.0*
Engine start/rev	*90*	*10*	*64.4*	*40.0*
Total Combined Noise Level			*64.9*	*40.4*
Human Conversation				
Normal	*55*	*3600*	*55.0*	*30.6*
Raised	*65*	*240*	*53.2*	*28.8*
Total Combined Noise Level			*57.2*	*32.8*
Truck Travel / Dock Activity				
Low speed travel (15 mph)	*96*	*30*	*75.2*	*50.8*
Maneuvering (with backup alarm)	*100*	*150*	*86.2*	*61.8*
Air brake release	*98*	*3*	*67.2*	*42.8*
Main engine idling	*86*	*900*	*80.0*	*55.5*
Door closing	*90*	*2*	*57.4*	*33.0*
Engine start/rev	*100*	*20*	*77.4*	*53.0*
Total Combined Noise Level			*87.9*	*63.4*
Cargo/Goods Movement				
Forklift	*85*	*1800*	*82.0*	*57.6*
Backup Alarm	*100*	*90*	*84.0*	*59.5*
Total Combined Noise Level			*86.1*	*61.7*
HVAC Unit				
Operation (3 Ton)	*76*	*2,400*	*74.2*	*49.8*
Operation (10 Ton)	*87*	*2,400*	*85.2*	*60.8*
Backup Generator				
Diesel - 310 horsepower	*106.1*	*1,800*	*103.1*	*78.7*
Speaker Boxes				
Speaker Box	*81*	*600*	*73.2*	*48.8*
Car Wash				
Operation (Tunnel Entrance)	*113.2*	*3,600*	*113.2*	*88.8*
Operation (Tunnel Exit)	*98.4*	*3,600*	*98.4*	*74.0*
Vacuum	*86*	*600*	*78.2*	*53.8*

Sources: MIG (see Appendix A), 2022, and 2023b; Carrier 2022, Generac, 2011; PC&D, 2005; U.S. EPA, 1977

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

(B) Hourly L_{eq} at 3 feet estimated using Equation 3. Hourly L_{eq} at 50 feet estimated using Equation 1.

5.2.2.2 Off-Site Traffic Noise Levels

The proposed Project would have the potential to change land uses within the Project area. These potential land use changes would increase residents and employees within the City and lead to an increase in vehicle trips and traffic-related noise levels that could pose land use compatibility issues and/or otherwise represent a substantial permanent increase in traffic noise levels on roadways used to access the Plan Area. Although the Project does not authorize any specific development project or increase in existing vehicular traffic levels, the TIA prepared for the Project includes estimates of the potential total net increase in trips associated with the Project's potential land use changes (LLG, 2023). These vehicle trip estimates provide a sufficient level of detail to evaluate the potential future increases in traffic-related noise levels associated with full development of the Project area by 2033.

Off-site traffic noise levels were computed using the U.S. Department of Transportation Federal Highway Administration's (FHWA) Traffic Noise Model (TNM), Version 3.1. The model uses traffic volume, vehicle mix, vehicle speed, roadway geometry, and other variables to compute traffic noise levels at user-defined receptor distances from the roadway center. The TNM modeling conducted for this analysis incorporates worst-case assumptions about motor vehicle traffic and noise levels; specifically, calculations are based on "hard" site conditions and do not incorporate any natural or artificial shielding. Based on data availability, two different traffic noise scenarios were modeled:

- Avenue 42 and Monroe Street: 2033 buildout conditions with and without the proposed Project were modeled for peak hour traffic conditions. Peak hour traffic volumes and distributions were obtained from the TIA prepared for the Project (LLG, 2023). The modeled vehicle mix was based on the TIA and CalEEMod vehicle mix used to estimate the project's air quality emissions (MIG, 2023). Vehicles were assumed to travel the posted speed limit on each modeled roadway segment. Avenue 42 and Monroe Street modeling was based on peak hour traffic volumes because 2033 ADT traffic volumes without the Project are not known. The modeled peak hour traffic noise level (dBA L_{eq}) was converted to a daily noise exposure level (CNEL) in accordance with guidance contained in Caltrans' Technical Noise Supplement. For the purposes of this analysis, non-peak hour traffic volumes were assumed to be equally distributed throughout the daytime, evening, and nighttime hours. This is likely to overestimate potential evening and nighttime traffic volumes and, therefore, overestimate potential traffic noise levels.
- "A" Street: 2033 buildout conditions with the proposed Project were modeled based on the project's ADT estimates contained in the TIA prepared for the Project (LLG, 2023). Like Avenue 42 and Monroe Street, the modeled vehicle mix was based on the TIA and the CalEEMod vehicle mix used to estimate the Project's air quality emissions. Vehicles were assumed to travel 35 mph. A Street modeling was based on ADT estimates because the TIA trip generation data indicated more truck trips would occur on A Street in non-peak hours than in peak hours.

Avenue 42, Monroe Street, and A Street were the only roadways modeled for potential traffic noise impacts because all Project trips would end up on one of these roadways. As Project trips travel farther away from the Project area, they become more dispersed and represent a smaller percentage of overall traffic volumes. Caltrans considers a doubling of total traffic volume to result in a three (3) dBA increase in traffic-related noise levels (Caltrans, 2013). A review of the trip generation data contained in the TIA prepared for the Project indicated that the proposed Project would not result in a doubling of traffic volumes

on any existing road used to access the Project area; however, the Project's highest increases in traffic would occur on the segments of Avenue 42 and Monroe Street located closest to the Project area.

5.2.3 GROUND-BORNE VIBRATION

Project construction activities would involve the use of large equipment capable of generating ground-borne vibrations. Construction equipment and activities are categorized by the nature of the vibration they produce. Equipment or activities typical of continuous vibration sources could include excavation equipment, static compaction equipment, and vibratory pile drivers. Equipment or activities typical of transient sources (single-impact) or low-rate, repeated impact vibration could include impact pile drivers. Pile drivers and other pieces of high impact construction equipment are generally the primary cause of construction-related vibration impacts. The use of such equipment is generally limited to sites where there are extensive layers of very hard materials (e.g., compacted soils, bedrock) that must be loosened and/or penetrated to achieve grading and foundation design requirements. Based on the conditions in the Project area, the use of large pile driving equipment is not expected to be required and, therefore, potential vibration impacts are not considered in this analysis. Blasting activities produce the highest levels of ground vibration; however, the proposed Project is not anticipated to require any blasting and, therefore, potential vibration impacts from blasting are also not considered in this analysis.

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 typical residential, commercial, industrial, and infrastructure development projects. The equipment assumptions used in this Report to estimate potential construction vibration levels are based on, and consistent with CalEEMod equipment assumptions used to evaluate the proposed Project's potential construction air quality impacts (MIG, 2023). Potential construction source vibration levels were developed based on methodologies, reference noise levels, and typical equipment usage and other operating factors documented and contained in the FTA's Transit Noise and Vibration Impact Assessment document (FTA 2018) and Caltrans' Transportation and Construction Vibration Guidance Manual (Caltrans 2020). Reference levels are vibration emissions for specific equipment or activity types that are well-documented and for which their usage is common practice in the field of acoustics.

5.3 TEMPORARY CONSTRUCTION NOISE AND VIBRATION IMPACTS

MIG estimated the proposed Project's short-term construction-related noise and vibration levels using project-specific information and standard noise and vibration estimation methodologies recommended by Caltrans and the FTA (see Section 5.2.1). 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 OFF-SITE CONSTRUCTION NOISE AND VIBRATION ANALYSIS

5.3.1.1 Off-Site Construction Noise

The closest existing off-site residential receptors in the vicinity of the proposed Project area are the residences on Avenida Celaya (R01), in the Sun City Shadow Hills Neighborhood. As shown in Table 5-2 and Table 5-3, the rear yards of these properties would be located at least 650 feet north of the Project's closest construction activities. The proposed Project's potential construction equipment noise levels at existing off-site receptor R01 under the Maximum Buildout Scenario and Scenario 2 are summarized in Table 5-5 and Table 5-6.

Table 5-5: Modeled Construction Noise at Off-Site Receptor R01 (Maximum Buildout Scenario)	
Model Run and Construction Activity	Modeled Construction Noise Level (dBA L_{eq}) at R01
01 Mass Grading	
Site Preparation (Worst Case)	63.1
Grading (Worst Case)	63.1
06: MBS PA1 Northwest Residential	
Site Preparation (Worst Case)	63.5
Paving (Worst Case)	64.5
07: MBS PA1 Northeast and PA2 Mixed-Use	
Site Preparation (Worst Case)	64.1(A)
Paving (Worst Case)	64.5(A)
Site Preparation (Typical)	64.1
Building Construction (Typical)	63.7
Paving (Typical)(	64.5
Architectural Coating (Typical)	49.8

Source: MIG (See Appendix B)

(A) Typical noise levels can be higher than worst case noise levels when the center of the site is less than twice the modeled distance for worst-case equipment operations. In this instance, the typical noise is also presented as the worst-case noise level.

Table 5-6: Modeled Construction Noise at Off-Site Receptor R01 (Scenario 2)	
Model Run and Construction Activity	Modeled Construction Noise Level (dBA L_{eq}) at R01
01 Mass Grading	
Site Preparation (Worst Case)	63.1
Grading (Worst Case)	63.1
09: S2 PA1 Northwest Residential	
Site Preparation (Worst Case)	63.5
Paving (Worst Case)	64.5
10: S2 PA1 Northeast Residential	
Site Preparation (Worst Case)	64.5(A)
Paving (Worst Case)	64.5(A)
Site Preparation (Typical)	64.5
Building Construction (Typical)	63.7
Paving (Typical)	64.5
Architectural Coating (Typical)	49.8

Table 5-6: Modeled Construction Noise at Off-Site Receptor R01 (Scenario 2)	
Model Run and Construction Activity	Modeled Construction Noise Level (dBA L_{eq}) at R01
11: S2 PA2 Commercial	
Site Preparation (Worst Case)	58.4
Paving (Worst Case)	59.3

Source: MIG (See Appendix B)

(A) Typical noise levels can be higher than worst case noise levels when the center of the site is less than twice the modeled distance for worst-case equipment operations. In this instance, the typical noise is also presented as the worst-case noise level.

As shown in Table 5-5 and Table 5-6, individual construction model noise levels at off-site receptor R01 would not exceed the FTA's daytime (80 dBA L_{eq}) construction noise criterion for any individually modeled construction activity.

In addition, the potential combined noise levels from concurrent construction activities near R01 also would not exceed the FTA's construction noise criterion. For example, as shown in Table 5-5, the highest noise level associated with the MBS PA1 Northwest Residential Model would be 63.8 dBA (during site preparation) and the highest noise level associated with the MBS PA1 Northeast and PA2 Mixed-Use Model would be 64.5 dBA L_{eq} (during paving). Although unlikely, if these two construction phases were to occur at the same time the combined noise level at R01 would be 67.2 dBA L_{eq}, which is less than the FTA's 80 dBA L_{eq} construction noise criterion.

As described above, the proposed Project would not generate construction noise levels that could exceed the FTA's daytime (80 dBA L_{eq}) construction noise criteria at R01. In addition, the proposed Project is not anticipated to require nighttime construction activities and, therefore, would not generate construction noise levels that could exceed the FTA's 70 dBA L_{eq} nighttime noise criterion. This impact would be less than significant. .

5.3.1.2 Off-Site Construction Vibrations

Construction activities have the potential to result in varying degrees of ground vibration, depending on the specific construction equipment used and activities involved. The vibrations generated by construction equipment spread through the ground and diminish with increases in distances, changes in media, etc. The effects of ground vibration may be imperceptible at low levels, result in low rumbling sounds and detectable vibrations at moderate levels, and can disturb human activities such as sleep and vibration sensitive equipment at high levels. Ground vibration can also potentially damage the foundations and exteriors of existing structures even if it does not result in a negative human response.

Construction vibration impacts generally occur when large construction equipment such as bulldozers or specific vibration generating equipment such as a vibratory roller operates next to or near existing buildings or vibration-sensitive areas, during evening or nighttime hours, or when construction activities last extended periods of time. For the proposed Project, these types of equipment would primarily operate during mass grading, site preparation, and paving work. Construction activities associated with the proposed Project would occur in multiple phases and may last several years in total; however, in general, construction activities in the Project area would occur at least 650 feet from existing off-site residential buildings (see Table 5-2 and Table 5-3). At this distance, the bulldozers, jackhammers, loaded trucks, and vibratory rollers that are expected to be used in the Project area would not generate groundborne vibration levels that would be perceptible or have the potential to result in damage to existing structures (see Table

5-11 in Section 5.3.2.2). In addition, the proposed Project would not include the use of pile drivers or require any blasting activities. For these reasons, the proposed Project would not have the potential to generate excessive construction-related vibrations at off-site receptor locations. This impact would be less than significant.

5.3.2 ON-SITE CONSTRUCTION NOISE AND VIBRATION ANALYSIS

5.3.2.1 On-Site Construction Noise

Future on-site residential receptors would range in distance from potential construction work areas. As shown in Table 5-2 and Table 5-3, most future on-site residential receptors would be several hundred feet or more from potential construction activities due to the overall size of the Project area. Certain future receptors, however, could be located directly adjacent to and within 25 feet of construction activities. For the Maximum Buildout Scenario, this could occur for receptors on the western boundary of PA 3 (represented by R05) and on an interior lot line in PA 1 (represented by R07). For Scenario 2, this could occur for a receptor on the eastern boundary of PA 1 (represented by R03) and on an interior lot line in PA 1 (represented by R07).

The proposed Project's potential construction equipment noise levels at future on-site receptors R02 to R09 under the Maximum Buildout Scenario and Scenario 2 are summarized in Table 5-7 and Table 5-8, respectively.

Table 5-7: Modeled Construction Noise Levels at On-Site Receptors (Maximum Buildout Scenario)

Model Run and Construction Activity	Modeled Construction Noise Level (dBA L_{eq}) at R02 – R09							
	R02	R03	R04	R05	R06	R07	R08	R09
04: PA4 Industrial Southwest								
Site Preparation (Worst Case)	--	--	--	--	--	64.5	74.7	75.2
Paving (Worst Case)	--	--	--	--	--	65.5	75.6	76.1
Site Preparation (Typical)	--	--	--	--	--	--	62.5	65.7
Building Construction (Typical)	--	--	--	--	--	--	61.3	64.5
Paving (Typical)	--	--	--	--	--	--	60.8	64
Architectural Coating (Typical)	--	--	--	--	--	--	48.1	51.2
05: PA4 Industrial Southeast								
Site Preparation (Worst Case)	65.0	63.4	69.4	91.8	75.2	64.5	75.2	--
Paving (Worst Case)	66.0	64.3	70.4	92.8	76.1	65.5	76.1	--
Site Preparation (Typical)	--	--	--	64.9	63.7	--	63.4	--
Building Construction (Typical)	--	--	--	64.5	63.3	--	63.1	--
Paving (Typical)	--	--	--	63.0	61.8	--	61.6	--
Architectural Coating (Typical)	--	--	--	50.2	49.0	--	48.8	--
06: MBS PA1 Northwest Residential								
Site Preparation (Worst Case)	--	--	--	--	--	N/A	78.9	N/A
Paving (Worst Case)	--	--	--	--	--	N/A	79.9	N/A
Site Preparation (Typical)	--	--	--	--	--	N/A	--	N/A
Building Construction (Typical)	--	--	--	--	--	N/A	--	N/A
Paving (Typical)	--	--	--	--	--	N/A	--	N/A
Architectural Coating (Typical)	--	--	--	--	--	N/A	--	N/A

Table 5-7: Modeled Construction Noise Levels at On-Site Receptors (Maximum Buildout Scenario)								
Model Run and Construction Activity	Modeled Construction Noise Level (dBA L_{eq}) at R02 – R09							
	R02	R03	R04	R05	R06	R07	R08	R09
07: MBS PA1 Northeast and PA2 Mixed-Use								
Site Preparation (Worst Case)	N/A	N/A	79.8	65.0	N/A	91.8	N/A	--
Paving (Worst Case)	N/A	N/A	80.7	65.9	N/A	92.8	N/A	--
Site Preparation (Typical)	N/A	N/A	63.3	63.4	N/A	--	N/A	--
Building Construction (Typical)	N/A	N/A	62.9	63.0	N/A	--	N/A	--
Paving (Typical)	N/A	N/A	61.9	62.0	N/A	--	N/A	--
Architectural Coating (Typical)	N/A	N/A	49.1	49.2	N/A	--	N/A	--
8: MBS PA3 Residential								
Site Preparation (Worst Case)	79.8	64.7	N/A	N/A	75.2	--	--	--
Paving (Worst Case)	80.7	65.7	N/A	N/A	76.1	--	--	--
Site Preparation (Typical)	70.2	65.3	N/A	N/A	69.5	--	--	--
Building Construction (Typical)	67.8	62.9	N/A	N/A	67.1	--	--	--
Paving (Typical)	68.4	63.4	N/A	N/A	67.7	--	--	--
Architectural Coating (Typical)	62.5	57.6	N/A	N/A	61.8	--	--	--

Source: MIG (See Appendix B)

(A) Typical noise levels can be higher than worst case noise levels when the center of the site is less than twice the modeled distance for worst-case equipment operations. In this instance, the typical noise is also presented as the worst-case noise level.

(B) **Bold** values indicate the estimated noise level exceeds the FTA's daytime (80 dBA L_{eq}) noise criteria (see Table 4-4).

Table 5-8: Modeled Construction Noise Levels at On-Site Receptors (Scenario 2)								
Model Run and Construction Activity	Modeled Construction Noise Level (dBA L_{eq}) at R02 – R09							
	R02	R03	R04	R05	R06	R07	R08	R09
04: PA4 Industrial Southwest								
Site Preparation (Worst Case)	--	--	--	--	--	64.5	74.7	75.2
Paving (Worst Case)	--	--	--	--	--	65.5	75.6	76.1
Site Preparation (Typical)	--	--	--	--	--	--	62.5	65.7
Building Construction (Typical)	--	--	--	--	--	--	61.3	64.5
Paving (Typical)	--	--	--	--	--	--	60.8	64.0
Architectural Coating (Typical)	--	--	--	--	--	--	48.1	51.2
05: PA4 Industrial Southeast								
Site Preparation (Worst Case)	65.0	63.4	69.4	91.8	75.2	64.5	75.2	--
Paving (Worst Case)	66.0	64.3	70.4	92.8	76.1	65.5	76.1	--
Site Preparation (Typical)	--	--	--	64.9	63.7	--	63.4	--
Building Construction (Typical)	--	--	--	64.5	63.3	--	63.1	--
Paving (Typical)	--	--	--	63.0	61.8	--	61.6	--
Architectural Coating (Typical)	--	--	--	50.2	49.0	--	48.8	--

Table 5-8: Modeled Construction Noise Levels at On-Site Receptors (Scenario 2)								
Model Run and Construction Activity	Modeled Construction Noise Level (dBA L_{eq}) at R02 – R09							
	R02	R03	R04	R05	R06	R07	R08	R09
09: S2 PA1 Northwest Residential								
Site Preparation (Worst Case)	--	--	--	--	--	N/A	78.9	N/A
Paving (Worst Case)	--	--	--	--	--	N/A	79.9	N/A
Site Preparation (Typical)	--	--	--	--	--	N/A	--	N/A
Building Construction (Typical)	--	--	--	--	--	N/A	--	N/A
Paving (Typical)	--	--	--	--	--	N/A	--	N/A
Architectural Coating (Typical)	--	--	--	--	--	N/A	--	N/A
10: S2 PA1 Northeast Residential								
Site Preparation (Worst Case)	N/A	N/A	N/A	N/A	N/A	91.8	N/A	--
Paving (Worst Case)	N/A	N/A	N/A	N/A	N/A	92.8	N/A	--
Site Preparation (Typical)	N/A	N/A	N/A	N/A	N/A	--	N/A	--
Building Construction (Typical)	N/A	N/A	N/A	N/A	N/A	--	N/A	--
Paving (Typical)	N/A	N/A	N/A	N/A	N/A	--	N/A	--
Architectural Coating (Typical)	N/A	N/A	N/A	N/A	N/A	--	N/A	--
11: S2 PA2 Commercial								
Site Preparation (Worst Case)	N/A	91.8	N/A	N/A	68.9	--	--	--
Paving (Worst Case)	N/A	92.8	N/A	N/A	69.9	--	--	--
Site Preparation (Typical)	N/A	81.1	N/A	N/A	69.1	--	--	--
Building Construction (Typical)	N/A	79.9	N/A	N/A	67.8	--	--	--
Paving (Typical)	N/A	81.1	N/A	N/A	69.1	--	--	--
Architectural Coating (Typical)	N/A	66.5	N/A	N/A	54.4	--	--	--
12: S2 PA3 Commercial								
Site Preparation (Worst Case)	N/A	64.7	N/A	N/A	75.2	--	--	--
Paving (Worst Case)	N/A	65.7	N/A	N/A	76.1	--	--	--
Site Preparation (Typical)	N/A	64.0	N/A	N/A	68.2	--	--	--
Building Construction (Typical)	N/A	62.9	N/A	N/A	67.1	--	--	--
Paving (Typical)	N/A	64.9	N/A	N/A	69.1	--	--	--
Architectural Coating (Typical)	N/A	50.6	N/A	N/A	54.9	--	--	--

Source: MIG (See Appendix B)

(A) Typical noise levels can be higher than worst case noise levels when the center of the site is less than twice the modeled distance for worst-case equipment operations. In this instance, the typical noise is also presented as the worst-case noise level.

(B) **Bold** values indicate the estimated noise level exceeds the FTA's daytime (80 dBA L_{eq}) noise criteria (see Table 4-4).

As shown in Table 5-7, the proposed Project's potential Maximum Buildout Scenario construction noise levels could exceed the FTA's daytime (7 AM to 10 PM) noise criterion of 80 dBA L_{eq} at R02 (80.7 dBA L_{eq}), R04 (80.7 dBA L_{eq}), R05 (92.8 dBA L_{eq}), and R07 (92.8 dBA L_{eq}). This occurs primarily during individual, worst-case site preparation and paving operations that were assumed to occur at the boundary of the construction model area, sometimes within 25 feet of an adjacent receptor (e.g., R05 and R07). Under the Maximum Buildout Scenario, typical construction noise levels would not exceed 80 dBA L_{eq} at any on-site receptor location.

In addition to the potential for individually modeled construction activities to exceed the FTA's daytime noise criterion, there is also the potential for combined noise levels from concurrent construction activities occurring near on-site receptors to exceed the FTA's criterion. For example, at R08, as shown in Table 5-7, the highest individual noise level associated with the MBS PA4 Industrial Southwest Model would be 75.6 dBA (during site paving), while the highest individual noise level associated with the MBS PA1 Northwest Residential Model would be 79.9 (also during site paving). Individually, these construction models do not exceed the FTA's 80 dBA L_{eq} criterion; however, the combined noise level at R08 if both paving activities were occurring at the same time would be 81.3 dBA L_{eq}, which is above the FTA's daytime criterion. Potential combined noise levels would depend on the specific type of construction activities occurring and their distance from the on-site receptor; however, concurrent construction activities are likely to produce a noise level above 80 dBA L_{eq} under the following conditions: 1) one individual activity produces a noise level of at least 79 dBA L_{eq} at a receptor and a second individual activity produces a noise level of at least 73.5 dBA L_{eq} at the same receptor; 2) one individual activity produces a noise level of at least 78 dBA L_{eq} at a receptor and a second individual activity produces a noise level of at least 76 dBA L_{eq} at the same receptor; or 3) two individual activities produce a noise level of at least 77 dBA L_{eq} at the same receptor. The estimated highest combined noise level that could occur would be approximately 93 dBA L_{eq} at receptors R05 and/or R07. This could occur only when worst-case paving operations combine with noise from another individual construction activity occurring near R05 and/or R07. Thus, worst-case combined construction noise levels could be up to 13 dBA above the FTA's 80 dBA L_{eq} daytime noise criterion.

The construction noise model results for Scenario 2 are similar to the results for the Maximum Buildout Scenario. As shown in Table 5-8, the proposed Project's potential Scenario 2 construction noise levels could exceed the FTA's daytime (7 AM to 10 PM) noise criterion of 80 dBA L_{eq} at R03 (92.8 dBA L_{eq}), R05 (92.8 dBA L_{eq}), and R07 (92.8 dBA L_{eq}). Like the Maximum Buildout Scenario, this situation occurs primarily during individual, worst-case site preparation and paving operations that were assumed to occur at the boundary of the construction model area, sometimes within 25 feet of an adjacent receptor; however, unlike the Maximum Buildout Scenario, the FTA's daytime criterion are also exceed during typical site preparation and paving activities associated with the S2 PA2 Commercial Model because these typical activities could potentially occur within approximately 150 feet of potential receptors in the northeast part of PA 1 (R03). Like the Maximum Buildout Scenario, there is also the potential for concurrent Scenario 2 construction activities to occur near the same receptor and result in a combined noise level above 80 dBA L_{eq}. The estimated highest combined noise level that could occur would be approximately 93 dBA L_{eq} at receptors R03, R05, and/or R07. This combined noise impact could only occur if worst-case paving operations combine with noise from another individual construction activity near R03, R05, and/or R07. Thus, worst-case combined construction noise levels under Scenario 2 could also be up to 13 dBA above the FTA's 80 dBA L_{eq} daytime noise criterion.

As shown in Table 5-7 and Table 5-8, the proposed Project's potential construction activities would have the potential to generate noise levels above the FTA's nighttime (10 PM to 7 AM) criterion of 70 dBA L_{eq} at most on-site receptors; however, city Municipal Code Section 95C.08 generally limits the use of construction tools and machinery to daytime hours only.[6], Nighttime construction is not anticipated to occur because the Project would not involve the need for continuous, uninterrupted construction activities.

[6]The Indio Municipal Code does permit construction tools and machinery to be used starting at 6 AM, Monday to Friday, during Pacific Daylight Time, which usually is in effect from late March to early November. This Report does not apply the FTA's nighttime standard during these allowed operations.

Therefore, the Project would not generate construction noise levels that could exceed the FTA's 70 dBA L_{eq} nighttime noise criterion.

Construction noise impacts generally occur when construction activities occur in areas immediately adjoining noise sensitive land uses, during noise sensitive times of the day, or when construction durations last over extended periods of time. As described above, the proposed Project would have the potential to generate construction noise levels that could exceed the FTA's daytime (80 dBA L_{eq}) construction noise criteria at on-site receptors R02, R04, R05, and R07 under the Maximum Buildout Scenario and at on-site receptors R03, R05, and R07 under Scenario 2. The magnitude of the Project's predicted construction noise levels at modeled on-site receptor locations is primarily a function of the modeled equipment usage and the distance between modeled construction activities and receptors. In addition, as explained in Section 5.2.1, the modeled on-site residential receptors may not actually be present during all or even most construction activities. Nonetheless, if receptors are present, the Project would have the potential to generate construction noise levels that could exceed the FTA's daytime (80 dBA L_{eq}) construction noise criteria by up to 13 dBA L_{eq}. This is considered a potentially significant impact.

On-Site Construction Noise Mitigation Measures

To reduce the potential for Project construction activities to result in substantial temporary construction noise levels, MIG recommends the proposed Project incorporate the following mitigation measures into the Project.

Mitigation Measure NOI-1A: Provide Notification of Construction Activities. To ensure receptors in the vicinity of the Project area are aware of the Project and its planned construction activities, all future development in the Project area shall notify occupied residential land uses of planned construction activities.

1) The notice shall be provided at least 14 calendar days prior to the start of any construction activities, describe the planned phasing and schedule of construction activities, including any nighttime activities allowed by the city of Indio, describe the noise control measures to be implemented during construction, and include the name and phone number of a designated contact for the construction contractor and the City of Indio responsible for handling construction-related noise complaints.

2) The notice shall be provided to the owner/occupants of all occupied dwelling units within 200 feet of planned construction work areas.

Mitigation Measure NOI-1B: Restrict Construction Work Hours. To reduce the potential for construction activities to generate noise during times when receptors are more sensitive to changes in noise and the use of construction tools and machinery is restricted by the Indio Municipal Code, all future development in the Project area shall:

1) *Restrict Motor Vehicle Standing/Idling .* All motor vehicles with a gross vehicle weight rating more than 10,000 pounds, and any auxiliary equipment attached to such a vehicle, shall be subject to the requirements of Municipal Code Section 95C.08.A. Such vehicles shall not operate for a period longer than 15 minutes in any hour while stationary and within 150 feet of a residential area between the hours of 7 PM and 7 AM.

2) *Restrict Construction Equipment Hours.* All construction activities shall be subject to the requirements of Municipal Code Section 95C.08.B.2 and 95C.08.B.3. Unless otherwise approved by the City, the loading and unloading of vehicles and the operating of fork lifts or

cranes within 1,000 feet of a residence and the use of construction tools and machinery shall occur only during the following times:

a. Pacific Standard Time

i. Monday through Friday: 7 AM through 6 PM

ii. Saturday: 8 AM through 6 PM

iii. Sunday and Government Holidays: 9 AM through 5 PM

b. Pacific Daylight Time

i. Monday through Friday: 6 AM through 6 PM

ii. Saturday: 7 AM through 6 PM

iii. Sunday and Government Holidays: 9 AM through 5 PM

3) *Post Restricted Work Hours.* Each development project shall post a sign at all entrances to and exits from the construction site informing contractors, subcontractors, construction workers, etc. of the allowable work hours pursuant to sections 1) and 2) of this mitigation measure.

Mitigation Measure NOI-1C: Reduce Construction Traffic and Equipment Noise and Vibration Levels. To reduce potential noise levels associated with Project construction activities, all future development in the Project area shall:

1) *Control Construction Traffic and Site Access.* Construction truck traffic, including soil and debris hauling, equipment deliveries, and concrete and other vendor deliveries shall follow City of Indio-designated truck routes, including Monroe Street and Avenue 42.

2) *Construction Equipment Selection, Use, and Noise Control Measures.* The following measures shall apply to all future development in the Project area:

a. Construction staging activities such as receipt of deliveries, equipment and material storage, etc., shall occur as far away from residential land uses as possible.

b. All stationary noise generating equipment such as pumps, compressors, and welding machines shall be shielded and located as far from sensitive receptor locations as practical. Shielding may consist of trailers, stored materials, or a three- or four-sided enclosure provided the structure/barrier breaks the line of sight between the equipment and the receptor, provides for proper equipment ventilation and operations, and complies with all other applicable occupational safety and health requirements.

c. Heavy equipment shall include standard noise suppression devices such as mullers, engine covers, and engine/mechanical isolators, mounts, etc. Equipment and noise suppression devices shall be maintained in accordance with manufacturer's recommendations while on-site.

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

e. Connect to existing electrical service to power stationary and portable equipment (e.g., pumps, generators, compressors, and welding sets). This measure shall be subject to the approval of the local electric utility. If it is not feasible to connect to electrical service and/or extend electrical service to all work sites, Mitigation Measure NOI-1C, items 2.a and 2.b are implemented.

Mitigation Measure NOI-1D: Install Temporary Noise Barriers. To reduce potential construction noise levels at receptors near active work areas, all future development in the Project area shall install a temporary noise barrier during all site preparation, grading, and paving work activities that have a line of sight to and occur within 150 feet of an occupied dwelling unit.

1) The barrier shall only be required along the portion of the job site perimeter that lies between the active work area and the affected dwelling unit(s). In addition, a temporary barrier shall not be required if a permanent barrier is already present between the work area and the affected dwelling unit (e.g., if a permanent barrier has been installed pursuant to Mitigation Measure NOI-3A).
2) The barrier shall consist of the following:
    a. When activities occur no closer than 50 feet from an occupied dwelling unit, the physical noise barrier shall extend to a height of 6 feet above grade and consist of nominal 0.5-inch plywood with a minimum material density of 1.7 pounds per square foot installed. Alternatively, the barrier may consist of commercially available acoustic panels, blankets, etc. that have a minimum sound transmission class (STC) or transmission loss value of 20 dB.
    b. When activities occur within 25 to 50 feet of an occupied dwelling unit, the physical noise barrier shall extend to a height of 8 feet above grade and consist of nominal 0.5-inch plywood with a minimum material density of 1.7 pounds per square foot installed. Alternatively, the barrier may consist of commercially available acoustic panels, blankets, etc. that have a minimum (STC) or transmission loss value of 20 dB.
    c. When activities occur within 25 feet of an occupied dwelling unit, the physical noise barrier shall extend to a height of 10 feet above grade and consist of nominal 1.0-inch plywood with a minimum material density of approximately 3 pounds per square foot installed. Alternatively, the barrier may consist of commercially available acoustic panels, blankets, etc. that have a minimum STC or transmission loss value of 23 dB or higher.
3) The barrier shall be installed at grade, or mounted to structures located at grade, such as a K-rail, and be maintained free of openings or gaps other than weep holes. Construction ingress/egress shall not be permitted through the barrier unless there is no other viable access point due to specific project constraints or other access requirements.
4) The noise barrier may be removed following the completion of all site preparation, grading, and paving activities (i.e., it is not necessary once framing and typical vertical building construction begins provided no other site preparation, grading, or paving work is still occurring in the area).

Mitigation Measure NOI-1E: Owner/Occupant Disclosure. Future owners, occupants, and tenants of residential and commercial properties in the Project area shall receive disclosures that properties in the Project area may be subjected to elevated construction noise levels from development in the Project area. This disclosure shall be provided as part of the mortgage, lease, sub-lease, and/or other contractual real-estate transaction associated with the subject property.

On-Site Construction Noise Impact Conclusion

The above analysis indicates that the proposed Project would have the potential to generate construction noise levels that could exceed the FTA's daytime (80 dBA L_{eq}) construction noise criteria, provided future receptor locations are in fact occupied when adjacent construction activities occur. The implementation of Mitigation Measures NOI-1A to NOI-1E would require future development in the Project area to provide advanced notification of construction activities, restrict work hours to periods when period humans are less sensitive to elevated noise levels in accordance with Municipal Code requirements, implement equipment noise control measures, install temporary noise barriers, and disclose to future owners, occupants, and tenants in the Project area that properties may be subjected to elevated construction noise levels from development near their properties. The use of equipment in good working order with standard noise suppression devices and the shielding of stationary noise generating equipment per Mitigation Measure NOI 1-C is estimated to result in a 2 dBA to 5 dBA reduction in modeled equipment noise levels.[7] In addition, the installation of a 6- to 10-foot-tall temporary noise barrier per Mitigation Measure NOI-1D is estimated to result in an additional 5 dBA to 13 dBA reduction in modeled equipment noise levels, depending on the specific type of equipment used, the distance between the equipment and the barrier and the receptor and the barrier, and the elevation of the residential noise receptor. It is noted the installation of a 10-foot-tall, as required by Mitigation Measure NOI-1D or Mitigation Measure NOI-3A (see Section 5.4.1.3) would provide at least 11 dB of construction noise reduction when the equipment is operated within 25 feet of the barrier .All other mitigation measures would reduce the potential for receptor annoyance but would not physically reduce construction noise levels. The combined reduction in construction noise levels achieved by Mitigation Measures NOI-1A to NOI-1E and Mitigation Measure NOI-3A, therefore, is estimated to range from 7 dBA L_{eq} to 16 dBA L_{eq}. The proposed Project's mitigated construction noise levels at on-site residential receptors are summarized in Table 5-9 (Maximum Buildout Scenario) and Table 5-10 (Scenario 2).

[7] The RCNM construction equipment noise levels are based, in part, on measured data from construction projects occurring in the 1990s with equipment manufactured as early as the 1970's. Newer equipment would include enhanced shields, mounts, and noise suppression controls that lower equipment noise levels below that assumed by the RCNM.

Table 5-9: Mitigated Construction Noise at On-Site Receptors (Maximum Buildout Scenario)			
Receptor	Highest Unmitigated Noise Level (dBA L_{eq})	Mitigated Noise Level Range (dBA L_{eq})(B)	FTA Daytime 80 dBA L_{eq} Criterion Exceeded?
R02	80.7	73.7	No
R04	80.7	73.7	No
R05	92.8	79.8	No
R07	92.8	79.8	No

(A) Daytime noise level is based on the receptor's highest worst case noise level listed in Table 5-7.
(B) Mitigated noise level range assumes a 7 dBA reduction for receptors R02 and R04 per Mitigation Measures NOI-1C and NOI-1D (six-foot-tall barrier), and a 13 dBA reduction for receptors R05 and R07 per Mitigation Measures NOI-1C and NOI-1D (10-foot-tall barrier).

Table 5-10: Mitigated Construction Noise Levels at On-Site Receptors (Scenario 2)			
Receptor	Highest Unmitigated Noise Level (dBA L_{eq})	Mitigated Noise Level Range (dBA L_{eq})(C)	FTA Daytime 80 dBA L_{eq} Criterion Exceeded?
R03	92.8	79.8	No
R05	92.8	79.8	No
R07	92.8	79.8	No

(A) Daytime noise level is based on the receptor's highest worst case noise level listed in Table 5-8.
(B) Mitigated noise level range assumes a 13 dBA reduction for receptors R05 and R07 per Mitigation Measures NOI-1C and NOI-1D (10-foot-tall barrier).

As shown in Table 5-9 and Table 5-10, the implementation of Mitigation Measures NOI-1A to NOI-1D would reduce the proposed Project's potential construction noise to levels below the FTA's 80 dBA L_{eq}. daytime noise criterion. Thus, the implementation of Mitigation Measures NOI-1A to NOI-1D would render the project's potential construction noise levels a **less than significant impact with mitigation.**

5.3.2.2 On-Site Construction Vibration

The future residential land uses envisioned by the proposed Project could be located near construction work areas within the Project area; however, construction equipment would not likely operate closer than 25 feet from any building façade located in the Project area (see Table 5-2 and Table 5-3). The ground-borne vibration levels that could be generated by the type of equipment that could be used to construct the proposed Project are shown in Table 5-11.

Table 5-11: Typical Construction Equipment Ground-borne Vibration Levels										
Equipment	Peak Particle Velocity (in/sec)(A)									
	25 Feet	50 Feet	100 Feet	150 Feet	200 Feet	300 Feet	400 Feet	500 Feet	600 Feet	650 Feet
Small bulldozer	0.003	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jackhammer	0.035	0.014	0.006	0.003	0.002	0.001	0.001	0.001	0.001	0.001
Loaded truck	0.076	0.031	0.013	0.007	0.005	0.003	0.002	0.002	0.001	0.001
Auger Drill Rig	0.089	0.036	0.015	0.009	0.006	0.004	0.002	0.002	0.001	0.001
Large bulldozer	0.089	0.036	0.015	0.009	0.006	0.004	0.002	0.002	0.001	0.001
Vibratory Roller	0.210	0.085	0.035	0.020	0.014	0.008	0.006	0.004	0.003	0.003

Source: MIG (see Appendix B)

(A) **Bold** values indicate the estimated vibration level exceeds Caltrans' strongly perceptible (0.1 PPV in/sec) guideline for human detection and annoyance from continuous vibration sources (Caltrans, 2020; see Table 4-6).

As shown in Table 5-11, potential vibration levels for construction equipment depend on the type of equipment used. Specifically:

- Potential for Physical Damage to a Building or Structure: Typical equipment operations (e.g., bulldozer, jack hammer, trucks, etc.) are estimated to produce a maximum PPV level of 0.089 in/sec at 25 feet, while specific vibration-generating equipment operations (e.g., vibratory roller r) are estimated to produce a maximum PPV level of 0.210 in/sec at 25 feet. These PPVs value are less than Caltrans' vibration threshold criteria for potential structural damage for the types of buildings in and adjacent to the Project area, which are or would consist of new and modern residential, commercial, and industrial structures (0.5 PPV for continuous vibration sources; see Table 4-5).
- Potential for Human Annoyance: For most typical equipment operations, ground-borne vibration would usually not be perceptible; however, a large bulldozer or drill rig is estimated to produce a maximum PPV level of 0.089 in/sec at 25 feet, 0.036 in/sec at 50 feet, and 0.015 in/sec at 100 feet. These values could exceed Caltrans' barely perceptible and distinctly perceptible vibration annoyance criterion (0.01 in/sec and 0.04 in/sec, respectively, for continuous vibration sources, see Table 4-6), but not Caltrans' strongly perceptible vibration annoyance criterion (0.1 in/sec for continuous vibration sources). Specific vibration-generating equipment could generally exceed Caltrans' barely perceptible vibration annoyance criterion (0.01 in/sec) at distances of up to 300 feet from equipment operating areas. At 50 feet, the use of a vibratory roller (0.085 in/sec) could exceed Caltrans' distinctly perceptible vibration annoyance criterion (0.04 in/sec for continuous vibration sources), while at 25 feet, the use of a vibratory rollers (0.210 in/sec) could exceed Caltrans' strongly perceptible vibration annoyance criterion (0.10 in/sec for continuous vibration sources).

As described above, the proposed Project's construction activities would not have the potential to result in physical damage to any future building inside the Project area. In addition, most equipment that would be used to construct the proposed Project would not generate annoying vibrations because equipment operations would be intermittent (not occur every day), limited in duration (equipment would move throughout work areas and not operate in the same location for a prolonged amount of time), and occur during the daytime (when receptors would not be sleeping and, therefore, are considered less

sensitive to vibration levels). The specific use of a vibratory roller during paving and other activities, however, could result in ground-borne vibration levels that exceed Caltrans' strongly perceptible annoyance criterion (0.10 in/sec) if such operations were to occur within approximately 50 feet of a building façade. Although this is unlikely to occur, the generation of strongly perceptible ground-borne vibration levels would be a potentially significant impact.

On-Site Construction Vibration Mitigation Measures

To reduce the potential for Project construction activities to result in substantial temporary construction vibration levels, MIG recommends the proposed Project incorporate the following mitigation measure into the Project.

> Mitigation Measure NOI-2: Prohibit Vibratory Equipment. To reduce the potential for construction equipment to generate substantially perceptible groundborne vibrations, the use of vibratory rollers, vibratory/impact hammers and other potential large vibration-generating equipment (e.g., hydraulic breakers/hoe rams) shall be prohibited within 50 feet of any occupied residential dwelling unit. Plate compactors and compactor rollers are acceptable. Deep foundation piers or caissons shall be auger drilled.
>
> 1) If it is not feasible to prohibit the use of vibratory equipment within 50 feet of a residential building façade due to site- or project-specific conditions or design considerations, a project-specific construction vibration evaluation plan shall be prepared that identifies planned vibration-generating construction activities and potential ground-borne vibration levels (given specific equipment and soil conditions) at specific receptor locations and the vibration control measures that will be employed to ensure equipment and work activities would not result in vibrations that exceed Caltrans' strongly perceptible human annoyance criterion of 0.1 inches/second peak particle velocity. Such measures may include but are not limited to the use of vibration monitoring to measure actual vibration levels, the use of photo monitoring or documentation of building conditions prior to, during, and after construction activities, and/or the use of trenches or barriers that attenuate ground-borne vibration.

On-Site Construction Vibration Impact Conclusion

The above analysis indicates that the proposed Project would have the potential to generate construction vibration levels that exceed Caltrans strongly perceptible vibration threshold (0.1 in/sec PPV) when specific vibration-generating equipment such as a vibratory roller is operated within 50 feet of an occupied residential DU. Mitigation measure NOI-2 requires the Project to prohibit the use of such equipment within 50 feet of occupied residential DU or, if such prohibition is not feasible, to prepare a project-specific vibration plan that ensures equipment and work activities would not result in vibrations that exceed Caltrans' strongly perceptible human annoyance criterion of 0.1 in/sec PPV. The implementation of Mitigation Measure NOI-2 would render the proposed Project's potential on-site construction vibration levels a less than significant impact with mitigation.

5.4 OPERATIONAL NOISE AND VIBRATION IMPACTS

Once constructed, the proposed Project would generate noise and vibration from the operation of new residential, commercial, and industrial land uses. These land uses would include on-site noise and vibration sources and activities and off-site traffic noise as described in Section 5.2.2.

5.4.1 LAND USE OPERATIONS / ON-SITE NOISE ANALYSIS

5.4.1.1 Compliance with Exterior Noise Standards

The City's Municipal Code, Unified Development Code, and General Plan include noise control provisions that would control noise from many of the Project's on-site noise sources. The City's General Plan also establish noise exposure guidelines for different land uses (see Table 4-9) which the Unified Development Code references and reinforces. For single-family residential uses, the General Plan establishes 60 CNEL and 75 CNEL as the acceptable and conditionally acceptable exterior noise levels, respectively. For multi-family residential and mixed-use commercial/residential lands, the General Plan establishes 65 CNEL and 75 CNEL as the acceptable and conditionally acceptable exterior noise level, respectively. For office/professional, commercial, retail, industrial, manufacturing, and warehouse land use types, the General Plan establishes 70 CNEL and 75 CNEL as the acceptable and conditionally acceptable exterior noise level, respectively.

In general, the proposed Project would have a limited potential to generate noise levels that could exceed the City's noise compatibility guidelines because both the Municipal Code and the proposed Project include provisions that generally limit nighttime noise from mixed-use commercial operations. In addition, the proposed Project includes design standards and guidelines that separate and shield noise generating equipment, activities, and land uses away from sensitive noise receptors.

The proposed Project's compliance with the City's exterior noise standards is evaluated below.

<u>Multi-Family Residential Development</u>

As summarized in Table 2-3 and Table 2-4 and shown in Figure 2-3 and Figure 2-4, the proposed Project could result in between 1,237 and 3,240 multi-family dwelling units in PA 1, PA 2, and PA 3, with more residential development occurring under the Maximum Buildout Scenario (3,240 DUs) than Scenario 2 (1,237 DUs). As described in Section 4.3.2.1, the effects of noise generated by residential occupants and their guests on human beings is not a significant effect on the environment. Accordingly, the potential noise from residential open space areas is not evaluated further. Multi-family residential developments can still generate noise from other on-site sources such as vehicle parking areas, stationary mechanical equipment such as HVAC units, water/pool pumps, waste compactors, garage doors, etc., waste collection activities, and landscaping activities. These noise sources are typical of many types of residential land uses and are not unique to the proposed Project. As shown in Table 5-4, while certain specific residential activities and sources could generate high noise levels at close distances (e.g., small HVAC units could generate noise levels of 76 dBA at 3 feet), sustained noise levels would generally be less than 50 decibels at 50 feet from the activity or source.

The proposed Project's on-site residential noise sources would not impact existing sensitive noise receptors located outside the Project area due to the distance between the Project's residential noise sources and these receptors. Potential on-site residential noise sources would be in PA 1, PA 2, and PA 3. Although the exact location of such sources is not known at this time, the northern boundaries of PA 1 and PA 2 are, under both the Maximum Buildout Scenario and Scenario 2, located at least 650 feet from the closest existing noise sensitive receptor outside the Project area (in the Sun City Shadow Hills Neighborhood). Most residential noise sources in PA 1 and PA 2, as well as all sources in PA 3, would be hundreds of feet or more from any sensitive noise receptor outside the Project area. Potential residential noise would attenuate with distance and, due to this, would not affect existing or potential future noise sensitive receptors located outside the Project area.

The noise generated from one residential development (e.g., in PA 1) could be audible at a different development in the Project area (e.g., in PA 1, PA 2, or PA 3). While residential noise sources could be audible, they would be unlikely to an applicable City noise compatibility standard. Residential land uses, including high-density residential land uses, do not generate substantial noise levels because:

- They do not involve substantial noise-generating activities during the nighttime.
- Mechanical equipment associated with elevators, residential amenities such as pools and other building systems are typically enclosed within closets, sheds, or equipment rooms; and
- HVAC equipment is typically screened from public view by landscaping, fences, or walls and, therefore, shielded from adjacent property lines.
- The proposed Project and the City's Unified Development Code establish minimum required setbacks that would ensure buildings and associated equipment are separated by minimum distances.

In addition, the proposed Project's residential development would be subject to City Municipal Code requirements that control and abate unnecessary, excessive, or annoying noise, including prohibitions on noise that causes annoyance to a reasonable person that is plainly audible at a distance of 50 feet (Municipal Code section 95C.03; see Section 4.3.4.2); limitations on noise from horns and signaling devices, televisions and radios, animals, and leaf blowers (Municipal Code Section 95C.04), and minor property maintenance (Municipal Code Section 95C.09).

For the reasons described above, the proposed Project's residential development would be unlikely to generate noise levels that exceed the applicable standards from the City's Municipal Code, Unified Development Code, or General Plan Noise Element. This would be a less than significant impact.

Commercial and Mixed-Use Development

As summarized in Table 2-3 and Table 2-4 and shown in Figure 2-3 and Figure 2-4, the proposed Project could result in between 20,000 square feet and 71,600 square feet of commercial building space in PA 2 and PA 3, with more commercial development occurring under Scenario 2 (71,600 SF) than the Maximum Buildout Scenario (20,000 SF).[8] In addition, Scenario 2 could result in the development of a 128-key hotel. Commercial development could occur as stand-alone development or as part of a mixed-use residential and commercial development; except for the hotel, which is assumed to be a stand-alone development only.

Commercial and mixed-use development could generate noise from typical on-site sources such as vehicle parking areas, commercial loading docks and storage areas, HVAC equipment, solid waste collection activities, and landscaping activities, as well as potential equipment associated with specific commercial uses such as backup generators, car wash equipment, drive-thru-restaurant speaker boxes, and other permitted commercial uses. Commercial noise levels would vary depending on what activity is occurring and what equipment is operating at any given time. Although specific equipment details are not known, sustained commercial noise levels at 50 feet are estimated, as shown in Table 5-4, to range from less than 65 dBA L_{eq} (e.g., vehicle parking, cargo/good movement, truck dock activity), to up approximately

[8] Although the conceptual site plans show commercial development in PA 2 and PA 3, potential commercial development could also occur in Planning Area 1. This Report evaluates commercial development in PA 2 and PA 3; however, the impact analyses and finding of this Report would also apply to commercial development in PA 1.

89 dBA L_{eq} (e.g., noise from a car wash tunnel exit). At a distance of 650 feet, the highest assumed noise level (car wash tunnel exit) would be approximately 66.5 dBA L_{eq}.

The noise generated from one commercial development (e.g., in PA 2) could be audible at a different development in the Project area (e.g., a residential development in PA 1, PA 2, or PA 3) and, potentially, at noise sensitive receptors north of Avenue 42. As shown in Table 4-9, the City's General Plan establishes 60 CNEL and 75 CNEL as the acceptable and conditionally acceptable noise limit, respectively, for single-family residences (e.g., the Sun City Shadow Hills Neighborhood), and 65 CNEL and 75 CNEL as the acceptable and conditionally acceptable noise limit, respectively, for multi-family residential and mixed-use commercial and residential land uses. While commercial noise sources could be audible, most commercial development would be unlikely to exceed the City's acceptable daily 60 CNEL or 65 CNEL noise standard because on-site noise sources would not generate substantial noise levels (e.g., vehicle parking areas), would be set back and located away from residential property lines and dwelling units, and would not operate continuously (i.e., would not operate 24 hours a day) or at least involve reduced operations during nighttime hours. In addition, as described in Section 2.6, the proposed Project includes use restrictions, standards, and design guidelines that would reduce potential commercial noise levels by:

- Allowing the City's Community Development Director to prohibit activities and uses that are not compatible with the residential component of a mixed-use development.
- Restricting the hours of operation for commercial/retail uses in a mixed-use development to the hours of 7 AM to 10 PM (unless modified by administrative or conditional use permit).
- Placing loading docks on the rear or sides of buildings.
- Placing solid waste storage and collection areas on the rear or sides of buildings and as far as possible from the residential portion of mixed-use buildings and open space areas.
- Requiring equipment that is not housed inside a building to be screened from pedestrian level views (thus providing noise attenuation) by the building itself, a screen wall, or other design element.
- Requiring a solid masonry wall between six and eight feet in height be installed along the interior property lines separating a non-residential property from a residential or mixed-use property.

The commercial noise sources that would have the potential to generate the highest noise levels would be unenclosed backup generators, car wash dryers and vacuums, and other large mechanical equipment that could be associated with specific, standalone commercial activities permitted by the Project but which cannot be known at this time due to the programmatic nature of the Project. Potential noise levels of 66.5 dBA L_{eq} to 89 dBA L_{eq}, if sustained on a daily basis, would be above the City's acceptable (60 CNEL for single-family residential and 65 CNEL for multi-family residential) and conditionally acceptable (75 CNEL for single- and multi-family residential) noise guidelines. The actual noise levels at off-site receptors north of Avenue 42 and on-site receptors within the Project area would depend on the specific equipment noise levels and operating characteristics and the distance to the receptor; however, commercial noise levels that could potentially exceed the City's acceptable noise limits would be considered a potentially significant impact.

Industrial Development

As summarized in Table 2-3 and Table 2-4 and shown in Figure 2-3 and Figure 2-4, the proposed Project could result in up to 1,806,290 square feet of industrial building space in PA 4 under both the

Maximum Buildout Scenario and Scenario 2. Industrial development could generate noise from employee vehicle parking areas, truck loading docks, cargo handling equipment operations in truck dock and trailer storage areas, HVAC equipment, solid waste collection activities, and landscaping activities, as well as potential backup generators and other equipment that could be associated with specific industrial activities permitted by the Project but which cannot be known at this time due to the programmatic nature of the Project.

Although potential industrial development could include stationary equipment, this equipment would be subject to the same screening requirements as commercial development (see Section 2.6) and is most likely to be on the interior of the site, away from truck dock loading areas. For this reason, the primary noise source associated with industrial development in PA 4 is likely to be truck loading docks. As shown in Figure 2-3 and Figure 2-4, industrial development could include loading dock areas along both "A" street and I-10 building perimeters, with trailer storage and other parking areas located on the west and south building perimeters. The City's Municipal Code prohibits truck idling for more than 15 minutes within 150 feet of residential area between the hours of 7 PM and 7 AM and also prohibits the loading and unloading of vehicles and the operation of forklifts and cranes within 1,000 feet of a residence unless reduced by the Planning Commission (see Section 4.3.4.2). Based on the conceptual site plans, truck loading docks on the southern side of PA 4, near I-10, would be located 950 feet or more from PA 1 and 2 and 425 feet or more from PA 3 and screened from receptors in PA 1, PA 2, and PA 3 by industrial building facades. Thus, these truck docks would be unlikely to affect receptors in the Project area. Truck loading docks on the north side of industrial buildings in PA 4 would be the closest to potential residential development in PA 1 and PA 2, but would still be more than 1,400 feet from residences in the Sun City Shadow Hills Neighborhood north of Avenue 42. The proposed Project has been designed to limit the potential for industrial noise to impact PA 1, PA 2 and PA 3 by:

- Separating potential residential development in PA 1 from potential industrial development in PA 4 by at least 280 feet, including (from north to south) a 68-foot-wide landscaped area, the 100-foot-wide "A" Street ROW, a 10-foot site setback from A Street, and a minimum 100-foot building setback.[9]
- Requiring loading docks and truck parking areas to be visually screened from view along "A" Street with a 14-foot-high wall, landscaping, and/or other screening features or barriers (such as berms).
- Prohibiting outdoor storage in front or street-side yards and requiring outdoor loading and storage areas to be screened from public view by decorative concrete or masonry walls with lockable view obstructing gates that are a minimum of eight feet in height.

As shown in Table 5-4, individual truck travel and docking activity could generate a sustained noise level of 63.4 dBA L_{eq} at 50 feet. If 10 trucks were to dock at the same time, the sustained noise level could be 73.4 dBA L_{eq} at 50 feet, which would then attenuate to a noise level of approximately 58.4 dBA L_{eq} at 280 feet and 56.1 dBA L_{eq} at 365 feet. Noise levels in trailer storage areas would be similar to that of truck docking but would generally include less overall activity as these trailers are stored and retrieved as necessary. These noise level estimates assume no shielding or reduction in noise levels by the required

[9] If truck docks were located on a northern building perimeter, the assumed minimum setback would be 100 feet to provide for sufficient travel, maneuvering, and docking activities. It is noted the conceptual setback shown in Figure 2-3 and Figure 2-4 is a 185-foot setback, which would increase the total separation distance between residential properties in PA 1 and industrial development in PA 4 to approximately 365 feet.

screening walls for truck dock areas and outdoor loading and storage areas. Potential noise levels of 56 dBA L_{eq} to 58 dBA L_{eq}, if sustained on a daily basis, would also be below the City's acceptable (60 CNEL for single-family residential and 65 CNEL for multi-family residential) and conditionally acceptable (75 CNEL) noise guidelines.

Based on the above analysis, industrial development in PA 4 would not impact existing off-site receptors north of Avenue 42 and would not generate noise levels that exceed City standards at residential or commercial receptors in PA 1 or PA 2 due to the distance between industrial noise sources and potential receptors and design standards and guidelines included in the proposed Project. In addition, industrial development is not anticipated to impact potential residential receptors in PA 3 under the Maximum Buildout Scenario, nor commercial receptors in PA 3 under Scenario 2; because the industrial activities along the PA 4 and PA 3 boundary are expected to be limited employee parking activities.

The actual noise levels generated by industrial development and perceived by potential receptors in the Project area would depend on actual equipment noise levels and operating characteristics, the actual distance to the receptor, and the presence or absence of noise barriers or other screening features between the industrial noise source(s) and the receptor. For example, truck docks or loading areas could be located closer to PA 3 than conceptually shown in Figure 2-3 and Figure 2-4 and, therefore, have the potential to generate noise levels that exceed City standards. Although unlikely to occur, the potential for industrial noise sources to generate noise levels in PA 3 that are above the City's acceptable noise limits would be considered a potentially significant impact.

5.4.1.2 Compliance with Interior Noise Standards

The City enforces the California Building Code which, as described in Section 4.3.2.2, establishes 45 CNEL as the allowable interior noise levels in habitable rooms and requires non-residential wall and roof ceiling assemblies exposed to noise levels above 65 dBA (CNEL or hourly L_{eq}) to prescriptive assembly requirements or a performance standard of 50 dBA L_{eq}.

As described in Section 5.4.1.1, the proposed Project's multi-family residential development would not generate substantial exterior noise levels. Residential development, therefore, would not have the potential to exceed interior noise level standards at any facilities located within or outside of the Project area. Some commercial noise sources like car washes could generate exterior noise levels of between approximately 79 dBA L_{eq} to 89 dBA L_{eq} at 50 feet, which would fully attenuate to 65 dBA L_{eq} at distance of 790 feet if no shielding was provided. In addition, industrial development could generate noise levels of up to approximately 65 dBA L_{eq} at 50 feet, but industrial noise sources are more likely to be located more than 50 feet from residential and commercial building facades.

Potential interior noise levels resulting from the Project would be contingent on specific information that cannot be known at this time, including the distance between a noise source and the exterior building façade, the exterior-to-interior noise reduction achieved by the façade, including any windows and doors, and whether windows and doors are in an open or closed condition. In general, standard construction techniques for new residential, commercial, and industrial buildings in California provides a minimum of 12 dBA of exterior to interior noise attenuation with windows open and between 20 dBA to 30 dBA of exterior

to interior noise attenuation with windows closed.[10] Exterior noise levels, therefore, must generally be 65 CNEL or below to meet an interior noise level of 45 CNEL for habitable rooms, and 70 dBA L_{eq} or below to meet a 50 dBA L_{eq} performance standard in occupied non-residential space. Although unlikely to occur, the proposed Project could result in the operation of noise generating equipment and activities in close proximity to residential and non-residential building facades within the Project area that have the potential to exceed interior noise standards. This would be a potentially significant impact.

5.4.1.3 Land Use Operations / On-Site Noise Mitigation Measures

To reduce the potential for the proposed Project to result in operational-related noise levels that exceed the City's exterior or interior standards and/or conflict with General Plan policies, MIG recommends the proposed Project incorporate the following operational noise mitigation measure into the Project.

Mitigation Measure NOI-3A: Planning Area 3 and Planning Area 4 Noise Barrier. The City shall not approve any residential development in Planning Area 3 unless one of the following conditions is satisfied:

1) Planning Area 4 is not yet developed (i.e., constructed and awaiting occupancy or already occupied), in which case the residential project design shall include an eight-foot-tall concrete masonry unit noise barrier along the western boundary of Planning Area 3.

    a. The barrier shall extend to a height of eight feet above the finished elevation of the development and shall extend in a north-south direction at least 100 feet past the northernmost and southernmost dwelling unit (if the project develops only a part of Planning Area 3).

2) The part of Planning Area 4 that borders Planning Area 3 is already developed, and a project-specific noise analysis required by Mitigation Measure NOI-3B (prepared by either the industrial or residential project) indicates Planning Area 4 industrial development would not generate noise levels in Planning Area 3 that exceed applicable City standards.

Mitigation Measure NOI-3B: Control On-site Noise Generating Sources and Activities. To ensure on-site, operations-related equipment and activities associated with the future development in the Project area do not generate noise levels that exceed City standards, future mixed-use residential/commercial, commercial, and industrial development shall submit a project-specific operational noise analysis to the City for review and approval prior to the issuance of the first building permit for the project, or as otherwise determined by the City. The noise analysis shall be prepared by a qualified acoustical consultant and shall:

1) Identify surrounding land uses and noise-sensitive receptors in the vicinity of the project.

2) Identify the ambient noise level at and in the vicinity of the project, including at noise-sensitive receptors that could be impacted by the project. Ambient noise levels may be based on Indio

[10] 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 standard exterior wall consisting of 5/8-inch siding, wall sheathing, fiberglass insulation, two by four wall studs on 16-inch centers, and 1/2-inch gypsum wall board with single strength windows provides approximately 32 dB to 35 dB of attenuation between exterior and interior noise levels, provided there are no doors in the assembly and windows do not occupy more than 30% of the exterior wall space. Attenuation may be 2 – 3 dB less for traffic noise frequencies.

General Plan traffic noise modeling, information in the Oasis at Indio Specific Plan EIR, or new ambient noise measurements conducted for the project.

3) Describe the noise levels generated by the project's on-site noise sources, including all stationary equipment (e.g., pumps, compressors, generators, dryers, heating, ventilation, and air conditioning equipment, etc.), truck docks/dedicated loading areas, waste collection areas, and vehicle parking areas included in the final project design/site plan.

4) Demonstrate how project noise sources and activities will comply with the exterior sound limits established in Municipal Code Chapter 95C, Noise Control, the noise compatibility guidelines in General Plan Table 11-1, and applicable interior sound limits for residential (45 CNEL in habitable rooms) and non-residential (50 dBA L_{eq} in occupied areas or application of prescriptive requirements) project components. Measures for reducing project noise to may include, but are not limited to, setbacks, equipment enclosures, noise barriers or other means of shielding on-site noise levels from surrounding land uses and noise-sensitive receptors, and operating restrictions (e.g., prohibiting certain equipment or activities from operating at certain times such as nighttime hours).

5.4.1.4 Land Use Operations / On-Site Noise Impact Conclusion

The above analysis indicates that the proposed Project's potential operational noise levels would vary depending on the specific type and amount of operations, the distance between these activities and potential sensitive noise receptors, and other factors. Existing residential receptors would be located at least 650 feet from potential noise sources and activities and are not likely to be subject to substantially elevated noise levels or excessive vibration levels. Future residential receptors, if such locations were to be occupied, would be subjected to the highest potential operational noise levels due to their proximity to potential noise sources. The implementation of Mitigation Measures NOI-3A and NOI-3B would limit the potential for industrial-related development in Planning Area 4 to impact residential development in Planning Area 3 and require future development in the Project area to identify and control on-site noise to comply with the City's exterior and interior noise standards. The implementation of Mitigation Measures NOI-3A and NOI-3B would, therefore, render the Project's operational noise levels **less than significant with mitigation**.

5.4.2 TRAFFIC / OFF-SITE NOISE ANALYSIS

The proposed Project would generate vehicle trips that would be distributed onto the local roadway system, primarily Avenue 42 and Monroe Street. The modeled peak hour traffic noise levels with and without the Project on these roadways are summarized in Table 5-12 and Table 5-13.

Table 5-12: Modeled Peak Hour Traffic Noise Levels With and Without the Project						
Road and Segment	Modeled Peak Hour Traffic Noise Level (dBA L_{eq}) 100 feet from Road Centerline					
	2033 No Project	2033 Max Build Scenario	Net Change	2033 No Project	2033 Scenario 2	Net Change
Avenue 42						
Madison St to Project Area Center	67.5 dBA	69.4 dBA	+1.9 dBA	67.5dBA	68.8 dBA	+1.3 dBA
Project Area Center to Monroe St	67.6 dBA	70.3dBA	+2.7 dBA	67.6 dBA	69.3 dBA	+1.7 dBA
Monroe St to Gore/Spectrum St	68.2 dBA	68.7 dBA	+0.5 dBA	68.2 dBA	68.8 dBA	+0.6 dBA
Monroe Street						
Ave 40 to Ave 42	65.7dBA	66.0 dBA	+0.3 dBA	65.7 dBA	66.1 dBA	+0.4 dBA
Ave 42 to I-10 WB Ramps	68.3 dBA	70.7 dBA	+2.4 dBA	68.3 dBA	70.0 dBA	+1.7dBA
I-10 WB Ramps to Ave 44	67.3 dBA	70.2 dBA	+2.9 dBA	67.3 dBA	69.4 dBA	+2.1 dBA
Ave 44 to Fred Waring Dr	69.2 dBA	70.5 dBA	+1.3dBA	69.2 dBA	70.1dBA	+0.9dBA
Source: MIG (see Appendix C)						

Table 5-13: Estimated CNEL Traffic Noise Levels With and Without the Project					
Road and Segment	2014 General Plan	2033 No Project	2033 Max Build Scenario	2033 Scenario 2	2040 General Plan
Avenue 42					
Madison St to Project Area Center	72.9 CNEL	70.4 CNEL	72.3 CNEL	71.6 CNEL	76.6 CNEL
Project Area Center to Monroe St	72.9 CNEL	70.5 CNEL	73.2 CNEL	72.1 CNEL	76.3 CNEL
Monroe St to Gore/Spectrum St	72.9 CNEL	71.1 CNEL	71.6 CNEL	71.6 CNEL	74.8 CNEL
Monroe Street					
Ave 40 to Ave 42	68.9 CNEL	68.6 CNEL	68.9 CNEL	68.9 CNEL	70.8 CNEL
Ave 42 to I-10 WB Ramps	71.8 CNEL	71.2 CNEL	73.6 CNEL	72.8 CNEL	73.6 CNEL
I-10 WB Ramps to Ave 44	73.4 CNEL	70.2 CNEL	73.1 CNEL	72.2 CNEL	74.6 CNEL
Ave 44 to Fred Waring Dr	74.9 CNEL	72.1 CNEL	73.4 CNEL	72.9 CNEL	76.1 CNEL
"A" Street					
Monroe St to Project boundary	--	--	69.9 CNEL	69.3 CNEL	--
Source: MIG (see Appendix C); City of Indio 2019b, Appendix G-3					

The results of the traffic noise modeling indicate that future traffic noise levels on Avenue 42 and Monroe Street will generally remain high, above 70 dBA on a peak and daily exposure basis (at 100 feet from the road centerline), which exceeds the City's acceptable noise exposure levels for all land use types (see Table 4-9). Specifically, the modeling shows:

- Avenue 42: Modeled 2033 peak hour traffic noise levels on Avenue 42 without the proposed Project are between 67.5 dBA L_{eq} and 68.2 dBA L_{eq} at 100 feet from the center of the road. This correlates to a traffic noise exposure level 70.4 CNEL and 71.1CNEL. The land along Avenue 42, including the Project area, is currently undeveloped, except for the Palms commercial development at the southeast corner of Avenue 42 and Monroe Street. At worst case, the Project could, under the Maximum Buildout Scenario, increase 2033 peak hour traffic noise levels on Avenue 42 by 0.5 dBA to 2.7 dBA, up to a maximum of 70.3 dBA L_{eq} and 73.2 CNEL. The modeled 2033 traffic noise levels with the Project would remain conditionally acceptable for multi-family residential uses (65 CNEL to 75 CNEL) and commercial uses (between 70 CNEL and 75 CNEL) and would not increase by more than 3 dBA on any modeled Avenue 42 road segment.

- Monroe Street: Modeled 2033 peak hour traffic noise levels on Monroe Street without the proposed Project are between 65.7 dBA L_{eq} and 69.2 dBA L_{eq} at 100 feet from the center of the road. This correlates to a traffic noise exposure level between 68.6 CNEL and 72.3 CNEL. From Avenue 40 in the north to Fred Waring Drive south, the land along the modeled segments of Monroe Street includes single-family residential and undeveloped land (Avenue 40 to Avenue 42), the Palms commercial development and undeveloped land in the Project area (Avenue 42 to I-10 WB ramps), park and open space and neighborhood commercial lands (I-10 WB ramps to Avenue 44), and heavy industrial and mixed-use neighborhood land (Avenue 44 to Fred Waring Drive). At worst case, the Project could, under the Maximum Buildout Scenario, increase 2033 peak hour and daily traffic noise exposure levels on Monroe Street by 0.3 dBA to 2.9 dBA, up to a maximum of 70.7 dBA L_{eq} and 73.6 CNEL. The modeled 2033 traffic noise levels would remain conditionally acceptable for single-family residential uses (60 CNEL to 75 CNEL), multi-family residential uses (65 CNEL to 75 CNEL), and commercial and industrial uses (between 70 CNEL and 75 CNEL) on all modeled Monroe Street segments. In addition, the Project would not increase traffic noise levels by more than 3.0 dBA on any modeled Monroe Street segment.

As described above, the proposed Project would not result in an increase traffic noise levels under any scenario that would be 3 dBA or more where the ambient noise level would change from acceptable to conditionally acceptable or remain conditionally acceptable per the City's General Plan Noise and Land Use Compatibility Matrix (see Table 4-9). This impact would be less than significant.

5.4.3 OPERATIONAL VIBRATION ANALYSIS

The proposed Project area does not currently include any substantial vibration generating equipment. The Project would add a mix of residential, mixed-use, commercial, and/or industrial land uses to the Project area over time, reaching full development by 2033. These new land uses could involve machinery and equipment such as pumps, compressors, generators, and other fixed equipment that produce vibrations; however, this equipment is unlikely to generate vibration levels that would be discernible without the aid of instruments. As discussed in Section 5.3.2.2, even large construction equipment such as a bulldozer does not generate a vibration level above Caltrans' barely perceptible human annoyance criterion 0.01 in/sec at distance of approximately 150 feet. Potential pumps, generators,

and other typical equipment would be securely mounted and not large enough to generate substantial vibrations beyond the immediate vicinity of the equipment. The Project does not propose or support any large vibration-inducing equipment or land use activities and would not result in excessive ground-borne vibration levels. This impact would be less than significant.

5.4.4 COMPLIANCE WITH GENERAL PLAN NOISE ELEMENT POLICIES

The Project's consistency with the applicable policies of the City's General Plan Noise Element is summarized in Table 5-14.

Table 5-14: Project Consistency with Applicable General Plan Noise Policies

General Plan Noise Element Goal/Policy	Consistency Analysis
Goal NE-1: Land Use Compatibility. A City where noise exposure is minimized for those living, working, and visiting the community.	
Policy NE-1.1: Sensitive Receptors: Protect noise-sensitive uses, such as residences, schools, health care facilities, hotels, libraries, and churches from excessive noise levels through land use compatibility/adjacency, build design, and noise ordinance enforcement.	Consistent with mitigation. As discussed in Section 5.4.1.1 and Section 5.4.1.2, the proposed Project would not generate noise levels that could affect sensitive receptors located outside of the Project area; however, the proposed Project's stand-alone commercial and industrial developments could generate noise levels at sensitive receptors inside the Project area that are substantially above existing ambient conditions and/or above the City's exterior or interior noise standards. The proposed Project would incorporate Mitigation Measure NOI-3 to ensure sensitive receptors inside the Project area are exposed to acceptable noise levels.
Policy NE-1.2 Noise Compatibility: Apply the Noise Compatibility Matrix, shown in [Table 4-9], as a guide for planning and development decisions. The City will require projects involving new development or modifications to existing development to implement mitigation measures, where necessary, to reduce noise levels to at least the normally compatible range shown in the City's Noise Compatibility Matrix shown in [Table 4-9]. Mitigation measures should focus on architectural features and building design and construction, rather than site design features, such as excessive setbacks, berms, and sound walls, to maintain compatibility with adjacent and surrounding uses.	Consistent with mitigation. As described in Section 5.4.1.1, the proposed Project includes commercial use restrictions, commercial and industrial design standards, and commercial and industrial design guidelines that incorporate operational restrictions, landscaping and other setbacks, and screening requirements to limit potential noise impacts. The proposed Project would incorporate Mitigation Measure NOI-3 to ensure sensitive receptors inside the Project area are not exposed to unacceptable noise levels.

Table 5-14: Project Consistency with Applicable General Plan Noise Policies	
General Plan Noise Element Goal/Policy	Consistency Analysis
Policy NE-1.3 Airport Land Use Planning: Implement all applicable noise-related policies contained in the Bermuda Dunes Airport Land Use Plan.	Consistent. As discussed in Section 5.5, the proposed Project would not conflict with the Riverside County ALUCP policies pertaining to noise nor have the potential to expose people living or working in the Project area to excessive Bermuda Dunes Airport noise levels.
Policy NE-1.6 Limit on Hours of Operation: Limit delivery or service hours for stores and businesses with loading areas, docks, or trash bins that front, side, border, or gain access on driveways next to residential and other noise sensitive areas, such as residences, schools, hospitals, religious meeting spaces, and recreation areas.	Consistent. As described in Section 2.6, the proposed Project restricts the for commercial/retail uses in a mixed-use development shall be no earlier than 7 AM and no later than 10 PM daily unless modified by an administrative or conditional use permit.
Policy NE-1.7 Land Use and Community Design: Prioritize the building design and character policies in the Land Use and Community Character Element over those in the Noise Element to ensure that new development meets the design vision of the city. This policy will not apply when noise levels are clearly in the incompatible range as shown in the City's Noise Compatibility Matrix shown in [Table 4-9].	Consistent. The proposed Project includes design guidelines to promote compatibility with surrounding uses and is consistent with the General Plan Land Use and Community Character Element. Future development in the Project area would be subject to this policy on a project-by-project basis.
Goal NE-2: Mobile Noise Sources. A City with minimal mobile source-generated noise levels.	
Policy NE-2.2 Truck routes. Regulate traffic flow to enforce speed limits to reduce traffic noise. Periodically evaluate and enforce established truck and bus routes to avoid noise impacts on sensitive receptors	Consistent. As described in Section 2.3.3, the proposed Project would direct truck trips to City-designated truck routes including Avenue 42 and Monroe Street.
Policy NE-2.4 Roadway noise. Implement the policies listed under Goal 1 to reduce the impacts of roadway noise on noise-sensitive receptors where roadway noise exceeds the normally compatible range shown in the City's Noise Compatibility Matrix shown in Table 11-1.	Consistent with mitigation. The proposed Project would be consistent with Noise Element Goal 1 and related policies protecting noise sensitive receptors (see Goal 1, Policy NE-1.1 above).

Table 5-14: Project Consistency with Applicable General Plan Noise Policies	
General Plan Noise Element Goal/Policy	Consistency Analysis
Policy NE-2.5 Traffic calming. Require the use of traffic calming measures such as reduced speed limits or roadway design features to reduce noise levels where roadway noise exceeds the normally compatible range shown in the City's Noise Compatibility Matrix shown in Table 11-1.	Not Applicable. As described in Section 5.4.2, 2033 traffic noise levels with the Project would not exceed the City's conditionally acceptable noise levels for development along Avenue 42 and Monroe Street. .
Policy NE-2.6 Noise-reducing paving. Encourage the use of noise-reducing paving materials, such as open-grade or rubberized asphalt, for public and private road surfacing projects in proximity to existing and proposed residential land uses	Not applicable See discussion under Policy NE-2.5 above.
Goal NE-3: Stationary Noise Sources. A City with minimal stationary source-generated noise levels.	
Policy NE-3.1 Noise ordinance. Minimize noise conflicts between neighboring properties through enforcement of applicable regulations, such as the City's Noise Control Ordinance	Consistent with mitigation. As discussed in Section 5.4.1.1 and Section 5.4.1.2, although unlikely to occur due because the proposed Project would be subject to compliance with Municipal Code requirements and includes design standards that separate and shield noise generating equipment, activities, and land uses away from sensitive noise receptors, the proposed Project could result in noise levels that exceed City standards within the Project area. The proposed Project would incorporate Mitigation Measure NOI-3A and Mitigation Measure NOI-3B to ensure sensitive receptors inside the Project area are not exposed to unacceptable noise levels.
Policy NE-3.3 Entertainment uses. Require noise generating uses, such as restaurants, bars, entertainment venues, and industrial manufacturing operations to minimize noise impacts on adjacent noise-sensitive receptors when there is a potential for adverse noise impacts to occur.	Consistent with mitigation. The proposed Project permits, either by right or use permit, eating and drinking establishments and entertainment uses and industrial manufacturing operations. As discussed in Section 5.4.1.1 and Section 5.4.1.2, although unlikely to occur due because the proposed Project would be subject to compliance with Municipal Code requirements and includes design standards that separate and shield noise generating equipment, activities, and land uses away from sensitive noise receptors, the proposed Project could result in noise levels that exceed City standards within the Project area. The proposed Project would incorporate Mitigation Measure NOI-3 to ensure sensitive receptors inside the Project area are not exposed to unacceptable noise levels.

Table 5-14: Project Consistency with Applicable General Plan Noise Policies	
General Plan Noise Element Goal/Policy	Consistency Analysis
Policy NE-3.4 Construction noise. Require development to minimize the exposure of neighboring properties to excessive noise levels from construction-related activity during all phases of construction.	Consistent with mitigation. As described in Section 5.3.2.1, the proposed Project would incorporate Mitigation Measures NOI-1A through NOI-1E to minimize the exposure of existing and future noise-sensitive receptors to potential construction-related noise levels.

5.5 AIRPORT-RELATED NOISE

As described in Section 4.2.1.1, the proposed Project area is located approximately one mile east of Bermuda Dunes Airport. The entirety of the Project area is within the Bermuda Dunes Airport Influence Area, and parts of the Project area are within Compatibility Zone C, D, and E, as follows:

- Compatibility Zone C (Extended Inner Approach / Departure Zone): The southwestern part of PA 4 is located within this zone. In addition, a small part of the southwestern corner of PA 1 that is directly adjacent to the planned "A" Street may also be in this zone. The part of PA 1 that potentially lies Compatibility Zone C would most likely fall within the 68-foot-wide landscaped transition zone planned along the southern boundary of PA 1.
- Compatibility Zone D (Primary Traffic Patterns and Runway Buffer Area): The northwestern parts of PA 4 and the part of PA 1 that is west of the Clinton Street ROW is located within this zone.
- Compatibility Zone E (Other Airport Environs): The parts of PA 1 and PA 4 east of the Clinton Street ROW are located in this zone, excepting a small part of PA 4 near the end of the Clinton Street ROW, adjacent to the I-10 (which is in Compatibility Zone C). In addition, PA 2 and PA 3 are located entirely within Compatibility Zone E.

In addition, a small part of the southwest corner of the Project area is located within the 55 CNEL to 60 CNEL airport noise contour (Riverside County, 2004).

The Riverside County ALUCP (see Table 4-7) and City General Plan Policy NE-1.3 (see Section 4.3.4.4) establish specific requirements for the review and control of airport-related noise in the proposed Project area. These requirements limit the maximum development density in each compatibility zone, discourage and/or prohibit certain land uses in certain zones, and establish other noise-related requirements. For example, children's schools and buildings with more than three aboveground habitable floors are prohibited in Zone C, schools and hospitals are discouraged in Zone D, and deed notices are required in both Zone C and Zone D.

The proposed Project would not conflict with the requirements of the Riverside County ALUCP nor have the potential to expose people living or working in the Project area for the reasons listed below.

- Planned Uses are Compatible with ALUCP Zone Restrictions. Based on the proposed Project's PA boundaries (see Figure 2-2) and conceptual site plans for the Maximum Buildout Scenario (see Figure 2-3) and Scenario 2 (see Figure 2-4), the proposed Project would not result in development that conflicts with ALUCP land use criteria for Compatibility Zone C or D. The proposed Project would not place any children's schools, day care centers, libraries, hospitals, nursing homes, buildings with more than three aboveground habitable floors, or highly noise-sensitive outdoor non-residential uses within Compatibility Zone C. Rather, the

only uses that could be located within Zone C would be industrial uses, roadways, parking areas, landscaping, and open spaces that may include walking trails, biking trails, and other active or passive recreational features. Such uses would not be highly noise sensitive. Similarly, the proposed Project would not result in any highly noise-sensitive non-residential uses in Compatibility Zone D . Rather, development in this area could consist of residential or mixed-uses with non-residential areas (e.g., outdoor dining areas, parking lots, loading areas, etc.) that would not be highly noise sensitive.

- Standard Construction would Achieve Required Minimum Noise Reductions. A small part of the PA 4 Industrial District is located within the Bermuda Dunes Airport 55 CNEL to 60 CNEL noise contour, meaning airport-related noise levels do not exceed 60 CNEL within the Project area. As shown in Table 4-8, the Riverside County ALUCP identifies noise levels up to 60 CNEL as normally acceptable for office and retail trade uses, while noise levels up to 65 CNEL are normally acceptable for warehousing and light industrial uses. Therefore, PA 4 Industrial District land uses would be compatible with potential airport-related noise levels. In addition, for potential office buildings/areas in PA 4 that are also within Compatibility Zone C, the ALUCP requires a minimum exterior to interior noise level reduction of 20 dB; however, no office building would be located within an airport-related 65 CNEL contour. The ALCUP (Policy 4.1.6) acknowledges that most standard wood-frame construction techniques with a windows closed condition achieves a minimum of 20 dB of exterior to interior noise reductions. Thus, airport-related interior noise levels in any potential office building located within Compatibility Zone C would not exceed 45 CNEL as required by the ALUCP.
- Project Development Standards Require Compliance with the ALUCP. The proposed Project's development standards explicitly identify that properties located within the Bermuda Dunes Airport Influence Area shall be subject to the requirements and standards of the ALUCP, including density and intensity standards that exist at the time of review (City of Indio, 2023b, Table 3-3, Notes 1 and 2).
- Project Supplemental Development Standards Provide Necessary Real-Estate Disclosures and Deed Noticing. For any residential property within any compatibility zone, the proposed Project's supplemental development standards require the disclosure of airport proximity and existence of aircraft overflights during real estate transactions as specified by State law. The Project's supplemental development standards also require a deed notice to be recorded for each parcel associated with any discretionary land use action affecting property within the Project that discloses the property is within an airport influence area and may be subject to annoyances and inconveniences associated with proximity to airport operations such as noise, vibration, and odors.

As described above, the proposed Project is located one mile east of Bermuda Dunes Airport and is not located in an area impacted by aircraft or other airport-related noise levels. As required by the Project's development standards, future development projects would each be subject to the applicable ALUCP requirements and standards in effect at the time of review, which would ensure compliance with applicable ALUCP policies. The Project, therefore, would not expose people working or residing in the Project area to excessive airport-related noise levels. This impact would be less than significant.

This page was intentionally left blank.

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. 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.

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.

6.1 EXISTING NOISE ENVIRONMENT AND PROJECT COMPATIBILITY

As explained in Section 4.3.4.4, the City's General Plan establishes land use compatibility standards with regard to determining the appropriate type of new development in relation to the existing transportation noise environment.

- Traffic Noise Exposure. The ambient noise levels near future multi-family housing development in the Project area vary depending on location. As described in Section 4.2.1, measured noise levels in the Project area were highest closest to the I-10 and Monroe Street, and lowest in the center and western parts of the Project area, which are away from transportation noise sources. The estimated CNEL in the center of the Project areas, near the southern boundary of PA 1 and PA 2, is approximately 70 CNEL. The noise levels measured in the Project area are based on actual existing conditions at the time of the measurements, and do not reflect changes in traffic volumes that could occur as the Project area is developed, nor any shielding of I-10 and other traffic noise that may occur as multi-story residential buildings and tall industrial buildings are erected along the perimeter of the Project area. In general, traffic noise levels in the vicinity of the Project are above the City's acceptable noise levels for multi-family and mixed-use land uses (65 CNEL) and commercial and industrial land uses (70 CNEL). As discussed in Section 5.4.2, 2033 traffic noise levels with and without the Project are expected to increase on Avenue 42 (between Madison Street and Monroe Street) and Monroe Street (between Avenue 42 and Fred Waring Drive) but remain within the city's conditionally acceptable limit for all land uses (75 CNEL); however, the General Plan establishes the City intent to protect noise sensitive land use and ensure development is not exposed to unacceptable noise levels.

  In addition, as described in Section 4.3.2.2, the California Building Standards Code establishes a 45 CNEL standard for habitable rooms, and the California Green Building Standards Code establishes additional standards for non-residential interior noise levels (50 dBA L_{eq}) that may apply if a building is located within a 65 CNEL noise contour of an airport, freeway, railroad, industrial source, etc. or otherwise exposed to a noise level of 65 dBA on an hourly L_{eq} basis, which would likely be the case for development directly adjacent to Avenue 42 and Monroe Street. Typically, new construction is capable of providing approximately 12 dBA of exterior-to-interior noise reduction with windows open and between 20 dBA to 30 dBA of exterior-to-interior noise reduction with windows closed. Therefore, exterior noise levels up to 57 CNEL

(with windows open) and between 65 CNEL to 75 CNEL (with windows closed) may require the incorporation of specific site design (e.g., setbacks), noise control (e.g., barriers or berms to block noise), and/or building attenuation measures (e.g., specific exterior wall assemblies, windows and doors with high STC ratings, etc.) to ensure outdoor and interior noise levels meet applicable City and State building code standards. The actual level of exterior noise and exterior to interior noise attenuation required for each individual development project would depend on factors such as the distance from major noise sources, updated traffic noise modeling results or ambient noise measurements that capture actual development patterns over time, and the presence of any intervening shielding or other attenuating factors that may reduce noise levels in specific parts of developed housing sites.

As discussed above, the Project includes residential and non-residential that may be exposed to traffic noise levels above acceptable and conditionally acceptable levels; however, the General Plan includes policies and programs to protect existing and future land uses from excessive noise levels by ensuring new development projects meet City noise standards through appropriate, project-specific evaluation and design considerations. For this reason, the Project would not expose existing or future noise sensitive land uses to unacceptable traffic noise levels.

- Rail Noise Exposure. As described in Section 4.2.1.1, rail activity on the Union Pacific Railroad line is estimated to generate noise levels above 65 CNEL up to 585 feet from the center of the rail line. The proposed Project boundary is, at closest, located 590 feet from the center of the railroad corridor. For this reason, the proposed Project would not expose existing or future noise sensitive land uses to unacceptable rail noise levels.

7 REPORT PREPARERS AND REFERENCES

This Report was prepared by MIG under contract to BH Properties. This report reflects the independent, objective, professional opinion of MIG. The following individuals were involved in the preparation of this Report:

MIG
Chris Dugan, Director of Air Quality, GHG, and Noise Services
cdugan@migcom.com / 916-956-3802

1650 Spruce Street, Suite 106
Riverside, California 92507
(951) 787-9222

Kasey Kitowski, Analyst II
kkitowski@migcom.com

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) 2017. State of California General Plan Guidelines. Sacramento, California. 2017.

Carrier 2022. Product Data Weather Master Gas Heat/Electric Cooling Packaged Rooftop Units 3 to 12.5 Nominal Tons. 2022.

City of Indio 2019a. City of Indio General Plan. September 18, 2019. https://www.indio.org/home/showpublisheddocument/922/637874289450770000

_____2019b. Final Environmental Impact Report for the City of Indio General Plan Update, Indio, California, SCH# 2015081021. June 2019.

_____2023a. Proposed Zoning and Land Use Map. Accessed online. 2023. <https://raimi.maps.arcgis.com/apps/webappviewer/index.html?id=dd6ecffaca4e4ce5b26c0310197e94d8>

_____2023b. The Oasis at Indio Specific Plan (Draft). September 2023.

Generac 2011. SD230 Industrial Diesel Generator Set Product Information Sheet. Waukesha, WI. September 2011.

Linscott, Law, and Greenspan (LLG) 2023. Traffic Impact Analysis Report BH Properties Industrial and Commercial Project. September 15, 2023.

MIG 2022. Noise and Vibration Analysis for Arlington Plaza Project, Riverside, CA. September 2022.

MIG 2023a. Oasis at Indio Specific Plan Air Quality and Health Risk Assessment Report. October 2023.

_____2023c. Modified Costco Wholesale Gas Station Relocation and Expansion Project Subsequent Noise Impact Evaluation. March 2023.

MSA Consulting 2023a. Conceptual Site Plan Option 1. June 23, 2023.

MSA Consulting 2023b. Conceptual Site Plan Option 2. June 23, 2023.

Professional Carwashing & Detailing (PC&D) 2005. Choosing the Best Dryer for your Wash. January 2005.

Riverside County Airport Land Use Commission (ALUC) 2004. Airport Land Use Compatibility Plan Policy Document. December 2004.

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.

U.S. EPA 1977. Speech Levels in Various Noise Environments. Washington, D.C. May 1977.

APPENDIX A: Ambient Noise Monitoring Data

This page was intentionally left blank.

TABLE 1: SUMMARY OF SITE LT-01 NOISE MONITORING DATA												
Date	**Time**	**Duration**	**Leq**	**CNEL**	**Lmin**	**Lmax**	**L1.7**	**L8.3**	**L16.7**	**L25.0**	**L50.0**	**L90.0**
11/13/2022	9:15 AM	45 mins	58.9	58.9	53.4	79.8	63.5	60.5	59.8	59.3	58.4	56.7
11/13/2022	10:00 AM	1 hour	58.2	58.2	54.0	66.4	60.3	59.6	59.2	58.8	58.0	56.8
11/13/2022	11:00 AM	1 hour	56.8	56.8	49.2	69.3	59.8	58.7	58.1	57.6	56.4	54.8
11/13/2022	12:00 PM	1 hour	55.6	55.6	48.5	71.0	59.0	57.7	56.9	56.4	55.1	53.3
11/13/2022	1:00 PM	59 mins	54.8	54.8	47.2	88.1	67.0	58.0	56.7	55.9	54.1	52.4
11/13/2022	2:00 PM	1 hour	57.3	57.3	47.6	76.8	61.8	60.1	58.9	58.1	56.4	54.4
11/13/2022	3:00 PM	1 hour	56.3	56.3	48.5	70.2	60.0	58.6	57.6	57.0	55.6	54.1
11/13/2022	4:00 PM	1 hour	56.5	56.5	50.8	66.1	59.4	58.4	57.7	57.2	56.1	54.7
11/13/2022	5:00 PM	1 hour	58.7	58.7	51.8	68.3	61.5	60.6	59.9	59.4	58.3	57.0
11/13/2022	6:00 PM	1 hour	59.1	59.1	53.1	70.4	61.6	60.9	60.4	59.9	58.7	57.2
11/13/2022	7:00 PM	1 hour	61.1	66.1	56.0	70.0	63.2	62.5	62.0	61.6	60.9	59.8
11/13/2022	8:00 PM	1 hour	60.4	65.4	53.7	69.7	62.5	61.8	61.3	61.0	60.3	59.0
11/13/2022	9:00 PM	1 hour	64.1	69.1	55.4	72.7	66.6	65.8	65.3	64.9	63.8	62.2
11/13/2022	10:00 PM	1 hour	63.9	73.9	56.8	71.6	66.4	65.5	65.0	64.5	63.6	62.0
11/13/2022	11:00 PM	1 hour	62.6	72.6	51.9	76.4	66.0	64.9	64.1	63.4	62.1	59.9
11/14/2022	12:00 AM	1 hour	63.6	73.6	54.3	71.4	66.3	65.5	65.0	64.6	63.5	61.1
11/14/2022	1:00 AM	1 hour	60.5	70.5	46.2	67.6	63.2	62.4	61.8	61.4	60.3	58.3
11/14/2022	2:00 AM	1 hour	61.6	71.6	52.0	70.4	64.2	63.5	63.0	62.6	61.4	59.1
11/14/2022	3:00 AM	1 hour	63.4	73.4	53.4	70.4	66.2	65.3	64.7	64.3	63.2	60.9
11/14/2022	4:00 AM	1 hour	64.6	74.6	54.6	70.9	66.8	66.1	65.7	65.3	64.5	62.8
11/14/2022	5:00 AM	1 hour	67.9	77.9	61.3	74.9	69.8	69.2	68.7	68.5	67.8	66.5
11/14/2022	6:00 AM	1 hour	65.3	75.3	60.1	70.6	67.2	66.5	66.1	65.9	65.2	64.0
11/14/2022	7:00 AM	1 hour	67.0	67.0	56.1	85.9	69.9	68.4	67.9	67.5	67.0	66.1
11/14/2022	8:00 AM	1 hour	56.6	56.6	50.7	71.3	59.7	58.3	57.3	56.9	56.2	55.1
11/14/2022	9:00 AM	1 hour	57.0	57.0	51.6	79.1	62.2	58.7	57.7	57.2	56.3	55.1
11/14/2022	10:00 AM	1 hour	57.6	57.6	51.0	69.5	60.3	59.4	58.7	58.3	57.2	55.9
11/14/2022	11:00 AM	1 hour	58.1	58.1	52.1	78.1	63.1	61.0	59.4	58.4	57.1	55.7
11/14/2022	12:00 PM	1 hour	58.7	58.7	52.1	74.4	61.6	60.7	60.0	59.4	58.3	56.7
11/14/2022	1:00 PM	1 hour	59.4	59.4	52.3	75.6	62.7	61.5	60.9	60.4	58.9	57.4
11/14/2022	2:00 PM	1 hour	57.1	57.1	50.6	64.2	59.0	58.4	57.9	57.7	57.0	55.9
11/14/2022	3:00 PM	1 hour	58.5	58.5	54.5	65.8	60.5	59.8	59.3	59.0	58.3	57.3
11/14/2022	4:00 PM	1 hour	61.0	61.0	55.8	67.1	62.4	62.0	61.6	61.4	60.8	60.0
11/14/2022	5:00 PM	1 hour	63.2	63.2	58.8	69.1	64.7	64.2	63.9	63.7	63.1	62.3
11/14/2022	6:00 PM	1 hour	63.7	63.7	59.5	69.6	65.3	64.7	64.4	64.2	63.6	62.7
11/14/2022	7:00 PM	59 mins	64.9	69.9	60.8	71.6	66.3	65.9	65.6	65.4	64.8	63.8
11/14/2022	8:00 PM	1 hour	64.6	69.6	58.3	71.6	66.4	65.9	65.5	65.2	64.5	63.3
11/14/2022	9:00 PM	1 hour	63.7	68.7	59.2	77.9	66.0	64.8	64.5	64.2	63.5	62.3
11/14/2022	10:00 PM	1 hour	64.0	74.0	57.7	69.3	65.8	65.2	64.9	64.6	63.9	62.5
11/14/2022	11:00 PM	1 hour	63.9	73.9	55.4	69.7	66.1	65.4	64.9	64.5	63.8	62.3
11/15/2022	12:00 AM	1 hour	61.7	71.7	53.4	66.9	64.0	63.3	62.8	62.4	61.4	60.0

11/15/2022	1:00 AM	1 hour	61.5	71.5	52.3	73.4	64.2	63.2	62.7	62.2	61.2	59.5
11/15/2022	2:00 AM	1 hour	62.6	72.6	53.3	70.6	65.4	64.4	63.8	63.4	62.4	60.4
11/15/2022	3:00 AM	1 hour	62.1	72.1	55.5	69.2	65.0	64.1	63.5	63.0	61.8	59.9
11/15/2022	4:00 AM	1 hour	62.8	72.8	55.6	75.7	66.0	65.1	64.3	63.4	62.3	60.3
11/15/2022	5:00 AM	1 hour	63.3	73.3	57.5	69.4	65.3	64.6	64.1	63.8	63.1	61.9
11/15/2022	6:00 AM	1 hour	65.3	75.3	59.4	70.5	66.9	66.5	66.1	65.8	65.2	64.2
11/15/2022	7:00 AM	1 hour	63.9	63.9	56.9	69.9	65.6	65.1	64.7	64.5	63.8	62.7
11/15/2022	8:00 AM	1 hour	57.8	57.8	50.6	67.2	59.8	59.2	58.6	58.2	57.5	56.6
11/15/2022	9:00 AM	15 mins	54.9									
11/13 Daytime (7 AM to 7 PM)			*59.8*	*--*	*47.2*	*88.1*	*63.5*	*61.4*	*60.7*	*60.2*	*59.4*	*58.2*
11/13 Evening (7 PM to 10 PM)			*62.2*	*--*	*53.7*	*72.7*	*64.5*	*63.7*	*63.2*	*62.8*	*62.0*	*60.5*
11/13 Nightime (10 PM to 7 AM)			*64.2*	*--*	*46.2*	*76.4*	*66.6*	*65.8*	*65.3*	*64.9*	*64.0*	*62.4*
11/13 24-hour CNEL			*--*	***70.4***				-	-	-	-	-
11/14 Daytime (7 AM to 7 PM)			*60.5*	*--*	*50.6*	*79.1*	*62.8*	*61.8*	*61.3*	*61.0*	*60.2*	*59.2*
11/14 Evening (7 PM to 10 PM)			*64.4*	*--*	*58.3*	*77.9*	*66.2*	*65.6*	*65.2*	*64.9*	*64.3*	*63.2*
11/14 Nightime (10 PM to 7 AM)			*63.2*	*--*	*52.3*	*75.7*	*65.5*	*64.7*	*64.2*	*63.8*	*63.0*	*61.5*
11/14 24-hour CNEL			*--*	***69.8***				-	-	-	-	-

TABLE 2: SUMMARY OF SHORT-TERM NOISE MONITORING DATA

Site	Date	Time	Duration	Leq	Lmin	Lmax	L1.7	L8.3	L16.7	L25.0	L50.0	L90.0
ST-01	11/14/2022	9:10 AM	2 hours	73.6	58.4	87.6	77.6	77.6	77.6	77.6	77.6	77.6
ST-02	11/14/2022	10:50 AM	2 hours	58.9	51.2	70.8	61.6	61.6	61.6	61.6	61.6	61.6
ST-03	11/14/2022	12:00 PM	2 hours	67.2	67.2	89.4	75.4	75.4	75.4	75.4	75.4	75.4

TABLE 3: SUMMARY OF LONG-TERM NOISE MONITORING DATA (for Comparison to ST sites)

Site	Date	Time	Duration	Leq	Lmin	Lmax	L1.7	L8.3	L16.7	L25.0	L50.0	L90.0
LT-01	11/14/2022	9:10 AM	2 hours	57.5	51.0	79.1	61.6	59.5	58.6	58.1	56.9	55.6
LT-01	11/14/2022	10:50 AM	2 hours	58.3	52.1	74.4	60.9	60.1	59.5	59.0	58.0	56.5
LT-01	11/14/2022	12:00 PM	2 hours	57.9	50.6	65.8	60.0	59.3	58.8	58.5	57.7	56.7

Summary

File Name on Meter	Indio_LT.001.s
File Name on PC	LxT_0005064-20221113 090000-Indio_LT.001.ldbin
Serial Number	0005064
Model	SoundTrack LxT®
Firmware Version	2.404
User	
Location	
Job Description	
Note	

Measurement

Description	BH Properties Indio SP LT
Start	2022-11-13 09:00:00
Stop	2022-11-15 09:20:45
Duration	48:20:45.594
Run Time	48:20:45.594
Pause	00:00:00.0
Pre-Calibration	2022-11-13 08:51:37
Post-Calibration	2022-11-15 09:22:52
Calibration Deviation	0.04 dB

Overall Settings

RMS Weight	A Weighting
Peak Weight	Z Weighting
Detector	Slow
Preamplifier	Direct
Microphone Correction	Off
Integration Method	Exponential
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	Z Weighting
OBA Max Spectrum	Bin Max
Overload	122.3 dB

	A	**C**	**Z**	
Under Range Peak	78.6	75.6	**80.6**	dB
Under Range Limit	**14.6**	13.1	17.3	dB
Noise Floor	5.4	3.9	8.2	dB

	First	**Second**	**Third**
Instrument Identification			

Results

LASeq	62.2		
LASE	114.7		
EAS	32.458	mPa²h	
EAS8	5.371	mPa²h	
EAS40	26.855	mPa²h	
LZpeak (max)	2022-11-13 09:14:41	123.2	dB
LASmax	2022-11-13 09:14:41	91.7	dB

LASmin	2022-11-14 01:08:11	46.2 dB
SEA	138.0 dB	

	Exceedance Counts	Duration
LAS > 85.0 dB	3	4.5 s
LAS > 115.0 dB	0	0.0 s
LZpeak > 135.0 dB	0	0.0 s
LZpeak > 137.0 dB	0	0.0 s
LZpeak > 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
	69.8	61.0	63.7	70.1	60.2	63.5	63.7

LCSeq	71.9 dB
LASeq	62.2 dB
LCSeq - LASeq	9.7 dB
LAIeq	64.0 dB
LAeq	62.2 dB
LAIeq - LAeq	1.8 dB

	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
Leq	62.2					
LS(max)	91.7	2022/11/13 9:14:41				
LS(min)	46.2	2022/11/14 1:08:11				
LPeak(max)					123.2	2022/11/13 9:14:41

Overload Count	2
Overload Duration	4.1 s
OBA Overload Count	2
OBA Overload Duration	4.1 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	0.00	0.01	%
Projected Dose	0.00	0.00	%

TWA (Projected)	-2.7	12.3 dB
TWA (t)	10.3	25.3 dB
Lep (t)	70.1	70.1 dB

Statistics

LAS 1.70	68.5 dB
LAS 8.30	65.9 dB
LAS 16.70	64.5 dB
LAS 25.00	63.5 dB
LAS 50.00	60.6 dB
LAS 90.00	54.9 dB

Calibration History

Preamp	**Date**	**dB re. 1V/Pa**
Direct	2020-01-28 05:43:54	-28.63
PRMLxT1L	2022-11-15 09:22:49	-28.98
PRMLxT1L	2022-11-13 08:51:35	-29.02
PRMLxT1L	2022-11-01 14:01:22	-28.89
PRMLxT1L	2022-10-25 15:22:53	-28.80
PRMLxT1L	2022-10-25 14:50:35	-28.73
PRMLxT1L	2022-10-25 13:12:22	-26.38
PRMLxT1L	2022-06-08 14:11:13	-28.73
PRMLxT1L	2022-06-07 08:11:01	-28.80
PRMLxT1L	2022-05-18 13:25:41	-28.81
PRMLxT1L	2022-05-16 12:46:27	-28.83
PRMLxT1L	2022-05-03 09:01:14	-28.89

Note: Detailed calibration records available upon request

Summary

File Name on Meter	IndioST1.001.s
File Name on PC	LxTse_0003790-20221114 090000-IndioST1.001.ldbin
Serial Number	0003790
Model	SoundExpert® LxT
Firmware Version	2.404
User	
Location	
Job Description	
Note	

Measurement

Description	BH Properties Indio SP ST
Start	2022-11-14 09:00:00
Stop	2022-11-14 15:50:31
Duration	06:50:31.7
Run Time	06:50:31.7
Pause	00:00:00.0
Pre-Calibration	2022-11-14 08:53:10
Post-Calibration	2022-11-14 15:50:55
Calibration Deviation	0.00 dB

Overall Settings

RMS Weight	A Weighting
Peak Weight	Z Weighting
Detector	Slow
Preamplifier	PRMLxT1L
Microphone Correction	Off
Integration Method	Exponential
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	Z Weighting
OBA Max Spectrum	Bin Max
Overload	122.8 dB

	A	**C**	**Z**
Under Range Peak	79.4	76.4	**81.4** dB
Under Range Limit	**24.3**	25.5	31.7 dB
Noise Floor	15.2	16.3	22.5 dB

	First	**Second**	**Third**
Instrument Identification	MIG		

Results

LASeq	69.7	
LASE	113.6	
EAS	25.633 mPa²h	
LZpeak (max)	2022-11-14 11:14:52	123.3 dB
LASmax	2022-11-14 14:34:42	89.4 dB
LASmin	2022-11-14 13:37:47	39.4 dB
SEA	146.0 dB	

	Exceedance Counts	Duration
LAS > 85.0 dB	2	10.2 s
LAS > 115.0 dB	0	0.0 s
LZpeak > 135.0 dB	0	0.0 s
LZpeak > 137.0 dB	0	0.0 s
LZpeak > 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
	69.7	69.7	-99.9	69.7	69.7	-99.9	-99.9

LCSeq	78.7	dB
LASeq	69.7	dB
LCSeq - LASeq	9.0	dB
LAIeq	71.1	dB
LAeq	69.7	dB
LAIeq - LAeq	1.4	dB

	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
Leq	69.7					
LS(max)	89.4	2022/11/14 14:34:42				
LS(min)	39.4	2022/11/14 13:37:47				
LPeak(max)					123.3	2022/11/14 11:14:52

Overload Count	13	
Overload Duration	26.8	s
OBA Overload Count	13	
OBA Overload Duration	26.8	s

Statistics

LAS 1.70	76.8	dB
LAS 8.30	74.6	dB
LAS 16.70	73.1	dB
LAS 25.00	71.6	dB
LAS 50.00	63.5	dB
LAS 90.00	56.7	dB

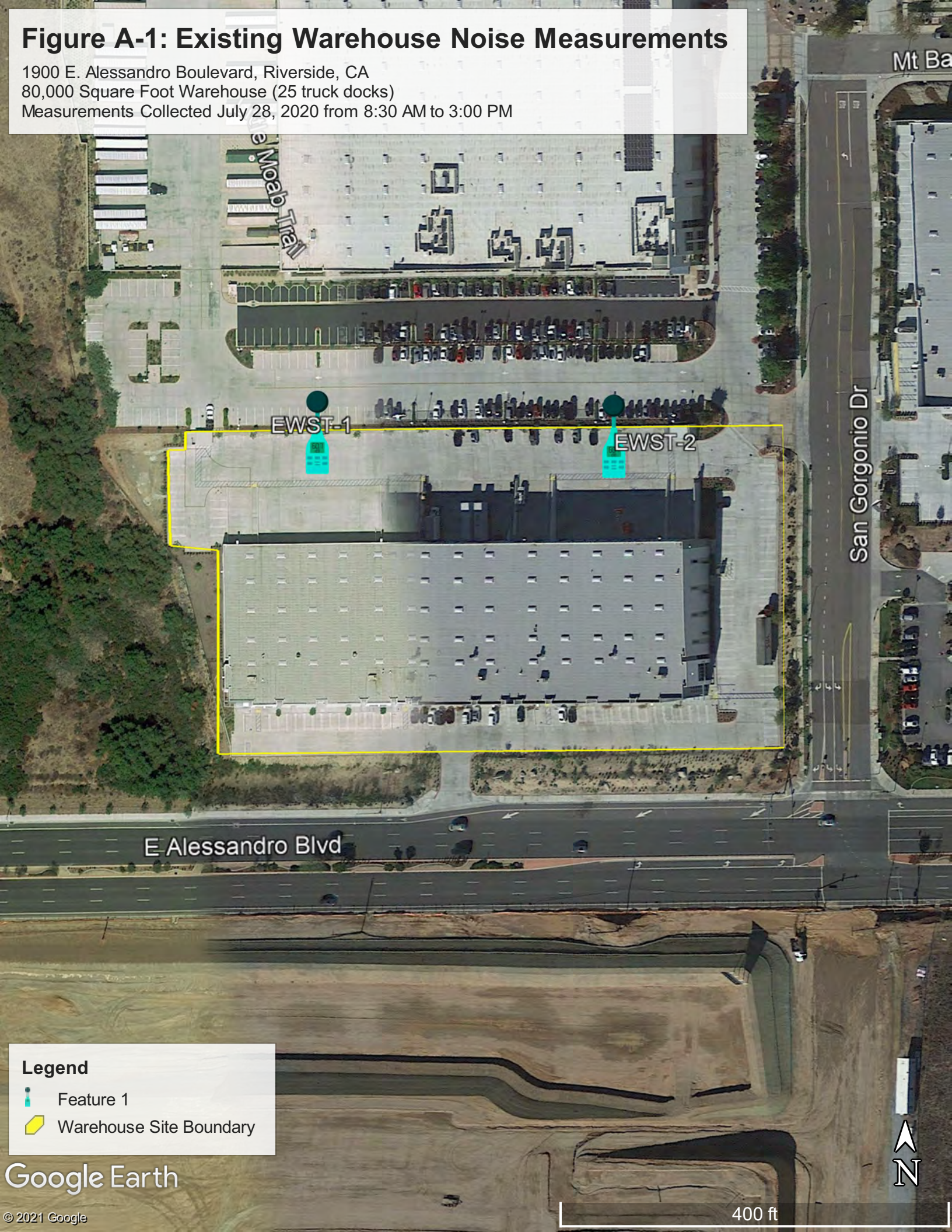
Calibration History

Preamp	Date	dB re. 1V/Pa
Direct	2020-01-28 06:13:43	-26.38
Direct	2020-01-27 13:00:51	-29.00
PRMLxT1L	2022-11-14 15:50:53	-29.09
PRMLxT1L	2022-11-14 08:53:02	-29.09
PRMLxT1L	2022-11-01 14:14:15	-28.88
PRMLxT1L	2022-10-24 13:16:14	-28.86
PRMLxT1L	2022-10-24 13:05:10	-29.00
PRMLxT1L	2022-10-24 11:26:14	-26.38
PRMLxT1L	2022-08-12 08:38:35	-29.00
PRMLxT1L	2022-06-08 13:51:13	-28.95
PRMLxT1L	2022-06-08 09:10:17	-28.96
PRMLxT1L	2022-06-07 14:08:23	-28.97
PRMLxT1L	2022-06-07 08:48:30	-29.00
Unknown	2019-12-01 17:09:04	-28.99

Note: Detailed calibration records available upon request.

Figure A-1: Existing Warehouse Noise Measurements

1900 E. Alessandro Boulevard, Riverside, CA
80,000 Square Foot Warehouse (25 truck docks)
Measurements Collected July 28, 2020 from 8:30 AM to 3:00 PM



Summary of Measured Noise Levels at Existing Warehouse/Business Park

TABLE 1: SUMMARY OF EAST ALESSANDRO BOULEVARD WAREHOUSE ST-1 NOISE MONITORING DATA											
Date	Time	Duration	Leq	Lmin	Lmax	L(1.6)	L(8.3)	L(25)	L(50)	L(66.6)	L(90)
7/28/2020	8:30 AM	30 minutes	63.0	44.7	82.0	71.5	66.2	62.9	60.5	59.6	58.4
7/28/2020	9:00 AM	1-hour	65.5	43.1	88.5	73.6	69.3	64.9	62.7	62.1	61.2
7/28/2020	10:00 AM	1-hour	61.1	43.3	81.3	69.0	65.4	62.9	56.2	54.4	52.8
7/28/2020	11:00 AM	1-hour	55.2	42.9	79.1	64.4	60.1	54.4	50.2	48.8	47.3
7/28/2020	12:00 PM	1-hour	60.4	43.3	84.2	69.5	63.1	60.1	57.6	56.4	55.3
7/28/2020	1:00 PM	1-hour	64.8	45.4	80.6	71.4	67.7	64.9	63.5	62.6	61.6
7/28/2020	2:00 PM	1-hour	62.9	45.5	86.7	72.3	66.3	62.0	59.6	58.4	56.2
	Daytime (7 AM to 7 PM)		*62.8*	*42.9*	*88.5*	*71.0*	*66.2*	*62.7*	*60.2*	*59.2*	*58.1*

TABLE 2: SUMMARY OF EAST ALESSANDRO BOULEVARD WAREHOUSE ST-2 NOISE MONITORING DATA											
Date	Time	Duration	Leq	Lmin	Lmax	L(1.6)	L(8.3)	L(25)	L(50)	L(66.6)	L(90)
7/28/2020	8:50 AM	10 minutes	54.8	44.7	74.2	65.0	60.3	52.0	48.8	47.9	47.1
7/28/2020	9:00 AM	1-hour	63.1	42.1	89.0	73.0	68.2	61.4	57.6	56.3	55.2
7/28/2020	10:00 AM	1-hour	57.0	42.7	79.5	65.2	61.7	56.8	53.1	51.5	50.4
7/28/2020	11:00 AM	1-hour	55.8	41.9	78.0	64.0	60.9	55.4	51.7	49.7	47.1
7/28/2020	12:00 PM	1-hour	59.4	43.0	81.7	68.2	65.3	58.2	54.5	53.0	51.5
7/28/2020	1:00 PM	1-hour	62.4	46.0	89.6	73.0	67.1	60.2	56.2	55.1	54.2
7/28/2020	2:00 PM	1-hour	60.1	45.3	78.2	67.3	64.6	61.2	57.3	56.1	51.2
	Daytime (7 AM to 7 PM)		*59.9*	*41.9*	*89.6*	*69.4*	*64.9*	*58.9*	*55.1*	*53.7*	*51.9*

Summary

File Name on Meter	Lxt_Data.002
File Name on PC	SLM_0005065_Lxt_Data_002.00.ldbin
Serial Number	0005065
Model	SoundTrack LxT®
Firmware Version	2.402
User	
Location	
Job Description	
Note	

Measurement

Description	1_1900 Alessandro - Industrial Site Ambient Noise Monitoring
Start	2020-07-28 08:30:00
Stop	2020-07-28 15:00:11
Duration	06:30:11.3
Run Time	06:30:11.3
Pause	00:00:00.0
Pre Calibration	2020-07-28 08:20:56
Post Calibration	2020-07-28 15:01:21
Calibration Deviation	-0.19 dB

Overall Settings

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamp	PRMLxT1L
Microphone Correction	Off
Integration Method	Exponential
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Freq. Weighting	A Weighting
OBA Max Spectrum	At LMax
Overload	122.1 dB

	A	**C**	**Z**
Under Range Peak	**78.7**	75.7	80.7 dB
Under Range Limit	**25.2**	25.8	31.4 dB
Noise Floor	16.1	16.7	22.3 dB

Results

LASeq	62.8 dB	
LASE	106.4 dB	
EAS	4.902 mPa²h	
EAS8	6.030 mPa²h	
EAS40	30.150 mPa²h	
LASpeak (max)	2020-07-28 09:21:31	105.9 dB
LASmax	2020-07-28 09:21:32	88.5 dB
LASmin	2020-07-28 11:14:26	42.9 dB
SEA	-99.9 dB	

LAS > 120.0 dB (Exceedance Counts / Duration)	0	0.0 s
LAS > 120.0 dB (Exceedance Counts / Duration)	0	0.0 s
LASpeak > 120.0 dB (Exceedance Counts / Duration)	0	0.0 s
LASpeak > 140.0 dB (Exceedance Counts / Duration)	0	0.0 s
LASpeak > 140.0 dB (Exceedance Counts / Duration)	0	0.0 s

Community Noise	**Ldn**	**LDay 07:00-22:00**	**22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**19:00-22:00**	**22:00-07:00**	
	62.8	62.8	-99.9	62.8	62.8	-99.9	-99.9	dB

LCSeq	71.7	dB
LASeq	62.8	dB
LCSeq - LASeq	9.0	dB
LAIeq	66.2	dB
LAeq	62.8	dB
LAIeq - LAeq	3.4	dB

	A		**C**		**Z**	
	dB	**Time Stamp**	**dB**	**Time Stamp**	**dB**	**Time Stamp**
Leq	62.8					
LS(max)	88.5	2020/07/28 9:21:32				
LS(min)	42.9	2020/07/28 11:14:26				
LPeak(max)	105.9	2020/07/28 9:21:31				

# Overloads	0	
Overload Duration	0.0	s
# OBA Overloads	0	
OBA Overload Duration	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	-99.9	0.04	%
Projected Dose	-99.9	0.06	%
TWA (Projected)	-99.9	35.9	dB
TWA (t)	-99.9	34.4	dB
Lep (t)	61.9	61.9	dB

Statistics

LAS1.66	72.3	dB
LAS8.33	65.2	dB
LAS25.00	62.2	dB
LAS50.00	53.3	dB
LAS66.66	50.2	dB
LAS90.00	46.7	dB

Calibration History

Preamp	**Date**	**dB re. 1V/Pa**
Direct	2020-01-28 06:05:01	-28.5
PRMLxT1L	2020-07-28 15:01:19	-28.4
PRMLxT1L	2020-07-28 08:20:53	-28.2
PRMLxT1L	2020-07-28 08:14:12	-28.3
PRMLxT1L	2020-07-27 13:43:14	-28.9
PRMLxT1L	2020-07-26 19:45:35	-28.9
PRMLxT1L	2020-07-26 15:38:13	-28.9
PRMLxT1L	2020-07-25 19:09:22	-28.3
PRMLxT1L	2020-07-24 17:12:03	-28.3
PRMLxT1L	2020-07-08 08:30:09	-28.4
PRMLxT1L	2020-04-09 07:57:48	-28.4
PRMLxT1L	2020-02-04 13:33:06	-28.2
Unknown	2018-11-13 08:29:15	-28.3
Unknown	2018-11-05 14:21:01	-28.3
Unknown	2018-06-27 10:46:33	-28.0
Unknown	2018-06-27 10:46:16	-28.0

Summary

File Name on Meter	Lxt_Data.001
File Name on PC	SLM_0003790_Lxt_Data_001.00.ldbin
Serial Number	0003790
Model	SoundExpert® LxT
Firmware Version	2.402
User	
Location	
Job Description	
Note	

Measurement

Description	2_1900 Alessandro - Industrial Site Ambient Noise Monitoring
Start	2020-07-28 08:50:00
Stop	2020-07-28 15:07:51
Duration	06:17:51.8
Run Time	06:17:51.8
Pause	00:00:00.0
Pre Calibration	2020-07-28 08:35:18
Post Calibration	2020-07-28 15:09:12
Calibration Deviation	-0.24 dB

Overall Settings

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamp	PRMLxT1L
Microphone Correction	Off
Integration Method	Exponential
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Freq. Weighting	A Weighting
OBA Max Spectrum	At LMax
Overload	122.7 dB

	A	**C**	**Z**	
Under Range Peak	**79.3**	76.3	81.3	dB
Under Range Limit	**24.3**	25.4	31.6	dB
Noise Floor	15.2	16.3	22.4	dB

Results

LASeq	60.4 dB		
LASE	103.9 dB		
EAS	2.737 mPa^2h		
LASpeak (max)	2020-07-28 13:41:04	108.6	dB
LASmax	2020-07-28 13:41:05	89.6	dB
LASmin	2020-07-28 11:59:53	41.9	dB
SEA	-99.9 dB		

LAS > 120.0 dB (Exceedance Counts / Duration)	0	0.0 s
LAS > 120.0 dB (Exceedance Counts / Duration)	0	0.0 s
LASpeak > 120.0 dB (Exceedance Counts / Duration)	0	0.0 s
LASpeak > 140.0 dB (Exceedance Counts / Duration)	0	0.0 s
LASpeak > 140.0 dB (Exceedance Counts / Duration)	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**	
	60.4	60.4	-99.9	60.4	60.4	-99.9	-99.9	dB

LCSeq	71.9	dB
LASeq	60.4	dB
LCSeq - LASeq	11.5	dB
LAIeq	63.4	dB
LAeq	60.4	dB
LAIeq - LAeq	3.1	dB

	A		**C**		**Z**	
	dB	**Stamp**	**dB**	**Stamp**	**dB**	**Stamp**
Leq	60.4					
LS(max)	89.6	2020/07/2				
LS(min)	41.9	2020/07/2				
LPeak(max)	108.6	2020/07/2				

# Overloads	0	
Overload Duration	0.0	s
# OBA Overloads	0	
OBA Overload Duration	0.0	s

Statistics

LAS1.66	69.5	dB
LAS8.33	61.5	dB
LAS25.00	55.9	dB
LAS50.00	51.7	dB
LAS66.66	49.7	dB
LAS90.00	46.6	dB

Calibration History

Preamp	Date	dB re. 1V/Pa
Direct	2020-01-28 06:13:43	-26.4
Direct	2020-01-27 13:00:51	-29.0
PRMLxT1L	2020-07-28 15:09:11	-29.0
PRMLxT1L	2020-07-28 08:35:16	-28.7
PRMLxT1L	2020-07-27 16:20:52	-28.3
PRMLxT1L	2020-07-26 15:54:05	-28.2
PRMLxT1L	2020-07-24 17:27:34	-28.8
PRMLxT1L	2020-05-29 07:48:09	-28.8
PRMLxT1L	2020-05-29 07:47:21	-28.8
PRMLxT1L	2020-02-04 13:20:24	-28.8
PRMLxT1L	2020-01-28 06:21:08	-28.7
PRMLxT1L	2020-01-28 05:50:07	-26.4
PRMLxT1L	2020-01-27 15:10:32	-26.4
Unknown	2019-12-01 17:09:04	-29.0

APPENDIX B: Construction Noise and Vibration Estimates

This page was intentionally left blank.

RCNM Input Distances (Maximum Buildout Scenario)

Model Run / CalEEMod Phase	Distance (in Feet) To Modeled Noise Receptor								
	R01	R02	R03	R04	R05	R06	R07	R08	R09
01: Mass Grading									
Site Preparation (Worst Case)	650	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grading (Worst Case)	650	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Site Preparation (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grading (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02: "A" Street									
Site Prepration, Utility, Paving (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
03: IID Substation									
Site Preparation (Worst Case)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paving (Worst Case)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Site Preparation (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Building Construction (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paving (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Architectural Coating (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
04: PA4 Industrial Southwest									
Site Preparation (Worst Case)	--	--	--	--	--	--	580	180	170
Paving (Worst Case)	--	--	--	--	--	--	580	180	170
Site Preparation (Typical)	--	--	--	--	--	--	--	1,250	870
Building Construction (Typical)	--	--	--	--	--	--	--	1,250	870
Paving (Typical)	--	--	--	--	--	--	--	1,250	870
Architectural Coating (Typical)	--	--	--	--	--	--	--	1,250	870
05: PA4 Industrial Southeast									
Site Preparation (Worst Case)	--	545	660	330	25	170	580	170	--
Paving (Worst Case)	--	545	660	330	25	170	580	170	--
Site Preparation (Typical)	--	--	--	--	975	1,120	--	1,150	--
Building Construction (Typical)	--	--	--	--	975	1,120	--	1,150	--
Paving (Typical)	--	--	--	--	975	1,120	--	1,150	--
Architectural Coating (Typical)	--	--	--	--	975	1,120	--	1,150	--
06: MBS PA1 Northwest Residential									
Site Preparation (Worst Case)	650	--	--	--	--	--	N/A	110	N/A
Paving (Worst Case)	650	--	--	--	--	--	N/A	110	N/A
Site Preparation (Typical)	--	--	--	--	--	--	N/A	--	N/A
Building Construction (Typical)	--	--	--	--	--	--	N/A	--	N/A
Paving (Typical)	--	--	--	--	--	--	N/A	--	N/A
Architectural Coating (Typical)	--	--	--	--	--	--	N/A	--	N/A
07: MBS PA1 Northeast and PA 2 Mixed-Use									
Site Preparation (Worst Case)	650	N/A	N/A	100	550	N/A	25	N/A	--
Paving (Worst Case)	650	N/A	N/A	100	550	N/A	25	N/A	--
Site Preparation (Typical)	1,020	N/A	N/A	1,110	1,100	N/A	--	N/A	--
Building Construction (Typical)	1,020	N/A	N/A	1,110	1,100	N/A	--	N/A	--
Paving (Typical)	1,020	N/A	N/A	1,110	1,100	N/A	--	N/A	--
Architectural Coating (Typical)	1,020	N/A	N/A	1,110	1,100	N/A	--	N/A	--
08: MBS PA3 Residential									
Site Preparation (Worst Case)	--	100	565	N/A	N/A	170	--	--	--
Paving (Worst Case)	--	100	565	N/A	N/A	170	--	--	--

Site Preparation (Typical)	--	525	930	N/A	N/A	570	--	--	--
Building Construction (Typical)	--	525	930	N/A	N/A	570	--	--	--
Paving (Typical)	--	525	930	N/A	N/A	570	--	--	--
Architectural Coating (Typical)	--	525	930	N/A	N/A	570	--	--	--

RCNM Predicted Noise Levels (dBA Leq) (Maximum Buildout Scenario)

Model Run / CalEEMod Phase	Predicted Noise Level (dBA Leq) at Modeled Receptor								
	R01	R02	R03	R04	R05	R06	R07	R08	R09
01: Mass Grading									
Site Preparation (Worst Case)	63.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grading (Worst Case)	63.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Site Preparation (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grading (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02: "A" Street									
Site Prepration, Utility, Paving (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
03: IID Substation									
Site Preparation (Worst Case)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paving (Worst Case)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Site Preparation (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Building Construction (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paving (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Architectural Coating (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
04: MBS PA4 Industrial Southwest									
Site Preparation (Worst Case)	--	--	--	--	--	--	64.5	74.7	75.2
Paving (Worst Case)	--	--	--	--	--	--	65.5	75.6	76.1
Site Preparation (Typical)	--	--	--	--	--	--	--	62.5	65.7
Building Construction (Typical)	--	--	--	--	--	--	--	61.3	64.5
Paving (Typical)	--	--	--	--	--	--	--	60.8	64.0
Architectural Coating (Typical)	--	--	--	--	--	--	--	48.1	51.2
05: MBS PA4 Industrial Southeast									
Site Preparation (Worst Case)	--	65.0	63.4	69.4	91.8	75.2	64.5	75.2	--
Paving (Worst Case)	--	66.0	64.3	70.4	92.8	76.1	65.5	76.1	--
Site Preparation (Typical)	--	--	--	--	64.9	63.7	--	63.4	--
Building Construction (Typical)	--	--	--	--	64.5	63.3	--	63.1	--
Paving (Typical)	--	--	--	--	63.0	61.8	--	61.6	--
Architectural Coating (Typical)	--	--	--	--	50.2	49.0	--	48.8	--
06: MBS PA1 Northwest Residential									
Site Preparation (Worst Case)	63.5	--	--	--	--	--	N/A	78.9	N/A
Paving (Worst Case)	64.5	--	--	--	--	--	N/A	79.9	N/A
Site Preparation (Typical)	--	--	--	--	--	--	N/A	--	N/A
Building Construction (Typical)	--	--	--	--	--	--	N/A	--	N/A
Paving (Typical)	--	--	--	--	--	--	N/A	--	N/A
Architectural Coating (Typical)	--	--	--	--	--	--	N/A	--	N/A
07: MBS PA1 Northeast and PA 2 Mixed-Use									
Site Preparation (Worst Case)	63.5	N/A	N/A	79.8	65.0	N/A	91.8	N/A	--
Paving (Worst Case)	64.5	N/A	N/A	80.7	65.9	N/A	92.8	N/A	--
Site Preparation (Typical)	64.1	N/A	N/A	63.3	63.4	N/A	--	N/A	--
Building Construction (Typical)	63.7	N/A	N/A	62.9	63.0	N/A	--	N/A	--
Paving (Typical)	62.6	N/A	N/A	61.9	62.0	N/A	--	N/A	--
Architectural Coating (Typical)	49.8	N/A	N/A	49.1	49.2	N/A	--	N/A	--
08: MBS PA3 Residential									
Site Preparation (Worst Case)	--	79.8	64.7	N/A	N/A	75.2	--	--	--
Paving (Worst Case)	--	80.7	65.7	N/A	N/A	76.1	--	--	--

Site Preparation (Typical)	--	70.2	65.3	N/A	N/A	69.5	--	--	--
Building Construction (Typical)	--	67.8	62.9	N/A	N/A	67.1	--	--	--
Paving (Typical)	--	68.4	63.4	N/A	N/A	67.7	--	--	--
Architectural Coating (Typical)	--	62.5	57.6	N/A	N/A	61.8	--	--	--

RCNM Input Distances (Scenario 2)

Model Run / CalEEMod Phase	Distance (in Feet) To Modeled Noise Receptor								
	R01	R02	R03	R04	R05	R06	R07	R08	R09
01: Mass Grading									
Site Preparation (Worst Case)	650	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grading (Worst Case)	650	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Site Preparation (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grading (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02: "A" Street									
Site Prepration, Utility, Paving (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
03: IID Substation									
Site Preparation (Worst Case)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paving (Worst Case)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Site Preparation (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Building Construction (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paving (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Architectural Coating (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
04: PA4 Industrial Southwest									
Site Preparation (Worst Case)	--	--	--	--	--	--	580	180	170
Paving (Worst Case)	--	--	--	--	--	--	580	180	170
Site Preparation (Typical)	--	--	--	--	--	--	--	1,250	870
Building Construction (Typical)	--	--	--	--	--	--	--	1,250	870
Paving (Typical)	--	--	--	--	--	--	--	1,250	870
Architectural Coating (Typical)	--	--	--	--	--	--	--	1,250	870
05: PA4 Industrial Southeast									
Site Preparation (Worst Case)	--	545	660	330	25	170	580	170	--
Paving (Worst Case)	--	545	660	330	25	170	580	170	--
Site Preparation (Typical)	--	--	--	--	975	1,120	--	1,150	--
Building Construction (Typical)	--	--	--	--	975	1,120	--	1,150	--
Paving (Typical)	--	--	--	--	975	1,120	--	1,150	--
Architectural Coating (Typical)	--	--	--	--	975	1,120	--	1,150	--
09: S2 PA1 Northwest Residential									
Site Preparation (Worst Case)	650	--	--	--	--	--	N/A	110	N/A
Paving (Worst Case)	650	--	--	--	--	--	N/A	110	N/A
Site Preparation (Typical)	--	--	--	--	--	--	N/A	--	N/A
Building Construction (Typical)	--	--	--	--	--	--	N/A	--	N/A
Paving (Typical)	--	--	--	--	--	--	N/A	--	N/A
Architectural Coating (Typical)	--	--	--	--	--	--	N/A	--	N/A
10: S2 PA1 Northeast Residential									
Site Preparation (Worst Case)	650	N/A	N/A	N/A	N/A	N/A	25	N/A	--
Paving (Worst Case)	650	N/A	N/A	N/A	N/A	N/A	25	N/A	--
Site Preparation (Typical)	1,020	N/A	N/A	N/A	N/A	N/A	--	N/A	--
Building Construction (Typical)	1,020	N/A	N/A	N/A	N/A	N/A	--	N/A	--
Paving (Typical)	1,020	N/A	N/A	N/A	N/A	N/A	--	N/A	--
Architectural Coating (Typical)	1,020	N/A	N/A	N/A	N/A	N/A	--	N/A	--
11: S2 PA2 Commercial									
Site Preparation (Worst Case)	1,175	N/A	25	N/A	N/A	350	--	--	--
Paving (Worst Case)	1,175	N/A	25	N/A	N/A	350	--	--	--

Site Preparation (Typical)	--	N/A	150	N/A	N/A	600	--	--	--
Building Construction (Typical)	--	N/A	150	N/A	N/A	600	--	--	--
Paving (Typical)	--	N/A	150	N/A	N/A	600	--	--	--
Architectural Coating (Typical)	--	N/A	150	N/A	N/A	600	--	--	--
12: S2 PA3 Commercial									
Site Preparation (Worst Case)	--	N/A	565	N/A	N/A	170	--	--	--
Paving (Worst Case)	--	N/A	565	N/A	N/A	170	--	--	--
Site Preparation (Typical)	--	N/A	930	N/A	N/A	570	--	--	--
Building Construction (Typical)	--	N/A	930	N/A	N/A	570	--	--	--
Paving (Typical)	--	N/A	930	N/A	N/A	570	--	--	--
Architectural Coating (Typical)	--	N/A	930	N/A	N/A	570	--	--	--

RCNM Predicted Noise Levels (dBA Leq) (Scenario 2)

Model Run / CalEEMod Phase	Predicted Noise Level (dBA Leq) at Modeled Receptor								
	R01	R02	R03	R04	R05	R06	R07	R08	R09
01: Mass Grading									
Site Preparation (Worst Case)	63.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grading (Worst Case)	63.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Site Preparation (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grading (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02: "A" Street									
Site Prepration, Utility, Paving (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
03: IID Substation									
Site Preparation (Worst Case)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paving (Worst Case)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Site Preparation (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Building Construction (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paving (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Architectural Coating (Typical)	--	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
04: PA4 Industrial Southwest									
Site Preparation (Worst Case)	--	--	--	--	--	--	64.5	74.7	75.2
Paving (Worst Case)	--	--	--	--	--	--	65.5	75.6	76.1
Site Preparation (Typical)	--	--	--	--	--	--	--	62.5	65.7
Building Construction (Typical)	--	--	--	--	--	--	--	61.3	64.5
Paving (Typical)	--	--	--	--	--	--	--	60.8	64.0
Architectural Coating (Typical)	--	--	--	--	--	--	--	48.1	51.2
05: PA4 Industrial Southeast									
Site Preparation (Worst Case)	--	65.0	63.4	69.4	91.8	75.2	64.5	75.2	--
Paving (Worst Case)	--	66.0	64.3	70.4	92.8	76.1	65.5	76.1	--
Site Preparation (Typical)	--	--	--	--	64.9	63.7	--	63.4	--
Building Construction (Typical)	--	--	--	--	64.5	63.3	--	63.1	--
Paving (Typical)	--	--	--	--	63.0	61.8	--	61.6	--
Architectural Coating (Typical)	--	--	--	--	50.2	49.0	--	48.8	--
09: S2 PA1 Northwest Residential									
Site Preparation (Worst Case)	63.5	--	--	--	--	--	N/A	78.9	N/A
Paving (Worst Case)	64.5	--	--	--	--	--	N/A	79.9	N/A
Site Preparation (Typical)	--	--	--	--	--	--	N/A	--	N/A
Building Construction (Typical)	--	--	--	--	--	--	N/A	--	N/A
Paving (Typical)	--	--	--	--	--	--	N/A	--	N/A
Architectural Coating (Typical)	--	--	--	--	--	--	N/A	--	N/A
10: S2 PA1 Northeast Residential									
Site Preparation (Worst Case)	63.5	N/A	N/A	N/A	N/A	N/A	91.8	N/A	--
Paving (Worst Case)	64.5	N/A	N/A	N/A	N/A	N/A	92.8	N/A	--
Site Preparation (Typical)	64.5	N/A	N/A	N/A	N/A	N/A	--	N/A	--
Building Construction (Typical)	63.7	N/A	N/A	N/A	N/A	N/A	--	N/A	--
Paving (Typical)	64.5	N/A	N/A	N/A	N/A	N/A	--	N/A	--
Architectural Coating (Typical)	49.8	N/A	N/A	N/A	N/A	N/A	--	N/A	--
11: S2 PA2 Commercial									
Site Preparation (Worst Case)	58.4	N/A	91.8	N/A	N/A	68.9	--	--	--
Paving (Worst Case)	59.3	N/A	92.8	N/A	N/A	69.9	--	--	--

Site Preparation (Typical)	--	N/A	81.1	N/A	N/A	69.1	--	--	--
Building Construction (Typical)	--	N/A	79.9	N/A	N/A	67.8	--	--	--
Paving (Typical)	--	N/A	81.1	N/A	N/A	69.1	--	--	--
Architectural Coating (Typical)	--	N/A	66.5	N/A	N/A	54.4	--	--	--
12: S2 PA3 Commercial									
Site Preparation (Worst Case)	--	N/A	64.7	N/A	N/A	75.2	--	--	--
Paving (Worst Case)	--	N/A	65.7	N/A	N/A	76.1	--	--	--
Site Preparation (Typical)	--	N/A	64.0	N/A	N/A	68.2	--	--	--
Building Construction (Typical)	--	N/A	62.9	N/A	N/A	67.1	--	--	--
Paving (Typical)	--	N/A	64.9	N/A	N/A	69.1	--	--	--
Architectural Coating (Typical)	--	N/A	50.6	N/A	N/A	54.9	--	--	--

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/20/2023
Case Descrip101 Mass Grading: Grading WC

		---- Receptor #1 ----		
		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R01	Residential	63	63	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85		680	0
Grader	No	40	85		680	0
Grader	No	40	85		680	0

		Results							
		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader		62.3	58.3	N/A	N/A	N/A	N/A	N/A	N/A
Grader		62.3	58.3	N/A	N/A	N/A	N/A	N/A	N/A
Grader		62.3	58.3	N/A	N/A	N/A	N/A	N/A	N/A
	Total	62.3	63.1	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 date: 11/20/2023
Case Description: 01 Mass Grading: Site Prep WC

		---- Receptor #1 ----		
		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R01	Residential	63	63	55

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Dozer	No	40	85		680	0
Dozer	No	40	85		680	0
Dozer	No	40	85		680	0

			Results					
		Calculated (dBA)		Noise Limits (dBA)				
			Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		62.3	58.3	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		62.3	58.3	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		62.3	58.3	N/A	N/A	N/A	N/A	N/A	N/A
	Total	62.3	63.1	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 date: 11/20/2023
Case Description: 04 PA4 IndSW SitePrep WC

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R07	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		580	0
Dozer	No	40	85		580	0
Dozer	No	40	85		580	0

		Results							
		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		63.7	59.7	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		63.7	59.7	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		63.7	59.7	N/A	N/A	N/A	N/A	N/A	N/A
	Total	63.7	64.5	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R08	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		180	0
Dozer	No	40	85		180	0
Dozer	No	40	85		180	0

		Results							
		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		73.9	69.9	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		73.9	69.9	N/A	N/A	N/A	N/A	N/A	N/A

Dozer		73.9	69.9	N/A	N/A	N/A	N/A	N/A	N/A
	Total	73.9	74.7	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R09	Residential	65	65	60

			Equipment			
		Spec	Actual	Receptor	Estimated	
	Impact	Lmax	Lmax	Distance	Shielding	
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Dozer	No	40	85		170	0
Dozer	No	40	85		170	0
Dozer	No	40	85		170	0

		Results							
		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		74.4	70.4	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		74.4	70.4	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		74.4	70.4	N/A	N/A	N/A	N/A	N/A	N/A
	Total	74.4	75.2	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 date: 11/20/2023
Case Description: 04 PA4 IndSW Paving WC

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R07	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		580	0
Paver	No	50	85		580	0
Paver	No	50	85		580	0

		Results Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		63.7	60.7	N/A	N/A	N/A	N/A	N/A	N/A
Paver		63.7	60.7	N/A	N/A	N/A	N/A	N/A	N/A
Paver		63.7	60.7	N/A	N/A	N/A	N/A	N/A	N/A
	Total	63.7	65.5	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
R08	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		180	0
Paver	No	50	85		180	0
Paver	No	50	85		180	0

		Results Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		73.9	70.9	N/A	N/A	N/A	N/A	N/A	N/A
Paver		73.9	70.9	N/A	N/A	N/A	N/A	N/A	N/A

Paver		73.9	70.9	N/A	N/A	N/A	N/A	N/A	N/A
	Total	73.9	75.6	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R09	Residential	65	65	60

			Equipment			
	Impact		Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Paver	No	50	85		170	0
Paver	No	50	85		170	0
Paver	No	50	85		170	0

		Results							
		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		74.4	71.4	N/A	N/A	N/A	N/A	N/A	N/A
Paver		74.4	71.4	N/A	N/A	N/A	N/A	N/A	N/A
Paver		74.4	71.4	N/A	N/A	N/A	N/A	N/A	N/A
	Total	74.4	76.1	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 date: 11/20/2023
Case Description: 04 PA4 IndSW SitePrep TYP

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R07	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		9999	0
Dozer	No	40	85		9999	0
Dozer	No	40	85		9999	0
Tractor	No	40	84		9999	0
Backhoe	No	40	80		9999	0
Tractor	No	40	84		9999	0
Dump Truck	No	40	84		9999	0
Dump Truck	No	40	84		9999	0
Dump Truck	No	40	84		9999	0
Dump Truck	No	40	84		9999	0
Dump Truck	No	40	84		9999	0

		Results							
		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		39	35	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		39	35	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		39	35	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		38	34	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		34	30	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		38	34	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		38	34	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		38	34	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		38	34	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		38	34	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		38	34	N/A	N/A	N/A	N/A	N/A	N/A
	Total	39	44.5	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night

R08	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		1250	0
Dozer	No	40	85		1250	0
Dozer	No	40	85		1250	0
Tractor	No	40	84		1250	0
Backhoe	No	40	80		1250	0
Tractor	No	40	84		1250	0
Dump Truck	No	40	84		1250	0
Dump Truck	No	40	84		1250	0
Dump Truck	No	40	84		1250	0
Dump Truck	No	40	84		1250	0
Dump Truck	No	40	84		1250	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	57	53.1	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	57	53.1	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	57	53.1	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	56	52.1	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	52	48.1	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	56	52.1	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	56	52.1	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	56	52.1	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	56	52.1	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	56	52.1	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	56	52.1	N/A	N/A	N/A	N/A	N/A	N/A
Total	57	62.5	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R09	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		870	0
Dozer	No	40	85		870	0

Dozer	No	40	85	870	0
Tractor	No	40	84	870	0
Backhoe	No	40	80	870	0
Tractor	No	40	84	870	0
Dump Truck	No	40	84	870	0
Dump Truck	No	40	84	870	0
Dump Truck	No	40	84	870	0
Dump Truck	No	40	84	870	0
Dump Truck	No	40	84	870	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	60.2	56.2	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	60.2	56.2	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	60.2	56.2	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	59.2	55.2	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	55.2	51.2	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	59.2	55.2	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	59.2	55.2	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	59.2	55.2	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	59.2	55.2	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	59.2	55.2	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	59.2	55.2	N/A	N/A	N/A	N/A	N/A	N/A
Total	60.2	65.7	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 date: 11/20/2023
Case Description: 04 PA4 IndSW BuildConst TYP

				---- Receptor #1 ----
		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R07	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		9999	0
Backhoe	No	40	80		9999	0
Tractor	No	40	84		9999	0
Dump Truck	No	40	84		9999	0
Dump Truck	No	40	84		9999	0
Dump Truck	No	40	84		9999	0
Dump Truck	No	40	84		9999	0
Dump Truck	No	40	84		9999	0
Welder / Torch	No	40		74	9999	0
Generator	No	50		80.6	9999	0
Man Lift	No	20		74.7	9999	0
Man Lift	No	20		74.7	9999	0
Man Lift	No	20		74.7	9999	0
Crane	No	16		80.6	9999	0

			Results					
	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	38	34	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	34	30	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	38	34	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	38	34	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	38	34	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	38	34	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	38	34	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	38	34	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	28	24	N/A	N/A	N/A	N/A	N/A	N/A
Generator	34.6	31.6	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	28.7	21.7	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	28.7	21.7	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	28.7	21.7	N/A	N/A	N/A	N/A	N/A	N/A
Crane	34.5	26.6	N/A	N/A	N/A	N/A	N/A	N/A

	Total	38	43.3	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R08	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		1250	0
Backhoe	No	40	80		1250	0
Tractor	No	40	84		1250	0
Dump Truck	No	40	84		1250	0
Dump Truck	No	40	84		1250	0
Dump Truck	No	40	84		1250	0
Dump Truck	No	40	84		1250	0
Dump Truck	No	40	84		1250	0
Welder / Torch	No	40		74	1250	0
Generator	No	50		80.6	1250	0
Man Lift	No	20		74.7	1250	0
Man Lift	No	20		74.7	1250	0
Man Lift	No	20		74.7	1250	0
Crane	No	16		80.6	1250	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	56	52.1	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	52	48.1	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	56	52.1	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	56	52.1	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	56	52.1	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	56	52.1	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	56	52.1	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	56	52.1	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	46	42.1	N/A	N/A	N/A	N/A	N/A	N/A
Generator	52.7	49.7	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	46.7	39.8	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	46.7	39.8	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	46.7	39.8	N/A	N/A	N/A	N/A	N/A	N/A
Crane	52.6	44.6	N/A	N/A	N/A	N/A	N/A	N/A
Total	56	61.3	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
R09	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		870	0
Backhoe	No	40	80		870	0
Tractor	No	40	84		870	0
Dump Truck	No	40	84		870	0
Dump Truck	No	40	84		870	0
Dump Truck	No	40	84		870	0
Dump Truck	No	40	84		870	0
Dump Truck	No	40	84		870	0
Welder / Torch	No	40		74	870	0
Generator	No	50		80.6	870	0
Man Lift	No	20		74.7	870	0
Man Lift	No	20		74.7	870	0
Man Lift	No	20		74.7	870	0
Crane	No	16		80.6	870	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Tractor	59.2	55.2	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	55.2	51.2	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	59.2	55.2	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	59.2	55.2	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	59.2	55.2	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	59.2	55.2	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	59.2	55.2	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	59.2	55.2	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	49.2	45.2	N/A	N/A	N/A	N/A	N/A	N/A
Generator	55.8	52.8	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	49.9	42.9	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	49.9	42.9	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	49.9	42.9	N/A	N/A	N/A	N/A	N/A	N/A
Crane	55.7	47.8	N/A	N/A	N/A	N/A	N/A	N/A
Total	59.2	64.5	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 date: 11/20/2023
Case Description: 04 PA4 IndSW Paving TYP

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R07	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		9999	0
Paver	No	50	85		9999	0
Paver	No	50	85		9999	0
Paver	No	50	85		9999	0
Roller	No	20	85		9999	0
Roller	No	20	85		9999	0

Results

		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		39	36	N/A	N/A	N/A	N/A	N/A	N/A
Paver		39	36	N/A	N/A	N/A	N/A	N/A	N/A
Paver		39	36	N/A	N/A	N/A	N/A	N/A	N/A
Paver		39	36	N/A	N/A	N/A	N/A	N/A	N/A
Roller		39	32	N/A	N/A	N/A	N/A	N/A	N/A
Roller		39	32	N/A	N/A	N/A	N/A	N/A	N/A
	Total	39	42.8	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
R08	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		1250	0
Paver	No	50	85		1250	0
Paver	No	50	85		1250	0
Paver	No	50	85		1250	0

Roller	No	20	85	1250	0
Roller	No	20	85	1250	0

Results

		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		57	54	N/A	N/A	N/A	N/A	N/A	N/A
Paver		57	54	N/A	N/A	N/A	N/A	N/A	N/A
Paver		57	54	N/A	N/A	N/A	N/A	N/A	N/A
Paver		57	54	N/A	N/A	N/A	N/A	N/A	N/A
Roller		57	50.1	N/A	N/A	N/A	N/A	N/A	N/A
Roller		57	50.1	N/A	N/A	N/A	N/A	N/A	N/A
	Total	57	60.8	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R09	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		870	0
Paver	No	50	85		870	0
Paver	No	50	85		870	0
Paver	No	50	85		870	0
Roller	No	20	85		870	0
Roller	No	20	85		870	0

Results

		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		60.2	57.2	N/A	N/A	N/A	N/A	N/A	N/A
Paver		60.2	57.2	N/A	N/A	N/A	N/A	N/A	N/A
Paver		60.2	57.2	N/A	N/A	N/A	N/A	N/A	N/A
Paver		60.2	57.2	N/A	N/A	N/A	N/A	N/A	N/A
Roller		60.2	53.2	N/A	N/A	N/A	N/A	N/A	N/A
Roller		60.2	53.2	N/A	N/A	N/A	N/A	N/A	N/A
	Total	60.2	64	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 date: 11/20/2023
Case Description: 04 PA4 IndSW ArchCoat TYP

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R07	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40	80		9999	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Compressor (air)	34	30	N/A	N/A	N/A	N/A	N/A	N/A
Total	34	30	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
R08	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40	80		1250	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Compressor (air)	52	48.1	N/A	N/A	N/A	N/A	N/A	N/A
Total	52	48.1	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
R09	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40	80		870	0

	Calculated (dBA)		Results					
			Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	55.2	51.2	N/A	N/A	N/A	N/A	N/A	N/A
Total	55.2	51.2	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 date: 11/20/2023
Case Description: 05 PA4 IndSE SitePrep WC

				---- Receptor #7 ----
		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R08	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		170	0
Dozer	No	40	85		170	0
Dozer	No	40	85		170	0

		Results							
		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		74.4	70.4	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		74.4	70.4	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		74.4	70.4	N/A	N/A	N/A	N/A	N/A	N/A
	Total	74.4	75.2	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 date: 11/20/2023
Case Description: 05 PA4 IndSE Paving WC

---- Receptor #7 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R08	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		170	0
Paver	No	50	85		170	0
Paver	No	50	85		170	0

		Results Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		74.4	71.4	N/A	N/A	N/A	N/A	N/A	N/A
Paver		74.4	71.4	N/A	N/A	N/A	N/A	N/A	N/A
Paver		74.4	71.4	N/A	N/A	N/A	N/A	N/A	N/A
	Total	74.4	76.1	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 Descr 05 PA4 IndSE SitePrep TYP

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R02	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		99999	0
Dozer	No	40	85		99999	0
Dozer	No	40	85		99999	0
Tractor	No	40	84		99999	0
Backhoe	No	40	80		99999	0
Tractor	No	40	84		99999	0
Backhoe	No	40	80		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	19	15	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	19	15	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	19	15	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	14	10	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	14	10	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Total	19	20.7	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R03	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		99999	0
Dozer	No	40	85		99999	0
Dozer	No	40	85		99999	0
Tractor	No	40	84		99999	0
Backhoe	No	40	80		99999	0
Tractor	No	40	84		99999	0
Backhoe	No	40	80		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0

	Calculated (dBA)		Results		Noise Limits (dBA)			
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	19	15	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	19	15	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	19	15	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	14	10	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	14	10	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Total	19	20.7	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R04	Residential	65	65	60

			Equipment Spec	Actual	Receptor	Estimated

Description	Impact Device	Usage(%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Dozer	No	40	85		99999	0
Dozer	No	40	85		99999	0
Dozer	No	40	85		99999	0
Tractor	No	40	84		99999	0
Backhoe	No	40	80		99999	0
Tractor	No	40	84		99999	0
Backhoe	No	40	80		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	19	15	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	19	15	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	19	15	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	14	10	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	14	10	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Total	19	20.7	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
R05	Residential	65	65	60

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		975	0
Dozer	No	40	85		975	0
Dozer	No	40	85		975	0
Tractor	No	40	84		975	0

Backhoe	No	40	80	975	0
Tractor	No	40	84	975	0
Backhoe	No	40	80	975	0
Dump Truck	No	40	84	975	0
Dump Truck	No	40	84	975	0
Dump Truck	No	40	84	975	0
Dump Truck	No	40	84	975	0
Dump Truck	No	40	84	975	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	59.2	55.2	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	59.2	55.2	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	59.2	55.2	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	58.2	54.2	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	54.2	50.2	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	58.2	54.2	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	54.2	50.2	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	58.2	54.2	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	58.2	54.2	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	58.2	54.2	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	58.2	54.2	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	58.2	54.2	N/A	N/A	N/A	N/A	N/A	N/A
Total	59.2	64.9	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
R06	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		1120	0
Dozer	No	40	85		1120	0
Dozer	No	40	85		1120	0
Tractor	No	40	84		1120	0
Backhoe	No	40	80		1120	0
Tractor	No	40	84		1120	0
Backhoe	No	40	80		1120	0
Dump Truck	No	40	84		1120	0
Dump Truck	No	40	84		1120	0
Dump Truck	No	40	84		1120	0

Dump Truck	No	40	84	1120	0	
Dump Truck	No	40	84	1120	0	

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	58	54	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	58	54	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	58	54	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	57	53	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	53	49	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	57	53	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	53	49	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	57	53	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	57	53	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	57	53	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	57	53	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	57	53	N/A	N/A	N/A	N/A	N/A	N/A
Total	58	63.7	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
R07	Residential	65	65	60

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		99999	0
Dozer	No	40	85		99999	0
Dozer	No	40	85		99999	0
Tractor	No	40	84		99999	0
Backhoe	No	40	80		99999	0
Tractor	No	40	84		99999	0
Backhoe	No	40	80		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0

Results

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

Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	19	15	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	19	15	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	19	15	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	14	10	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	14	10	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Total	19	20.7	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
R08	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		1150	0
Dozer	No	40	85		1150	0
Dozer	No	40	85		1150	0
Tractor	No	40	84		1150	0
Backhoe	No	40	80		1150	0
Tractor	No	40	84		1150	0
Backhoe	No	40	80		1150	0
Dump Truck	No	40	84		1150	0
Dump Truck	No	40	84		1150	0
Dump Truck	No	40	84		1150	0
Dump Truck	No	40	84		1150	0
Dump Truck	No	40	84		1150	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*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
Dozer	57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	56.8	52.8	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	52.8	48.8	N/A	N/A	N/A	N/A	N/A	N/A

Tractor	56.8	52.8	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	52.8	48.8	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	56.8	52.8	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	56.8	52.8	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	56.8	52.8	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	56.8	52.8	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	56.8	52.8	N/A	N/A	N/A	N/A	N/A	N/A
Total	57.8	63.4	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 date: 11/20/2023
Case Description: 05 PA4 IndSE BuildConst TYP

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R02	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		99999	0
Backhoe	No	40	80		99999	0
Tractor	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Welder / Torch	No	40	73		99999	0
Generator	No	50	82		99999	0
Man Lift	No	20	85		99999	0
Man Lift	No	20	85		99999	0
Man Lift	No	20	85		99999	0
Crane	No	16	85		99999	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
			Noise Limits (dBA)					
Tractor	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	14	10	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	19	16	N/A	N/A	N/A	N/A	N/A	N/A
Generator	19	16	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	19	16	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	19	12	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	19	12	N/A	N/A	N/A	N/A	N/A	N/A
Crane	14	10	N/A	N/A	N/A	N/A	N/A	N/A

	Total	19	20.7	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R03	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		99999	0
Backhoe	No	40	80		99999	0
Tractor	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Welder / Torch	No	40	73		99999	0
Generator	No	50	82		99999	0
Man Lift	No	20	85		99999	0
Man Lift	No	20	85		99999	0
Man Lift	No	20	85		99999	0
Crane	No	16	85		99999	0

		Calculated (dBA)		Results Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor		18	14	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		14	10	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		18	14	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch		19	16	N/A	N/A	N/A	N/A	N/A	N/A
Generator		19	16	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift		19	16	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift		19	12	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift		19	12	N/A	N/A	N/A	N/A	N/A	N/A
Crane		14	10	N/A	N/A	N/A	N/A	N/A	N/A
	Total	19	20.7	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
R04	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		99999	0
Backhoe	No	40	80		99999	0
Tractor	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Welder / Torch	No	40	73		99999	0
Generator	No	50	82		99999	0
Man Lift	No	20	85		99999	0
Man Lift	No	20	85		99999	0
Man Lift	No	20	85		99999	0
Crane	No	16	85		99999	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Tractor	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	14	10	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	19	16	N/A	N/A	N/A	N/A	N/A	N/A
Generator	19	16	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	19	16	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	19	12	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	19	12	N/A	N/A	N/A	N/A	N/A	N/A
Crane	14	10	N/A	N/A	N/A	N/A	N/A	N/A
Total	19	20.7	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
R05	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		975	0
Backhoe	No	40	80		975	0
Tractor	No	40	84		975	0
Dump Truck	No	40	84		975	0
Dump Truck	No	40	84		975	0
Dump Truck	No	40	84		975	0
Dump Truck	No	40	84		975	0
Dump Truck	No	40	84		975	0
Welder / Torch	No	40	73		975	0
Generator	No	50	82		975	0
Man Lift	No	20	85		975	0
Man Lift	No	20	85		975	0
Man Lift	No	20	85		975	0
Crane	No	16	85		975	0

		Results							
		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor		58.2	54.2	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		54.2	50.2	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		58.2	54.2	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		58.2	54.2	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		58.2	54.2	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		58.2	54.2	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		58.2	54.2	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		58.2	54.2	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch		47.2	43.2	N/A	N/A	N/A	N/A	N/A	N/A
Generator		56.2	53.2	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift		59.2	52.2	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift		59.2	52.2	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift		59.2	52.2	N/A	N/A	N/A	N/A	N/A	N/A
Crane		59.2	51.2	N/A	N/A	N/A	N/A	N/A	N/A
	Total	59.2	64.5	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

R06	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		1120	0
Backhoe	No	40	80		1120	0
Tractor	No	40	84		1120	0
Dump Truck	No	40	84		1120	0
Dump Truck	No	40	84		1120	0
Dump Truck	No	40	84		1120	0
Dump Truck	No	40	84		1120	0
Dump Truck	No	40	84		1120	0
Welder / Torch	No	40	73		1120	0
Generator	No	50	82		1120	0
Man Lift	No	20	85		1120	0
Man Lift	No	20	85		1120	0
Man Lift	No	20	85		1120	0
Crane	No	16	85		1120	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	57	53	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	53	49	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	57	53	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	57	53	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	57	53	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	57	53	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	57	53	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	57	53	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	58	55	N/A	N/A	N/A	N/A	N/A	N/A
Generator	58	55	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	58	55	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	58	51	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	58	51	N/A	N/A	N/A	N/A	N/A	N/A
Crane	53	49	N/A	N/A	N/A	N/A	N/A	N/A
Total	53	49	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
R07	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		99999	0
Backhoe	No	40	80		99999	0
Tractor	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Welder / Torch	No	40	73		99999	0
Generator	No	50	82		99999	0
Man Lift	No	20	85		99999	0
Man Lift	No	20	85		99999	0
Man Lift	No	20	85		99999	0
Crane	No	16	85		99999	0

Results

		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor		18	14	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		14	10	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		18	14	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch		19	16	N/A	N/A	N/A	N/A	N/A	N/A
Generator		19	16	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift		19	16	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift		19	12	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift		19	12	N/A	N/A	N/A	N/A	N/A	N/A
Crane		14	10	N/A	N/A	N/A	N/A	N/A	N/A
	Total	19	20.7	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
R08	Residential	65	65	60

	Equipment Spec	Actual	Receptor	Estimated

Description	Impact Device	Usage(%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Tractor	No	40	84		1150	0
Backhoe	No	40	80		1150	0
Tractor	No	40	84		1150	0
Dump Truck	No	40	84		1150	0
Dump Truck	No	40	84		1150	0
Dump Truck	No	40	84		1150	0
Dump Truck	No	40	84		1150	0
Dump Truck	No	40	84		1150	0
Welder / Torch	No	40	73		1150	0
Generator	No	50	82		1150	0
Man Lift	No	20	85		1150	0
Man Lift	No	20	85		1150	0
Man Lift	No	20	85		1150	0
Crane	No	16	85		1150	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	56.8	52.8	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	52.8	48.8	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	56.8	52.8	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	56.8	52.8	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	56.8	52.8	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	56.8	52.8	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	56.8	52.8	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	56.8	52.8	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	57.8	54.8	N/A	N/A	N/A	N/A	N/A	N/A
Generator	57.8	54.8	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	57.8	54.8	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	57.8	50.8	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	57.8	50.8	N/A	N/A	N/A	N/A	N/A	N/A
Crane	52.8	48.8	N/A	N/A	N/A	N/A	N/A	N/A
Total	52.8	48.8	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 date: 11/20/2023
Case Description: 05 PA4 IndSE Paving TYP

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R02	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		99999	0
Paver	No	50	85		99999	0
Paver	No	50	85		99999	0
Paver	No	50	85		99999	0
Roller	No	20	85		99999	0
Roller	No	20	85		99999	0

		Results							
		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		19	16	N/A	N/A	N/A	N/A	N/A	N/A
Paver		19	16	N/A	N/A	N/A	N/A	N/A	N/A
Paver		19	16	N/A	N/A	N/A	N/A	N/A	N/A
Paver		19	16	N/A	N/A	N/A	N/A	N/A	N/A
Roller		19	12	N/A	N/A	N/A	N/A	N/A	N/A
Roller		19	12	N/A	N/A	N/A	N/A	N/A	N/A
	Total	19	20.7	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R03	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		99999	0
Paver	No	50	85		99999	0
Paver	No	50	85		99999	0
Paver	No	50	85		99999	0

Roller	No	20	85	99999	0
Roller	No	20	85	99999	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	19	16	N/A	N/A	N/A	N/A	N/A	N/A
Paver	19	16	N/A	N/A	N/A	N/A	N/A	N/A
Paver	19	16	N/A	N/A	N/A	N/A	N/A	N/A
Paver	19	16	N/A	N/A	N/A	N/A	N/A	N/A
Roller	19	12	N/A	N/A	N/A	N/A	N/A	N/A
Roller	19	12	N/A	N/A	N/A	N/A	N/A	N/A
Total	19	20.7	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
R04	Residential	65	65	60

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		99999	0
Paver	No	50	85		99999	0
Paver	No	50	85		99999	0
Paver	No	50	85		99999	0
Roller	No	20	85		99999	0
Roller	No	20	85		99999	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	19	16	N/A	N/A	N/A	N/A	N/A	N/A
Paver	19	16	N/A	N/A	N/A	N/A	N/A	N/A
Paver	19	16	N/A	N/A	N/A	N/A	N/A	N/A
Paver	19	16	N/A	N/A	N/A	N/A	N/A	N/A
Roller	19	12	N/A	N/A	N/A	N/A	N/A	N/A
Roller	19	12	N/A	N/A	N/A	N/A	N/A	N/A
Total	19	20.7	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
R05	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		975	0
Paver	No	50	85		975	0
Paver	No	50	85		975	0
Paver	No	50	85		975	0
Roller	No	20	85		975	0
Roller	No	20	85		975	0

Results

		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		59.2	56.2	N/A	N/A	N/A	N/A	N/A	N/A
Paver		59.2	56.2	N/A	N/A	N/A	N/A	N/A	N/A
Paver		59.2	56.2	N/A	N/A	N/A	N/A	N/A	N/A
Paver		59.2	56.2	N/A	N/A	N/A	N/A	N/A	N/A
Roller		59.2	52.2	N/A	N/A	N/A	N/A	N/A	N/A
Roller		59.2	52.2	N/A	N/A	N/A	N/A	N/A	N/A
	Total	59.2	63	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	
R06	Residential	65	65	60	

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		1120	0
Paver	No	50	85		1120	0
Paver	No	50	85		1120	0
Paver	No	50	85		1120	0
Roller	No	20	85		1120	0
Roller	No	20	85		1120	0

Results

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

Paver		58	55	N/A	N/A	N/A	N/A	N/A	N/A
Paver		58	55	N/A	N/A	N/A	N/A	N/A	N/A
Paver		58	55	N/A	N/A	N/A	N/A	N/A	N/A
Paver		58	55	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
Roller		58	51	N/A	N/A	N/A	N/A	N/A	N/A
	Total	58	61.8	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
R07	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		99999	0
Paver	No	50	85		99999	0
Paver	No	50	85		99999	0
Paver	No	50	85		99999	0
Roller	No	20	85		99999	0
Roller	No	20	85		99999	0

			Results					
	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	19	16	N/A	N/A	N/A	N/A	N/A	N/A
Paver	19	16	N/A	N/A	N/A	N/A	N/A	N/A
Paver	19	16	N/A	N/A	N/A	N/A	N/A	N/A
Paver	19	16	N/A	N/A	N/A	N/A	N/A	N/A
Roller	19	12	N/A	N/A	N/A	N/A	N/A	N/A
Roller	19	12	N/A	N/A	N/A	N/A	N/A	N/A
Total	19	20.7	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
R08	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)

Paver	No	50	85	1150	0
Paver	No	50	85	1150	0
Paver	No	50	85	1150	0
Paver	No	50	85	1150	0
Roller	No	20	85	1150	0
Roller	No	20	85	1150	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	57.8	54.8	N/A	N/A	N/A	N/A	N/A	N/A
Paver	57.8	54.8	N/A	N/A	N/A	N/A	N/A	N/A
Paver	57.8	54.8	N/A	N/A	N/A	N/A	N/A	N/A
Paver	57.8	54.8	N/A	N/A	N/A	N/A	N/A	N/A
Roller	57.8	50.8	N/A	N/A	N/A	N/A	N/A	N/A
Roller	57.8	50.8	N/A	N/A	N/A	N/A	N/A	N/A
Total	57.8	61.6	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 date: 11/20/2023
Case Description: 05 PA4 IndSE ArchCoat TYP

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R02	Residential	65	65	60

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Compressor (air)	No	40	80		99999	0

		Results					
	Calculated (dBA)		Noise Limits (dBA)				
		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	14	10	N/A	N/A	N/A	N/A	N/A	N/A
Total	19	20.7	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R03	Residential	65	65	60

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Compressor (air)	No	40	80		99999	0

		Results					
	Calculated (dBA)		Noise Limits (dBA)				
		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	14	10	N/A	N/A	N/A	N/A	N/A	N/A
Total	19	20.7	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R04	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40	80		99999	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	14	10	N/A	N/A	N/A	N/A	N/A	N/A
Total	19	20.7	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
R05	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40	80		975	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	54.2	50.2	N/A	N/A	N/A	N/A	N/A	N/A
Total	59.2	63	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
R06	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40	80		1120	0

Results

Calculated (dBA) Noise Limits (dBA)

Equipment		*Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Compressor (air)		53	49	N/A	N/A	N/A	N/A	N/A	N/A
	Total	58	61.8	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
R07	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40	80		99999	0

Results

Equipment		Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Compressor (air)		14	10	N/A	N/A	N/A	N/A	N/A	N/A
	Total	19	20.7	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
R08	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40	80		1150	0

Results

Equipment		Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Compressor (air)		52.8	48.8	N/A	N/A	N/A	N/A	N/A	N/A
	Total	52.8	48.8	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 date: 11/20/2023
Case Description: 06 MBSPA1NWRES: Site Prep WC

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R01	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		650	0
Dozer	No	40	85		650	0
Dozer	No	40	85		650	0

Results

		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		62.7	58.7	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		62.7	58.7	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		62.7	58.7	N/A	N/A	N/A	N/A	N/A	N/A
	Total	62.7	63.5	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R08	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		110	0
Dozer	No	40	85		110	0
Dozer	No	40	85		110	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	78.2	74.2	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	78.2	74.2	N/A	N/A	N/A	N/A	N/A	N/A

Dozer		78.2	74.2	N/A	N/A	N/A	N/A	N/A	N/A
	Total	78.2	78.9	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 date: 11/20/2023
Case Description: 06 MBSPA1NWRES: Paving WC

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R01	Residential	63	63	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		650	0
Paver	No	50	85		650	0
Paver	No	50	85		650	0

Results

		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		62.7	59.7	N/A	N/A	N/A	N/A	N/A	N/A
Paver		62.7	59.7	N/A	N/A	N/A	N/A	N/A	N/A
Paver		62.7	59.7	N/A	N/A	N/A	N/A	N/A	N/A
	Total	62.7	64.5	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R08	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		110	0
Paver	No	50	85		110	0
Paver	No	50	85		110	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	78.2	75.1	N/A	N/A	N/A	N/A	N/A	N/A
Paver	78.2	75.1	N/A	N/A	N/A	N/A	N/A	N/A

Paver		78.2	75.1	N/A	N/A	N/A	N/A	N/A	N/A
	Total	78.2	79.9	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 date: 11/20/2023
Case Description: 07 MBSPA1NEPA2MU: Site Prep WC

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R01	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		650	0
Dozer	No	40	85		650	0
Dozer	No	40	85		650	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	62.7	58.7	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	62.7	58.7	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	62.7	58.7	N/A	N/A	N/A	N/A	N/A	N/A
Total	62.7	63.5	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R04	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		100	0
Dozer	No	40	85		100	0
Dozer	No	40	85		100	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	79	75	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	79	75	N/A	N/A	N/A	N/A	N/A	N/A

Dozer		79	75	N/A	N/A	N/A	N/A	N/A	N/A
	Total	79	79.8	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R05	Residential	65	65	60

			Equipment			
	Impact		Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Dozer	No	40	85		550	0
Dozer	No	40	85		550	0
Dozer	No	40	85		550	0

		Results							
		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		64.2	60.2	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		64.2	60.2	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		64.2	60.2	N/A	N/A	N/A	N/A	N/A	N/A
	Total	64.2	65	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
R07	Residential	65	65	60

			Equipment			
	Impact		Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Dozer	No	40	85		25	0
Dozer	No	40	85		25	0
Dozer	No	40	85		25	0

		Results							
		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		91	87	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		91	87	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		91	87	N/A	N/A	N/A	N/A	N/A	N/A

Total	91	91.8	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 date: 11/20/2023
Case Description: 07 MBSPA1NEPA2MU: Paving WC

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R01	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		650	0
Paver	No	50	85		650	0
Paver	No	50	85		650	0

		Results Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		62.7	59.7	N/A	N/A	N/A	N/A	N/A	N/A
Paver		62.7	59.7	N/A	N/A	N/A	N/A	N/A	N/A
Paver		62.7	59.7	N/A	N/A	N/A	N/A	N/A	N/A
	Total	62.7	63.5	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
R04	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		100	0
Paver	No	50	85		100	0
Paver	No	50	85		100	0

		Results Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		79	76	N/A	N/A	N/A	N/A	N/A	N/A
Paver		79	76	N/A	N/A	N/A	N/A	N/A	N/A

Paver		79	76	N/A	N/A	N/A	N/A	N/A	N/A
	Total	79	79.8	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R05	Residential	65	65	60

			Equipment			
	Impact		Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Paver	No	50	85		550	0
Paver	No	50	85		550	0
Paver	No	50	85		550	0

		Results							
		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		64.2	61.2	N/A	N/A	N/A	N/A	N/A	N/A
Paver		64.2	61.2	N/A	N/A	N/A	N/A	N/A	N/A
Paver		64.2	61.2	N/A	N/A	N/A	N/A	N/A	N/A
	Total	64.2	65	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
R07	Residential	65	65	60

			Equipment			
	Impact		Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Paver	No	50	85		25	0
Paver	No	50	85		25	0
Paver	No	50	85		25	0

		Results							
		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		91	88	N/A	N/A	N/A	N/A	N/A	N/A
Paver		91	88	N/A	N/A	N/A	N/A	N/A	N/A
Paver		91	88	N/A	N/A	N/A	N/A	N/A	N/A

Total	91	92.8	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 date: 11/20/2023
Case Description: 07 MBSPA1NEPA2MU: Site Prep TYP

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R01	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		1020	0
Dozer	No	40	85		1020	0
Dozer	No	40	85		1020	0
Tractor	No	40	84		1020	0
Backhoe	No	40	80		1020	0
Tractor	No	40	84		1020	0
Backhoe	No	40	80		1020	0
Dump Truck	No	40	84		1020	0
Dump Truck	No	40	84		1020	0
Dump Truck	No	40	84		1020	0
Dump Truck	No	40	84		1020	0

Equipment	Calculated (dBA) *Lmax	Leq	Results Day Lmax	Day Leq	Noise Limits (dBA) Evening Lmax	Evening Leq	Night Lmax	Night Leq
Dozer	58.8	54.8	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	58.8	54.8	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	58.8	54.8	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	53.8	49.8	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	53.8	49.8	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A
Total	58.8	64.1	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

R04	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		1110	0
Dozer	No	40	85		1110	0
Dozer	No	40	85		1110	0
Tractor	No	40	84		1110	0
Backhoe	No	40	80		1110	0
Tractor	No	40	84		1110	0
Backhoe	No	40	80		1110	0
Dump Truck	No	40	84		1110	0
Dump Truck	No	40	84		1110	0
Dump Truck	No	40	84		1110	0
Dump Truck	No	40	84		1110	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	58.1	54.1	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	58.1	54.1	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	58.1	54.1	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	57.1	53.1	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	53.1	49.1	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	57.1	53.1	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	53.1	49.1	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	57.1	53.1	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	57.1	53.1	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	57.1	53.1	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	57.1	53.1	N/A	N/A	N/A	N/A	N/A	N/A
Total	58.1	63.3	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R05	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		1100	0
Dozer	No	40	85		1100	0

Dozer	No	40	85	1100	0
Tractor	No	40	84	1100	0
Backhoe	No	40	80	1100	0
Tractor	No	40	84	1100	0
Backhoe	No	40	80	1100	0
Dump Truck	No	40	84	1100	0
Dump Truck	No	40	84	1100	0
Dump Truck	No	40	84	1100	0
Dump Truck	No	40	84	1100	0

Results

		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		58.2	54.2	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		58.2	54.2	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		58.2	54.2	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		57.2	53.2	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		53.2	49.2	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		57.2	53.2	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		53.2	49.2	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		57.2	53.2	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		57.2	53.2	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		57.2	53.2	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		57.2	53.2	N/A	N/A	N/A	N/A	N/A	N/A
	Total	58.2	63.4	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
R07	Residential	65	65	60

			Equipment Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Dozer	No	40	85		99999	0
Dozer	No	40	85		99999	0
Dozer	No	40	85		99999	0
Tractor	No	40	84		99999	0
Backhoe	No	40	80		99999	0
Tractor	No	40	84		99999	0
Backhoe	No	40	80		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0

Dump Truck	No	40	84	99999	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	19	15	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	19	15	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	19	15	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	14	10	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	14	10	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Total	19	24.2	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 date: 11/20/2023
Case Description: 07 MBSPA1NEPA2MU: BuildConst TYP

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R01	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		1020	0
Backhoe	No	40	80		1020	0
Tractor	No	40	84		1020	0
Dump Truck	No	40	84		1020	0
Dump Truck	No	40	84		1020	0
Dump Truck	No	40	84		1020	0
Dump Truck	No	40	84		1020	0
Welder / Torch	No	40	73		1020	0
Generator	No	50	82		1020	0
Man Lift	No	20	85		1020	0
Man Lift	No	20	85		1020	0
Man Lift	No	20	85		1020	0
Crane	No	16	85		1020	0

Equipment		Calculated (dBA) *Lmax	Leq	Results Day Lmax	Leq	Noise Limits (dBA) Evening Lmax	Leq	Night Lmax	Leq
Tractor		57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		53.8	49.8	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch		46.8	42.8	N/A	N/A	N/A	N/A	N/A	N/A
Generator		55.8	52.8	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift		58.8	51.8	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift		58.8	51.8	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift		58.8	51.8	N/A	N/A	N/A	N/A	N/A	N/A
Crane		58.8	50.8	N/A	N/A	N/A	N/A	N/A	N/A
	Total	58.8	63.7	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R04	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		1110	0
Backhoe	No	40	80		1110	0
Tractor	No	40	84		1110	0
Dump Truck	No	40	84		1110	0
Dump Truck	No	40	84		1110	0
Dump Truck	No	40	84		1110	0
Dump Truck	No	40	84		1110	0
Welder / Torch	No	40	73		1110	0
Generator	No	50	82		1110	0
Man Lift	No	20	85		1110	0
Man Lift	No	20	85		1110	0
Man Lift	No	20	85		1110	0
Crane	No	16	85		1110	0

		Results							
		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor		57.1	53.1	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		53.1	49.1	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		57.1	53.1	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		57.1	53.1	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		57.1	53.1	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		57.1	53.1	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		57.1	53.1	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch		46.1	42.1	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
Man Lift		58.1	51.1	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift		58.1	51.1	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift		58.1	51.1	N/A	N/A	N/A	N/A	N/A	N/A
Crane		58.1	50.1	N/A	N/A	N/A	N/A	N/A	N/A
	Total	58.1	62.9	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night

R05	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		1100	0
Backhoe	No	40	80		1100	0
Tractor	No	40	84		1100	0
Dump Truck	No	40	84		1100	0
Dump Truck	No	40	84		1100	0
Dump Truck	No	40	84		1100	0
Dump Truck	No	40	84		1100	0
Welder / Torch	No	40	73		1100	0
Generator	No	50	82		1100	0
Man Lift	No	20	85		1100	0
Man Lift	No	20	85		1100	0
Man Lift	No	20	85		1100	0
Crane	No	16	85		1100	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	57.2	53.2	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	53.2	49.2	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	57.2	53.2	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	57.2	53.2	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	57.2	53.2	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	57.2	53.2	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	57.2	53.2	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	46.2	42.2	N/A	N/A	N/A	N/A	N/A	N/A
Generator	55.2	52.1	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
Man Lift	58.2	51.2	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
Crane	58.2	50.2	N/A	N/A	N/A	N/A	N/A	N/A
Total	58.2	63	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
R07	Residential	65	65	60

		Equipment Spec	Actual	Receptor	Estimated

Description	Impact Device	Usage(%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Tractor	No	40	84		99999	0
Backhoe	No	40	80		99999	0
Tractor	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Dump Truck	No	40	84		99999	0
Welder / Torch	No	40	73		99999	0
Generator	No	50	82		99999	0
Man Lift	No	20	85		99999	0
Man Lift	No	20	85		99999	0
Man Lift	No	20	85		99999	0
Crane	No	16	85		99999	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	14	10	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	18	14	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	19	16	N/A	N/A	N/A	N/A	N/A	N/A
Generator	19	16	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	19	16	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	19	16	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	19	12	N/A	N/A	N/A	N/A	N/A	N/A
Crane	19	12	N/A	N/A	N/A	N/A	N/A	N/A
Total	14	10	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 date: 11/20/2023
Case Description: 07 MBSPA1NEPA2MU: Paving TYP

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R01	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		1020	0
Paver	No	50	85		1020	0
Paver	No	50	85		1020	0
Paver	No	50	85		1020	0
Roller	No	20	85		1020	0
Roller	No	20	85		1020	0

		Results Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night	
Equipment		*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
Paver		58.8	55.8	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
Paver		58.8	55.8	N/A	N/A	N/A	N/A	N/A	N/A
Roller		58.8	51.8	N/A	N/A	N/A	N/A	N/A	N/A
Roller		58.8	51.8	N/A	N/A	N/A	N/A	N/A	N/A
	Total	58.8	64.1	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
R04	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		1110	0
Paver	No	50	85		1110	0
Paver	No	50	85		1110	0
Paver	No	50	85		1110	0

Roller	No	20	85	1110	0	
Roller	No	20	85	1110	0	

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	58.1	55.1	N/A	N/A	N/A	N/A	N/A	N/A
Paver	58.1	55.1	N/A	N/A	N/A	N/A	N/A	N/A
Paver	58.1	55.1	N/A	N/A	N/A	N/A	N/A	N/A
Paver	58.1	55.1	N/A	N/A	N/A	N/A	N/A	N/A
Roller	58.1	51.1	N/A	N/A	N/A	N/A	N/A	N/A
Roller	58.1	51.1	N/A	N/A	N/A	N/A	N/A	N/A
Total	58.1	63.3	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
R05	Residential	65	65	60

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		1100	0
Paver	No	50	85		1100	0
Paver	No	50	85		1100	0
Paver	No	50	85		1100	0
Roller	No	20	85		1100	0
Roller	No	20	85		1100	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	58.2	55.1	N/A	N/A	N/A	N/A	N/A	N/A
Paver	58.2	55.1	N/A	N/A	N/A	N/A	N/A	N/A
Paver	58.2	55.1	N/A	N/A	N/A	N/A	N/A	N/A
Paver	58.2	55.1	N/A	N/A	N/A	N/A	N/A	N/A
Roller	58.2	51.2	N/A	N/A	N/A	N/A	N/A	N/A
Roller	58.2	51.2	N/A	N/A	N/A	N/A	N/A	N/A
Total	58.2	62	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
R07	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		99999	0
Paver	No	50	85		99999	0
Paver	No	50	85		99999	0
Paver	No	50	85		99999	0
Roller	No	20	85		99999	0
Roller	No	20	85		99999	0

		Results							
		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		19	16	N/A	N/A	N/A	N/A	N/A	N/A
Paver		19	16	N/A	N/A	N/A	N/A	N/A	N/A
Paver		19	16	N/A	N/A	N/A	N/A	N/A	N/A
Paver		19	16	N/A	N/A	N/A	N/A	N/A	N/A
Roller		19	12	N/A	N/A	N/A	N/A	N/A	N/A
Roller		19	12	N/A	N/A	N/A	N/A	N/A	N/A
	Total	19	24.2	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 date: 11/20/2023
Case Description: 07 MBSPA1NEPA2MU: ArchCoat TYP

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R01	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40	80		1020	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	53.8	49.8	N/A	N/A	N/A	N/A	N/A	N/A
Total	58.8	56.8	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R04	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40	80		1110	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	53.1	49.1	N/A	N/A	N/A	N/A	N/A	N/A
Total	58.1	56	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R05	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40	80		1100	0

Results

		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)		53.2	49.2	N/A	N/A	N/A	N/A	N/A	N/A
	Total	53.2	49.2	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
R07	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40	80		99999	0

Results

		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)		14	10	N/A	N/A	N/A	N/A	N/A	N/A
	Total	19	24.2	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 date: 11/20/2023
Case Description: 08 MBSPA3RES: Site Prep WC

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R02	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		100	0
Dozer	No	40	85		100	0
Dozer	No	40	85		100	0

		Results							
		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		79	75	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		79	75	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		79	75	N/A	N/A	N/A	N/A	N/A	N/A
	Total	79	79.8	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R03	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		565	0
Dozer	No	40	85		565	0
Dozer	No	40	85		565	0

		Results							
		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		63.9	60	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		63.9	60	N/A	N/A	N/A	N/A	N/A	N/A

Dozer		63.9	60	N/A	N/A	N/A	N/A	N/A	N/A
	Total	63.9	64.7	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R06	Residential	65	65	60

			Equipment			
	Impact		Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Dozer	No	40	85		170	0
Dozer	No	40	85		170	0
Dozer	No	40	85		170	0

		Results							
		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		74.4	70.4	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		74.4	70.4	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		74.4	70.4	N/A	N/A	N/A	N/A	N/A	N/A
	Total	74.4	75.2	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 date: 11/20/2023
Case Description: 08 MBSPA3RES: Paving WC

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R02	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		100	0
Paver	No	50	85		100	0
Paver	No	50	85		100	0

Results

		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		79	76	N/A	N/A	N/A	N/A	N/A	N/A
Paver		79	76	N/A	N/A	N/A	N/A	N/A	N/A
Paver		79	76	N/A	N/A	N/A	N/A	N/A	N/A
	Total	79	80.7	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R03	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		565	0
Paver	No	50	85		565	0
Paver	No	50	85		565	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	63.9	60.9	N/A	N/A	N/A	N/A	N/A	N/A
Paver	63.9	60.9	N/A	N/A	N/A	N/A	N/A	N/A

Paver		63.9	60.9	N/A	N/A	N/A	N/A	N/A	N/A
	Total	63.9	65.7	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R06	Residential	65	65	60

			Equipment			
	Impact		Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Paver	No	50	85		170	0
Paver	No	50	85		170	0
Paver	No	50	85		170	0

		Results							
		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		74.4	71.4	N/A	N/A	N/A	N/A	N/A	N/A
Paver		74.4	71.4	N/A	N/A	N/A	N/A	N/A	N/A
Paver		74.4	71.4	N/A	N/A	N/A	N/A	N/A	N/A
	Total	74.4	76.1	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 date: 11/20/2023
Case Description: 08 MBSPA3RES: SitePrep TYP

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R02	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		525	0
Dozer	No	40	85		525	0
Dozer	No	40	85		525	0
Tractor	No	40	84		525	0
Backhoe	No	40	80		525	0
Tractor	No	40	84		525	0
Backhoe	No	40	80		525	0
Dump Truck	No	40	84		525	0
Dump Truck	No	40	84		525	0
Dump Truck	No	40	84		525	0
Dump Truck	No	40	84		525	0
Dump Truck	No	40	84		525	0

Results

		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		64.6	60.6	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		64.6	60.6	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		64.6	60.6	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		63.6	59.6	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		59.6	55.6	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		63.6	59.6	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		59.6	55.6	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		63.6	59.6	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		63.6	59.6	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		63.6	59.6	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		63.6	59.6	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		63.6	59.6	N/A	N/A	N/A	N/A	N/A	N/A
	Total	64.6	70.2	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R03	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		930	0
Dozer	No	40	85		930	0
Dozer	No	40	85		930	0
Tractor	No	40	84		930	0
Backhoe	No	40	80		930	0
Tractor	No	40	84		930	0
Backhoe	No	40	80		930	0
Dump Truck	No	40	84		930	0
Dump Truck	No	40	84		930	0
Dump Truck	No	40	84		930	0
Dump Truck	No	40	84		930	0
Dump Truck	No	40	84		930	0

				Results					
		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		59.6	55.6	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		59.6	55.6	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		59.6	55.6	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		54.6	50.6	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		54.6	50.6	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A
	Total	59.6	65.3	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R06	Residential	65	65	60

	Equipment Spec	Actual	Receptor	Estimated

Description	Impact Device	Usage(%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Dozer	No	40	85		570	0
Dozer	No	40	85		570	0
Dozer	No	40	85		570	0
Tractor	No	40	84		570	0
Backhoe	No	40	80		570	0
Tractor	No	40	84		570	0
Backhoe	No	40	80		570	0
Dump Truck	No	40	84		570	0
Dump Truck	No	40	84		570	0
Dump Truck	No	40	84		570	0
Dump Truck	No	40	84		570	0
Dump Truck	No	40	84		570	0

			Results					
	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	63.9	59.9	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	63.9	59.9	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	63.9	59.9	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	62.9	58.9	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	58.9	54.9	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	62.9	58.9	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	58.9	54.9	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	62.9	58.9	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	62.9	58.9	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	62.9	58.9	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	62.9	58.9	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	62.9	58.9	N/A	N/A	N/A	N/A	N/A	N/A
Total	63.9	69.5	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 date: 11/20/2023
Case Description: 08 MBSPA3RES: BuildConst TYP

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R02	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40		84	525	0
Backhoe	No	40		80	525	0
Tractor	No	40		84	525	0
Dump Truck	No	40		84	525	0
Welder / Torch	No	40		73	525	0
Generator	No	50		82	525	0
Man Lift	No	20		85	525	0
Man Lift	No	20		85	525	0
Man Lift	No	20		85	525	0
Crane	No	16		85	525	0

		Results							
		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor		63.6	59.6	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		59.6	55.6	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		63.6	59.6	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		63.6	59.6	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch		52.6	48.6	N/A	N/A	N/A	N/A	N/A	N/A
Generator		61.6	58.6	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift		64.6	57.6	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift		64.6	57.6	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift		64.6	57.6	N/A	N/A	N/A	N/A	N/A	N/A
Crane		64.6	56.6	N/A	N/A	N/A	N/A	N/A	N/A
	Total	64.6	67.8	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R03	Residential	65	65	60

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		930	0
Backhoe	No	40	80		930	0
Tractor	No	40	84		930	0
Dump Truck	No	40	84		930	0
Welder / Torch	No	40	73		930	0
Generator	No	50	82		930	0
Man Lift	No	20	85		930	0
Man Lift	No	20	85		930	0
Man Lift	No	20	85		930	0
Crane	No	16	85		930	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	54.6	50.6	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	59.6	56.6	N/A	N/A	N/A	N/A	N/A	N/A
Generator	59.6	56.6	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	59.6	56.6	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	59.6	56.6	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	59.6	52.6	N/A	N/A	N/A	N/A	N/A	N/A
Crane	59.6	52.6	N/A	N/A	N/A	N/A	N/A	N/A
Total	59.6	57.6	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R06	Residential	65	65	60

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		570	0
Backhoe	No	40	80		570	0
Tractor	No	40	84		570	0
Dump Truck	No	40	84		570	0
Welder / Torch	No	40	73		570	0
Generator	No	50	82		570	0

Man Lift	No	20	85	570	0
Man Lift	No	20	85	570	0
Man Lift	No	20	85	570	0
Crane	No	16	85	570	0

			Results					
	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	62.9	58.9	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	58.9	54.9	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	62.9	58.9	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	62.9	58.9	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	51.9	47.9	N/A	N/A	N/A	N/A	N/A	N/A
Generator	60.9	57.9	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	63.9	56.9	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	63.9	56.9	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	63.9	56.9	N/A	N/A	N/A	N/A	N/A	N/A
Crane	63.9	55.9	N/A	N/A	N/A	N/A	N/A	N/A
Total	63.9	67.1	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 date: 11/20/2023
Case Description: 08 MBSPA3RES: Paving TYP

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R02	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		525	0
Paver	No	50	85		525	0
Paver	No	50	85		525	0
Paver	No	50	85		525	0
Roller	No	20	85		525	0
Roller	No	20	85		525	0

Results

		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		64.6	61.6	N/A	N/A	N/A	N/A	N/A	N/A
Paver		64.6	61.6	N/A	N/A	N/A	N/A	N/A	N/A
Paver		64.6	61.6	N/A	N/A	N/A	N/A	N/A	N/A
Paver		64.6	61.6	N/A	N/A	N/A	N/A	N/A	N/A
Roller		64.6	57.6	N/A	N/A	N/A	N/A	N/A	N/A
Roller		64.6	57.6	N/A	N/A	N/A	N/A	N/A	N/A
	Total	64.6	68.4	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
R03	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		930	0
Paver	No	50	85		930	0
Paver	No	50	85		930	0
Paver	No	50	85		930	0

Roller	No	20	85	930	0
Roller	No	20	85	930	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	59.6	56.6	N/A	N/A	N/A	N/A	N/A	N/A
Paver	59.6	56.6	N/A	N/A	N/A	N/A	N/A	N/A
Paver	59.6	56.6	N/A	N/A	N/A	N/A	N/A	N/A
Paver	59.6	56.6	N/A	N/A	N/A	N/A	N/A	N/A
Roller	59.6	52.6	N/A	N/A	N/A	N/A	N/A	N/A
Roller	59.6	52.6	N/A	N/A	N/A	N/A	N/A	N/A
Total	59.6	63.4	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R06	Residential	65	65	60

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Paver	No	50	85		570	0
Paver	No	50	85		570	0
Paver	No	50	85		570	0
Paver	No	50	85		570	0
Roller	No	20	85		570	0
Roller	No	20	85		570	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	63.9	60.9	N/A	N/A	N/A	N/A	N/A	N/A
Paver	63.9	60.9	N/A	N/A	N/A	N/A	N/A	N/A
Paver	63.9	60.9	N/A	N/A	N/A	N/A	N/A	N/A
Paver	63.9	60.9	N/A	N/A	N/A	N/A	N/A	N/A
Roller	63.9	56.9	N/A	N/A	N/A	N/A	N/A	N/A
Roller	63.9	56.9	N/A	N/A	N/A	N/A	N/A	N/A
Total	63.9	67.7	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 date: 11/20/2023
Case Description: 08 MBSPA3RES: ArchCoat TYP

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R02	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		525	0
Compressor (air)	No	40	80		525	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	64.6	61.6	N/A	N/A	N/A	N/A	N/A	N/A
Compressor (air)	59.6	55.6	N/A	N/A	N/A	N/A	N/A	N/A
Total	64.6	62.5	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R03	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		930	0
Compressor (air)	No	40	80		930	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	59.6	56.6	N/A	N/A	N/A	N/A	N/A	N/A
Compressor (air)	54.6	50.6	N/A	N/A	N/A	N/A	N/A	N/A
Total	59.6	57.6	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R06	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		570	0
Compressor (air)	No	40	80		570	0

Results

		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		63.9	60.9	N/A	N/A	N/A	N/A	N/A	N/A
Compressor (air)		58.9	54.9	N/A	N/A	N/A	N/A	N/A	N/A
	Total	63.9	61.8	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 date: 11/20/2023
Case Description: 10 S2PA1NERES: Site Prep WC

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R01	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		650	0
Dozer	No	40	85		650	0
Dozer	No	40	85		650	0

Results

		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		62.7	58.7	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		62.7	58.7	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		62.7	58.7	N/A	N/A	N/A	N/A	N/A	N/A
	Total	62.7	63.5	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R07	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		25	0
Dozer	No	40	85		25	0
Dozer	No	40	85		25	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	91	87	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	91	87	N/A	N/A	N/A	N/A	N/A	N/A

Dozer		91	87	N/A	N/A	N/A	N/A	N/A	N/A
	Total	91	91.8	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 date: 11/20/2023
Case Description: 10 S2PA1NERES: Paving TYP

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R01	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		650	0
Paver	No	50	85		650	0
Paver	No	50	85		650	0

		Results							
		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		62.7	59.7	N/A	N/A	N/A	N/A	N/A	N/A
Paver		62.7	59.7	N/A	N/A	N/A	N/A	N/A	N/A
Paver		62.7	59.7	N/A	N/A	N/A	N/A	N/A	N/A
	Total	62.7	64.5	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R07	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		25	0
Paver	No	50	85		25	0
Paver	No	50	85		25	0

		Results							
		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		91	88	N/A	N/A	N/A	N/A	N/A	N/A
Paver		91	88	N/A	N/A	N/A	N/A	N/A	N/A

Paver		91	88	N/A	N/A	N/A	N/A	N/A	N/A
	Total	91	92.8	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 date: 11/20/2023
Case Description: 10 S2PA1NERES: Site Prep TYP

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R01	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		1020	0
Dozer	No	40	85		1020	0
Dozer	No	40	85		1020	0
Tractor	No	40	84		1020	0
Backhoe	No	40	80		1020	0
Tractor	No	40	84		1020	0
Backhoe	No	40	80		1020	0
Dump Truck	No	40	84		1020	0
Dump Truck	No	40	84		1020	0
Dump Truck	No	40	84		1020	0
Dump Truck	No	40	84		1020	0
Dump Truck	No	40	84		1020	0

Results

		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		58.8	54.8	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		58.8	54.8	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		58.8	54.8	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		53.8	49.8	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		53.8	49.8	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A
	Total	58.8	64.5	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
	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		25	0
Dozer	No	40	85		25	0
Dozer	No	40	85		25	0
Tractor	No	40	84		25	0
Backhoe	No	40	80		25	0
Tractor	No	40	84		25	0
Backhoe	No	40	80		25	0
Dump Truck	No	40	84		25	0
Dump Truck	No	40	84		25	0
Dump Truck	No	40	84		25	0
Dump Truck	No	40	84		25	0
Dump Truck	No	40	84		25	0

		Results							
		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		91	87	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		91	87	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		91	87	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
Backhoe		86	82	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
Backhoe		86	82	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		90	86	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		90	86	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		90	86	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		90	86	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		90	86	N/A	N/A	N/A	N/A	N/A	N/A
	Total	91	91.8	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 date: 11/20/2023
Case Description: 10 S2PA1NERES:BuildConst Typ

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R01	Residential	63	63	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		1020	0
Backhoe	No	40	80		1020	0
Tractor	No	40	84		1020	0
Dump Truck	No	40	84		1020	0
Dump Truck	No	40	84		1020	0
Dump Truck	No	40	84		1020	0
Dump Truck	No	40	84		1020	0
Welder / Torch	No	40	73		1020	0
Generator	No	50	82		1020	0
Man Lift	No	20	85		1020	0
Man Lift	No	20	85		1020	0
Man Lift	No	20	85		1020	0
Crane	No	16	85		1020	0

Equipment	Calculated (dBA) *Lmax	Leq	Results Day Lmax	Noise Limits (dBA) Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Tractor	57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	53.8	49.8	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	46.8	42.8	N/A	N/A	N/A	N/A	N/A	N/A
Generator	55.8	52.8	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	58.8	51.8	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	58.8	51.8	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	58.8	51.8	N/A	N/A	N/A	N/A	N/A	N/A
Crane	58.8	50.8	N/A	N/A	N/A	N/A	N/A	N/A
Total	58.8	63.7	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 date: 11/20/2023
Case Description: 10 S2PA1NERES: Paving TYP

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R01	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		1020	0
Paver	No	50	85		1020	0
Paver	No	50	85		1020	0
Paver	No	50	85		1020	0
Roller	No	20	85		1020	0
Roller	No	20	85		1020	0
Dump Truck	No	40	84		1020	0
Dump Truck	No	40	84		1020	0
Dump Truck	No	40	84		1020	0
Dump Truck	No	40	84		1020	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*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
Paver	58.8	55.8	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
Paver	58.8	55.8	N/A	N/A	N/A	N/A	N/A	N/A
Roller	58.8	51.8	N/A	N/A	N/A	N/A	N/A	N/A
Roller	58.8	51.8	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	57.8	53.8	N/A	N/A	N/A	N/A	N/A	N/A
Total	58.8	64.5	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
	Residential	65	65	60

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		25	0
Paver	No	50	85		25	0
Paver	No	50	85		25	0
Paver	No	50	85		25	0
Roller	No	20	85		25	0
Roller	No	20	85		25	0
Dump Truck	No	40	84		25	0
Dump Truck	No	40	84		25	0
Dump Truck	No	40	84		25	0
Dump Truck	No	40	84		25	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	91	88	N/A	N/A	N/A	N/A	N/A	N/A
Paver	91	88	N/A	N/A	N/A	N/A	N/A	N/A
Paver	91	88	N/A	N/A	N/A	N/A	N/A	N/A
Paver	91	88	N/A	N/A	N/A	N/A	N/A	N/A
Roller	91	84	N/A	N/A	N/A	N/A	N/A	N/A
Roller	91	84	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	90	86	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	90	86	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	90	86	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	90	86	N/A	N/A	N/A	N/A	N/A	N/A
Total	91	92.8	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 date: 11/20/2023
Case Description: 10 S2PA1NERES:BuildConst Typ

		Baselines (dBA)		---- Receptor #1 ----
Description	Land Use	Daytime	Evening	Night
R01	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40	80		1020	0

		Results							
		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)		53.8	49.8	N/A	N/A	N/A	N/A	N/A	N/A
	Total	53.8	49.8	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 date: 11/20/2023
Case Description: 11 S2PA2COM: Site Prep WC

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R01	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		1175	0
Dozer	No	40	85		1175	0
Dozer	No	40	85		1175	0

Results

		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		57.6	53.6	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		57.6	53.6	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		57.6	53.6	N/A	N/A	N/A	N/A	N/A	N/A
	Total	57.6	58.4	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R03	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		25	0
Dozer	No	40	85		25	0
Dozer	No	40	85		25	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	91	87	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	91	87	N/A	N/A	N/A	N/A	N/A	N/A

Dozer		91	87	N/A	N/A	N/A	N/A	N/A	N/A
	Total	91	91.8	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R06	Residential	65	65	60

			Equipment			
	Impact		Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Dozer	No	40	85		350	0
Dozer	No	40	85		350	0
Dozer	No	40	85		350	0

Results

		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		68.1	64.1	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		68.1	64.1	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		68.1	64.1	N/A	N/A	N/A	N/A	N/A	N/A
	Total	68.1	68.9	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 date: 11/20/2023
Case Description: 11 S2PA2COM: Paving WC

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R01	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		1175	0
Paver	No	50	85		1175	0
Paver	No	50	85		1175	0

		Results							
		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		57.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A
Paver		57.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A
Paver		57.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A
	Total	57.6	59.3	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R03	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		25	0
Paver	No	50	85		25	0
Paver	No	50	85		25	0

		Results							
		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		91	88	N/A	N/A	N/A	N/A	N/A	N/A
Paver		91	88	N/A	N/A	N/A	N/A	N/A	N/A

Paver		91	88	N/A	N/A	N/A	N/A	N/A	N/A
	Total	91	92.8	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R06	Residential	65	65	60

			Equipment			
	Impact		Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Paver	No	50	85		350	0
Paver	No	50	85		350	0
Paver	No	50	85		350	0

Results

		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		68.1	65.1	N/A	N/A	N/A	N/A	N/A	N/A
Paver		68.1	65.1	N/A	N/A	N/A	N/A	N/A	N/A
Paver		68.1	65.1	N/A	N/A	N/A	N/A	N/A	N/A
	Total	68.1	69.9	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 date: 11/20/2023
Case Description: 11 S2PA2COM: Site Prep TYP

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R03	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		150	0
Dozer	No	40	85		150	0
Dozer	No	40	85		150	0
Tractor	No	40	84		150	0
Backhoe	No	40	80		150	0
Tractor	No	40	84		150	0
Backhoe	No	40	80		150	0
Dump Truck	No	40	84		150	0
Dump Truck	No	40	84		150	0
Dump Truck	No	40	84		150	0
Dump Truck	No	40	84		150	0
Dump Truck	No	40	84		150	0

Equipment	Calculated (dBA) *Lmax	Leq	Results Day Lmax	Day Leq	Noise Limits (dBA) Evening Lmax	Evening Leq	Night Lmax	Night Leq
Dozer	75.5	71.5	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	75.5	71.5	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	75.5	71.5	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	70.5	66.5	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	70.5	66.5	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A
Total	75.5	81.1	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R06	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		600	0
Dozer	No	40	85		600	0
Dozer	No	40	85		600	0
Tractor	No	40	84		600	0
Backhoe	No	40	80		600	0
Tractor	No	40	84		600	0
Backhoe	No	40	80		600	0
Dump Truck	No	40	84		600	0
Dump Truck	No	40	84		600	0
Dump Truck	No	40	84		600	0
Dump Truck	No	40	84		600	0
Dump Truck	No	40	84		600	0

		Results							
		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		63.4	59.4	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		63.4	59.4	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		63.4	59.4	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		62.4	58.4	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		58.4	54.4	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		62.4	58.4	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		58.4	54.4	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		62.4	58.4	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		62.4	58.4	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		62.4	58.4	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		62.4	58.4	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		62.4	58.4	N/A	N/A	N/A	N/A	N/A	N/A
	Total	63.4	69.1	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
	Residential	65	65	60

	Equipment Spec	Actual	Receptor	Estimated

Description	Impact Device	Usage(%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Dozer	No	40	85		350	0
Dozer	No	40	85		350	0
Dozer	No	40	85		350	0
Tractor	No	40	84		350	0
Backhoe	No	40	80		350	0
Tractor	No	40	84		350	0
Backhoe	No	40	80		350	0
Dump Truck	No	40	84		350	0
Dump Truck	No	40	84		350	0
Dump Truck	No	40	84		350	0
Dump Truck	No	40	84		350	0
Dump Truck	No	40	84		350	0

			Results					
	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	68.1	64.1	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	68.1	64.1	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	68.1	64.1	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
Backhoe	63.1	59.1	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
Backhoe	63.1	59.1	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	67.1	63.1	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	67.1	63.1	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	67.1	63.1	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	67.1	63.1	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	67.1	63.1	N/A	N/A	N/A	N/A	N/A	N/A
Total	68.1	68.9	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 date: 11/20/2023
Case Description: 11 S2PA2COM: BuildConst Typ

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R03	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		150	0
Backhoe	No	40	80		150	0
Tractor	No	40	84		150	0
Dump Truck	No	40	84		150	0
Dump Truck	No	40	84		150	0
Dump Truck	No	40	84		150	0
Welder / Torch	No	40	73		150	0
Generator	No	50	82		150	0
Man Lift	No	20	85		150	0
Man Lift	No	20	85		150	0
Man Lift	No	20	85		150	0
Crane	No	16	85		150	0

		Results							
		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor		74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		70.5	66.5	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch		63.5	59.5	N/A	N/A	N/A	N/A	N/A	N/A
Generator		72.5	69.4	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift		75.5	68.5	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift		75.5	68.5	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift		75.5	68.5	N/A	N/A	N/A	N/A	N/A	N/A
Crane		75.5	67.5	N/A	N/A	N/A	N/A	N/A	N/A
	Total	75.5	79.9	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R06	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		600	0
Backhoe	No	40	80		600	0
Tractor	No	40	84		600	0
Dump Truck	No	40	84		600	0
Dump Truck	No	40	84		600	0
Dump Truck	No	40	84		600	0
Welder / Torch	No	40	73		600	0
Generator	No	50	82		600	0
Man Lift	No	20	85		600	0
Man Lift	No	20	85		600	0
Man Lift	No	20	85		600	0
Crane	No	16	85		600	0

		Results							
		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor		62.4	58.4	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		58.4	54.4	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		62.4	58.4	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		62.4	58.4	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		62.4	58.4	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		62.4	58.4	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch		51.4	47.4	N/A	N/A	N/A	N/A	N/A	N/A
Generator		60.4	57.4	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift		63.4	56.4	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift		63.4	56.4	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift		63.4	56.4	N/A	N/A	N/A	N/A	N/A	N/A
Crane		63.4	55.5	N/A	N/A	N/A	N/A	N/A	N/A
	Total	63.4	67.8	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 date: 11/20/2023
Case Description: 11 S2PA2COM: Paving TYP

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R03	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		150	0
Paver	No	50	85		150	0
Paver	No	50	85		150	0
Paver	No	50	85		150	0
Roller	No	20	85		150	0
Roller	No	20	85		150	0
Dump Truck	No	40	84		150	0
Dump Truck	No	40	84		150	0
Dump Truck	No	40	84		150	0
Dump Truck	No	40	84		150	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	75.5	72.4	N/A	N/A	N/A	N/A	N/A	N/A
Paver	75.5	72.4	N/A	N/A	N/A	N/A	N/A	N/A
Paver	75.5	72.4	N/A	N/A	N/A	N/A	N/A	N/A
Paver	75.5	72.4	N/A	N/A	N/A	N/A	N/A	N/A
Roller	75.5	68.5	N/A	N/A	N/A	N/A	N/A	N/A
Roller	75.5	68.5	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A
Total	75.5	81.1	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R06	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		600	0
Paver	No	50	85		600	0
Paver	No	50	85		600	0
Paver	No	50	85		600	0
Roller	No	20	85		600	0
Roller	No	20	85		600	0
Dump Truck	No	40	84		600	0
Dump Truck	No	40	84		600	0
Dump Truck	No	40	84		600	0
Dump Truck	No	40	84		600	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	63.4	60.4	N/A	N/A	N/A	N/A	N/A	N/A
Paver	63.4	60.4	N/A	N/A	N/A	N/A	N/A	N/A
Paver	63.4	60.4	N/A	N/A	N/A	N/A	N/A	N/A
Paver	63.4	60.4	N/A	N/A	N/A	N/A	N/A	N/A
Roller	63.4	56.4	N/A	N/A	N/A	N/A	N/A	N/A
Roller	63.4	56.4	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	62.4	58.4	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	62.4	58.4	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	62.4	58.4	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	62.4	58.4	N/A	N/A	N/A	N/A	N/A	N/A
Total	63.4	69.1	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		350	0
Paver	No	50	85		350	0
Paver	No	50	85		350	0
Paver	No	50	85		350	0
Roller	No	20	85		350	0
Roller	No	20	85		350	0

Dump Truck	No	40	84	350	0
Dump Truck	No	40	84	350	0
Dump Truck	No	40	84	350	0
Dump Truck	No	40	84	350	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	68.1	65.1	N/A	N/A	N/A	N/A	N/A	N/A
Paver	68.1	65.1	N/A	N/A	N/A	N/A	N/A	N/A
Paver	68.1	65.1	N/A	N/A	N/A	N/A	N/A	N/A
Paver	68.1	65.1	N/A	N/A	N/A	N/A	N/A	N/A
Roller	68.1	61.1	N/A	N/A	N/A	N/A	N/A	N/A
Roller	68.1	61.1	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	67.1	63.1	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	67.1	63.1	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	67.1	63.1	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	67.1	63.1	N/A	N/A	N/A	N/A	N/A	N/A
Total	68.1	69.9	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 date: 11/20/2023
Case Description: 11 S2PA2COM: ArchCoat TYP

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R03	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40	80		150	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	70.5	66.5	N/A	N/A	N/A	N/A	N/A	N/A
Total	70.5	66.5	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
R06	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40	80		600	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	58.4	54.4	N/A	N/A	N/A	N/A	N/A	N/A
Total	58.4	54.4	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 date: 11/20/2023
Case Description: 12 S2PA3COM: Site Prep WC

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R03	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		565	0
Dozer	No	40	85		565	0
Dozer	No	40	85		565	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	63.9	60	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	63.9	60	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	63.9	60	N/A	N/A	N/A	N/A	N/A	N/A
Total	63.9	64.7	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R06	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		170	0
Dozer	No	40	85		170	0
Dozer	No	40	85		170	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	74.4	70.4	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	74.4	70.4	N/A	N/A	N/A	N/A	N/A	N/A

Dozer		74.4	70.4	N/A	N/A	N/A	N/A	N/A	N/A
	Total	74.4	75.2	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 date: 11/20/2023
Case Description: 12 S2PA3COM: Paving WC

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R03	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		565	0
Paver	No	50	85		565	0
Paver	No	50	85		565	0

		Results Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		63.9	60.9	N/A	N/A	N/A	N/A	N/A	N/A
Paver		63.9	60.9	N/A	N/A	N/A	N/A	N/A	N/A
Paver		63.9	60.9	N/A	N/A	N/A	N/A	N/A	N/A
	Total	63.9	65.7	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
R06	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		170	0
Paver	No	50	85		170	0
Paver	No	50	85		170	0

		Results Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		74.4	71.4	N/A	N/A	N/A	N/A	N/A	N/A
Paver		74.4	71.4	N/A	N/A	N/A	N/A	N/A	N/A

Paver		74.4	71.4	N/A	N/A	N/A	N/A	N/A	N/A
	Total	74.4	76.1	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 date: 11/20/2023
Case Description: 12 S2PA3COM: Site Prep TYP

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R03	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		930	0
Dozer	No	40	85		930	0
Dozer	No	40	85		930	0
Tractor	No	40	84		930	0
Backhoe	No	40	80		930	0
Tractor	No	40	84		930	0
Backhoe	No	40	80		930	0
Dump Truck	No	40	84		930	0
Dump Truck	No	40	84		930	0

Equipment	Calculated (dBA) *Lmax	Leq	Results Day Lmax	Day Leq	Noise Limits (dBA) Evening Lmax	Evening Leq	Night Lmax	Night Leq
Dozer	59.6	55.6	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	59.6	55.6	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	59.6	55.6	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	54.6	50.6	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	54.6	50.6	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A
Total	59.6	64	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
R06	Residential	65	65	60

			Equipment Spec	Actual	Receptor	Estimated

Description	Impact Device	Usage(%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Dozer	No	40	85		570	0
Dozer	No	40	85		570	0
Dozer	No	40	85		570	0
Tractor	No	40	84		570	0
Backhoe	No	40	80		570	0
Tractor	No	40	84		570	0
Backhoe	No	40	80		570	0
Dump Truck	No	40	84		570	0
Dump Truck	No	40	84		570	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	63.9	59.9	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	63.9	59.9	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	63.9	59.9	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	62.9	58.9	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	58.9	54.9	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	62.9	58.9	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	58.9	54.9	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	62.9	58.9	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	62.9	58.9	N/A	N/A	N/A	N/A	N/A	N/A
Total	63.9	68.2	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 date: 11/20/2023
Case Description: 12 S2PA3COM: BuildConst Typ

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R03	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		930	0
Backhoe	No	40	80		930	0
Tractor	No	40	84		930	0
Dump Truck	No	40	84		930	0
Welder / Torch	No	40	73		930	0
Generator	No	50	82		930	0
Man Lift	No	20	85		930	0
Man Lift	No	20	85		930	0
Man Lift	No	20	85		930	0
Crane	No	16	85		930	0

		Results							
		Calculated (dBA)		Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor		58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		54.6	50.6	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch		47.6	43.6	N/A	N/A	N/A	N/A	N/A	N/A
Generator		56.6	53.6	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift		59.6	52.6	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift		59.6	52.6	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift		59.6	52.6	N/A	N/A	N/A	N/A	N/A	N/A
Crane		59.6	51.7	N/A	N/A	N/A	N/A	N/A	N/A
	Total	59.6	62.9	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
R06	Residential	65	65	60

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		570	0
Backhoe	No	40	80		570	0
Tractor	No	40	84		570	0
Dump Truck	No	40	84		570	0
Welder / Torch	No	40	73		570	0
Generator	No	50	82		570	0
Man Lift	No	20	85		570	0
Man Lift	No	20	85		570	0
Man Lift	No	20	85		570	0
Crane	No	16	85		570	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	62.9	58.9	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	58.9	54.9	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	62.9	58.9	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	62.9	58.9	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	51.9	47.9	N/A	N/A	N/A	N/A	N/A	N/A
Generator	60.9	57.9	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	63.9	56.9	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	63.9	56.9	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	63.9	56.9	N/A	N/A	N/A	N/A	N/A	N/A
Crane	63.9	55.9	N/A	N/A	N/A	N/A	N/A	N/A
Total	63.9	67.1	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 date: 11/20/2023
Case Description: 12 S2PA3COM: Paving TYP

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R03	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		930	0
Paver	No	50	85		930	0
Paver	No	50	85		930	0
Paver	No	50	85		930	0
Roller	No	20	85		930	0
Roller	No	20	85		930	0
Dump Truck	No	40	84		930	0
Dump Truck	No	40	84		930	0
Dump Truck	No	40	84		930	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Paver	59.6	56.6	N/A	N/A	N/A	N/A	N/A	N/A
Paver	59.6	56.6	N/A	N/A	N/A	N/A	N/A	N/A
Paver	59.6	56.6	N/A	N/A	N/A	N/A	N/A	N/A
Paver	59.6	56.6	N/A	N/A	N/A	N/A	N/A	N/A
Roller	59.6	52.6	N/A	N/A	N/A	N/A	N/A	N/A
Roller	59.6	52.6	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A
Total	59.6	64.9	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
R06	Residential	65	65	60

		Equipment Spec	Actual	Receptor	Estimated

Description	Impact Device	Usage(%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Paver	No	50	85		570	0
Paver	No	50	85		570	0
Paver	No	50	85		570	0
Paver	No	50	85		570	0
Roller	No	20	85		570	0
Roller	No	20	85		570	0
Dump Truck	No	40	84		570	0
Dump Truck	No	40	84		570	0
Dump Truck	No	40	84		570	0

Results

	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	63.9	60.9	N/A	N/A	N/A	N/A	N/A	N/A
Paver	63.9	60.9	N/A	N/A	N/A	N/A	N/A	N/A
Paver	63.9	60.9	N/A	N/A	N/A	N/A	N/A	N/A
Paver	63.9	60.9	N/A	N/A	N/A	N/A	N/A	N/A
Roller	63.9	56.9	N/A	N/A	N/A	N/A	N/A	N/A
Roller	63.9	56.9	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	62.9	58.9	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	62.9	58.9	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	62.9	58.9	N/A	N/A	N/A	N/A	N/A	N/A
Total	63.9	69.1	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Report date: 11/20/2023
Case Description: 12 S2PA3COM: ArchCoat Typ

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
R03	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40	80		930	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Compressor (air)	54.6	50.6	N/A	N/A	N/A	N/A	N/A	N/A
Total	54.6	50.6	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
R06	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40	80		570	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Compressor (air)	58.9	54.9	N/A	N/A	N/A	N/A	N/A	N/A
Total	58.9	54.9	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Typical Peak Particle Velocity (PPV) Estimates (in/sec)											
Equipment	**Reference PPV at 25 ft (in/sec)**	**Soil Attenuation Rate (n)**	**Estimated PPV (in/sec) at Specified Distance from Source (in feet)**								
			50	**100**	**150**	**200**	**300**	**400**	**500**	**600**	**650**
Small bulldozer	0.003	1.3	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jackhammer	*0.035*	1.3	*0.014*	0.006	0.003	0.002	0.001	0.001	0.001	0.001	0.001
Loaded Truck	*0.076*	1.3	*0.031*	*0.013*	0.007	0.005	0.003	0.002	0.002	0.001	0.001
Caisson drilling	*0.089*	1.3	*0.036*	*0.015*	0.009	0.006	0.004	0.002	0.002	0.001	0.001
Large bulldozer	*0.089*	1.3	*0.036*	*0.015*	0.009	0.006	0.004	0.002	0.002	0.001	0.001
Vibratory roller	**0.210**	1.3	*0.085*	*0.035*	*0.020*	*0.014*	0.008	0.006	0.004	0.003	0.003

Notes:
Reference PPV from Caltrans Transportation and Construction Vibration Guidance Manual (2020), Table 18
Soil attenuation rate from Caltrans (2020, Table 17). Assumes Soil Class II - sands, gravel, and weathered rock.
Italicized , underlined, and **bold** values indicate the estimated vibration level exceeds Caltrans' barely perceptible (0.01 PPV in/sec), distincly perceptible (0.04 PPV in/sec), and strongly perceptible (0.1 PPV in/sec) guidelines, respectively, for human detection and annoyance from continuous vibration sources (Caltrans 2020).

APPENDIX C: Operational Noise Level Estimates

This page was intentionally left blank.

Noise Source	Reference dBA @ 3 Feet	Duration (Seconds)	Estimated Hourly Leq @ 3 Feet	Estimated Hourly Leq @ 50 Feet
Vehicle Parking Areas				
Low speed travel (15 mph)/parking	*55*	*30*	*34.2*	*9.8*
Door closing	*90*	*1*	*54.4*	*30.0*
Engine start/rev	*90*	*10*	*64.4*	*40.0*
Total Combined Noise Level			*64.9*	*40.4*
Human Conversation				
Normal	*55*	*3600*	*55.0*	*30.6*
Raised	*65*	*240*	*53.2*	*28.8*
Total Combined Noise Level			*57.2*	*32.8*
Truck Travel / Dock Activity				
Low speed travel (15 mph)	*96*	*30*	*75.2*	*50.8*
Maneuvering (with backup alarm)	*100*	*150*	*86.2*	*61.8*
Air brake release	*98*	*3*	*67.2*	*42.8*
Main engine idling	*86*	*900*	*80.0*	*55.5*
Door closing	*90*	*2*	*57.4*	*33.0*
Engine start/rev	*100*	*20*	*77.4*	*53.0*
Total Combined Noise Level			*87.9*	*63.4*
Truck Entrance Way				
Warehouse Noise Measurement	*71.4*	*3600*	*71.4*	*47.0*
Cargo/Goods Movement				
Forklift	*85*	*1800*	*82.0*	*57.6*
Backup Alarm	*100*	*90*	*84.0*	*59.5*
Total Combined Noise Level			*86.1*	*61.7*
HVAC Unit				
Operation (3 Ton)	*76*	*2,400*	*74.2*	*49.8*
Operation (10 Ton)	*87*	*2,400*	*85.2*	*60.8*
Backup Generator				
Diesel - 310 horsepower	*106.1*	*1,800*	*103.1*	*78.7*
Speaker Boxes				
Speaker Box	*81*	*600*	*73.2*	*48.8*
Car Wash				
Operation (Tunnel Entrance)	*113.2*	*3,600*	*113.2*	*88.8*
Operation (Tunnel Exit)	*98.4*	*3,600*	*98.4*	*74.0*
Vacuum	*86*	*600*	*78.2*	*53.8*

2033 NO PROJECT PM PEAK HOUR									
Road and Segment	**Hourly Leq**	**Peak Hour % of ADT**	**Peak Hour Correction**	**Daytime Traffic %**	**Evening Traffic %**	**Nighttime Traffic %**	**Evening and Nighttime Penalty**	**CNEL**	**Net Change from No Project**
Avenue 42									
Madison Street to Project Area Center	67.5	9.7%	-3.7	54.7%	11.3%	34.0%	6.5	70.4	--
Project Area Center to Monroe Street	67.6	9.7%	-3.7	54.7%	11.3%	34.0%	6.5	70.5	--
Monroe Street to Gore Street	68.2	9.7%	-3.7	54.7%	11.3%	34.0%	6.5	71.1	--
Monroe St									
Avenue 40 to Avenue 42	65.7	9.7%	-3.7	54.7%	11.3%	34.0%	6.5	68.6	--
Avenue 42 to I-10 WB Ramp	68.3	9.7%	-3.7	54.7%	11.3%	34.0%	6.5	71.2	--
I-10 WB Ramp to Avenue 44	67.3	9.7%	-3.7	54.7%	11.3%	34.0%	6.5	70.2	--
Avenue 44 to Fred Waring Drive	69.2	9.7%	-3.7	54.7%	11.3%	34.0%	6.5	72.1	--

2033 MAXIMUM BUILDOUT SCENARIO PM PEAK HOUR									
Road and Segment	**Hourly Leq**	**Peak Hour % of ADT**	**Peak Hour Correction**	**Daytime Traffic %**	**Evening Traffic %**	**Nighttime Traffic %**	**Evening and Nighttime Penalty**	**CNEL**	**Net Change from No Project**
Avenue 42									
Madison Street to Project Area Center	69.4	9.6%	-3.7	54.7%	11.3%	34.0%	6.5	72.3	1.9
Project Area Center to Monroe Street	70.3	9.6%	-3.7	54.7%	11.3%	34.0%	6.5	73.2	2.7
Monroe Street to Gore Street	68.7	9.6%	-3.7	54.7%	11.3%	34.0%	6.5	71.6	0.5
Monroe St									
Avenue 40 to Avenue 42	66	9.6%	-3.7	54.7%	11.3%	34.0%	6.5	68.9	0.3
Avenue 42 to I-10 WB Ramp	70.7	9.6%	-3.7	54.7%	11.3%	34.0%	6.5	73.6	2.4
I-10 WB Ramp to Avenue 44	70.2	9.6%	-3.7	54.7%	11.3%	34.0%	6.5	73.1	2.9
Avenue 44 to Fred Waring Drive	70.5	9.6%	-3.7	54.7%	11.3%	34.0%	6.5	73.4	1.3

2033 SCENARIO 2 PM PEAK HOUR									
Road and Segment	**Hourly Leq**	**Peak Hour % of ADT**	**Peak Hour Correction**	**Daytime Traffic %**	**Evening Traffic %**	**Nighttime Traffic %**	**Evening and Nighttime Penalty**	**CNEL**	**Net Change from No Project**
Avenue 42									
Madison Street to Project Area Center	**68.8**	9.6%	-3.7	54.7%	11.3%	34.0%	6.5	71.7	1.3
Project Area Center to Monroe Street	**69.3**	9.6%	-3.7	54.7%	11.3%	34.0%	6.5	72.2	1.7
Monroe Street to Gore Street	**68.8**	9.6%	-3.7	54.7%	11.3%	34.0%	6.5	71.7	0.6
Monroe St									
Avenue 40 to Avenue 42	**66.1**	9.6%	-3.7	54.7%	11.3%	34.0%	6.5	69.0	0.4
Avenue 42 to I-10 WB Ramp	**70.0**	9.6%	-3.7	54.7%	11.3%	34.0%	6.5	72.9	1.7
I-10 WB Ramp to Avenue 44	**69.4**	9.6%	-3.7	54.7%	11.3%	34.0%	6.5	72.3	2.1
Avenue 44 to Fred Waring Drive	**70.1**	9.6%	-3.7	54.7%	11.3%	34.0%	6.5	73.0	0.9

A

REPORT:	**Results: Sound Levels - No Barrier Objects**		
TNM VERSION	3.1.7970.37608	REPORT DATE:	22 November 2023
CALCULATED WITH:	3.1.7970.37608	CALCULATION DATE:	11/10/2023 1:50:30 PM
CASE:	Oasis_Buildout_NoProject_PM	ORGANIZATION:	MIG
UNITS:	Metric	ANALYSIS BY:	CD
DEFAULT GROUND TYPE:	HardSoil	PROJECT/CONTRACT	Oasis at Indio Specific Plan
ATMOSPHERICS:	27°C, 20%	Average pavement type shall be used unless a state highway agency substantiates the use of a different type with approval FHWA.	
PAVEMENT TYPE(S) USED:	Average		

Receiver				Modeled Traffic Noise Levels				
				LAeq		Increase over Existing		
Name	No.	Nb. R.R.	Existing LAeq	Calc.	Absolute Criterion	Calc.	Relative Criterion	Type of Impact
			dBA	dBA	dBA	dBA	dBA	
A42 - Madison to Clinto	0	0	---	67.5	0.0	---	---	Sound Level
A42 - Clinton to Monroe	0	0	---	67.6	0.0	---	---	Sound Level
A42 - Monroe to Gore	0	0	---	68.2	0.0	---	---	Sound Level
Monroe - A40 to A42	0	0	---	65.7	0.0	---	---	Sound Level
Monroe - A42 to I10WB	0	0	---	68.3	0.0	---	---	Sound Level
Monroe - I10WB to A44	0	0	---	67.3	0.0	---	---	Sound Level
Monroe - A44 to FredWaring	0	0	---	69.2	0.0	---	---	Sound Level

REPORT:	**Results: Sound Levels - No Barrier Objects**		
TNM VERSION	3.1.7970.37608	REPORT DATE:	22 November 2023
CALCULATED WITH:	3.1.7970.37608	CALCULATION DATE:	11/10/2023 1:59:27 PM
CASE:	Oasis_Buildout_MaxBuildScenario_PM	ORGANIZATION:	MIG
UNITS:	Metric	ANALYSIS BY:	CD
DEFAULT GROUND TYPE:	HardSoil	PROJECT/CONTRACT	Oasis at Indio Specific Plan
ATMOSPHERICS:	27°C, 20%	Average pavement type shall be used unless a state highway agency substantiates the use of a different type with approval FHWA.	
PAVEMENT TYPE(S) USED:	Average		

Receiver				Modeled Traffic Noise Levels				
				LAeq		Increase over Existing		
Name	No.	Nb. R.R.	Existing LAeq	Calc.	Absolute Criterion	Calc.	Relative Criterion	Type of Impact
			dBA	dBA	dBA	dBA	dBA	
A42 - Madison to Clinto	0	0	---	69.4	0.0	---	---	Sound Level
A42 - Clinton to Monroe	0	0	---	70.3	0.0	---	---	Sound Level
A42 - Monroe to Gore	0	0	---	68.7	0.0	---	---	Sound Level
Monroe - A40 to A42	0	0	---	66.0	0.0	---	---	Sound Level
Monroe - A42 to I10WB	0	0	---	70.7	0.0	---	---	Sound Level
Monroe - I10WB to A44	0	0	---	70.2	0.0	---	---	Sound Level
Monroe - A44 to FredWaring	0	0	---	70.5	0.0	---	---	Sound Level

REPORT:	**Results: Sound Levels - No Barrier Objects**		
TNM VERSION	3.1.7970.37608	REPORT DATE:	22 November 2023
CALCULATED WITH:	3.1.7970.37608	CALCULATION DATE:	11/10/2023 2:10:58 PM
CASE:	Oasis_Buildout_Scen2_PM	ORGANIZATION:	MIG
UNITS:	Metric	ANALYSIS BY:	CD
DEFAULT GROUND TYPE:	HardSoil	PROJECT/CONTRACT	Oasis at Indio Specific Plan
ATMOSPHERICS:	27°C, 20%	Average pavement type shall be used unless a state highway agency substantiates the use of a different type with approval FHWA.	
PAVEMENT TYPE(S) USED:	Average		

Receiver				Modeled Traffic Noise Levels				
				LAeq		Increase over Existing		
Name	No.	Nb. R.R.	Existing LAeq	Calc.	Absolute Criterion	Calc.	Relative Criterion	Type of Impact
			dBA	dBA	dBA	dBA	dBA	
A42 - Madison to Clinto	0	0	---	68.8	0.0	---	---	Sound Level
A42 - Clinton to Monroe	0	0	---	69.2	0.0	---	---	Sound Level
A42 - Monroe to Gore	0	0	---	68.8	0.0	---	---	Sound Level
Monroe - A40 to A42	0	0	---	66.1	0.0	---	---	Sound Level
Monroe - A42 to I10WB	0	0	---	70.0	0.0	---	---	Sound Level
Monroe - I10WB to A44	0	0	---	69.4	0.0	---	---	Sound Level
Monroe - A44 to FredWaring	0	0	---	70.1	0.0	---	---	Sound Level

REPORT:	**Results: Sound Levels - No Barrier Objects**		
TNM VERSION	3.1.7970.37608	REPORT DATE:	22 November 2023
CALCULATED WITH:	3.1.7970.37608	CALCULATION DATE:	11/10/2023 2:19:24 PM
CASE:	Oasis_A_Street_MaxBuild	ORGANIZATION:	MIG
UNITS:	Metric	ANALYSIS BY:	CD
DEFAULT GROUND TYPE:	HardSoil	PROJECT/CONTRACT	Oasis at Indio Specific Plan
ATMOSPHERICS:	27°C, 20%	Average pavement type shall be used unless a state highway agency substantiates the use of a different type with approval FHWA.	
PAVEMENT TYPE(S) USED:	Average		

Receiver				Modeled Traffic Noise Levels				
				Lden		Increase over Existing		
Name	No.	Nb. R.R.	Existing Lden	Calc.	Absolute Criterion	Calc.	Relative Criterion	Type of Impact
			dBA	dBA	dBA	dBA	dBA	
A Street	0	0	---	58.7	0.0	---	---	Sound Level

REPORT:	**Results: Sound Levels - No Barrier Objects**
TNM VERSION	3.1.7970.37608
CALCULATED WITH:	3.1.7970.37608
CASE:	Oasis_A_Street_Scen2
UNITS:	Metric
DEFAULT GROUND TYPE:	HardSoil
ATMOSPHERICS:	27°C, 20%
PAVEMENT TYPE(S) USED:	Average

REPORT DATE:	22 November 2023
CALCULATION DATE:	11/10/2023 2:21:59 PM
ORGANIZATION:	MIG
ANALYSIS BY:	CD
PROJECT/CONTRACT	Oasis at Indio Specific Plan

Average pavement type shall be used unless a state highway agency substantiates the use of a different type with approval FHWA.

Receiver				Modeled Traffic Noise Levels				
				Lden		Increase over Existing		
Name	No.	Nb. R.R.	Existing Lden	Calc.	Absolute Criterion	Calc.	Relative Criterion	Type of Impact
			dBA	dBA	dBA	dBA	dBA	
A Street	0	0	---	58.1	0.0	---	---	Sound Level