DRAFT NOISE STUDY REPORT

Florida Department of Transportation

District 1

SR 72 (Clark Road) Project Development and Envrionmental Study

Limits of Project: From East of I-75 to Lorraine Road

Sarasota County, Florida

Financial Management Number: 444634-1

ETDM Number: 14441

Date: September 2024

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by the Florida Department of Transportation (FDOT) pursuant to 23 U.S.C. § 327 and a Memorandum of Understanding dated May 26, 2022 and executed by the Federal Highway Administration and FDOT.

Executive Summary

The Florida Department of Transportation (FDOT) District One is conducting a Project Development and Environment (PD&E) Study along State Road (SR) 72 (Clark Road) in Sarasota County to evaluate roadway capacity and safety improvements. The project is approximately 3.39 miles in length. The PD&E study is evaluating widening the existing two-lane undivided roadway to a four-lane divided roadway.

The purpose of this Noise Study Report (NSR) is to identify noise sensitive land uses, evaluate future traffic noise levels at the properties with and without the proposed improvements, and evaluate the need for, and effectiveness of, noise abatement measures. Additionally, the analysis considered potential construction noise impacts and the identification of noise impact contours adjacent to the project corridor.

This traffic noise study was completed in accordance with Title 23, Code of Federal Regulations, Part 772 (23 CFR 772), *Procedures for Abatement of Highway Traffic Noise and Construction Noise* following methodology and procedures established by the FDOT in the *PD&E Manual*, Part 2, Chapter 18 – Highway Traffic Noise and the *Traffic Noise Modeling and Analysis Practitioner's Handbook* (December 2018).

The Traffic Noise Model Version 2.5 (TNM 2.5) was used to predict traffic noise levels at 227 receptors for the existing (2019 and 2022) and future year (2045 and 2050) conditions with and without the proposed improvements.

The results of the analysis indicate that the existing condition exterior traffic noise levels range from 47.8 to 66.8 dB(A). The proposed No-Build Alternative exterior traffic noise levels are predicted to range from 48.9 to 69.1 dB(A). The Build Alternative exterior traffic noise levels are predicted to range from 50.6 to 67.9 dB(A).

Based on the analyses, one special land use (SLU) facility (receptor 11N-1) is predicted to experience highway traffic noise levels that approach, meet, or exceed the Noise Abatement Criteria (NAC) in the future with the proposed project improvements. None of the evaluated receptors will experience a substantial increase [15 dB(A) or more] of traffic noise with the proposed improvements. The maximum increase between the existing condition and the proposed Build Alternative is 4.3 dB(A) at receptor 6N-2, a single-family residence along Shetland Way east of Lorraine Road.

Noise abatement measures were evaluated for the impacted SLU site. Alignment modifications, buffer zones, and traffic management measures were determined to not be feasible abatement measures. The impacted SLU failed to pass the preliminary screening analysis in determining feasibility of a noise barrier. Therefore, a noise barrier is not a viable noise abatement measure for the impacted receptor since the minimum feasibility requirements cannot be achieved. Based on the results of the evaluation, there appear to be no reasonable solutions to abate the predicted traffic noise impacts at the impacted SLU.

TABLE OF CONTENTS

LIST OF FIGURES

Figure Page Number

LIST OF TABLES

Table Page Number

APPENDICES

1.0 PROJECT SUMMARY

The Florida Department of Transportation (FDOT) District One is conducting a Project Development and Environment (PD&E) Study along State Road (SR) 72 (Clark Road) in Sarasota County to evaluate roadway capacity and safety improvements. The PD&E study limits extend approximately 3.39 miles from east of I-75 to Lorraine Road within unincorporated Sarasota County (**Figure 1**).

Figure 1: Project Location Map

1.1 Project Description

This roadway project proposes the potential widening of 3.39 miles of two-lane undivided SR 72 (Clark Road) up to four lanes from east of I-75 to Lorraine Road within unincorporated Sarasota County. Additionally, associated but not part of this project, there are roundabout improvements recently completed at Proctor Road/Dove Avenue and Lorraine Road, and a temporary traffic signal at Ibis Street. SR 72 (Clark Road) plays an important role in the transportation network as it facilitates east-west movement within Sarasota County for both local and regional traffic [including truck traffic]. Within the region, SR 72 (Clark Road) provides connections to US 41, I-75, and beaches at Siesta Key on the west and SR 70 on the east within DeSoto County [just west of the City of Arcadia]. In keeping with the objectives of the Sarasota/Manatee Metropolitan Planning

Organization (MPO), the proposed project may include shared-use paths on both sides of the roadway to enhance bicycle and pedestrian mobility.

The project segment of SR 72 (Clark Road) is classified as 'Urban Minor Arterial'. East of the I-75 interchange, SR 72 (Clark Road) narrows to four lanes before becoming a two-lane undivided roadway with 12-foot travel lanes in each direction and intermittent right-turn and center left-turn lanes. The project corridor currently contains paved shoulders west of Proctor Road/Dove Avenue, marked bicycle lanes east of Proctor Road/Dove Avenue, and intermittent sidewalks [primarily on the north side of the road where the master planned residential developments are located; however, there are some sidewalks on the south side of the road near Twin Lakes Park and east of Sandhill Lake Drive/Preservation Drive]. An open drainage system is provided via the grass swales located along each side of the roadway. The posted speed limits along the project corridor are 45 miles per hour (mph) from I-75 to Proctor Road and 55 mph from Proctor Road to Lorraine Road, with the exception of a curved portion of the road just east of Proctor Road where there is an advisory 25 mph. As part of the nearby I-75 Diverging Diamond Interchange (DDI) project, the speed limit on the west end of the project corridor [near Twin Lakes Park] is being lowered to 35 mph. The existing context classification for the project corridor is C3C-Suburban Commercial. However, the approved future context classification for the project corridor is C3R-Suburban Residential.

The existing roadway right-of-way is generally 100 feet in width; intermittent wider and narrower sections exist along the length of the corridor. Additional right-of-way is anticipated to accommodate the proposed improvements; right-of-way requirements will be determined during the Project Development and Environment (PD&E) Study.

1.2 Purpose & Need

The purpose of this project is to improve the operational capacity of SR 72 (Clark Road) from east of I-75 to Lorraine Road within Sarasota County in order to accommodate future travel demand projected as a result of area-wide population and employment growth. Other goals of the project include enhancing safety conditions and accommodating multimodal activity. The need for the project is based on the following criteria:

1.2.1 Transportation Demand

There are several large residential developments along the project section of SR 72 (Clark Road), either already built or under construction, including Sandhill Lake, Heron Lake, East Lake, Skye Ranch, and The Forest at Hi Hat Ranch. The Skye Ranch development is expected to accommodate 4,000+ multi- and single-family homes by 2040 and will be one of the largest developments in Sarasota County. In conjunction with the Skye Ranch residential development, dozens of new parks, a new elementary school, and a new shopping center are proposed to occupy the former LT Ranch [owned by the Turner family and located east of I-75, west of Cow Pen Slough, and south

of SR 72 (Clark Road)]. Based on the Florida Department of Transportation (FDOT) District One Regional Planning Model, the population within the traffic analysis zones (TAZs) encompassing the project segment is expected to grow by 78.8% from 13,278 in 2015 to 23,745 in 2045 (2.6% annual growth rate); employment is expected to increase by 84.1% from 1,981 in 2015 to 3,647 in 2045 (2.8% annual growth rate).

While SR 72 (Clark Road) currently operates above its designated LOS standard of 'D', conditions are anticipated to deteriorate if no future improvements occur as the roadway lacks the operational capacity to accommodate the projected travel demand. In turn, this will contribute to higher levels of congestion and delays. With the proposed improvement, the corridor is expected to continue to operate at an acceptable LOS.

1.2.2 Safety

The five-year average crash rate [i.e., crashes per million vehicle miles traveled] for this project corridor was obtained from the Florida Department of Transportation Safety Office. During the five-year period from 2015 to 2019, 107 crashes occurred along the corridor with three fatalities and 99 injuries. This data indicates that the five-year average crash rate for the SR 72 (Clark Road) project corridor is 1.85. This is comparable to the statewide average crash rate for similar facilities [Urban 2-3 Lanes, 2-Way Undivided] which is 1.92.

According to the data, angle and rear-end crashes were the most common crash types recorded along the project segment. It should be noted that as the volume of traffic increases along the corridor, the opportunity for vehicle movement conflict is expected to increase.

Serving as part of the emergency evacuation route network designated by the Florida Division of Emergency Management and Sarasota County, SR 72 (Clark Road) plays a critical role during emergency evacuation periods as it facilitates traffic from the vulnerable coastal areas located in the western portion of the county inland to the east. It additionally runs parallel to US 41 and I-75 as well as directly connects to US 41 and I-75 on the west and SR 70 on the east within the City of Arcadia - all of which are designated state and county evacuation routes.

The proposed project is anticipated to improve safety conditions along the roadway by:

- Reducing congestion through additional capacity,
- Enhancing a viable east-west route that can aid in emergency access and response times, and
- Maintaining the evacuation capabilities and further enhancing emergency evacuation efficiency of SR 72 (Clark Road).

1.2.3 Modal Interrelationships

SR 72 (Clark Road) currently contains paved shoulders west of Proctor Road/Dove Avenue, marked bicycle lanes east of Proctor Road/Dove Avenue, and intermittent sidewalks [primarily on the

north side of the road where the master planned residential developments are located; however, there are some sidewalks on the south side of the road near Twin Lakes Park and east of Sandhill Lake Drive/Preservation Drive]. The proposed project may include shared-use paths on both sides of the roadway to enhance bicycle and pedestrian mobility. Accommodating bicycle and pedestrian activity within the corridor is particularly important given that this activity is expected to increase with the growing number of residential developments within the area. In addition, SR 72 (Clark Road) has been identified as a "Multi Modal Emphasis Corridor (MMEC)" by the Sarasota/Manatee MPO indicating a continued desire to accommodate for multiple modes.

The MMEC concept was developed during the Sarasota/Manatee MPO's 2035 Long Range Transportation Plan (LRTP) as a means of redeveloping and revitalizing the US 41 corridor. In the Sarasota/Manatee MPO's Transform 2045 [the 2045 LRTP], the MMEC program has been expanded to include SR 72 (Clark Road) along with several additional roadway corridors. MMEC roadways aim to establish a linkage between land use and transportation strategies through urban design that improve traffic movement as well as walking, biking, and transit accessibility conditions.

1.2.4 Project Status

The proposed widening and associated roundabout improvements on SR 72 (Clark Road) from east of I-75 to Lorraine Road are not identified in the Sarasota/Manatee MPO's Transform 2045 as they were programmed by the FDOT as a result of all the new residential development occurring along the corridor.

The proposed SR 72 (Clark Road) widening and associated roundabout improvements are identified in the FDOT's current FY 2020/2021-2024/2025 State Transportation Improvement Program (STIP) as well as FDOT's FY 2021-2025 Work Program with the following amounts programmed by phase:

SR 72 (Clark Road) from East of I-75 to Lorraine Road [FM #444634-1]:

PD&E Study - $1,810,000 [FY 2022]

1.3 Alternatives Analysis Summary

The alternatives were developed in consideration of input from local agencies and public comments received at the public meetings.

The alternatives analyzed include a Build Alternative with four lanes and shared use paths on both sides, and a No-Build Alternative. The No-Build Alternative assumes no improvements to the corridor other than routine maintenance. The Intersection Control Evaluation (ICE) process was used to evaluate roundabouts at the four main intersections within the project limits.

1.4 Description of Preferred Alternative

Based on the engineering and environmental comparative analysis documented during this PD&E study, the Preferred alternative for SR 72 (Clark Road) is the Build Alternative with roundabout intersections (**Figure 2**). The Build Alternative best meets the project purpose with:

- Additional travel lanes for vehicle capacity
- New roundabout intersections for enhanced operations and safety
- New raised median for improved safety
- New shared use paths for multimodal accommodations

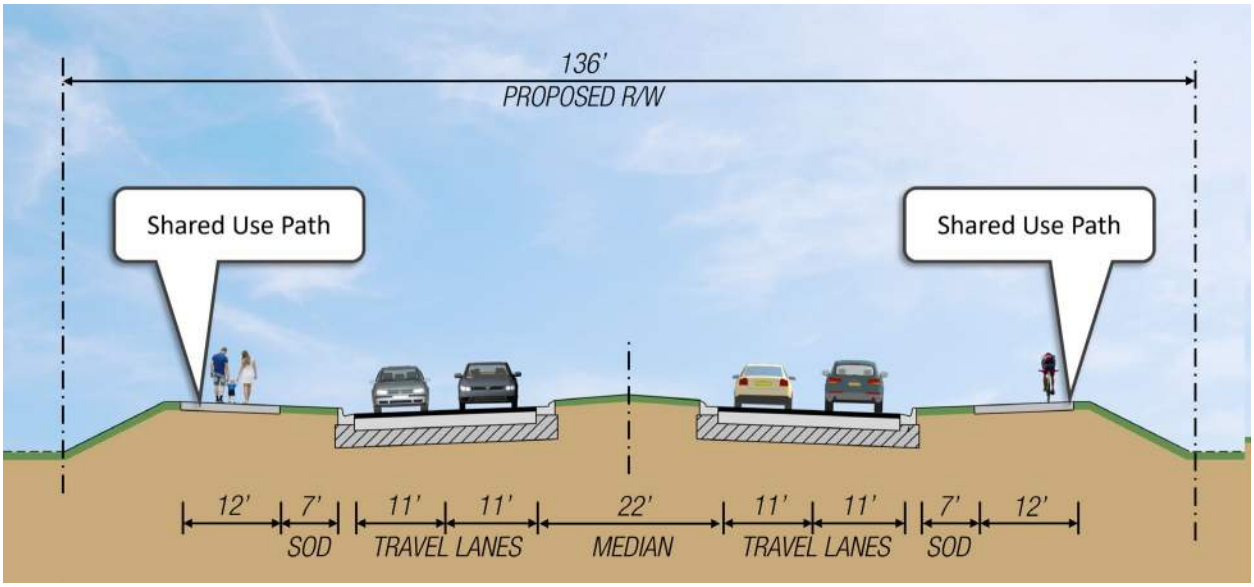


Figure 2: Preferred Alternative SR 72 (Clark Road) typical section

1.5 Purpose of Report

The purpose of this Noise Study Report (NSR) is to identify noise sensitive land uses, to evaluate future traffic noise levels at the properties with and without the proposed improvements, and to evaluate the need for, and effectiveness of, noise abatement measures. Additional objectives include the consideration of potential construction noise impacts and the identification of noise impact contours adjacent to the corridor.

2.0 METHODOLOGY

The traffic noise study was performed in accordance with Code of Federal Regulations, Title 23, Part 772 (23 CFR 772) *Procedures for Abatement of Highway Traffic Noise and Construction Noise* (July 2010) using methodology established by the FDOT in the *PD&E Manual*, Part 2, Chapter 18 (FDOT, July 1, 2023), and FDOT's *Traffic Noise Modeling and Analysis Practitioners Handbook* (December 2018). A methodology meeting was held with FDOT District One staff on April 1, 2024. The methodology agenda/minutes are provided in **Appendix A**.

This section describes the sound level metrics and motor vehicle traffic data that were used to prepare the analysis and the criteria used to determine if a future design year (2045 & 2050) traffic noise level with the new roadway would be considered an impact. Potential noise abatement measures and noise contours are also described.

2.1 Noise Metrics

Noise levels developed for this analysis are expressed in decibels (dB) using an "A"-scale [dB(A)] weighting. This scale most closely approximates the response characteristics of the human ear. All noise levels are reported as hourly equivalent noise levels, or Leq(h). The Leq(h) is defined as the equivalent steady-state sound level that, in a given hourly period, contains the same acoustic energy as the time-varying sound level for the same hourly period. Use of the dB(A) and Leq(h) metrics to evaluate traffic noise is consistent with 23 CFR 772.

Predicted noise levels were produced using the Federal Highway Administration (FHWA) Traffic Noise Model (TNM) version 2.5. The TNM propagates sound energy in one-third octave bands between highways and nearby receptors taking the intervening ground's acoustical characteristics/topography and rows of buildings into account. Notably, there are existing privacy walls located along the project corridor. These walls were included in the TNM input.

2.2 Traffic Data

Traffic noise is heavily dependent on both traffic speed and traffic volume with the amount of noise generated by traffic increasing as the vehicle speed and number of vehicles increase. The traffic conditions that result in the highest noise levels for roadways are the hourly traffic volumes that represent Level of Service (LOS) C traffic conditions because they represent maximized traffic volumes that continue to travel at free flow speed.

For SR 72 (Clark Road) roadway segments, the lesser volumes between demand and LOS C hourly traffic volumes were utilized. The project-specific traffic data used in TNM to predict existing (2019 and 2022) highway traffic noise levels and future (2045 and 2050) highway traffic noise levels, with and without the Build Alternative, are provided in **Appendix B**.

2.3 Noise Abatement Criteria

Noise sensitive sites are any property where frequent human use occurs and where a lowered noise level would be a benefit. FHWA has established noise levels at which noise abatement must be considered for various types of noise sensitive sites. These levels, which are used by the FDOT for the purpose of evaluating traffic noise, are referred to as the Noise Abatement Criteria (NAC). As shown in **Table 2-1** below, the NAC vary by activity category. Noise abatement measures are considered when predicted traffic noise levels approach, meet, or exceed the NAC for its respective category. The FDOT defines "approach" as within one dB(A) of the applicable FHWA criterion. For comparison purposes, typical noise levels for common indoor and outdoor activities are provided in **Figure 3**.

Noise abatement measures must also be considered when a substantial increase in traffic noise occurs as a direct result of the proposed improvements. A substantial increase typically occurs in areas where traffic noise is a minor component of the existing noise environment but would become a major component after the project is constructed (e.g., new alignment project). The project proposes to maintain or follow the existing alignment of SR 72 (Clark Road).

Table 2-1: FHWA & FDOT Noise Abatement Criteria

Activity Category	Activity Leq(h)[1]		Evaluation Location	Description of Activity Category
	FHWA	FDOT		
A	57	56	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B[2]	67	66	Exterior	Residential.
C[2]	67	66	Exterior	Active sports areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreational areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	51	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E[2]	72	71	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.
F	-	-	-	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	-	-	-	Undeveloped lands that are not permitted.

(Based on Table 1 of Title 23, Part 772 of the Code of Federal Regulations)

1. The Leq(h) Activity Criteria values are for impact determination only and are not design standards for noise abatement measures.
2. Includes undeveloped lands permitted for this activity category.

Note: FDOT defines that a substantial noise increase occurs when existing noise level is predicted to exceeded by 15 decibels or more as a result of the transportation improvement project.

Common Outdoor Activities	Noise Level dB(A)	Common Indoor Activities
	---110---	Rock Band
Jet Fly-Over 1000 ft.		
	---100---	
Gas Lawn Mower at 3 ft.		
	---90---	
Diesel Truck at 50 ft., at 50 mph		Food Blender at 3 ft.
	---80---	Garbage Disposal at 3 ft.
Noise Urban Area (Daytime)		
Gas Lawn Mower at 100 ft.	---70---	Vacuum Cleaner at 10 ft.
Commercial Area		Normal Speech at 3 ft.
Heavy Traffic at 300 ft.	---60---	
		Large Business Office
Quiet Urban Daytime	---50---	Dishwasher Next Room
Quiet Urban Nighttime	---40---	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime		
	---30---	Library
Quiet Rural Nighttime		Bedroom at Night, Concert Hall (Background)
	---20---	
	---10---	
Lowest Threshold of Human Hearing	---0---	Lowest Threshold of Human Hearing
Source: California Dept. of Transportation; Technical Noise Supplement; Oct 1998; Page 18.		

Figure 3: Typical Noise Levels

2.4 Noise Abatement Measures

Noise abatement is considered at all noise sensitive sites predicted to approach, meet, or exceed the NAC as stipulated by 23 CFR 772. Abatement measures considered during the PD&E phase included traffic management, alignment modifications, noise buffer zones through application of land use controls, and noise barriers. The following discusses the feasibility (i.e., amount of noise

reduction, engineering considerations) and/or reasonableness (i.e., number of noise sensitive sites benefited, absolute noise levels, cost, etc.) of these measures.

2.4.1 Traffic Management

Traffic management measures can reduce motor vehicle-related noise. For example, heavy trucks can be prohibited from certain streets and roads, or given specific time restrictions. Prohibiting or restricting heavy trucks would reduce or eliminate the ability to effectively move people and goods within the study limits and areas to the east and west. The timing of traffic lights can also be changed to smooth out the flow of traffic and eliminate the need for frequent stops and starts. Roundabouts are being provided along this corridor. Reducing speed limits and increasing enforcement of speed limits is also an effective method of reducing motor vehicle noise. Speeds were reduced to meet the future context classification, C3R-Suburban Residential, for the project corridor. Reducing the speeds assisted in reducing predicted noise levels; however, reducing the traffic speeds any further would not be consistent with the approved future context classification for the project corridor and would not meet the needs of the facility. As such, traffic management measures are not considered a reasonable noise mitigation measure for the project.

2.4.2 Alignment Modifications

Modifying the alignment of a roadway can also be an effective traffic noise mitigation measure. When the horizontal alignment is shifted away from a noise sensitive site, the sound level can be reduced. In certain circumstances, when a change is made to the vertical alignment (i.e., shifting the alignment so that it is below or above the elevation of noise sensitive site), highway traffic noise may be reduced due to shielding. The proposed project improvements will generally follow the same alignment as the existing roadway to minimize the need for additional right-of-way. Shifting the SR 72 (Clark Road) alignment would likely result in impacts that include increased property acquisition, residential or business relocations, and other environmental impacts. For these reasons, an alignment modification to reduce traffic noise impacts would result in other undesirable impacts and is not a feasible or reasonable noise abatement measure.

2.4.3 Land Use Controls

Another noise abatement measure is to use land use controls to minimize impacts to future development. Providing a buffer between a roadway and future noise sensitive land uses is an abatement measure that can minimize/eliminate noise impacts in areas of future development. To encourage use of this abatement measure through local land use planning, noise contours have been developed.

Land uses such as residences, motels, medical facilities, schools, churches, recreation areas, and parks are considered incompatible with highway noise levels that approach, meet, or exceed the NAC. In order to reduce the possibility of additional traffic noise-related impacts, noise level contours were developed for the future improved roadway facility. Specifically, these noise

contours delineate the distance from the improved roadway's edge-of-pavement to where traffic noise would approach the NAC for Activity Categories A, B, C, D, and E in the future (year 2045 and 2050) with the proposed project improvements. The contours are depicted in **Table 2-2** and **Figure 4** and will help local officials in planning and permitting future noise compatible land uses. Local officials will be provided with a copy of the NSR to promote compatibility between land development and the proposed improvements.

Table 2-2: Noise Contours

Roadway Segment	NAC* Activity Category			
	A – 56 dB(A)	B/C – 66 dB(A)	D – 51 dB(A)**	E – 71 dB(A)
From East of I-75 to Ibis St./Talon Blvd.	351 feet	75 feet	2 feet	30 feet
From Ibis St./Talon Blvd. to Proctor Rd./Dove Ave.	264 feet	56 feet	<1 foot	17 feet
From Proctor Rd./Dove Ave. to Coash Rd./Hawkins Rd.	357 feet	85 feet	5 feet	36 feet
From Coash Rd./Hawkins Rd. to Lorraine Ave.	345 feet	81 feet	4 feet	35 feet

*See Table 2 for a description of the activities that occur within each category. Distances do not reflect any reduction in noise levels that would occur from existing structures (shielding) and should be used for planning purposes only.

**Represents an interior noise level. A reduction factor of 25 dB(A) is applied to the modeling results consistent with guidance from *FHWA Highway Traffic Noise: Analysis and Abatement Guidance* in order to identify the estimated contour distance for NAC Activity Category D.

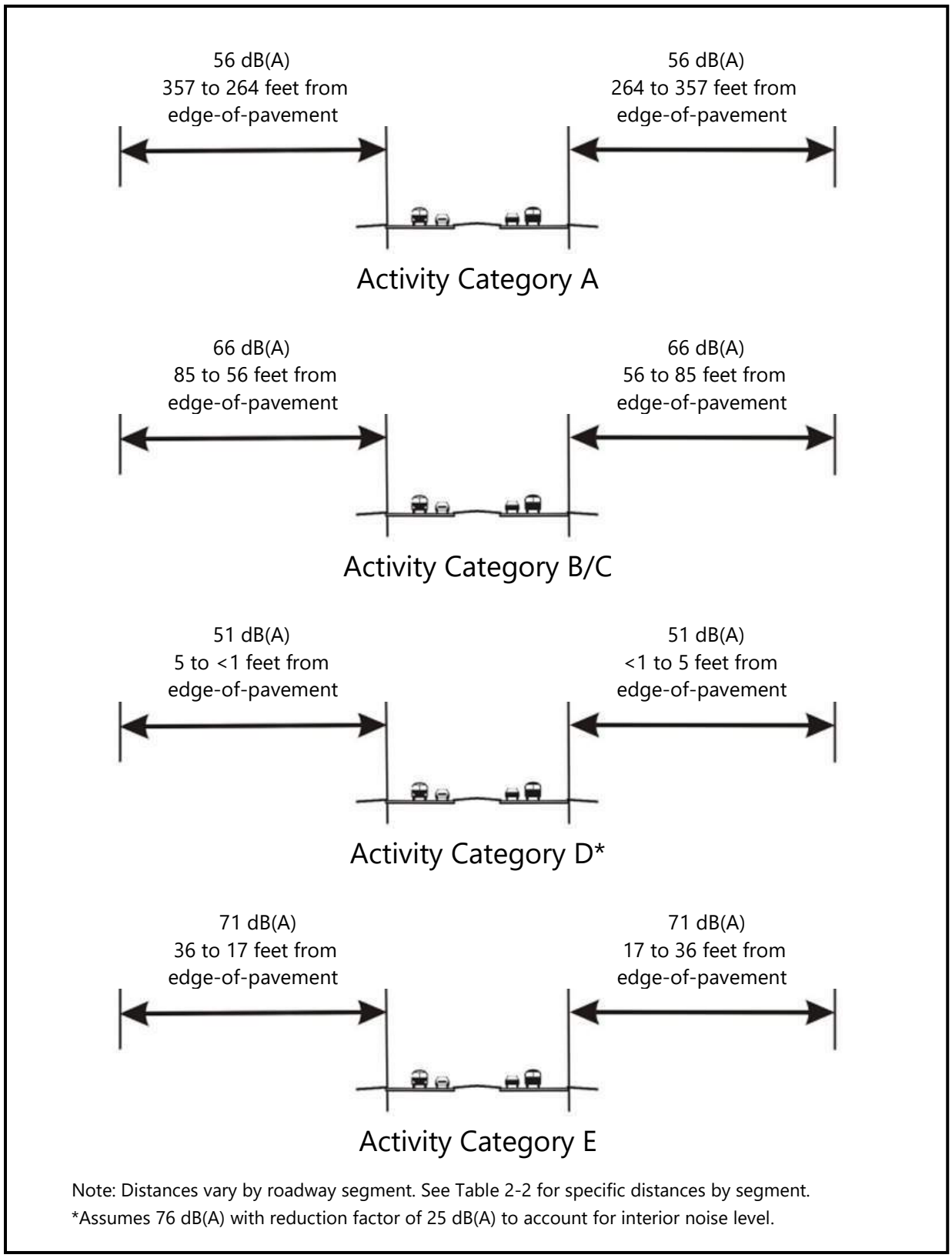


Figure 4: Noise Contours

2.4.4 Noise Barriers

Noise barriers have the potential to reduce traffic noise by interrupting the sound path between the motor vehicles on a roadway and a noise sensitive site. To effectively reduce traffic noise, a barrier must be relatively long, continuous (with no intermittent openings for driveways, etc.), and of sufficient height. Use of noise barriers is the most common traffic noise abatement measure. Generally, noise barriers are most effective when placed as close to the noise source or as close to the noise receptor as possible. The noise sensitive sites are grouped into common noise environments (CNEs) to evaluate the potential feasibility and reasonableness of providing noise barriers to reduce traffic noise. For a noise barrier to be considered feasible and reasonable, the following criteria must be met:

To be considered feasible it must:

- Demonstrate that it will benefit at least two impacted receptors by providing a reduction in traffic related noise of at least 5 dB(A).
- Take into consideration additional feasibility factors including design and construction, safety, access, right-of-way, maintenance, drainage, and utility factors.

To be considered reasonable it must:

- Take into consideration the viewpoints of the benefited property owners and residents.
- The cost of the noise barrier must not exceed $64,000 per benefited receptors for residences. A benefited receptor is defined as a receptor that would experience at least a 5 dB(A) reduction in noise levels as a result of providing a noise barrier. The current unit cost used to evaluate cost reasonableness in $40 per square foot for all noise barriers. This cost covers barrier materials and labor.
- Satisfy the FDOT's Noise Reduction Design Goal of 7 dB(A). Therefore, a noise barrier must provide a noise reduction of at least 7 dB(A) for at least one benefited receptor.

2.4.5 Special Land Uses

The methodology used to evaluate noise barrier systems for special use sites is different than the one used for residential locations. Special land uses (SLUs) are non-residential noise sensitive sites that are listed in FHWA's NAC Activity Categories A, C, D, and E. The standard procedure for determining the reasonableness and feasibility of a noise barrier for an SLU is documented in FDOT's *Methodology to Evaluate Highway Traffic Noise at Special Land Uses* (2023). This special use site analysis procedure starts with the established cost threshold for residential locations and generalizes it to a person-hours of use criteria that can be applied to non-residential sites. An Equivalent Receptor methodology has been provided which allows for the combined evaluation of both residential and non-residential noise sensitive land uses. In order for an isolated SLU to be further evaluated for noise abatement measures, it must have enough person-hour usage to equate to at least two residences (45,026 person-hours).

3.0 NOISE ANALYSIS

3.1 Model Validation

To validate the TNM and verify that the model accurately predicts traffic noise levels, traffic noise measurements were obtained at two locations in the field within the project corridor. The validation locations chosen were most suitable for validation due to the distance between existing traffic signals and accessibility. Those locations are depicted on the project aerials found in **Appendix C**. Traffic data recorded during each measurement period included vehicle volumes, vehicle types, and vehicle speeds. Meteorological conditions were also recorded.

The field measurements were conducted in accordance with the *Noise Measurement Handbook* from FHWA. The measurements were obtained using a Casella CEL-63X digital sound level meter (SLM). The SLM was calibrated before and after the measurement periods with a Casella CEL-120/2 acoustic calibrator. The speeds of passing vehicles were recorded with a Stalker Sport radar gun.

The recorded traffic data were used as input for the TNM to determine if, given the topography and actual site conditions of the area, the computer model could "re-create" the measured levels with the existing roadway. Following FDOT policy, a noise prediction model is considered within an acceptable level of accuracy if the measured and predicted noise levels are within a tolerance standard of 3 dB(A). The validation results are shown in **Table 3-1**. As shown, the ability of the model to predict noise levels within an acceptable level of accuracy [plus or minus 3 dB(A)] for the project was confirmed. Measured noise levels are higher in most cases than those predicted in TNM due to background noise during the validation period. Documentation in support of the validation is provided in **Appendix D**.

Table 3-1: Validation Results

Location	Measurement Period	Measured Noise Level (dB(A))	Modeled Noise Level (dB(A))	Difference (Measured – Modeled)
Site 1	1	65.3	64.3	1.0
	2	65.4	66.0	-0.6
	3	65.2	63.9	1.3
Site 2	1	65.7	65.3	0.4
	2	66.5	66.4	0.1
	3	68.1	66.8	1.3

3.2 Noise Sensitive Sites

Within the project limits, all potential residential and non-residential noise sensitive sites were evaluated. For the purposes of this analysis, all noise sensitive sites were assigned an individual receptor. There are no receptors that represent multiple sites. Receptor points representing these noise sensitive sites are positioned in accordance with the FDOT *PD&E Manual* as follows:

- Residential receptor points are located at an area of frequent exterior use (i.e., patio or lanai) or the corner of a residential building closest to the major traffic noise source.
- Receptor heights for first (ground) floor receptors are always assumed to be 5 feet above ground elevation. Analysts shall increase the height above ground by 10 feet for each additional floor above ground level for multi-level noise-sensitive sites where an assumed outdoor-use exits, consistent with guidance in Section 2.2.4b of the *Traffic Noise Modeling & Analysis Practitioners Handbook* (i.e., 15 feet for a second-floor receptor, 25 feet for a third-floor receptor, etc.).
- For the sport areas, a receptor was placed at an outdoor use location nearest to the roadway (i.e., the goal net)

The alphanumeric identification for each receptor point associated with a noise sensitive site is formulated as follows:

- Receptors are assigned a CNE identifier which labels receptors according to the CNE which they are located.
- The letter following the CNE identifier indicates which side of SR 72 (Clark Road) the receptor/CNE is located.
- The following number is the receptor number and is separated from the first characters with a dash (e.g., 1S-3 is the 3rd receptor in the 1st CNE, located on the south side of SR 72 [Clark Road]).

Within the project corridor, 227 receptors were modeled to evaluate the potential impacts by highway traffic noise as a result of the proposed improvements. The land use and building permit review that identified these properties was performed on July 8, 2024. The 227 sites are comprised of the following:

- Activity Category B – 219 residences. The FDOT's NAC for Activity Category B land uses is an exterior level of 66 dB(A).
- Activity Category C – two active sport areas and one gazebo within Twin Lakes Park, one school, two places of worship, two public pools (Sandhill Lake & Aurora) and one tennis court (Camelot East Village). The FDOT's NAC for Activity Category C land uses is an exterior level of 66 dB(A).

The 227 receptors comprise 19 CNEs. A CNE is a group of receptors within the same activity category that are exposed to similar noise sources and levels, traffic volumes, traffic mix, speed,

and topographic features. The locations of the receptor points are depicted on the project aerials found in **Appendix C**.

3.3 Predicted Noise Levels

Table 3-2 presents the summarized results of the traffic noise analysis for the proposed improvements broken down by CNE. The results of the analysis indicate that the existing (year 2019 & 2022) exterior traffic noise levels range from 47.8 to 66.8 dB(A). In the future (year 2045 & 2050) without the proposed project improvements (the No-Build Alternative), exterior traffic noise levels are predicted to range from 48.9 to 69.1 dB(A). In the future with the proposed project improvements (the Build Alternative), exterior traffic noise levels are predicted to range from 50.6 to 67.9 dB(A). Based on the results of the analysis, highway traffic noise levels in the future with the proposed improvements are predicted to approach, meet, or exceed the NAC at only one of the evaluated receptors – Receptor 11N-1, an NAC C special land use site.

The results of the analysis also indicate that when compared to existing conditions, traffic noise levels with the proposed improvements would not increase more than 4.3 dB(A) at any receptor. As such, the project would not substantially increase highway traffic noise [i.e., an increase of 15 dB(A) or more] at any of the evaluated receptors. Predicted traffic noise levels, NAC classification, and whether the receptor approaches or exceeds NAC for all noise sensitive sites in this project are documented in **Appendix E**.

Table 3-2: Predicted Traffic Noise Levels

CNE	Activity Category	Subdivision/Location	Traffic Noise Level				
			Existing dB(A)	No-Build dB(A)	Build		
					dB(A)	Increase from Existing	Number of Receptors dB(A) ≥ NAC
1	B	Single Family Residences	52.1 – 62.2	52.5 – 63.2	54.5 – 62.3	0.1 – 2.7	--
2	C	Twin Lakes Park	53.5 – 58.3	54.7 – 64.5	55.6 – 63.1	-0.3 – 2.1	--
3	B	Single Family Residences	51.0 – 61.0	52.9 – 63.1	53.7 – 62.0	1.0 – 3.3	--
4	B	The Preserve at Heron Lake	50.0 – 58.3	52.2 – 60.5	53.7 – 60.9	2.6 – 3.6	--
5	C	Sarasota Suncoast Academy Basketball Court	57.8	57.9	57.8	--	--
6	B	Gator Creek	54.5 – 56.9	57.4 – 58.8	58.8 – 61.0	4.1 – 4.3	--
7	B	Wildgrass & Timberland	51.2 – 60.8	54.1 – 63.9	54.1 – 62.5	0.9 – 4.0	--
8	B	Single Family Residence	59.4	61.7	61.2	1.8	--
9	C	Living Hope Bible Church	59.4	61.7	61.2	1.8	--
10	B	Sandhill Lake & East Lake	53.2 – 63.7	55.4 – 66.0	55.7 – 64.6	0.9 – 2.9	--
11	C	Sandhill Lake Clubhouse Pool	62.0	69.1	67.9	5.9	1
12	C	TouchPoint Community Church	60.4	62.6	62.1	1.7	--
13	B	Trillium	51.7 – 53.0	53.9 – 55.2	55.0 – 55.9	2.9 – 3.3	--
14	B	Heron Landing & Single Family Residences	51.7 – 60.0	53.8 – 62.2	53.9 – 60.8	0.8 – 2.6	--
15	B	Redhawk Reserve & Single Family Residences	47.8– 63.5	48.9 – 64.5	50.6 – 64.7	1.2 – 2.9	--
16	B	Aurora	52.1 – 62.2	52.8 – 63.1	55.1 – 64.1	1.2 – 2.9	--
17	C	Aurora Community Pool	56.3	57.3	59.2	2.9	--
18	B	Camelot East Village	50.5 – 64.1	51.4 – 65.1	53.4 – 65.4	1.8 – 3.0	--
19	C	Camelot Tennis Court	51.1	51.7	54.1	3.0	--

3.4 Noise Abatement Analysis

Based on the results of the analysis, highway traffic noise levels in the future with the proposed improvements are predicted to approach, meet, or exceed the NAC at the Sandhill Lake clubhouse pool (receptor 11N-1), located north of SR 72 (Clark Road) east of Proctor Road/Dove Avenue. The noise level at this SLU site is predicted to be 67.8 dB(A) in the Build Alternative condition. Because the impacted receptor represents an SLU, the *Methodology to Evaluate Highway Traffic Noise at Special Land Uses* (FDOT, December 2023) was used to determine the feasibility of a noise barrier as an abatement measure.

The preliminary screen analysis was used to determine the feasibility of a noise barrier for the impacted SLU. First, it was determined the SLU is isolated due to the fact the potential noise barrier would be unable to serve as an abatement measure for two or more impacted receptors, since there are no adjacent impacted receptors.

Based on the methodology, in order for a noise barrier to be found a feasible form of noise abatement, an isolated impacted SLU site must have enough person-hour usage to equate to least two residences or 45,026 person-hours. There are 43 residences in the Sandhill Lake subdivision. Utilizing the FDOT SLU Worksheet Preliminary Screening, the clubhouse pool would require 124 users per day for at least one hour, 7 days a week for all 52 weeks of the year for the site to be eligible for a noise barrier evaluation. Based on the type of facility with only 43 residences, this is not a reasonable number of users. As a result, the special land use site was impacted but failed to pass the preliminary screening analysis in determining feasibility. Therefore, a noise barrier is not a viable noise abatement measure for the impacted receptor since the minimum feasibility requirements cannot be achieved. The results of the preliminary screening analysis are provided in **Appendix F**.

4.0 CONCLUSION

The TNM noise prediction model was used to predict traffic noise levels at 227 receptors representing 227 noise sensitive sites adjacent to SR 72 (Clark Road) for the existing (2019 & 2022) and future (2045 & 2050) conditions with and without the proposed improvements. The existing condition traffic noise levels are predicted to range from 47.8 to 66.8 dB(A). The No-Build Alternative traffic noise levels are predicted to range from 48.9 to 69.1 dB(A). The Build Alternative is predicted to result in traffic noise levels ranging from 50.6 to 67.9 dB(A). Of the 227 noise sensitive sites evaluated, one SLU site (receptor 11N-1) is predicted to experience future noise levels that exceed the NAC with the proposed improvements.

None of the evaluated sites will experience a substantial increase [15 dB(A) or more] of traffic noise as a result of the proposed widening. The maximum increase between the existing condition and the Build Alternative is 4.3 dB(A) at receptor 6N-2, a residence located in the Gator Creek community on Shetland Way.

Noise abatement measures were determined to not be feasible or reasonable at the impacted location. If changes are proposed to the current Build Preferred Alternative, additional noise analysis may be warranted.

5.0 CONSTRUCTION NOISE AND VIBRATION

Based on the existing land uses within the project limits, construction of the proposed roadway improvements will have temporary noise and vibration impacts. Construction noise and vibration sensitive sites are listed in **Table 5-1**. A school, two churches, and numerous residences are present within the project limits; however, construction of the roadway improvements is not expected to have a substantial noise or vibration impact. If additional noise-sensitive sites develop adjacent to the roadway prior to construction, additional impacts could result. It is anticipated that application of the *FDOT Standard Plans for Road and Bridge Construction* will minimize or eliminate most of the potential construction noise and vibration impacts. However, should unanticipated noise or vibration issues arise during the construction process, the Project Manager, in coordination with the District Noise Specialist and the Contractor, will investigate additional methods of controlling these impacts.

Table 5-1: Construction Noise and Vibration Sensitive Sites

Noise	Vibration
Eye Centers/Clinics	Eye Centers/Clinics
Medical Centers	Medical Centers
Hospitals	Hospitals
Geriatric Centers	Geriatric Centers
Sound Recording Studios	Sound Recording Studios
TV/Radio Stations	TV/Radio Stations
Residences	Residences
Technical Laboratories	Technical Laboratories
Hearing Testing Centers	Antiques Shops
Theaters	Museums
Schools	Historic Buildings
Motels/Hotels	
Funeral Homes	
Libraries	
Meditation Centers	
Churches/Shrines	
Parks	
Day Care Centers	
Outdoor Theaters	
Note: This list is not meant to be all inclusive or exclusive, but rather an indication of the type of sites likely to be sensitive to construction noise and/or vibration.	
Source: FDOT Noise and Vibration Task Team; August 17, 1999.	

6.0 COMMUNITY COORDINATION

The FDOT conducted the SR 72 (Clark Road) PD&E Study Alternatives Public Information Meeting to present information about the preliminary alternatives and provide the opportunity for the public to express their views about the project. The meeting was conducted in-person on October 4, 2023, at the UF/IFAS Extension Sarasota County, located at 6700 Clark Road. The meeting also had an online format that was held live on October 12, 2023. There was a 19-day comment period that ended on October 23, 2023. Numerous comments were received regarding traffic noise and potential for noise barriers. Comments continue to be received and are stored in the public comment database for the project.

A Public Hearing is preliminarily scheduled for the fall of 2024. The hearing will inform the public of the results of the PD&E Study and provide the opportunity for the public to express their views regarding specific location, design, socio-economic effects, and environmental impacts associated with the No-Build and the Build Alternative.

Upon approval of the project's environmental document, a copy of the final NSR will be provided to the Sarasota County Planning and Development Services Department office for their use associated with planning for development after the Date of Public Knowledge. Noise contours are discussed in **Section 2.4** and shown in **Table 3-1** and in **Figure 3** to assist planning and zoning with a best estimate on distances from the proposed edge-of-pavement at which traffic noise levels would meet or exceed the FDOT's NAC for activity categories A through E.

7.0 REFERENCES

FDOT. Project Development and Environment Manual, Part 2, Chapter 18 – Highway Traffic Noise, July 2024.
https://www.fdot.gov/environment/pubs/pdeman/pdeman-current

FDOT. Traffic Noise Modeling and Analysis Practitioners Handbook, December 2018.
https://www.fdot.gov/environment/publications.shtm

FDOT. Methodology to Evaluate Highway Traffic Noise at Special Land Uses. December 2023.
https://www.fdot.gov/environment/publications.shtm

FHWA. Report FHWA-HEP-18-065, Noise Measurement Handbook: Final Report, June 2018.
https://www.fhwa.dot.gov/environment/noise/measurement/fhwahep18065.pdf

Title 23 CFR § 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise, July 13, 2010.
http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title23/23cfr772_main_02.tpl

California Department of Transportation. Technical Noise Supplement to the Traffic Noise Analysis Protocol, September 2013.
https://dot.ca.gov/programs/environmental-analysis/noise-vibration

FHWA. Report Number FHWA-PD-96-009, FHWA Traffic Noise Model User's Guide (Version 2.5 Addendum). April 2004.
http://www.fhwa.dot.gov/environment/noise/traffic_noise_model/tnm_v25/users_manual/index.cfm

FHWA. Report Number FHWA-HEP-10-025, Highway Traffic Noise: Analysis and Abatement Guidance. December 2011.
https://www.fhwa.dot.gov/environment/noise/regulations_and_guidance/analysis_and_abatement_guida nce/revguidance.pdf

FDOT. Standard Plans for Road and Bridge Construction. March 2024.
https://www.fdot.gov/design/standardplans/default.shtm

APPENDIX A

Methodology Meeting Minutes

NOISE ANALYSIS SCOPE AND METHODOLOGY

MEETING MINUTES

PROJECT: SR 72 PD&E Study
from east of I-75 to Lorraine Road
Sarasota County, Florida
FPID: 444634-1-22-01
DATE: April 1, 2024
LOCATION: Microsoft Teams Virtual Meeting
ATTENDEES: Jeff James – FDOT D1
Steven Andrews – FDOT D1
Cris Schooley, P.E. – Kimley Horn
Chris Salicco – AIM
Patrick Griffin – AIM
Tom Daniel – AIM
Nicole Selly – KCA

The purpose of this memo is to outline the methodology that will be used for the State Road (SR) 72 Noise Analysis and Noise Study Report (NSR). The report will be conducted in accordance with the latest version of Chapter 18, Highway Traffic Noise, of the PD&E manual (7/1/23); the Code of Federal Regulations (23 CFR 772); the Federal Highway Administration (FHWA) *Measurement of Highway-Related Noise* (FHWA-PD-96-046); FHWA Traffic Noise Model (TNM) guidance[1]; the Florida Department of Transportation (FDOT) Environmental Management Office *Traffic Noise Modeling and Analysis Practitioners Handbook*, and FDOT's *A Method to Determine Reasonableness and Feasibility of Noise Abatement at Special Use Locations.*

1) Project Description

- Widen SR 72 to from 2 lanes undivided to 4 lanes divided
    - Project Limits: From east of I-75 to Lorraine Road
    - Cross streets/local streets will not be modeled

2) Field Measurements for Model Validation

- Measurements will be obtained at two locations along SR 72 between Talon Blvd and Great Egret Blvd and between Coash Rd/Hawkins Rd and Lorraine Rd which appear to be the locations most suitable for validation due to the distance between existing traffic signals. Three 10-minute measurements will be collected while concurrently collecting traffic data. Verification of the measured noise levels with modeled noise levels for the existing roadway will then be conducted.

3) Traffic Noise Model & Data Input

- The latest version of TNM, version 2.5, will be used to conduct the noise analysis and to evaluate noise barriers, if required.

- Run the contour analysis to identify 66-dB line and provide to local agencies for land use planning.

[1] Traffic Noise Model (TNM) guidance, (http://www.fhwa.dot.gov/environment/noise/traffic_noise_model/tnm_faqs/.

Roadways

- Proposed Roadways (lane by lane)
    - SR 72
    - Cross Streets/Local Streets not included as part of approved traffic noise data
    - Talon Blvd/Ibis Street options for Roundabout will be modeled
- Design files
    - Design files (.dgn/.kmz files)
- Traffic
    - The traffic data used in the analysis will be the lesser of level-of-service (LOS) C or demand volume as approved by FDOT for use in the analysis. The analysis will include traffic associated with the mainline and cross-streets (if traffic is available). If LOS C traffic is used, the D-factor shall be 50%.

Receptors

- Single-family residences (new development north of Hummingbird – check permits), churches, veterinary center (construction noise and vibration only), school, and Twin Lakes Park.

- For determining noise impacts at residences, receptors will be modeled at the edge of the dwelling unit closest to the roadway if no area of outdoor use is present. For single family homes with 2nd story, model receptor on 2nd floor ONLY IF outdoor use on 2nd floor. The location of receptors at all other sites will be determined based on the type of land use (e.g., the receivers at a park would be located at the area of the park closest to the roadway in which there is frequent human use).

- Noise sensitive sites such as places of worship with no areas of exterior use will be modeled as Activity Category D (interior), and 20 dB(A) will be assumed as the amount of noise reduction due to the building structure. However, if the site is impacted using 20 dB(A), and it is of masonry construction, an interior-to-exterior Noise Level Reduction (NLR) of 25 dB(A) will be assumed per FHWA guidance.

Existing Privacy Walls

- Concrete privacy walls will be identified and modeled.
    - Field measurements will be taken for wall heights

Ground Zones

- Existing and Proposed stormwater retention areas.
- Lakes/Ponds will be modeled.
- Tree Zones will not be modeled.

4) Alternative Conditions Modeled

- Existing Condition
- Build Condition
- No-build Condition

5) Noise Barrier Analysis

- Barriers will be analyzed at heights of 8 to 22 feet in two foot increments, and five feet inside the ROW.
- Barriers will take into account line-of-sight, cross streets, and driveways.
- At least one impacted receptor must meet the noise reduction design goal of 7 dB(A) for a barrier to be considered reasonable; at least two impacted receptors need to achieve a minimum noise reduction of

5 dB(A) for a barrier to be considered feasible. If it applies, at least one receptor at a special land use area must meet 7 dB(A).

- Should it be necessary, noise barriers for special use areas will be evaluated using FDOT's A Method to Determine Reasonableness and Feasibility of Noise Abatement at Special Use Locations. If the actual usage of the area cannot be obtained, then the number of person-hours required to use the area in order for a noise barrier to be cost reasonable will be calculated and compared to the reasonably expected usage for that type of area.
- Potentially reasonable and feasible noise barriers will be shown on the public hearing displays.
- Updated cost criteria for abatement (noise barriers)
    - $40/square foot
    - $64,000 per benefited receptor

6) <u>Outdoor Advertising</u>

- Locations of existing outdoor advertising signs that may be affected by cost reasonable and feasible barriers will be identified.

7) <u>Noise Study Report</u>

- NSR layout will be consistent with current PD&E Manual Chapter 18 outline and other recent District 1 studies.
- Complete set of aerials in Appendix.
- An electronic copy of the Draft NSR will be provided in PDF format to the District. The PDF of the Final NSR will be and be included in SWEPT which will include the TNM modeling files.
- The finalized Methodology Memo will be placed in the Appendix of the NSR.

8) <u>Other Considerations</u>

- The coordinate system used will be the Florida State Plane West Coordinate System.

9) <u>Public Involvement Schedule</u>

- The Public Hearing is currently scheduled for October 2024.

APPENDIX B

Traffic Data

SR 72 from East of I-75 to Lorraine Road (Section # 17070000)
Project Development & Environment Study (FPID # 444634-1-22-01)
Traffic Data for Noise Analysis
From Hummingbird Avenue to Talon Boulevard/Ibis Street (From Milepost 5.282 to Milepost 5.708) - Context Classification = C3R

Demand Peak Hour/LOS C	Direction	Vehicle Type	Existing Year (2022) AADT = 16,400 Posted Speed = 45 mph No. of Lanes = 2 No. of Vehicles	Direction	Vehicle Type	Design Year (2050) No-Build Alt AADT = 35,200 Posted Speed = 45 mph No. of Lanes = 2 No. of Vehicles	Design Year (2050) Build Alt AADT = 38,300 Posted Speed = 35 mph No. of Lanes = 4 No. of Vehicles
PM Peak Hour Demand	Peak Direction	Autos	**711**	Peak Direction	Autos	1,527	1,662
		Medium Trucks	**40**		Medium Trucks	85	93
		Heavy Trucks	**53**		Heavy Trucks	115	125
		Buses	**4**		Buses	8	9
		Motorcycles	**3**		Motorcycles	7	8
		Total[1]	**812**		Total[1]	1,742	1,896
	Off-Peak Direction	Autos	**582**	Off-Peak Direction	Autos	1,249	1,359
		Medium Trucks	**33**		Medium Trucks	70	76
		Heavy Trucks	**44**		Heavy Trucks	94	102
		Buses	**3**		Buses	6	7
		Motorcycles	**3**		Motorcycles	6	7
		Total[1]	**664**		Total[1]	1,426	1,551
LOS C	Peak Direction	Autos	894	Peak Direction	Autos	**894**	**1,488**
		Medium Trucks	50		Medium Trucks	**50**	**83**
		Heavy Trucks	67		Heavy Trucks	**67**	**112**
		Buses	5		Buses	**5**	**8**
		Motorcycles	4		Motorcycles	**4**	**7**
		Total[2]	1,020		Total[2]	**1,020**	**1,698**
	Off-Peak Direction	Autos	731	Off-Peak Direction	Autos	**731**	**1,217**
		Medium Trucks	41		Medium Trucks	**41**	**68**
		Heavy Trucks	55		Heavy Trucks	**55**	**92**
		Buses	4		Buses	**4**	**6**
		Motorcycles	4		Motorcycles	**4**	**6**
		Total[2]	834		Total[2]	**834**	**1,389**

[1] *Peak hour peak direction volumes = AADT x 0.09 x 0.55 / Peak hour off-peak direction volumes = AADT x 0.09 x (1-0.55)*

[2] *Obtained from the 2023 FDOT Multimodal Quality/Level of Service Handbook*
2-lane undivided roadway with exclusive right-turn lanes (Existing) LOS C AADT volume = 19,600 x 1.05 = 20,600
4-lane divided roadway with exclusive left-turn lanes (Proposed) LOS C AADT volume = 34,300

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By: Greg Root (Print Name) Greg Root (Signature) Date: 8/21/2023

I have reviewed the information and concur that it is appropriate for use with the traffic noise analysis.

FDOT Reviewer: Brittany Nichols (Print Name) DocuSigned by: Brittany Nichols 3491A225DF874FE... (Signature) Date: 08/24/2023 | 9:24 AM EDT

SR 72 from East of I-75 to Lorraine Road (Section # 17070000)
Project Development & Environment Study (FPID # 444634-1-22-01)
Traffic Data for Noise Analysis
From Talon Boulevard/Ibis Street to Proctor Road/Dove Avenue (From Milepost 5.708 to Milepost 6.516) - Context Classification = C3R

Demand Peak Hour/LOS C	Direction	Vehicle Type	Existing Year (2022) AADT = 12,300 Posted Speed = 45 mph No. of Lanes = 2 No. of Vehicles	Direction	Vehicle Type	Design Year (2050) No-Build Alt AADT = 20,000 Posted Speed = 45 mph No. of Lanes = 2 No. of Vehicles	Design Year (2050) Build Alt AADT = 22,700 Posted Speed = 35 mph No. of Lanes = 4 No. of Vehicles
PM Peak Hour Demand	Peak Direction	Autos	**533**	Peak Direction	Autos	**866**	**983**
		Medium Trucks	**31**		Medium Trucks	**51**	**58**
		Heavy Trucks	**36**		Heavy Trucks	**59**	**67**
		Buses	**5**		Buses	**8**	**9**
		Motorcycles	**4**		Motorcycles	**6**	**7**
		Total[1]	**609**		Total[1]	**990**	**1,124**
	Off-Peak Direction	Autos	**436**	Off-Peak Direction	Autos	**709**	**804**
		Medium Trucks	**26**		Medium Trucks	**42**	**48**
		Heavy Trucks	**30**		Heavy Trucks	**48**	**55**
		Buses	**4**		Buses	**6**	**7**
		Motorcycles	**3**		Motorcycles	**5**	**6**
		Total[1]	**498**		Total[1]	**810**	**919**
LOS C	Peak Direction	Autos	892	Peak Direction	Autos	892	1,485
		Medium Trucks	53		Medium Trucks	53	88
		Heavy Trucks	61		Heavy Trucks	61	101
		Buses	8		Buses	8	13
		Motorcycles	6		Motorcycles	6	11
		Total[2]	1,020		Total[2]	1,020	1,698
	Off-Peak Direction	Autos	730	Off-Peak Direction	Autos	730	1,215
		Medium Trucks	43		Medium Trucks	43	72
		Heavy Trucks	50		Heavy Trucks	50	83
		Buses	6		Buses	6	11
		Motorcycles	5		Motorcycles	5	9
		Total[2]	834		Total[2]	834	1,389

[1] *Peak hour peak direction volumes = AADT x 0.09 x 0.55 / Peak hour off-peak direction volumes = AADT x 0.09 x (1-0.55)*

[2] *Obtained from the 2023 FDOT Multimodal Quality/Level of Service Handbook*
2-lane undivided roadway with exclusive left-turn lanes (Existing) LOS C AADT volume = 19,600 x 1.05 = 20,600
4-lane divided roadway with exclusive left-turn lanes (Proposed) LOS C AADT volume = 34,300

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By: Greg Root (Print Name) Greg Root (Signature) Date: 8/21/2023

I have reviewed the information and concur that it is appropriate for use with the traffic noise analysis.

FDOT Reviewer: Brittany Nichols (Print Name) DocuSigned by: Brittany Nichols 3401A225DE874FE... (Signature) Date: 08/24/2023 | 9:24 AM EDT

SR 72 from East of I-75 to Lorraine Road (Section # 17070000)
Project Development & Environment Study (FPID # 444634-1-22-01)
Traffic Data for Noise Analysis
From Proctor Road/Dove Avenue to Coash Road/Hawkins Road (From Milepost 6.516 to Milepost 7.356) - Context Classification = C3R

Demand Peak Hour/LOS C	Direction	Vehicle Type	Existing Year (2019) AADT = 12,200 Posted Speed = 55 mph No. of Lanes = 2 No. of Vehicles	Direction	Vehicle Type	Design Year (2045) No-Build Alt AADT = 22,100 Posted Speed = 55 mph No. of Lanes = 2 No. of Vehicles	Design Year (2045) Build Alt AADT = 24,100 Posted Speed = 45 mph No. of Lanes = 4 No. of Vehicles
PM Peak Hour Demand	Peak Direction	Autos	**529**	Peak Direction	Autos	958	**1,044**
		Medium Trucks	**27**		Medium Trucks	49	**54**
		Heavy Trucks	**43**		Heavy Trucks	77	**84**
		Buses	**2**		Buses	4	**4**
		Motorcycles	**3**		Motorcycles	6	**6**
		Total[1]	**604**		Total[1]	1,094	**1,193**
	Off-Peak Direction	Autos	**433**	Off-Peak Direction	Autos	784	**854**
		Medium Trucks	**22**		Medium Trucks	40	**44**
		Heavy Trucks	**35**		Heavy Trucks	63	**69**
		Buses	**2**		Buses	3	**3**
		Motorcycles	**3**		Motorcycles	5	**5**
		Total[1]	**494**		Total[1]	895	**976**
LOS C	Peak Direction	Autos	893	Peak Direction	Autos	**893**	1,486
		Medium Trucks	46		Medium Trucks	**46**	77
		Heavy Trucks	72		Heavy Trucks	**72**	120
		Buses	4		Buses	**4**	6
		Motorcycles	6		Motorcycles	**6**	9
		Total[2]	1,020		Total[2]	**1,020**	1,698
	Off-Peak Direction	Autos	730	Off Peak Direction	Autos	**730**	1,216
		Medium Trucks	38		Medium Trucks	**38**	63
		Heavy Trucks	59		Heavy Trucks	**59**	98
		Buses	3		Buses	**3**	5
		Motorcycles	5		Motorcycles	**5**	8
		Total[2]	834		Total[2]	**834**	1,389

[1] *Peak hour peak direction volumes = AADT x 0.09 x 0.55 / Peak hour off-peak direction volumes = AADT x 0.09 x (1-0.55)*

[2] *Obtained from the 2023 FDOT Multimodal Quality/Level of Service Handbook*
2-lane undivided roadway with exclusive left-turn & right-turn lanes (Existing) LOS C AADT volume = 19,600 x 1.05 = 20,600
4-lane divided roadway with exclusive left-turn lanes (Proposed) LOS C AADT volume = 34,300

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By: Greg Root (Print Name) — Greg Root (Signature) — Date: 8/21/2023

I have reviewed the information and concur that it is appropriate for use with the traffic noise analysis.

FDOT Reviewer: Brittany Nichols (Print Name) — DocuSigned by: Brittany Nichols (Signature) 3401A225DF874FE... — Date: 08/24/2023 | 9:24 AM EDT

SR 72 from East of I-75 to Lorraine Road (Section # 17070000)
Project Development & Environment Study (FPID # 444634-1-22-01)
Traffic Data for Noise Analysis
From Coash Road/Hawkins Road to Lorraine Road (From Milepost 7.356 to Milepost 7.967) - Context Classification = C3R

Demand Peak Hour/LOS C	Direction	Vehicle Type	Existing Year (2019) AADT = 10,400 Posted Speed = 55 mph No. of Lanes = 2 No. of Vehicles	Direction	Vehicle Type	Design Year (2045) No-Build Alt AADT = 20,200 Posted Speed = 55 mph No. of Lanes = 2 No. of Vehicles	Design Year (2045) Build Alt AADT = 22,000 Posted Speed = 45 mph No. of Lanes = 4 No. of Vehicles
PM Peak Hour Demand	Peak Direction	Autos	**451**	Peak Direction	Autos	**875**	**953**
		Medium Trucks	**23**		Medium Trucks	**45**	**49**
		Heavy Trucks	**36**		Heavy Trucks	**71**	**77**
		Buses	**2**		Buses	**3**	**4**
		Motorcycles	**3**		Motorcycles	**5**	**6**
		Total[1]	**515**		Total[1]	**1,000**	**1,089**
	Off-Peak Direction	Autos	**369**	Off-Peak Direction	Autos	**716**	**780**
		Medium Trucks	**19**		Medium Trucks	**37**	**40**
		Heavy Trucks	**30**		Heavy Trucks	**58**	**63**
		Buses	**1**		Buses	**3**	**3**
		Motorcycles	**2**		Motorcycles	**4**	**5**
		Total[1]	**421**		Total[1]	**818**	**891**
LOS C	Peak Direction	Autos	893	Peak Direction	Autos	893	1,486
		Medium Trucks	46		Medium Trucks	46	77
		Heavy Trucks	72		Heavy Trucks	72	120
		Buses	4		Buses	4	6
		Motorcycles	6		Motorcycles	6	9
		Total[2]	1,020		Total[2]	1,020	1,698
	Off-Peak Direction	Autos	730	Off-Peak Direction	Autos	730	1,216
		Medium Trucks	38		Medium Trucks	38	63
		Heavy Trucks	59		Heavy Trucks	59	98
		Buses	3		Buses	3	5
		Motorcycles	5		Motorcycles	5	8
		Total[2]	834		Total[2]	834	1,389

[1] *Peak hour peak direction volumes = AADT x 0.09 x 0.55 / Peak hour off-peak direction volumes = AADT x 0.09 x (1-0.55)*

[2] *Obtained from the 2023 FDOT Multimodal Quality/Level of Service Handbook*
2-lane undivided roadway with one exclusive left-turn lane (Existing) LOS C AADT volume = 19,600 x 1.05 = 20,600
4-lane divided roadway with exclusive left-turn lanes (Proposed) LOS C AADT volume = 34,300

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

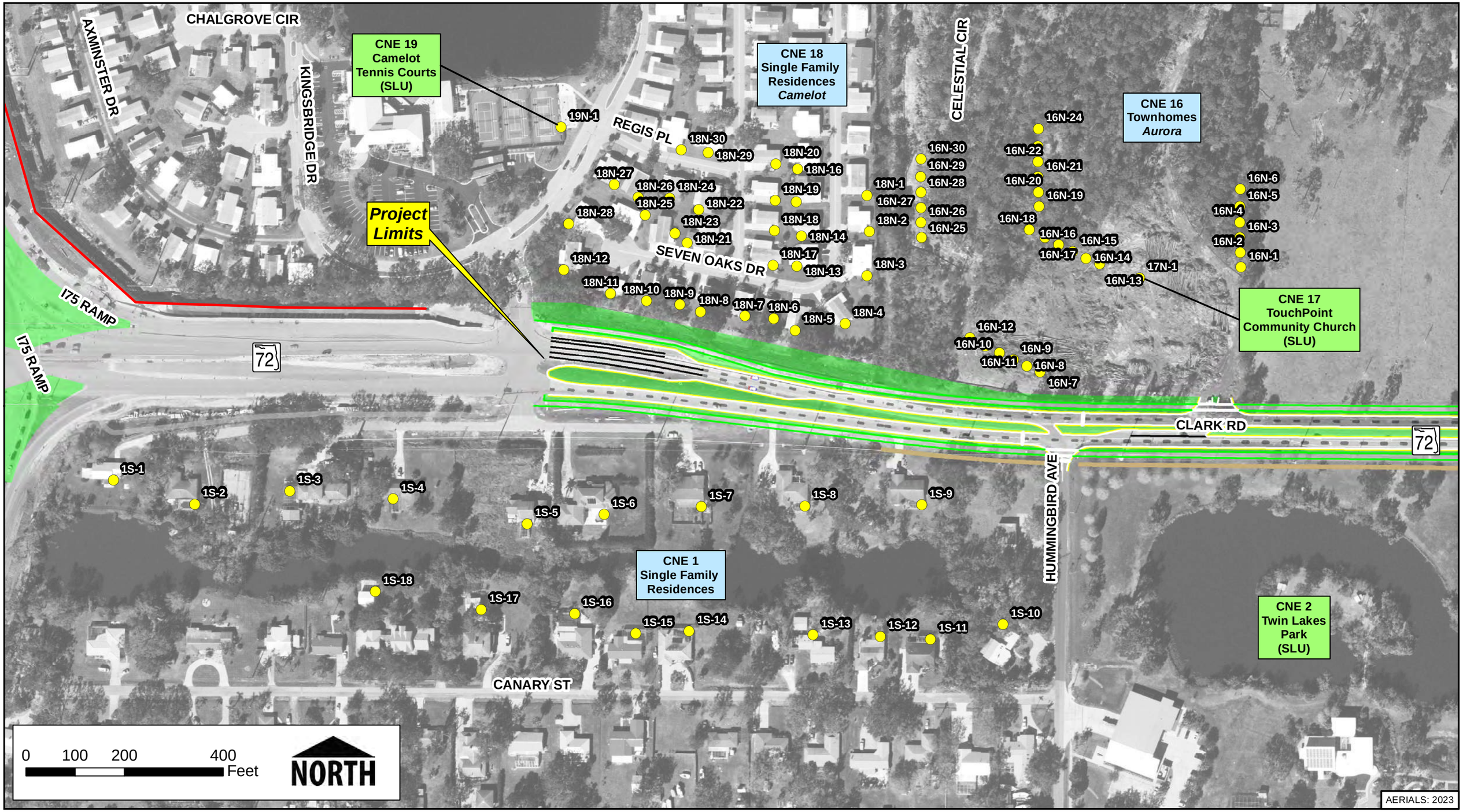
Prepared By: Greg Root (Print Name) Greg Root (Signature) Date: 8/21/2023

I have reviewed the information and concur that it is appropriate for use with the traffic noise analysis.

FDOT Reviewer: Brittany Nichols (Print Name) DocuSigned by: Brittany Nichols 3491A225DF874FE... (Signature) Date: 08/24/2023 | 9:24 AM EDT

APPENDIX C

Project Aerials and Noise Receptor Sites



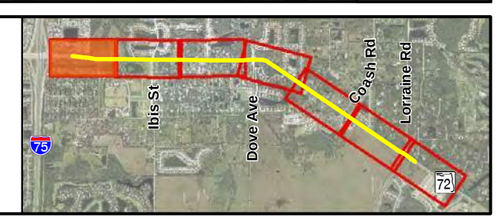
SR 72 (Clark Road)
PD&E Study
From East of I-75 to Lorraine Rd
FPID No.: 444634-1-22-01

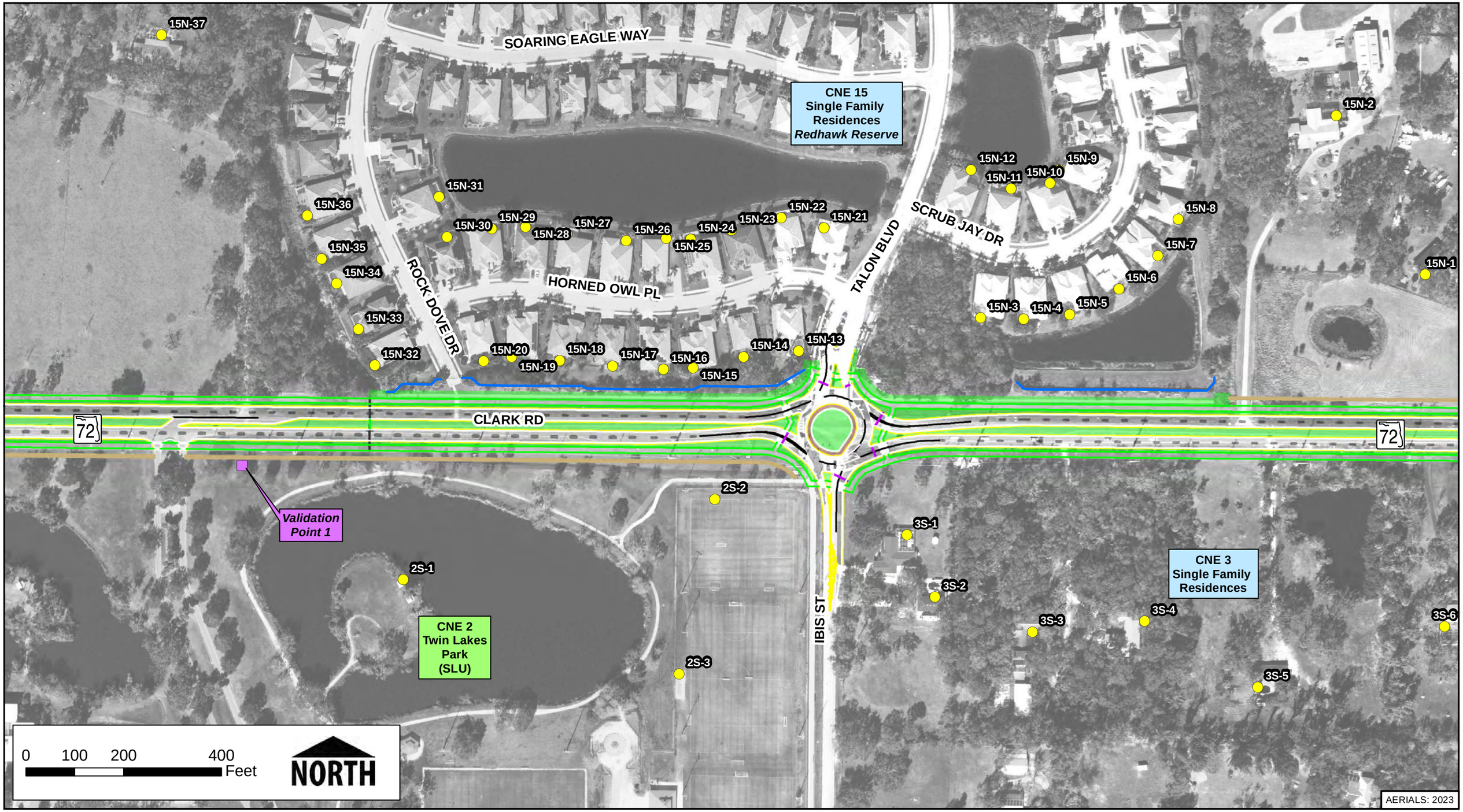
Project Aerials and Noise Receptor Sites

Sheet 1 of 7

Legend

- Non-Impacted Receptor
- Impacted Receptor
- Existing Noise Barrier
- Existing Concrete Wall





FDOT

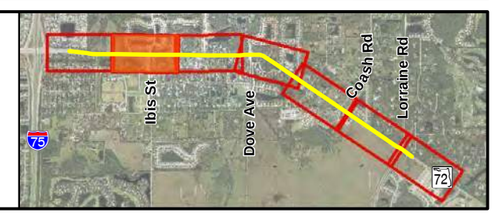
SR 72 (Clark Road)
PD&E Study
From East of I-75 to Lorraine Rd
FPID No.: 444634-1-22-01

Project Aerials and Noise Receptor Sites

Sheet 2 of 7

Legend

- Non-Impacted Receptor
- Impacted Receptor
- Existing Noise Barrier
- Existing Concrete Wall



SAFARI DR

15N-2

15N-1

14N-16

14N-15

14N-14

14N-13

14N-12

14N-11

14N-10

14N-9

14N-8

14N-7

14N-6

14N-5

14N-4

14N-3

14N-2

14N-1

CNE 14
Single Family
Residences
Foxfire and
Heron Landing

FOX TROTTING RD

72

CLARK RD

72

3S-8

3S-9

3S-6

3S-7

3S-10

3S-11

3S-12

3S-14

3S-15

3S-16

3S-13

CNE 3
Single Family
Residences

0 100 200 400 Feet

NORTH

AERIALS: 2023

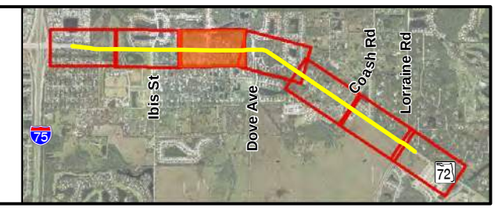
SR 72 (Clark Road)
PD&E Study
From East of I-75 to Lorraine Rd
FPID No.: 444634-1-22-01

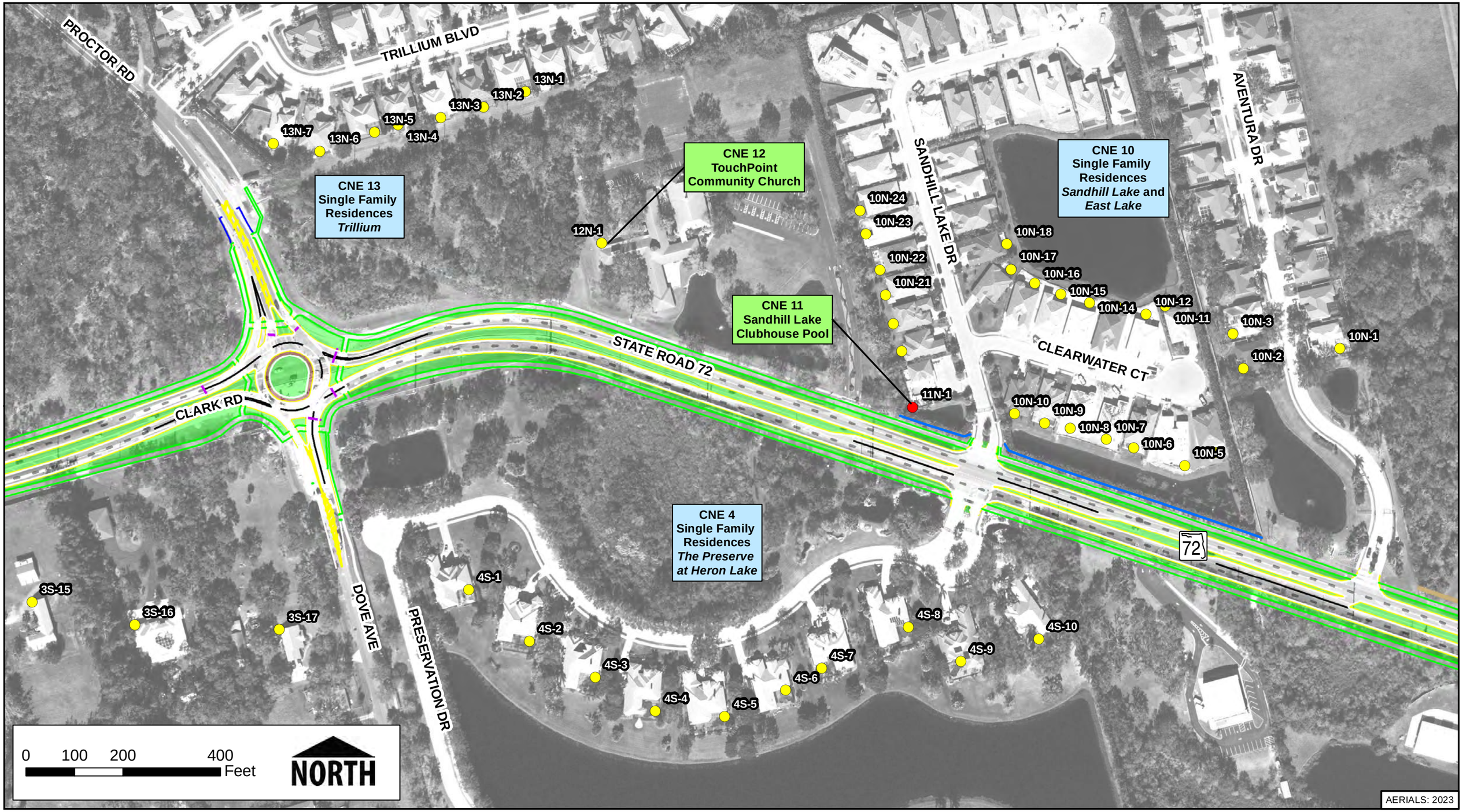
Project Aerials and Noise Receptor Sites

Sheet 3 of 7

Legend

- Non-Impacted Receptor
- Impacted Receptor
- Existing Noise Barrier
- Existing Concrete Wall





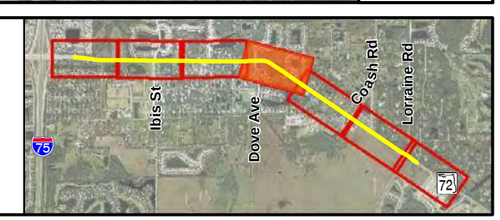
SR 72 (Clark Road)
PD&E Study
From East of I-75 to Lorraine Rd
FPID No.: 444634-1-22-01

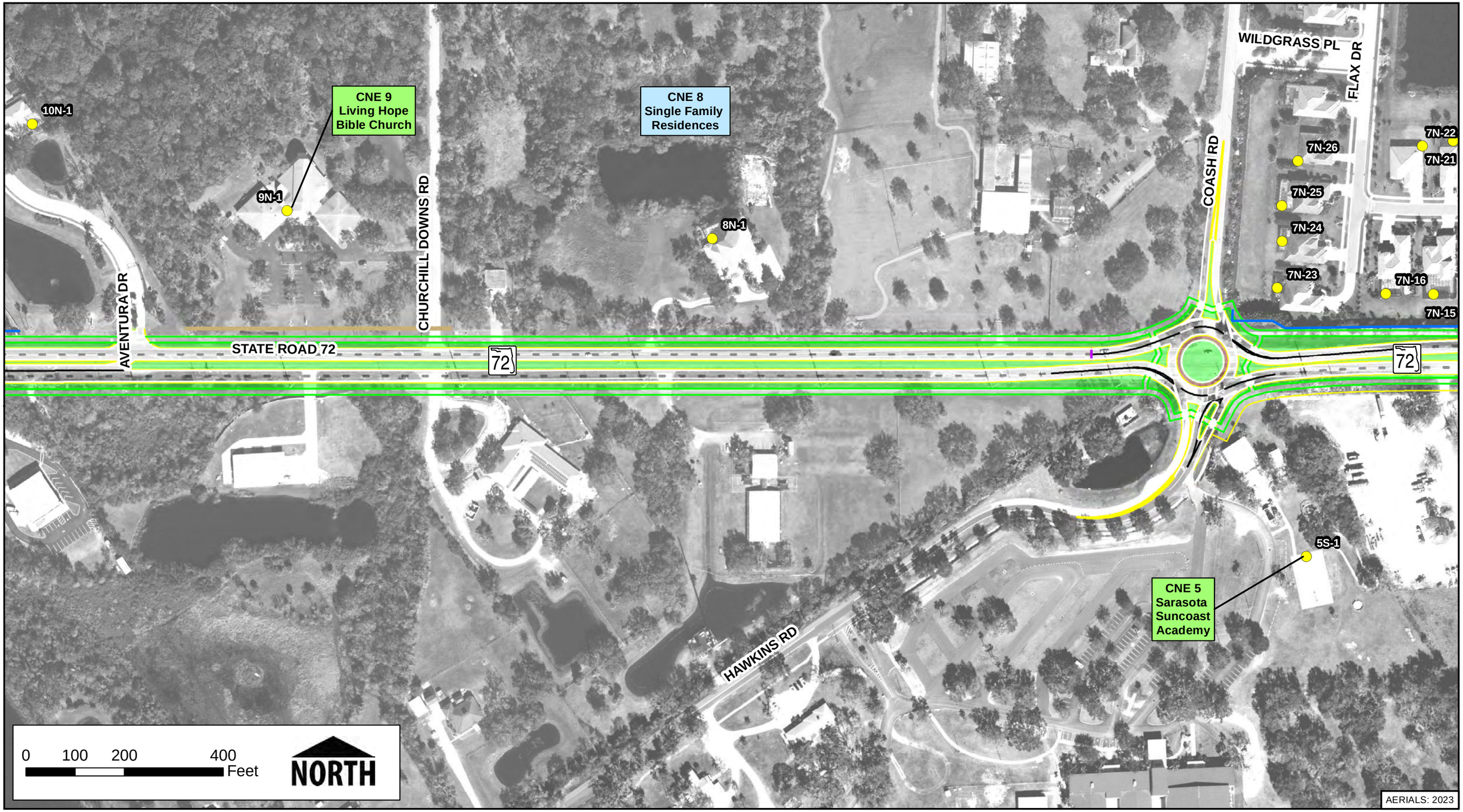
Project Aerials and Noise Receptor Sites

Sheet 4 of 7

Legend

- Non-Impacted Receptor
- Impacted Receptor
- Existing Noise Barrier
- Existing Concrete Wall





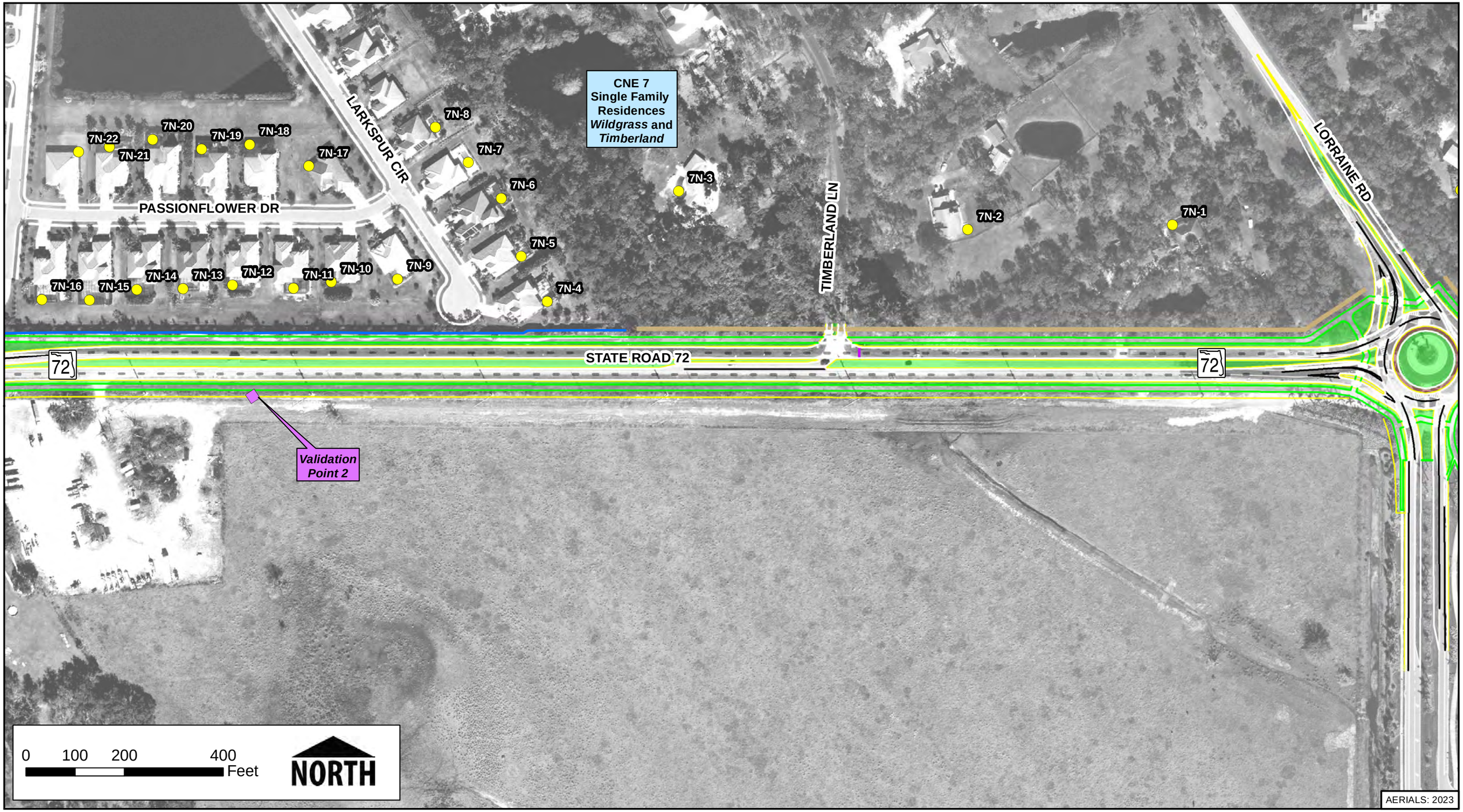
SR 72 (Clark Road)
PD&E Study
From East of I-75 to Lorraine Rd
FPID No.: 444634-1-22-01

Project Aerials and Noise Receptor Sites

Sheet 5 of 7

Legend

- Non-Impacted Receptor
- Impacted Receptor
- Existing Noise Barrier
- Existing Concrete Wall



SR 72 (Clark Road)
PD&E Study
From East of I-75 to Lorraine Rd
FPID No.: 444634-1-22-01

Project Aerials and Noise Receptor Sites

Sheet 6 of 7

Legend

- Non-Impacted Receptor
- Impacted Receptor
- Existing Noise Barrier
- Existing Concrete Wall

SHETLAND WAY

CNE 6
Single Family
Residences
Gator Creek

6N-2

6N-1

STATE ROAD 72

72

Project Limits

LORRAINE RD

LATIMER ST

DAYBREAK ST

DRIVEN SNOW ST

WINTER BREEZE WAY

0 100 200 400 Feet

NORTH

AERIALS: 2023

FDOT

SR 72 (Clark Road)
PD&E Study
From East of I-75 to Lorraine Rd
FPID No.: 444634-1-22-01

Project Aerials and Noise Receptor Sites

Sheet 7 of 7

Legend

- Non-Impacted Receptor
- Impacted Receptor
- Existing Noise Barrier
- Existing Concrete Wall

APPENDIX D

Validation Field Data

Traffic Noise Model Validation Monitoring Field Data Sheet

Project: SR 72 PD&E NSR Date: 6/17/24

Monitor Location: Location 1 - West of Ibis St

Distance from near travel lane / elevation difference / other factors needed for model:

70 ft from edge of travel lane

Air Temperature	Wind Speed	Wind Direction	Humidity	% Cloud
86	14	E	73	40

Monitor Identification: P. Griffin T. Daniel

Vehicle Type	Roadway Direction Identification					
	Northbound/~~Eastbound~~ West			Southbound/~~Westbound~~ East		
	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Cars	77	102	112	84	61	77
Medium Trucks	4	1	3	1	3	1
Heavy Trucks	3	3	1	1	9	0
Buses	0	0	0	0	0	0
Motorcycles	1	0	0	0	1	0

Vehicle Speed(s):

Event Start Time /Duration: Rep 1 11:44/10 Rep 2 11:56/10 Rep 3 12:08/10

Results / Leq: Rep 1 65.3 Rep 2 65.4 Rep 3 65.2

Major Noise Source(s): Highway traffic noise

Background Noise Source(s): Wind

Additional Comments / Unusual Events (e.g., airplane, siren, dog, etc.):

Rep 1 N/A

Rep 2 Cicadas in tree

Rep 3 Sandhill cranes calling

Field staff for this monitor:

Traffic Noise Model Validation Monitoring Field Data Sheet

Project: SR 72 PD+E NSR Date: 6/17/24

Monitor Location: Location 2 - West of Lorraine Rd

Distance from near travel lane / elevation difference / other factors needed for model:

48 ft from travel lane

Air Temperature	Wind Speed	Wind Direction	Humidity	% Cloud
83	13	E	79	70

Monitor Identification: P. Griffin T. Daniel

Vehicle Type	Roadway Direction Identification					
	Northbound/Eastbound			Southbound/Westbound		
	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Cars	52	48	44	41	56	47
Medium Trucks	2	4	4	1	6	4
Heavy Trucks	0	2	2	1	3	3
Buses	0	0	1	0	0	0
Motorcycles	2	0	1	0	1	0

Vehicle Speed(s):

Event Start Time /Duration: Rep 1 10:49/10 Rep 2 11:01/10 Rep 3 11:13/10

Results / Leq: Rep 1 65.7 Rep 2 66.5 Rep 3 68.1

Major Noise Source(s): Regular traffic

Background Noise Source(s): Wind

Additional Comments / Unusual Events (e.g., airplane, siren, dog, etc.):

Rep 1

n/a

Rep 2

n/a

Rep 3

n/a

Field staff for this monitor:

APPENDIX E

Predicted Noise Levels

Predicted Noise Levels

Site ID	Activity Category	Type	Description	Leq(h) [dB(A)]				Approaches, Meets, or Exceeds the NAC?
				Existing (2019 & 2022)	No-Build (2045 & 2050)	Build (2045 & 2050)	Increase from Existing	
1S-1	B	Residential	SFR south side of SR 72	56.0	56.0	58.2	2.2	No
1S-2	B	Residential	SFR south side of SR 72	55.4	55.4	57.6	2.2	No
1S-3	B	Residential	SFR south side of SR 72	56.8	56.9	59.1	2.3	No
1S-4	B	Residential	SFR south side of SR 72	56.5	56.7	58.9	2.4	No
1S-5	B	Residential	SFR south side of SR 72	55.6	56.0	58.2	2.6	No
1S-6	B	Residential	SFR south side of SR 72	56.7	57.3	59.4	2.7	No
1S-7	B	Residential	SFR south side of SR 72	58.2	59.0	60.4	2.2	No
1S-8	B	Residential	SFR south side of SR 72	59.8	60.7	61.3	1.5	No
1S-9	B	Residential	SFR south side of SR 72	62.2	63.2	62.3	0.1	No
1S-10	B	Residential	SFR south side of SR 72	54.8	55.8	56.9	2.1	No
1S-11	B	Residential	SFR south side of SR 72	54.1	55.1	56.1	2.0	No
1S-12	B	Residential	SFR south side of SR 72	54.3	55.2	56.2	1.9	No
1S-13	B	Residential	SFR south side of SR 72	53.7	54.6	55.8	2.1	No
1S-14	B	Residential	SFR south side of SR 72	53.0	53.8	55.3	2.3	No
1S-15	B	Residential	SFR south side of SR 72	52.3	53.0	54.7	2.4	No
1S-16	B	Residential	SFR south side of SR 72	52.4	53.0	54.9	2.5	No
1S-17	B	Residential	SFR south side of SR 72	52.1	52.5	54.5	2.4	No
1S-18	B	Residential	SFR south side of SR 73	52.3	52.6	54.7	2.4	No
2S-1	C	Park	Twin Lakes Park	58.3	59.4	60.3	2.0	No
2S-2	C	Park	Twin Lakes Park	63.4	64.5	63.1	-0.3	No
2S-3	C	Park	Twin Lakes Park	53.5	54.7	55.6	2.1	No
3S-1	B	Residential	SFR south side of SR 72	58.9	60.7	60.5	1.6	No
3S-2	B	Residential	SFR south side of SR 72	54.9	56.6	55.6	2.5	No
3S-3	B	Residential	SFR south side of SR 72	53.1	54.9	55.6	2.5	No
3S-4	B	Residential	SFR south side of SR 72	53.5	55.5	56.0	2.5	No
3S-5	B	Residential	SFR south side of SR 72	51.0	52.9	53.7	2.7	No
3S-6	B	Residential	SFR south side of SR 72	53.4	55.4	56.0	2.6	No
3S-7	B	Residential	SFR south side of SR 72	52.8	54.9	55.4	2.6	No
3S-8	B	Residential	SFR south side of SR 72	58.6	60.7	60.0	1.4	No
3S-9	B	Residential	SFR south side of SR 72	56.9	59.0	58.6	1.7	No
3S-10	B	Residential	SFR south side of SR 72	55.1	57.1	57.3	2.2	No
3S-11	B	Residential	SFR south side of SR 72	57.1	59.1	58.9	1.8	No
3S-12	B	Residential	SFR south side of SR 72	56.2	58.2	58.3	2.1	No
3S-13	B	Residential	SFR south side of SR 72	51.7	53.8	54.2	2.5	No
3S-14	B	Residential	SFR south side of SR 72	61.0	63.1	62.0	1.0	No
3S-15	B	Residential	SFR south side of SR 72	56.1	58.2	58.1	2.0	No
3S-16	B	Residential	SFR south side of SR 72	53.2	55.3	55.9	2.7	No
3S-17	B	Residential	SFR south side of SR 72	51.5	53.7	54.8	3.3	No
4S-1	B	Residential	Preserve at Heron Lake	52.5	54.7	56.1	3.6	No
4S-2	B	Residential	Preserve at Heron Lake	51.1	53.3	54.7	3.6	No
4S-3	B	Residential	Preserve at Heron Lake	50.5	52.7	54.1	3.6	No
4S-4	B	Residential	Preserve at Heron Lake	50.0	52.2	53.7	3.7	No
4S-5	B	Residential	Preserve at Heron Lake	50.5	52.7	54.1	3.6	No
4S-6	B	Residential	Preserve at Heron Lake	52.0	54.3	55.5	3.5	No
4S-7	B	Residential	Preserve at Heron Lake	53.4	55.6	56.7	3.3	No
4S-8	B	Residential	Preserve at Heron Lake	56.7	58.9	59.5	2.8	No
4S-9	B	Residential	Preserve at Heron Lake	55.6	57.8	59.0	3.4	No
4S-10	B	Residential	Preserve at Heron Lake	58.3	60.5	60.9	2.6	No
5S-1	C	School	Sarasota Suncoast Academy	55.3	57.9	57.8	2.5	No
6N-1	B	Residential	Gator Creek	56.9	58.8	61.0	4.1	No
6N-2	B	Residential	Gator Creek	54.5	57.4	58.8	4.3	No

Predicted Noise Levels

Site ID	Activity Category	Type	Description	Leq(h) [dB(A)]				Approaches, Meets, or Exceeds the NAC?
				Existing (2019 & 2022)	No-Build (2045 & 2050)	Build (2045 & 2050)	Increase from Existing	
7N-1	B	Residential	Timberland	56.9	59.8	60.6	3.7	No
7N-2	B	Residential	Timberland	57.1	60.0	60.8	3.7	No
7N-3	B	Residential	Timberland	54.1	57.0	58.1	4.0	No
7N-4	B	Residential	Wildgrass	60.3	63.2	62.5	2.2	No
7N-5	B	Residential	Wildgrass	57.0	59.9	59.5	2.5	No
7N-6	B	Residential	Wildgrass	53.9	56.8	56.8	2.9	No
7N-7	B	Residential	Wildgrass	52.4	55.3	55.4	3.0	No
7N-8	B	Residential	Wildgrass	51.2	54.1	54.1	2.9	No
7N-9	B	Residential	Wildgrass	58.6	61.5	60.6	2.0	No
7N-10	B	Residential	Wildgrass	59.2	62.1	61.0	1.8	No
7N-11	B	Residential	Wildgrass	62.5	59.5	61.3	1.8	No
7N-12	B	Residential	Wildgrass	59.4	62.4	61.1	1.7	No
7N-13	B	Residential	Wildgrass	59.6	62.6	61.3	1.7	No
7N-14	B	Residential	Wildgrass	59.7	62.6	61.4	1.7	No
7N-15	B	Residential	Wildgrass	60.7	63.7	62.3	1.6	No
7N-16	B	Residential	Wildgrass	60.8	63.8	62.1	1.3	No
7N-17	B	Residential	Wildgrass	52.7	55.6	55.2	2.5	No
7N-18	B	Residential	Wildgrass	52.0	54.8	54.4	2.4	No
7N-19	B	Residential	Wildgrass	52.2	55.1	54.6	2.4	No
7N-20	B	Residential	Wildgrass	52.0	54.8	54.4	2.4	No
7N-21	B	Residential	Wildgrass	52.3	55.2	54.7	2.4	No
7N-22	B	Residential	Wildgrass	52.6	55.4	54.9	2.3	No
7N-23	B	Residential	Wildgrass	60.7	63.9	61.9	1.2	No
7N-24	B	Residential	Wildgrass	58.2	60.9	59.1	0.9	No
7N-25	B	Residential	Wildgrass	56.1	58.8	57.6	1.5	No
7N-26	B	Residential	Wildgrass	53.8	56.4	55.8	2.0	No
8N-1	B	Residential	SFR north side of SR 72	59.4	61.7	61.2	1.8	No
9N-1	C	Residential	Living Hope Bible Church	59.4	61.7	61.2	1.8	No
10N-1	B	Residential	East Lake	53.3	55.6	55.9	2.6	No
10N-2	B	Residential	East Lake	55.7	57.9	57.8	2.1	No
10N-3	B	Residential	East Lake	54.0	56.2	56.3	2.3	No
10N-4	B	Residential	Sandhill Lake	60.6	62.9	61.9	1.3	No
10N-5	B	Residential	Sandhill Lake	62.4	64.7	63.6	1.2	No
10N-6	B	Residential	Sandhill Lake	62.0	64.3	63.2	1.2	No
10N-7	B	Residential	Sandhill Lake	62.1	64.4	63.3	1.2	No
10N-8	B	Residential	Sandhill Lake	62.2	64.5	63.3	1.1	No
10N-9	B	Residential	Sandhill Lake	62.8	65.1	63.9	1.1	No
10N-10	B	Residential	Sandhill Lake	63.7	66.0	64.6	0.9	No
10N-11	B	Residential	Sandhill Lake	53.4	55.7	55.7	2.3	No
10N-12	B	Residential	Sandhill Lake	53.9	56.2	56.2	2.3	No
10N-13	B	Residential	Sandhill Lake	54.0	56.3	56.3	2.3	No
10N-14	B	Residential	Sandhill Lake	54.3	56.5	56.5	2.2	No
10N-15	B	Residential	Sandhill Lake	54.3	56.6	56.7	2.4	No
10N-16	B	Residential	Sandhill Lake	54.3	56.5	56.7	2.4	No
10N-17	B	Residential	Sandhill Lake	54.1	56.4	56.6	2.5	No
10N-18	B	Residential	Sandhill Lake	53.2	55.4	55.8	2.6	No
10N-19	B	Residential	Sandhill Lake	61.8	64.1	63.2	1.4	No
10N-20	B	Residential	Sandhill Lake	59.8	62.1	61.5	1.7	No
10N-21	B	Residential	Sandhill Lake	58.1	60.3	60.2	2.1	No
10N-22	B	Residential	Sandhill Lake	56.7	59.0	59.2	2.5	No
10N-23	B	Residential	Sandhill Lake	55.2	57.5	58.0	2.8	No

Predicted Noise Levels

Site ID	Activity Category	Type	Description	Leq(h) [dB(A)]				Approaches, Meets, or Exceeds the NAC?
				Existing (2019 & 2022)	No-Build (2045 & 2050)	Build (2045 & 2050)	Increase from Existing	
10N-24	B	Residential	Sandhill Lake	54.2	56.5	57.1	2.9	No
11N-1	C	Pool	Sandhill Lake Clubhouse Pool	66.8	69.1	67.9	1.1	**YES**
12N-1	C	Church	TouchPoint Church	60.4	62.6	62.1	1.7	No
13N-1	B	Residential	Trillium	51.7	53.9	55.0	3.3	No
13N-2	B	Residential	Trillium	52.3	54.5	55.6	3.3	No
13N-3	B	Residential	Trillium	52.5	54.8	55.8	3.3	No
13N-4	B	Residential	Trillium	52.6	54.8	55.7	3.1	No
13N-5	B	Residential	Trillium	52.7	54.9	55.8	3.1	No
13N-6	B	Residential	Trillium	53.0	55.2	55.9	2.9	No
13N-7	B	Residential	Trillium	52.2	54.3	55.1	2.9	No
14N-1	B	Residential	Foxfire	53.8	55.9	56.2	2.4	No
14N-2	B	Residential	Foxfire	54.1	56.2	56.7	2.6	No
14N-3	B	Residential	Foxfire	52.6	54.7	55.1	2.5	No
14N-4	B	Residential	Foxfire	52.7	54.8	55.1	2.4	No
14N-5	B	Residential	Foxfire	51.7	53.8	53.9	2.2	No
14N-6	B	Residential	Heron Landing	59.1	61.2	60.2	1.1	No
14N-7	B	Residential	Heron Landing	56.1	58.2	57.8	1.7	No
14N-8	B	Residential	Heron Landing	53.9	56.0	56.0	2.1	No
14N-9	B	Residential	Heron Landing	52.1	54.2	54.2	2.1	No
14N-10	B	Residential	Heron Landing	60.0	62.2	60.8	0.8	No
14N-11	B	Residential	Heron Landing	57.4	59.5	58.6	1.2	No
14N-12	B	Residential	Heron Landing	54.7	56.8	56.6	1.9	No
14N-13	B	Residential	Heron Landing	52.7	54.8	54.8	2.1	No
14N-14	B	Residential	SFR north side of SR 72	58.4	60.5	59.4	1.0	No
14N-15	B	Residential	SFR north side of SR 72	57.1	59.2	58.6	1.5	No
14N-16	B	Residential	SFR north side of SR 72	55.4	57.5	57.4	2.0	No
15N-1	B	Residential	SFR north side of SR 72	54.5	56.6	56.7	2.2	No
15N-2	B	Residential	SFR north side of SR 72	48.4	50.4	50.9	2.5	No
15N-3	B	Residential	Redhawk Reserve	57.3	59.3	58.8	1.5	No
15N-4	B	Residential	Redhawk Reserve	57.0	59.0	58.7	1.7	No
15N-5	B	Residential	Redhawk Reserve	56.6	58.6	58.3	1.7	No
15N-6	B	Residential	Redhawk Reserve	55.3	57.4	57.2	1.9	No
15N-7	B	Residential	Redhawk Reserve	53.7	55.7	55.8	2.1	No
15N-8	B	Residential	Redhawk Reserve	52.0	54.0	54.1	2.1	No
15N-9	B	Residential	Redhawk Reserve	49.9	51.8	52.2	2.3	No
15N-10	B	Residential	Redhawk Reserve	50.3	52.2	52.6	2.3	No
15N-11	B	Residential	Redhawk Reserve	50.6	52.4	52.9	2.3	No
15N-12	B	Residential	Redhawk Reserve	50.1	51.8	52.4	2.3	No
15N-13	B	Residential	Redhawk Reserve	59.1	60.6	62.0	2.9	No
15N-14	B	Residential	Redhawk Reserve	58.8	59.9	61.1	2.3	No
15N-15	B	Residential	Redhawk Reserve	59.7	60.8	62.0	2.3	No
15N-16	B	Residential	Redhawk Reserve	59.2	60.3	61.6	2.4	No
15N-17	B	Residential	Redhawk Reserve	60.0	61.0	61.9	1.9	No
15N-18	B	Residential	Redhawk Reserve	59.6	60.6	61.8	2.2	No
15N-19	B	Residential	Redhawk Reserve	59.7	60.7	61.5	1.8	No
15N-20	B	Residential	Redhawk Reserve	60.9	61.9	62.4	1.5	No
15N-21	B	Residential	Redhawk Reserve	52.3	53.9	54.8	2.5	No
15N-22	B	Residential	Redhawk Reserve	52.0	53.4	54.4	2.4	No
15N-23	B	Residential	Redhawk Reserve	52.4	53.8	54.9	2.5	No
15N-24	B	Residential	Redhawk Reserve	52.8	54.1	55.3	2.5	No
15N-25	B	Residential	Redhawk Reserve	52.9	54.1	55.4	2.5	No

Predicted Noise Levels

Site ID	Activity Category	Type	Description	Leq(h) [dB(A)]				Approaches, Meets, or Exceeds the NAC?
				Existing (2019 & 2022)	No-Build (2045 & 2050)	Build (2045 & 2050)	Increase from Existing	
15N-26	B	Residential	Redhawk Reserve	53.1	54.3	55.5	2.4	No
15N-27	B	Residential	Redhawk Reserve	53.0	54.1	55.4	2.4	No
15N-28	B	Residential	Redhawk Reserve	52.8	53.9	55.3	2.5	No
15N-29	B	Residential	Redhawk Reserve	53.0	54.1	55.5	2.5	No
15N-30	B	Residential	Redhawk Reserve	53.6	54.6	56.1	2.5	No
15N-31	B	Residential	Redhawk Reserve	52.1	53.1	54.6	2.5	No
15N-32	B	Residential	Redhawk Reserve	63.5	64.5	64.7	1.2	No
15N-33	B	Residential	Redhawk Reserve	59.9	60.9	61.4	1.5	No
15N-34	B	Residential	Redhawk Reserve	56.5	57.5	59.1	2.6	No
15N-35	B	Residential	Redhawk Reserve	55.1	56.1	57.9	2.8	No
15N-36	B	Residential	Redhawk Reserve	53.1	54.2	55.8	2.7	No
15N-37	B	Residential	Redhawk Reserve	47.8	48.9	50.6	2.8	No
16N-1	B	Residential	Aurora	55.5	56.5	58.4	2.9	No
16N-2	B	Residential	Aurora	54.8	55.7	57.7	2.9	No
16N-3	B	Residential	Aurora	54.1	55.1	56.9	2.8	No
16N-4	B	Residential	Aurora	53.5	54.5	56.2	2.7	No
16N-5	B	Residential	Aurora	52.8	53.8	55.6	2.8	No
16N-6	B	Residential	Aurora	52.2	53.2	55.0	2.8	No
16N-7	B	Residential	Aurora	64.1	65.1	65.4	1.3	No
16N-8	B	Residential	Aurora	63.4	64.4	64.6	1.2	No
16N-9	B	Residential	Aurora	62.7	63.7	64.0	1.3	No
16N-10	B	Residential	Aurora	62.0	63.0	63.4	1.4	No
16N-11	B	Residential	Aurora	61.4	62.4	62.9	1.5	No
16N-12	B	Residential	Aurora	60.7	61.7	62.4	1.7	No
16N-13	B	Residential	Aurora	55.6	56.6	58.3	2.7	No
16N-14	B	Residential	Aurora	55.3	56.3	58.1	2.8	No
16N-15	B	Residential	Aurora	55.0	56.0	57.7	2.7	No
16N-16	B	Residential	Aurora	54.7	55.7	57.4	2.7	No
16N-17	B	Residential	Aurora	54.4	55.3	57.1	2.7	No
16N-18	B	Residential	Aurora	54.1	55.0	56.8	2.7	No
16N-19	B	Residential	Aurora	53.1	54.1	55.8	2.7	No
16N-20	B	Residential	Aurora	52.6	53.6	55.3	2.7	No
16N-21	B	Residential	Aurora	52.1	53.0	54.8	2.7	No
16N-22	B	Residential	Aurora	51.5	52.5	54.4	2.9	No
16N-23	B	Residential	Aurora	51.0	52.0	53.9	2.9	No
16N-24	B	Residential	Aurora	50.5	51.4	53.4	2.9	No
16N-25	B	Residential	Aurora	54.7	55.7	57.4	2.7	No
16N-26	B	Residential	Aurora	54.2	55.1	56.8	2.6	No
16N-27	B	Residential	Aurora	53.5	54.4	56.2	2.7	No
16N-28	B	Residential	Aurora	52.9	53.8	55.6	2.7	No
16N-29	B	Residential	Aurora	52.3	53.3	55.1	2.8	No
16N-30	B	Residential	Aurora	51.7	52.7	54.5	2.8	No
17N-1	C	Pool	Aurora Swimming Pool	56.3	57.3	59.2	2.9	No
18N-1	B	Residential	Camelot East Village	53.3	54.2	56.0	2.7	No
18N-2	B	Residential	Camelot East Village	54.7	55.6	57.4	2.7	No
18N-3	B	Residential	Camelot East Village	57.0	57.9	59.6	2.6	No
18N-4	B	Residential	Camelot East Village	60.6	61.5	62.6	2.0	No
18N-5	B	Residential	Camelot East Village	62.2	63.1	64.0	1.8	No
18N-6	B	Residential	Camelot East Village	61.2	62.2	63.2	2.0	No
18N-7	B	Residential	Camelot East Village	61.6	62.5	63.6	2.0	No
18N-8	B	Residential	Camelot East Village	61.9	62.8	64.1	2.2	No

Predicted Noise Levels

Site ID	Activity Category	Type	Description	Leq(h) [dB(A)]				Approaches, Meets, or Exceeds the NAC?
				Existing (2019 & 2022)	No-Build (2045 & 2050)	Build (2045 & 2050)	Increase from Existing	
18N-9	B	Residential	Camelot East Village	61.5	62.3	63.8	2.3	No
18N-10	B	Residential	Camelot East Village	61.6	61.9	64.0	2.4	No
18N-11	B	Residential	Camelot East Village	61.4	59.9	63.8	2.4	No
18N-12	B	Residential	Camelot East Village	56.9	59.9	59.5	2.6	No
18N-13	B	Residential	Camelot East Village	59.5	57.8	61.8	2.3	No
18N-14	B	Residential	Camelot East Village	55.3	56.2	58.0	2.7	No
18N-15	B	Residential	Camelot East Village	53.8	54.6	56.6	2.8	No
18N-16	B	Residential	Camelot East Village	52.5	53.4	55.3	2.8	No
18N-17	B	Residential	Camelot East Village	57.1	58.0	59.7	2.6	No
18N-18	B	Residential	Camelot East Village	55.2	56.0	57.9	2.7	No
18N-19	B	Residential	Camelot East Village	53.8	54.6	56.7	2.9	No
18N-20	B	Residential	Camelot East Village	52.4	53.2	55.3	2.9	No
18N-21	B	Residential	Camelot East Village	56.4	55.3	59.0	2.6	No
18N-22	B	Residential	Camelot East Village	54.5	57.2	57.4	2.9	No
18N-23	B	Residential	Camelot East Village	55.9	56.6	58.5	2.6	No
18N-24	B	Residential	Camelot East Village	54.1	55.7	57.0	2.9	No
18N-25	B	Residential	Camelot East Village	55.0	56.2	57.8	2.8	No
18N-26	B	Residential	Camelot East Village	54.1	54.2	57.0	2.9	No
18N-27	B	Residential	Camelot East Village	53.6	54.8	56.5	2.9	No
18N-28	B	Residential	Camelot East Village	55.8	54.8	58.3	2.5	No
18N-29	B	Residential	Camelot East Village	52.1	52.9	55.1	3.0	No
18N-30	B	Residential	Camelot East Village	52.1	52.8	55.1	3.0	No
19N-1	C	Sport Area	Camelot Tennis Courts	51.1	51.7	54.1	3.0	No

APPENDIX F

Special Land Use Worksheet Preliminary Screening

Usage Screening - To be used for ISOLATED SLUS ONLY

An isolated SLU must have enough person-hour usage to equate to at least 2 residences to satisfy the FDOT requirement that 2 residences must be provided a benefit for a noise barrier to be found feasible.

Average Single-Family Residence in Florida - Person Hours per Year	
Average number of people in a single-family residence in Florida (US CENSUS, 2017-2021 data)	2.57
Hours a single-family residence is available for use (24 hours x 365 days)	8,760
Residential Person-Hours per Year Available for Use	22,513
Isolated SLU Person-Hours per Year	
Average number of users per day at the SLU	123
Approximate daily hourly usage by each person at the SLU	1
Number of Days per week the SLU is operational	7
Number of weeks per year the SLU is operational	52
Person-Hours per Year SLU is available for use	44,772
Equivalent Residence (ER)	**1.99**
Isolated SLU Eligible for Noise Barrier Evaluation?	NOT ELLIGIBLE

The assumption that 2.57 persons utilize the average single-family home in Florida was obtained from the Florida Census data from 2017-2021 (https://www.census.gov/quickfacts/fact/table/FL/HSD310220).

Usage Screening - To be used for ISOLATED SLUS ONLY

An isolated SLU must have enough person-hour usage to equate to at least 2 residences to satisfy the FDOT requirement that 2 residences must be provided a benefit for a noise barrier to be found feasible.

Average Single-Family Residence in Florida - Person Hours per Year	
Average number of people in a single-family residence in Florida (US CENSUS, 2017-2021 data)	2.57
Hours a single-family residence is available for use (24 hours x 365 days)	8,760
Residential Person-Hours per Year Available for Use	22,513
Isolated SLU Person-Hours per Year	
Average number of users per day at the SLU	124
Approximate daily hourly usage by each person at the SLU	1
Number of Days per week the SLU is operational	7
Number of weeks per year the SLU is operational	52
Person-Hours per Year SLU is available for use	45,136
Equivalent Residence (ER)	**2.00**
Isolated SLU Eligible for Noise Barrier Evaluation?	ELLIGIBLE

The assumption that 2.57 persons utilize the average single-family home in Florida was obtained from the Florida Census data from 2017-2021 (https://www.census.gov/quickfacts/fact/table/FL/HSD310220).

APPENDIX G

TNM Files (provided via the project file on SWEPT)