CENTRAL FLORIDA EXPRESSWAY AUTHORITY

NOISE STUDY REPORT

PROJECT DEVELOPMENT AND ENVIRONMENT STUDY
Lake / Orange County Connector (US 27 to SR 429)
Lake and Orange Counties, Florida

CFX Project Number: 599-225

Prepared for

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

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EXECUTIVE SUMMARY

The Central Florida Expressway Authority (CFX) is conducting a Project Development and Environment Study of the Lake/Orange County Connector, a strategic transportation investment aimed at supporting existing and future growth in south Lake and west Orange counties. The purpose of the Lake/Orange County Connector PD&E Study is to develop a proposed alternative that is technically sound, environmentally sensitive and publicly acceptable.

A traffic noise analysis was performed following Code of Federal Regulations Title 23 Part 772 (23 CFR 772), *Procedures for Abatement of Highway Traffic Noise and Construction Noise*[1], using methodology established by the Florida Department of Transportation (FDOT) in the *Project Development and Environment Manual*[2], Part 2, Chapter 18 (dated January 14, 2019). The purpose of the noise study is to identify noise-sensitive sites that would be impacted with the proposed project and evaluate abatement measures at impacted noise-sensitive sites.

The FHWA has established Noise Abatement Criteria (NAC) for seven land use activity categories. These criteria determine when an impact occurs and when consideration of noise abatement is required. Maximum noise level thresholds have been established for five of these activity categories. These maximum thresholds, or criteria levels, represent acceptable traffic noise level conditions. Descriptions of the defined Activity Categories and associated NACs are presented in the table on the following page.

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Noise Abatement Criteria

[Hourly A-Weighted Sound Level-Decibels (dB(A))]

ACTIVITY CATEGORY	ACTIVITY Leq(h)[1]	EVALUATION LOCATION	DESCRIPTION OF ACTIVITY CATEGORY
A	57	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	Exterior	Residential
C[2]	67	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	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	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 23 CFR Part 772)
[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.

Noise abatement measures must be considered when predicted noise levels approach or exceed the NAC levels or when a substantial noise increase occurs. Following the FDOT procedure, “approach” is defined as within one dB(A) of the FHWA criteria. A substantial noise increase is defined as when the existing noise level is predicted to be exceeded by 15 dB(A) or more as a result of the transportation improvement project.

Traffic noise levels were predicted for the noise-sensitive locations along the project corridor for the 2018 (existing) conditions, and for the 2045 (Design Year) No-build Alternative and Preferred Alternative. Approximately 51 residences, single-family homes, were identified as being sensitive to traffic noise along the proposed Lake/Orange County Connector within the limits of this project. Also, two non-residential special-use noise-sensitive sites, including a community pool and trail were identified along the project corridor. Design Year traffic noise levels at nearby residences are predicted to range from 52.3 to 69.8 dB(A). The Preferred Alternative noise levels at special land use sites are predicted to range from 52.3 dB(A) at the Zanzibar pool area to 56.7 dB(A) at the Zanzibar Wingspread Loop Trail during the Design Year. Noise impacts are predicted to occur at three residences. The three impacted residences are located in the Zanzibar residential community located just west of the eastbound Lake/Orange County Connector ramp to southbound SR 429. No other noise-sensitive

sites within the project study area are predicted to experience traffic noise levels equal to or exceeding the Noise Abatement Criteria (NAC). None of the noise-sensitive sites are expected to experience a substantial noise level increase [i.e., greater than 15.0 dB(A) over existing levels] with the Preferred Alternative.

Noise barriers were considered for the three residences where Design Year traffic noise levels were predicted to equal or exceed the NAC. As such, noise barriers were considered at two locations to mitigate noise impacts. Since traffic management and alignment modifications were determined to not be viable abatement measures, noise barriers were determined to be the only potentially viable abatement measure that could be implemented for this project.

Five noise barrier concepts were evaluated for the three impacted noise-sensitive sites. Although four noise barrier concepts met the noise reduction criterion of 7.0 dB(A), noise abatement was not considered cost reasonable ($42,000 per benefited receptor) in accordance with the policy used by CFX.

Based on the noise analysis performed to date, there are no cost effective mitigations for these locations. Therefore, noise barriers are not recommended for further consideration or construction.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

APPENDICES

1.0 INTRODUCTION

PROJECT DESCRIPTION

The proposed Lake/Orange County Connector is a strategic transportation investment aimed at supporting existing and future growth in south Lake and west Orange counties. It has been identified as a system expansion project need in the last four consecutive Central Florida Expressway Authority (CFX) master plans, the most current being the 2040 CFX Master Plan. The Orlando-Orange County Expressway Authority (OOCEA), now CFX, completed the 2007 SR 429 to US 27 Connector Concept Development and Evaluation Study which developed various viable corridors/alternatives and identified an unmet need for an east-west connection between US 27 and SR 429. This study will confirm the feasibility of the connector and will conduct a Project Development and Environment (PD&E) Study on defined alignments. **Figure 1-1** illustrates the location of the project.

This report documents a traffic noise study identifying noise-sensitive areas that may be affected by the proposed improvements, and evaluates noise barriers as an abatement measure for sensitive areas expected to be impacted as a result of the planned improvements. This traffic noise analysis was performed following Code of Federal Regulations Title 23 Part 772 (23 CFR 772), *Procedures for Abatement of Highway Traffic Noise and Construction Noise*[1], using methodology established by FDOT in the *Project Development and Environment Manual*[2], Part 2, Chapter 18 (dated January 14, 2019).

PROJECT OBJECTIVE

Objective

The primary objectives of this transportation improvement project are to: expand regional system linkage and connectivity in Lake and Orange counties; enhance mobility between US 27 and SR 429; and accommodate the expected increase in traffic due to population and employment growth within the study area, while being consistent

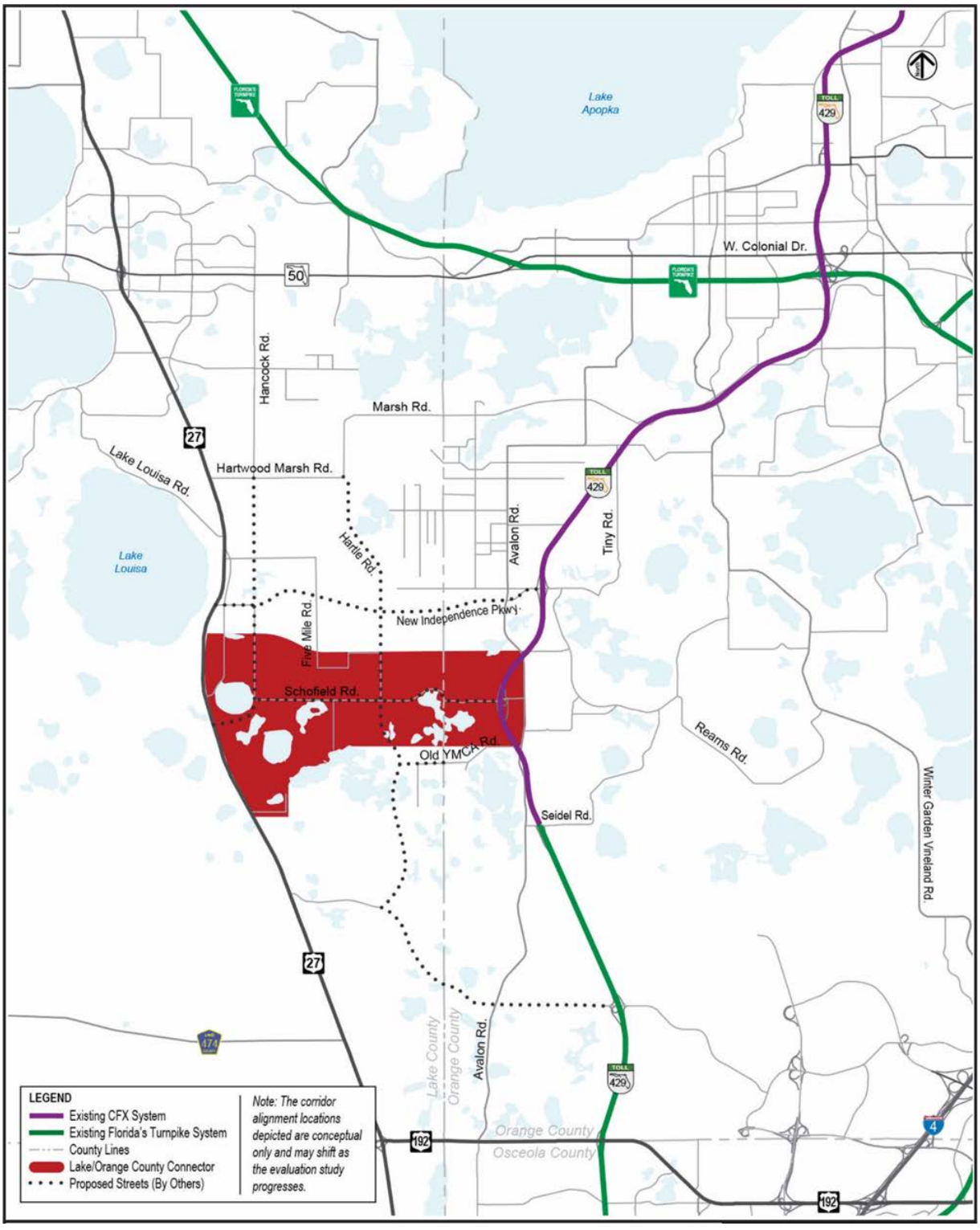

Figure 1-1 Project Location

with accepted local and regional plans. As such, the proposed improvements include the construction of a limited-access facility that provides a new east-west connection from US 27 in south Lake County to SR 429 in west Orange County.

Project Background

The vision of this critical east-west corridor has been documented in prior concept studies. In 2002, the OOCEA first investigated the potential to extend SR 408 (East-West Expressway) to the west to address the transportation needs of west Orange and east Lake counties. A report titled "Western Extension Concept Development and Feasibility Study" was prepared which investigated the feasibility of a limited-access toll road. Four primary corridors were identified (see **Figure 1-2**): a "Northern Corridor", a "SR 50 Corridor", a "Hartwood-Marsh Corridor" and a "Southern Corridor". The study concluded that only the "Southern Corridor" connecting SR 429 with US 27 in the general area of Schofield Road offered any long-term opportunity for Expressway Authority participation.

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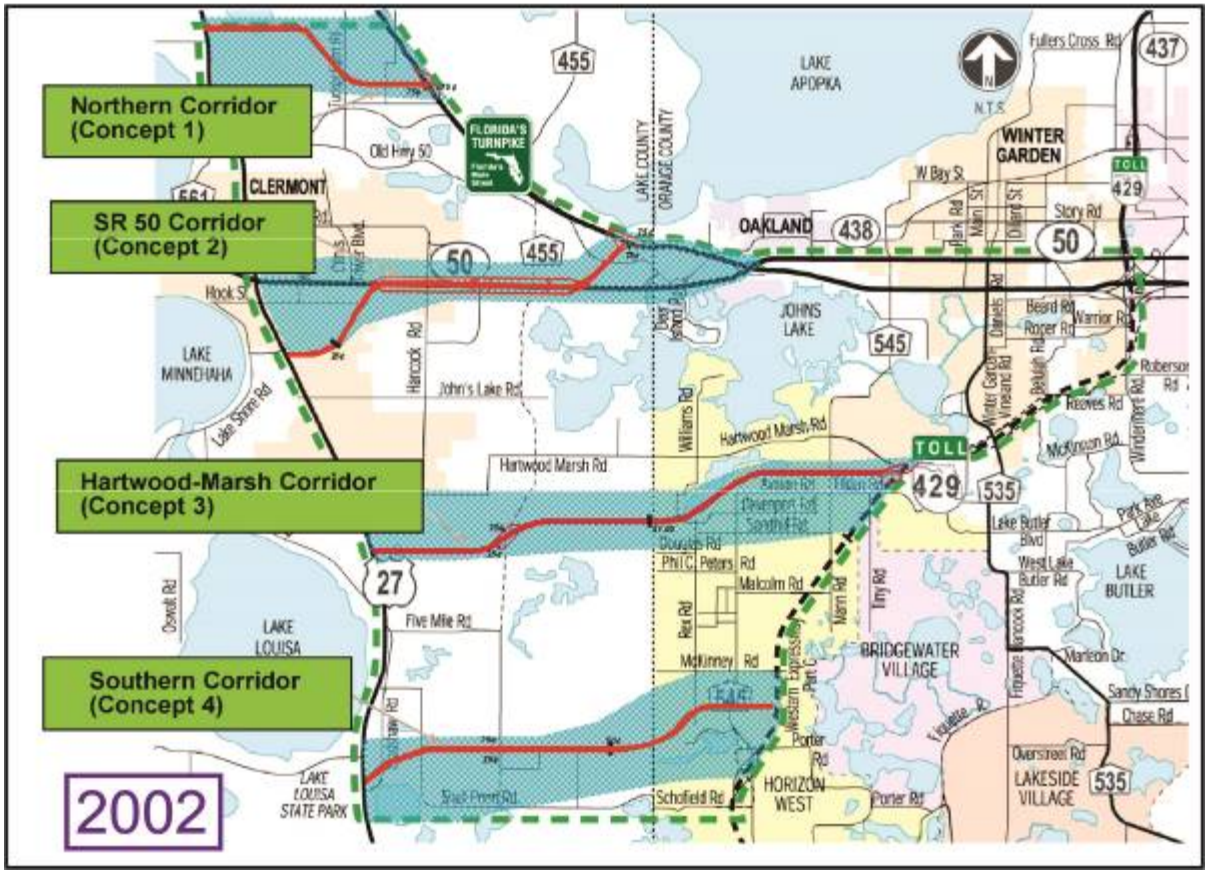

Figure 1-2 Western Extension Study Corridors

In 2007, a Concept Development and Evaluation Study for a potential SR 429 to US 27 Connector was prepared by the OOCEA. The purpose of the study was to determine the feasibility and viability of a potential SR 429 to US 27 expressway connection within an area south of Hartwood Marsh Road and north of US 192. Four distinct corridors were investigated (see **Figure 1-3**). The study found that Corridor B was not viable due to significant wetland and surface water impacts and relatively low traffic attraction. Corridor A (the southernmost option) had the largest traffic attraction but extended through an environmentally sensitive area while Corridor D (the northernmost option) had the lowest traffic attraction. Corridor C, which generally traversed the area adjacent to Schofield Road within the central portion of the study area, offered a potential balance between traffic attraction and minimization of environmental impacts.

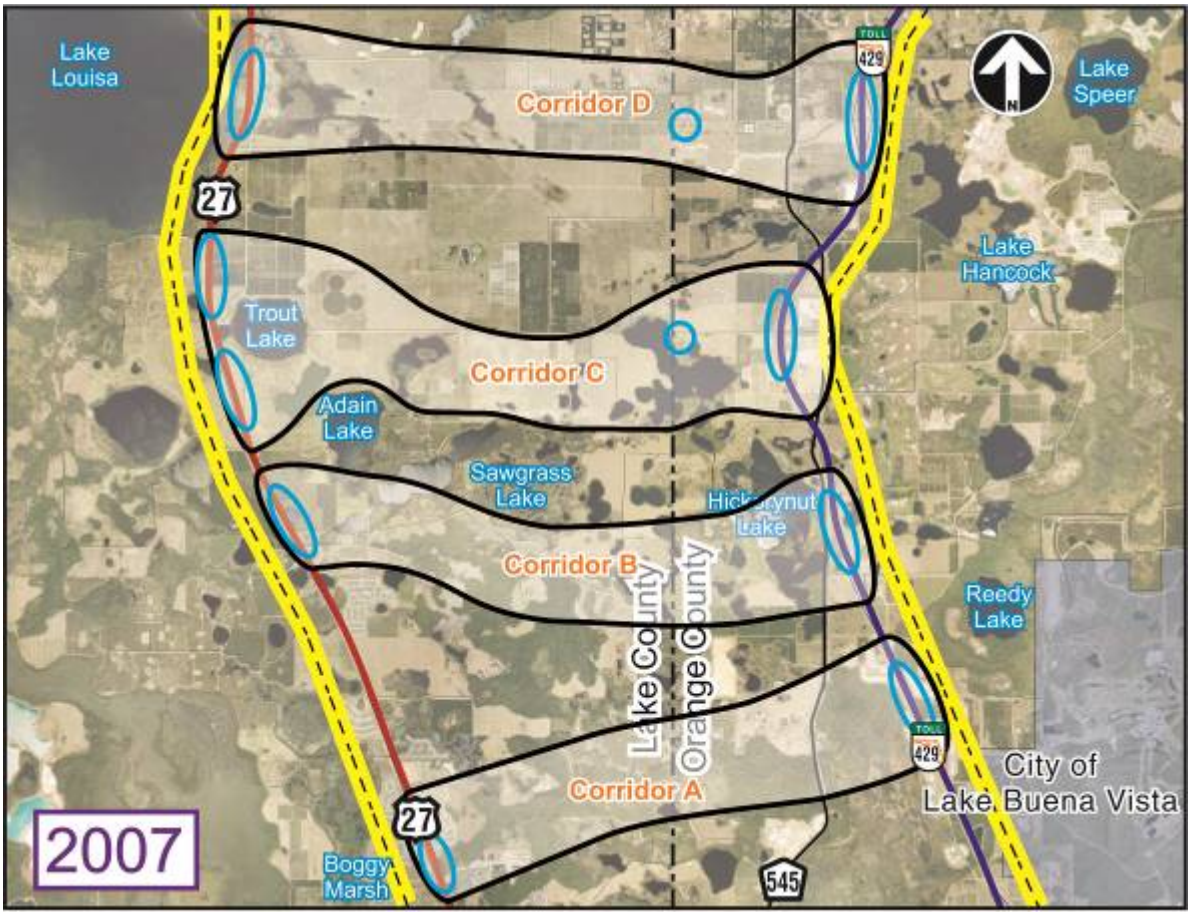

Figure 1-3 SR 429 to US 27 Connector Study Corridors

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2.0 PURPOSE AND NEED

PURPOSE

The purpose of the Lake/Orange County Connector PD&E Study is to develop a proposed improvement strategy that is technically sound, environmentally sensitive and publicly acceptable. As with every PD&E Study, emphasis has been placed on the development, evaluation and documentation of detailed engineering and environmental studies including data collection, conceptual design, environmental analyses, project documentation and the preparation of a Preliminary Engineering Report (PER).

NEED

There are six project needs that serve as justification for the proposed improvements. These needs are: 1) Provide improved system connectivity/linkage; 2) Accommodate anticipated transportation demand; 3) Provide consistency with local and regional plans; 4) Support economic viability and job creation; 5) Support intermodal opportunities; and 6) Enhance evacuation and emergency service. The following sections describe the needs in more detail.

System Connectivity/Linkage

System linkage is defined as linking two or more existing transportation facilities or types of modal facilities between geographic areas or regional traffic generators.

Figure 1-1 illustrates the existing roadway network within the vicinity of the proposed project. There are two major north-south facilities serving the project area, SR 429, a four-lane limited-access rural toll road at the eastern project terminus and US 27, a four-lane divided rural arterial at the western project terminus. In the east-west direction, SR 50, a six-lane urban arterial facility located approximately 7 miles to the north, and US 192, a six-lane urban divided arterial located approximately 7 miles south, connect Lake County to the Orlando urban core. These existing east-west facilities not only serve

through traffic but also provide significant local access, thus limiting their ability to provide effective overall mobility.

At the present time, the east-west connectivity within the study area is deficient with Schofield Road, an unpaved 20-foot wide rural facility, providing the only connection between US 27 on the west and SR 429 on the east. A new limited-access, direct connection expressway facility would not only provide the much-needed connectivity in the area but would also significantly improve regional mobility and travel time.

A PER was completed in 2016 for Wellness Way, a new four-lane divided arterial extending from US 27 and connecting to New Independence Parkway in the vicinity of SR 429. It should be noted that the 2007 SR 429 to US 27 Connector Concept Development and Evaluation Study prepared by the OOCEA stated that a network of east-west six-lane roadway arterials could also meet the capacity need of the study area. The proposed Wellness Way facility alone will not be sufficient to provide the necessary east-west linkage to meet the anticipated growth of the area when compared to a new limited-access, direct connection expressway facility.

Interchanges are proposed at US 27 in Lake County, SR 429 in Orange County, and the future extension of CR 455 in Lake County. Lake County's Visionary Map shows a southerly extension of CR 455 from its current terminus to the future extension of Sawgrass Bay Boulevard.

Anticipated Transportation Demand

According to the Central Florida Expressway Authority's 2040 Master Plan, Lake County's population is projected to increase by 56% (to 493,000 residents) and employment is projected to increase by 60% (to 212,700) by 2040. During the same time period, the population and employment growth within Orange County are expected to each increase by more than 50%. Two of the main areas of development generating additional population are the Wellness Way Area Plan (WWAP) in south Lake County

and the Horizon West Special Planning Area (HWSPA) in southwestern Orange County. The WWAP includes more than 16,000 acres. Horizon West is a growing community of several villages occupying more than 20,000 acres and projected to house over 60,000 residents when completed. Horizon West also features the future site of a Valencia College satellite campus.

The January 2018 Bureau of Economic and Business Research (BEBR) population projections show from 2017 to 2045 a 54% growth in population is anticipated for both Lake and Orange counties.

The study area traverses all five of the WWAP Future Land Use Categories (FLUC); Town Center and Wellness Way 1, 2, 3 and 4. The planning horizon for the WWAP is projected to be 2040 with a build-out of 16,500 dwelling units and a projected employment of 36,000. CEMEX, a multinational building materials supply company, submitted an updated permit for the proposed Four Corners Sand Mine in August 2017. They propose to operate on 1,200 acres within the WWAP, on property divided by Schofield Road. The permit allows mining approximately 525 acres over a 22-year period.

The study area also falls within the Town Center and Village H (Hickory Nut) of Horizon West. The Town Center will be a regional employment center with a projected employment force of over 27,000 and home to a host of new developments including a satellite campus of Valencia College and Orlando Health hospital. Overall, Horizon West has an anticipated build-out of 40,000 dwelling units and a projected commercial area of 9.5 million square feet.

An origin and destination (OD) study conducted by CDM Smith in 2017 for CFX revealed that much of the potential traffic for a new toll road would come from planned developments. In the year 2045, there is a potential for 34,000 daily trips traveling between US 27 and SR 429 in the vicinity of Schofield Road. With the proposed project

as a tolled expressway, approximately 19,000 daily trips would be diverted from local roadways.

The proposed connector is anticipated to help accommodate the expected increase in traffic due to population and employment growth within the study area by expanding the limited-access expressway system.

Consistency with Local and Regional Plans

Planning consistency of the proposed project is documented in various local comprehensive plans (see **Table 2-1**). A brief explanation of each follows.

CFX 2040 Master Plan and Five-Year Work Plan: The subject project is a major component of the Authority's plan to provide additional capacity to address the area's increasing projected population and employment growth. The Lake/Orange County Connector would support the economic vitality of the WWAP and the HWSPA developments and is widely supported among local landowners and community leaders. The project is listed in the five-year work plan (2019-2023) and funded for PD&E in years 2018/2019 and for potential design in years 2021/2022 and 2022/2023.

Lake-Sumter Metropolitan Planning Organization (MPO) – 2040 Long Range Transportation Plan (LRTP): The Lake-Sumter MPO provides a forum for cooperative decision making concerning transportation issues throughout the urbanized area of Lake and Sumter counties. The latest draft list of priority projects (May 2018) shows that a "New Road Alternative Corridor Evaluation" between US 27 and SR 429 is listed as priority #20 under the Preliminary Engineering projects. In addition, the portion of the Lake/Orange Parkway project extending from US 27 to the Lake/Orange County line is included in the Lake-Sumter 2040 LRTP as a cost feasible element and as an Emerging Regional Significant Corridor.

West Orange South Lake Transportation and Economic Development Task Force (WOSLTED): This task force was initiated in 2000 with the goal of promoting

transportation in the West Orange/South Lake (WOSL) region. In 2008, the task force started a planning process to ensure coordinated transportation and housing development which eventually resulted in a proposed system of new roadways and roadway improvements which included the provision of a proposed east-west connector from US 27 to SR 429. This connector has always been a main focus of this organization.

MetroPlan Orlando: MetroPlan Orlando is the metropolitan planning organization for the greater Orlando area. It coordinates and leads transportation planning efforts in Orange, Osceola and Seminole Counties. The subject project is listed on the 2040 LRTP Plan Development Cost Feasible projects (updated June 2017) as a funded project for both PD&E and design.

Table 2-1 Local Planning Consistency

Agency	Remarks
Central Florida Expressway Authority (CFX)	Included in the 2040 Master Plan and the Five-Year Work Plan (2019-2023)
Lake-Sumter MPO	Identified the proposed project in the 2040 LRTP Needs Plan
West Orange/South Lake Transportation and Economic Development Task Force	Identified a connection between US 27 to Orange County in its Transportation Plan
MetroPlan Orlando	Identified in its Technical Report 3: “Plan Development and Cost Feasible Projects”

Economic Viability and Job Creation

The proposed facility is needed to further support the economic viability of the WWAP. This 16,000-acre service area has been recognized for many years as having significant potential for economic development in southeast Lake County. It is projected to be an economic engine for job creation in the region and is envisioned to strengthen its connectivity with other regional economic hubs. With an anticipated buildout of over 16,000 residential units, this important planned development is expected to generate over 26,800 jobs in the future.

The proposed connector will also directly benefit the economic and job creation potential of the Horizon West development by expediting the efficient delivery of goods and services in this developing area of west Orange County.

Support Intermodal Opportunities

The Horizon West Town Center is proposed as an intermodal and freight staging facility potentially providing access to trucks, rails, airports and/or ports. Its presence enhances the integration and connectivity of the multimodal transportation system. The proposed connector would link this freight staging facility with two major Strategic Intermodal System (SIS) highways (US 27 and SR 429) and thus connect Lake County to a network of limited-access facilities that provide access to the Orlando International Airport and Port Canaveral. In addition, the MetroPlan Orlando's "Regional Freight and Goods Movement Facilities Profile" noted that there is "limited existing east-west highway and rail connectivity within the region – which provides logistical challenges for some shippers". The proposed project will add a valuable east-west mobility link to the area's transportation network.

Evacuation and Emergency Services

The East Central Florida Region has been identified by the National Oceanic and Atmospheric Administration (NOAA) as a high hurricane-vulnerable area within the United States and thus requires sufficient and efficient evacuation routes. There are no existing designated east-west evacuation routes within the immediate project area. Only SR 50, approximately 7 miles to the north, and US 192 (SR 530), approximately 7 miles to the south, provide effective east-west evacuation connection to important north-south SIS routes in the area (US 27 and SR 429). The provision of an additional high-speed, limited-access east-west facility will afford desirable redundancy of the highway network to accommodate diverted local and regional traffic during times of natural or man-made emergencies.

Another critical issue deals with potential delays of fire and emergency services. There are two fire stations just north and south of the study area along US 27 but their linkage to the east is ineffective due to the lack of a paved or limited-access facility connecting to SR 429, potentially resulting in additional delays. The proposed connector would facilitate prompt fire and emergency response.

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3.0 PROJECT AREA DESCRIPTION

The project spans Lake and Orange Counties, southwest of the City of Orlando. The project area is mostly undeveloped and consists mainly of agricultural land uses. Lake Louisa State Park is adjacent to SR 27 at the western project terminus. Large scale development, including a community college and extensive residential and commercial areas are anticipated along Schofield Road in the vicinity of US 27. The CEMEX Four Corners Sand Mine is planned for 600 acres that include part of the project area.

In this document, the term “project corridor” describes the footprint of the preferred alternative. The term “project area” describes a larger expanse that encompasses the project corridor and includes all land within 500 feet of the project corridor centerline. There are four recommended stormwater ponds that are located outside the project corridor. They are ponds 1A6, 2A, 3A3, and 4A3. Land use in the project corridor is shown on **Figure 3-1.** Additional details on the alternatives considered in this PD&E study are provided in Section 4.0.

LAND USE

Land use cover descriptions provided for both uplands and wetlands are classified using the *Florida Land Use Cover and Forms Classifications System* (FLUCCS) designation. Existing land use in the project area was initially determined utilizing United States Geological Survey (USGS) maps, historical images, aerial photographs, and land use mapping from the SJRWMD (2012). Land use categories reported by SFWMD and SJRWMD were verified in the field. Field reviews generally confirmed the land use mapping, with minor updates.

Land use categories mapped by SJRWMD are shown in **Figure 3-1** and land use categories in the project corridor are described below. Descriptions of FLUCCS codes are taken primarily from FDOT (1999) and SFWMD (2009). Land uses in the project area include large areas of Improved Pastures (FLUCCS 2110) and Citrus Groves (FLUCCS 2210) with Lakes (FLUCCS 5200), Freshwater Marshes (FLUCCS 6410), and

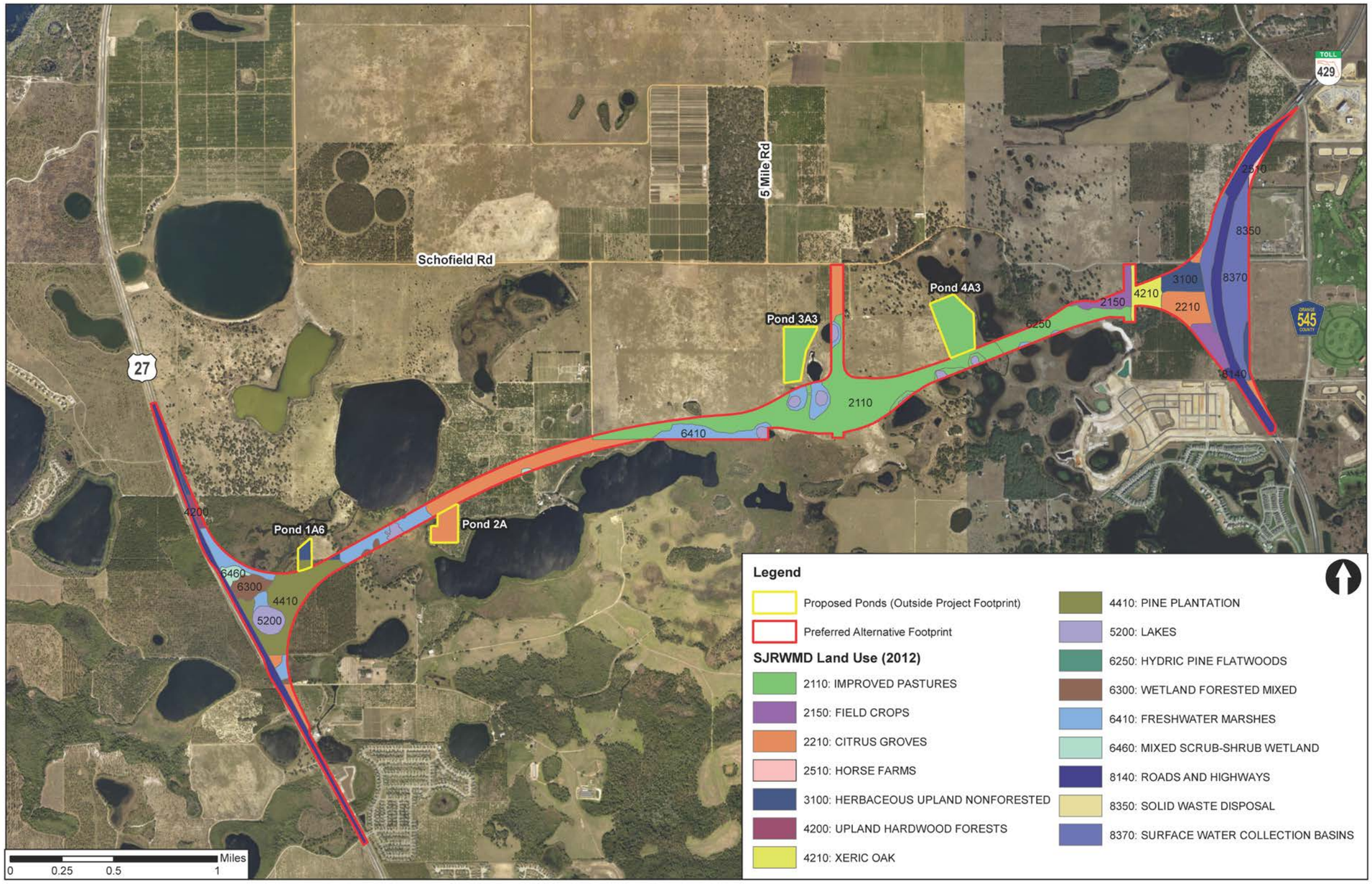

Figure 3-1 Land Use by FLUCCS Code in the Project Area

Wetlands (FLUCCS 6300 and 6460) scattered throughout. The western side of the project area has a large area of Pine Plantation (FLUCCS 4410), while the eastern side includes areas of Xeric Oak (FLUCCS 4210), Herbaceous Upland Nonforested (FLUCCS 3100), and Surface Water Collection Basins (FLUCCS 8370).

Improved Pastures (FLUCCS 2110)

Improved pastures are the most intensively managed of the pastureland classes. They are usually cleared, tilled, reseeded with specific grass types and periodically improved with brush control and fertilizer application. In most cases, they show some direct evidence of cattle, such as watering ponds, feed bunkers, fencing, corrals, barns, or cow trails. Large improved pastures cover the majority of the project corridor between Cook Road and the intersection of Meadow Bend Circle with Schofield Road. Areas that are mapped as Improved Pasture north of Lake Needham, in the eastern portion of the project area, appear to actually be wet prairie. This area maps as flood zone AE and recent historic images show the lakes periodically expand and cover much larger areas than during drier periods, which are expressed on **Figure 3-1**.

Field Crops (FLUCCS 2150)

Wheat, oats, hay and grasses are the primary types identified as field crops. Field Crops are mapped in two areas at the eastern end of the project corridor, however, the western area mapped as field crops was determined to be Improved Pastures during field investigations.

Citrus Groves (FLUCCS 2210)

This class is for active tree cropping operations that produce fruit, nuts, or other resources not including wood products. It is mapped in patches throughout the project corridor, with large areas just west of Cook Road and at the northern end of the proposed central intersection with Schofield road. There is also a small area mapped just east of SR 429 that was determined to be Pine Plantation during field investigations.

Horse Farms (FLUCCS 2510)

This category defines farms which stable, breed and train horses for a variety of uses such as hunting, exhibition, racing, riding and harness racing. One small area of Horse Farms is mapped at the northern end just east of SR 429.

Herbaceous Upland Nonforested (FLUCCS 3100)

This is one of three land cover classes used for upland nonagricultural, non-forested lands which contain no evidence of cattle grazing. FLUCCS 3100 is used for areas that have over 67% herbaceous cover, not counting any forested inclusions, which may be up to 25% of the area. This land use type is found in small areas on both ends of the project corridor.

Upland Hardwood Forests (FLUCCS 4200)

The Uplands hardwoods class may include forest communities such as oak-pine-hickory, Brazilian pepper, live oak, wax myrtle-willow (not hydric), mixed temperate or tropical hardwoods, and beech-magnolia. The canopy closure must be 25 percent or more, with at least a 66 percent dominance by hardwood tree species and trees must average over 20 feet tall. There is one area of Upland Hardwood Forests on the north end of the western edge of the project corridor, just east of US 27.

Xeric Oak (FLUCCS 4210)

This class is for forest communities dominated by xeric oaks. The canopy closure must be 25 percent or more, with at least a 66 percent dominance by xeric oak species, which include bluejack oak, turkey oak and sand post oak. The trees must average over 20 feet in height. Xeric Oak is found on the eastern side of the project corridor, just south of the intersection of Meadow Bend Circle with Schofield Road.

Pine Plantation (FLUCCS 4410)

Pine plantations are artificially generated by planting seedling stock or seeds. The stands are characterized by high numbers of trees per acre and uniform appearance. Row patterns are almost always apparent. A large area of Pine Plantation is mapped on the western end of the project corridor where it intersects with US 27.

Lakes (FLUCCS 5200)

This class includes freshwater and saltwater bodies of water greater than 1/2 acre in size, that are predominantly natural in origin. It does not include water bodies that are man-made or extensively modified. Lakes are found throughout the project corridor, primarily in the western and central portions.

Hydric Pine Flatwoods (FLUCCS 6250)

This class is for wetland forests with a canopy dominated by Slash pine. It may be naturally generated, or the result of pine plantations that are planted in rows through flatwoods depressions. The understory is grasses, wiregrass, forbs, and sometimes sparse saw palmetto. There is one small area of Hydric Pine Flatwoods on the eastern side of the corridor between the proposed central intersection with Schofield Road and SR 429.

Wetland Forested Mixed (FLUCCS 6300)

This classification is designated by forested systems composed of hardwood and coniferous tree mixtures. Species adapted to wet environments such as water oak, cabbage palm, red maple, bay trees, and conifers grow well in these habitats. Wetland Forested Mixed areas exist in a variety of moist soil conditions, from permanently wet to seasonally or infrequently wet. This land use type is located in patches at the western end of the project corridor.

Freshwater Marshes (FLUCCS 6410)

This classification is used for wetland communities having a representative suite of plant species such as sawgrass, cattail, arrowhead, maidencane, buttonbush, cordgrass, switchgrass, needlerush, common reed, arrowroot, and bulrush. Freshwater marshes tend to be open expanses of grasses, sedges, rushes and other types of herbaceous plants. Periods of inundation are intermediate between deep marshes (emergent aquatic FLUCCS 6440) and wet prairies (FLUCCS 6430) and these sites are usually covered with water at least two months of the year, undergoing prolonged periods of soil saturation**.** Freshwater Marsh is mapped in patches throughout the project corridor.

Mixed Scrub-Shrub Wetland (FLUCCS 6460)

This class is used for wetlands that are dominated by woody vegetation less than 20 feet in height. It is most common in disturbed communities on drier sites. There is one area of Mixed Scrub-Shrub Wetland at the western edge of the project corridor along US 27.

Roads and Highways (FLUCCS 8140)

This category includes roads and highways that exceed 100 feet in width over long segments and have four or more lanes and median strips. There are two major areas of Roads and Highways, one at each end of the project corridor, SR 429 to the east and US 27 to the west.

Solid Waste Disposal (FLUCCS 8350)

This class includes sanitary landfills, dumps and other waste disposal areas. The sites may be publicly or privately operated and may or may not be permitted. It includes dumps and landfills that are found at private operations, such as farms, institutions, industrial and commercial sites, if they meet size criteria. One area of Solid Waste Disposal is mapped on the very eastern edge of the project corridor.

Surface Water Collection Basins (FLUCCS 8370)

This code was created by the SJRWMD to classify excavated open spaces, situated within residential sub-divisions or communities and along freeway corridors, for temporary collection and holding of surface water runoff. It is not used for treatment ponds and other "reservoirs" that generally function as permanent water bodies. Surface Water Collection Basins are found on both sides of SR 429 at the eastern end of the project corridor.

ELEVATION AND HYDROLOGIC FEATURES

Figure 3-2 shows an elevation map created with data collected using LIDAR in North American Datum 1983 (NAD 83). The project area has a ground elevation ranging between approximately 90 and 190 feet, with areas of lower elevation where water is found. Areas of low elevation are found throughout the project corridor while the highest elevations are found on the eastern end of the corridor.

Hydrologic features and wetland areas mapped by the USFWS National Wetlands Inventory are shown in **Figure 3-3**. The nearest major water body is Lake Louisa, however, the nearest flowable water feature is the Kissimmee River, with headwaters starting approximately 18 miles southeast of the project corridor.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (updated December 4, 2012), a large portion of the project corridor is located within Flood Zone X, which is a flood zone that has a 0.2% annual flood chance. Small portions of the project area are located within flood zones A and AE, which are flood zones that are inundated by the 100-year flood (**Figure 3-4**).

SOILS

The Natural Resources Conservation Service (NRCS) (2017) indicates that 11 soil types occur in the project area (**Table 3-1**, and **Figure 3-5**). Three hydric soil types, including Oklawaha Muck, Organic Soil, and Placid Sand, are mapped in the project area.

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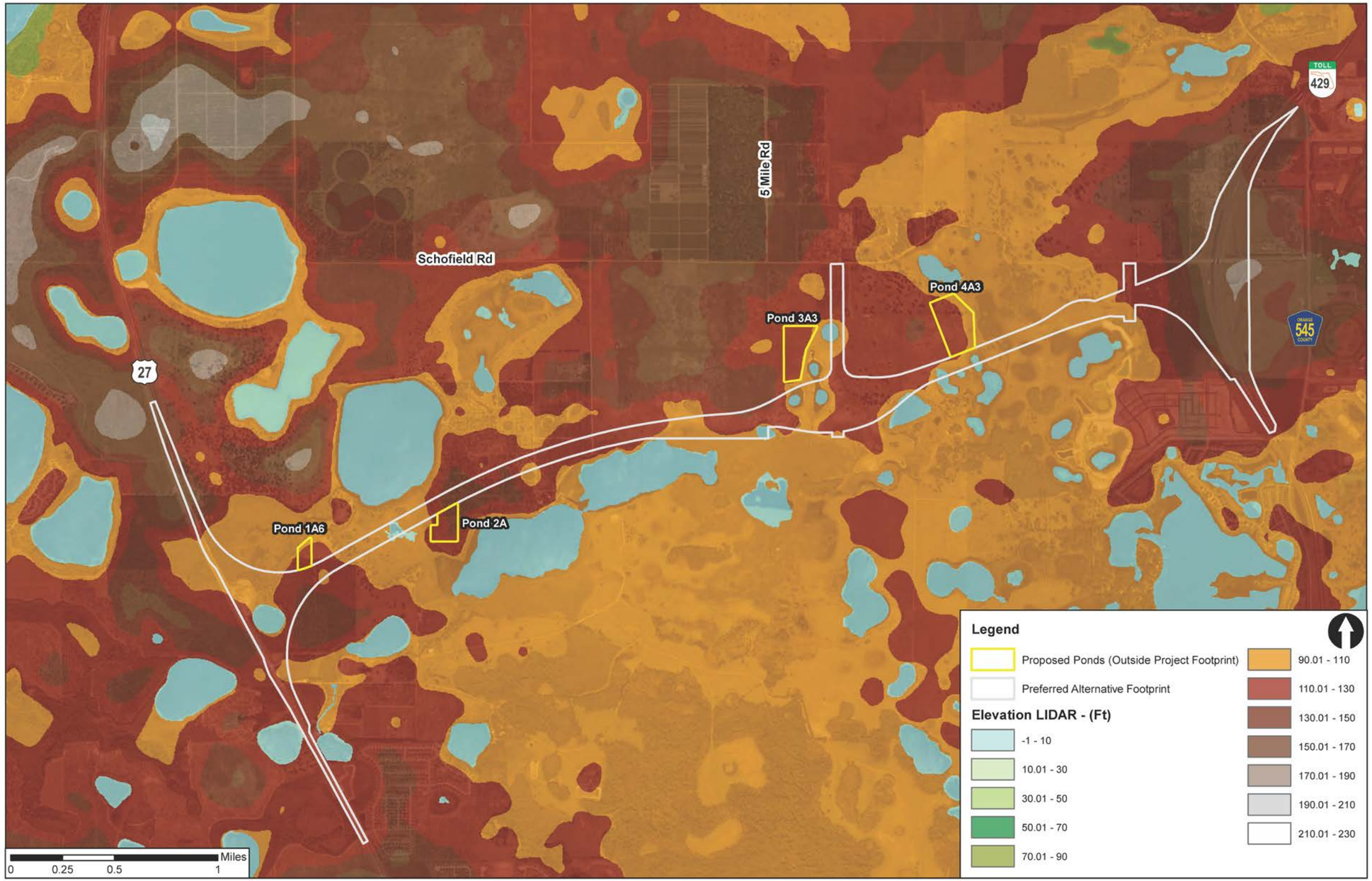

Figure 3-2 Elevation Map

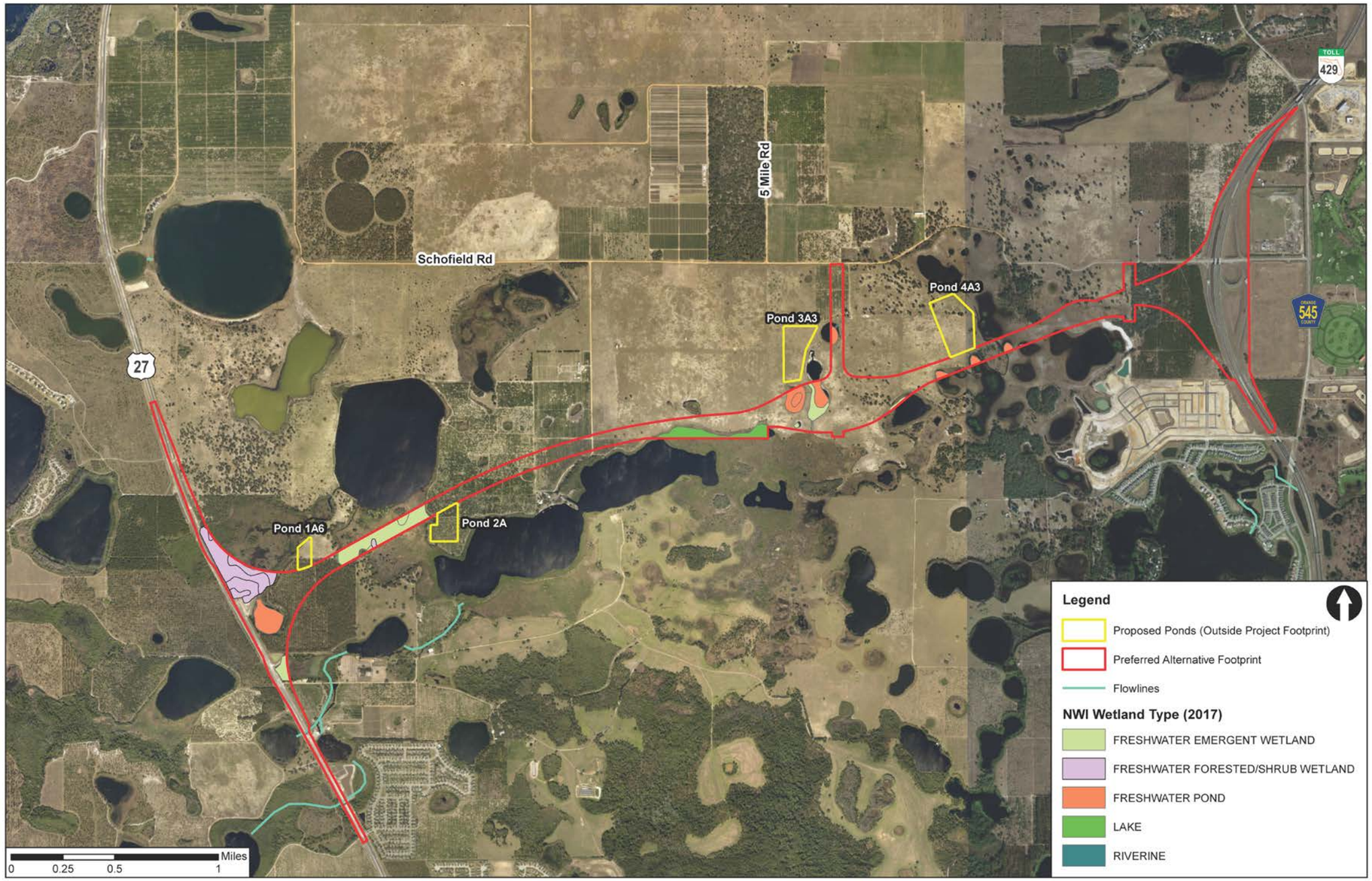

Figure 3-3 Hydrological Features and NWI Wetland Areas

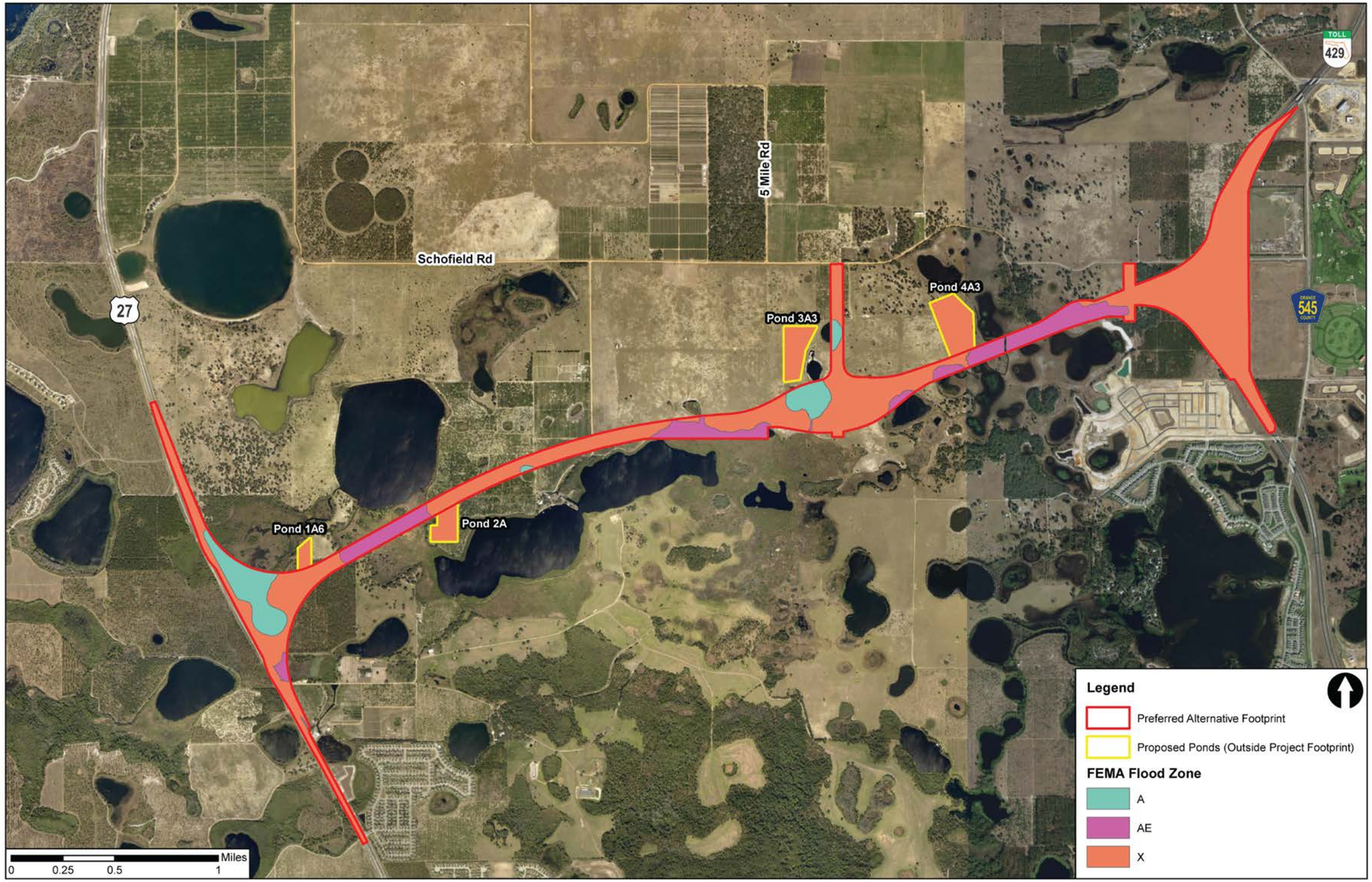

Figure 3-4 Flood Zones

Table 3-1 Soils

Soil Type	Slope	Characteristics
Apopka Sand	5 to 12 Percent	This soil type consists of very deep, well drained, moderately slowly permeable soils on upland ridges, side slopes and knolls. They formed in thick beds of sandy and loamy marine or eolian deposits. This is not a hydric soil.
Arents	-	Soils that have been deeply mixed by plowing, spading, or other methods of moving by humans. These soils are used mostly as cropland, urban land, or pasture.
Basigner fine sand	0 to 2 Percent	This type consists of very deep, very poorly and poorly drained, rapidly permeable soil in low flats, sloughs, depressions and poorly defined drainage ways. They formed in sandy marine sediments. Permeability is rapid. This is not a hydric soil.
Candler Sand	12 to 40 Percent	This soil type consists of very deep, excessively drained, very rapidly to rapidly permeable soils on uplands. They formed in think beds of eolian or sandy marine deposits. This is not a hydric soil.
Immokalee fine sand	0 to 5 Percent	This soil type consists of very deep, very poorly and poorly drained soils on flatwoods and in depressions primarily in the southern Florida flatwoods, but also occurs in the south-central Florida ridge, Florida Everglades and associated areas and the southern Florida lowlands of peninsular Florida. They formed in sandy marine sediments. Permeability is very rapid to moderate. This is not a hydric soil.
Myakka Sands	0 to 2 Percent	This soil type consists of very deep, very poorly or poorly drained, moderately rapid or moderately permeable soils that occur primarily in mesic flatwoods of peninsular Florida. They formed in sandy marine deposits. This is not a hydric soil.
Oklawaha Muck	0 to 2 Percent	This soil type consists of deep, very poorly drained soils that formed in herbaceous organic material and loamy and clayey mineral material. These soils are on floodplain, freshwater marshes, and depressions. This is a hydric soil.
Ona fine sand	0 to 2 Percent	This type consists of poorly drained, moderately permeable soils that formed in thick sandy marine sediments. They are in the flatwood areas of central and southern Florida. Permeability is moderate. This is not a hydric soil.
Organic Soil	-	Soils rich in nutrients and minerals, often found in wet, swampy areas. This is a hydric soil.
Placid Sand	0 to 2 Percent	This soil type consists of very deep, very poorly drained, rapidly permeable soils on low flats, depressions, poorly defined drainageways on uplands, and flood plains on the Lower Coastal Plain. They formed in sandy marine sediments. This is a hydric soil.
Tavares Sand	0 to 5 Percent	This soil type consists of very deep, moderately well drained soils that formed in sandy marine or eolian deposits. Tavares soils are on hills, ridges and knolls of the lower Coastal Plain. This is not a hydric soil.

*Source NRCS 2017

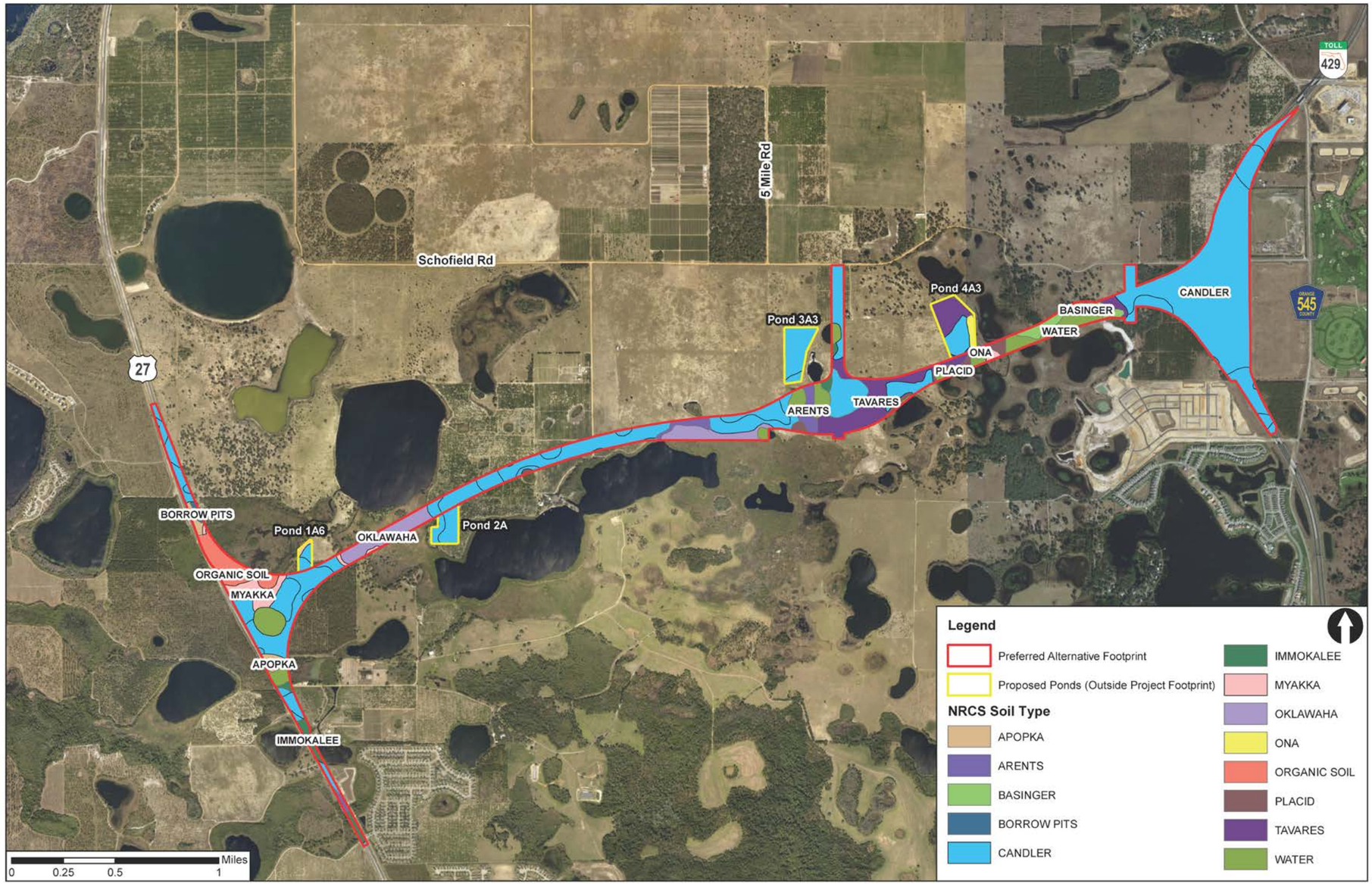

Figure 3-5 Soil Types

4.0 ALTERNATIVES

A multiphase alternative development evaluation and selection process was employed to properly assess all alternatives considered for the proposed Lake / Orange County Connector. The “No Build” alternative assumes the retainment of existing conditions. It is mostly used as a benchmark condition in order to compare the costs and benefits of implementing the proposed improvements to those incurred by continuing to use the existing facilities. In this case, the only existing east-west transportation facility (Schofield Road) within the project confines is inadequate not only in terms of future projected capacity needs but, more importantly, it would not provide the desirable redundancy in evacuation and emergency response potential nor the required additional freeway regional connectivity between US 27 and SR 429 on the east. It is evident that, because of the reasons previously discussed in this document, adoption of this alternative would not solve many of the existing needs associated with the goals of this project. However, the "No Build" alternative will be maintained as a viable option providing an effective baseline condition by which other project alternatives will be compared throughout the project alternative selection process.

PROJECT SEGMENTATION

Initially, the study area was divided into three segments that reflect predominant land uses, natural resources, etc. to facilitate the analysis. The segmental breakdown approach ensures that the generated corridor alternatives are more responsive to the needs of each segment rather than only to the generalized project needs.

Figure 4-1 illustrates the study segments and provides a description of each. Each segment has unique characteristics as well as differences in environmental, engineering and socio-economic features.

Segment 1 comprises the project’s western two miles and generally extends from US 27, a rural six-lane north-south facility, to Cook Road, a minor unpaved north-south rural road just east of Lake Island. Some of the main features within this first segment include

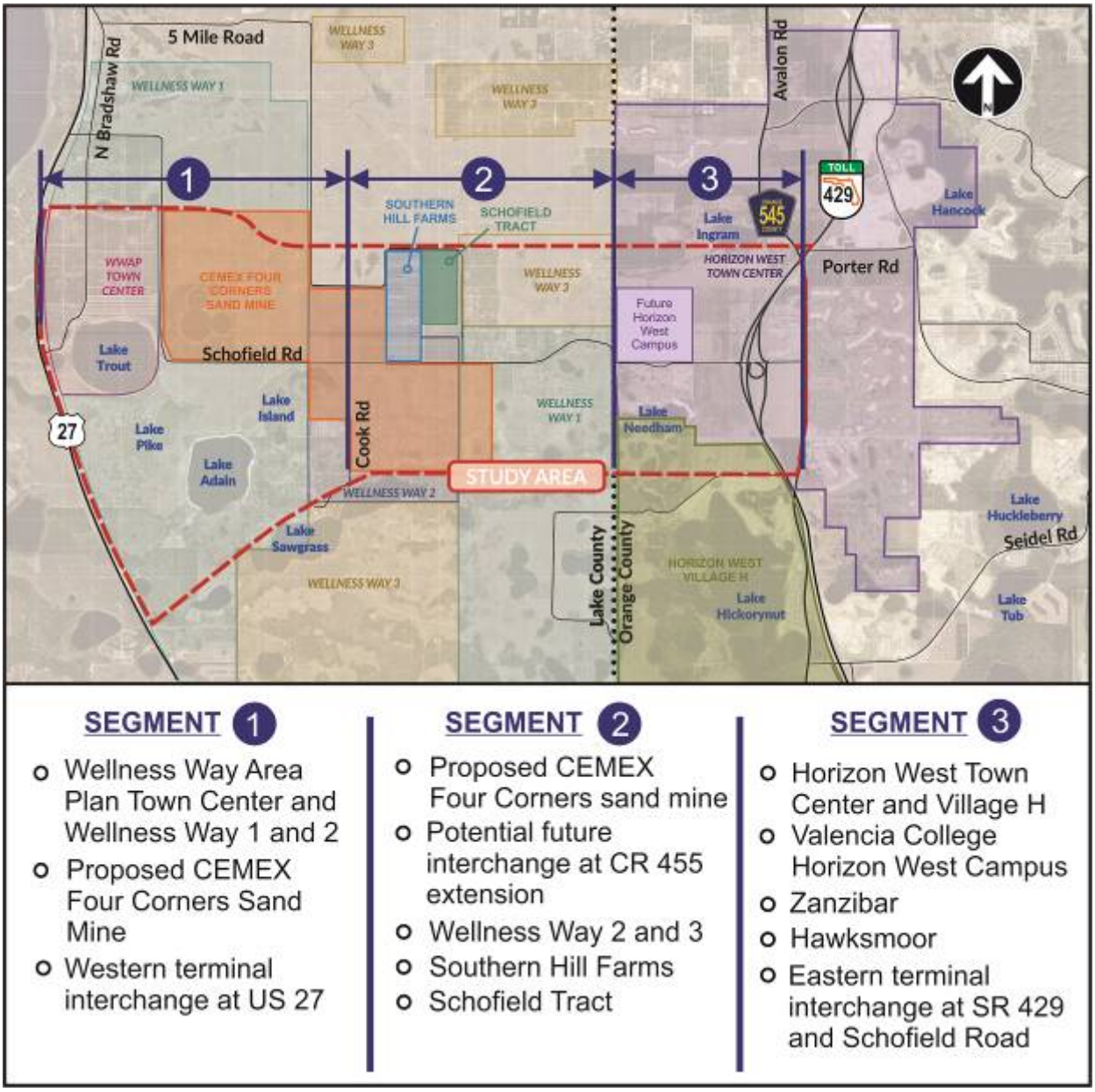

Figure 4-1 Segmental Breakdown

various lakes (e.g., Trout, Pike, Adain, Island), the Wellness Way Area Plan (WWAP) Town Center, Wellness Way 1, the proposed CEMEX Four Corners Sand Mine and portions of Wellness Way 2.

Segment 2 comprises the central portion of the study area and extends from Cook Road to the Lake/Orange county line for a total length of approximately 1.8 miles. Some of the main features within this segment include portions of Wellness Way 2 and 3, the Schofield Tract, CEMEX Four Corners Sand Mine, and the Southern Hill Farms north of Schofield Road, a rural two-lane east-west facility projected to be widened to 4 lanes in the future.

Segment 3 extends for approximately one mile from the Lake/Orange county line to the study's eastern terminus at the SR 429 and with Schofield Road interchange, where Schofield Road heads west and connects to US 27. Some of the principal features within Segment 3 include the Horizon West Town Center, the proposed Valencia College Horizon West Campus, Zanzibar, Hawksmoor, Horizon West Village H and Lake Needham.

DESCRIPTION OF THE PREFERRED ALTERNATIVE

In general, all alternatives were the result of combinations of the three project segments as well as various interchange configurations at each access point. After a comprehensive evaluation process, one alternative was selected as being the most effective option. This alternative is illustrated on **Figure 4-2**. The typical section for the preferred alternative is depicted on **Figure 4-3**.
A brief description of the preferred alternative follows:

Segment 1 (from US 27 (Begin Project) to Cook Road): Within Segment 1, the preferred alternative features a four-lane rural expressway typical section, with 330 feet of right-of-way, 12-foot travel lanes, 12-foot outside shoulders, an 88-foot divided median and a 94-foot border width. The section will feature grade separations in order to provide access to local facilities. The western interchange at US 27 provides direct connect ramps with free flow access to/from US 27. In order to avoid impacts to the abutting

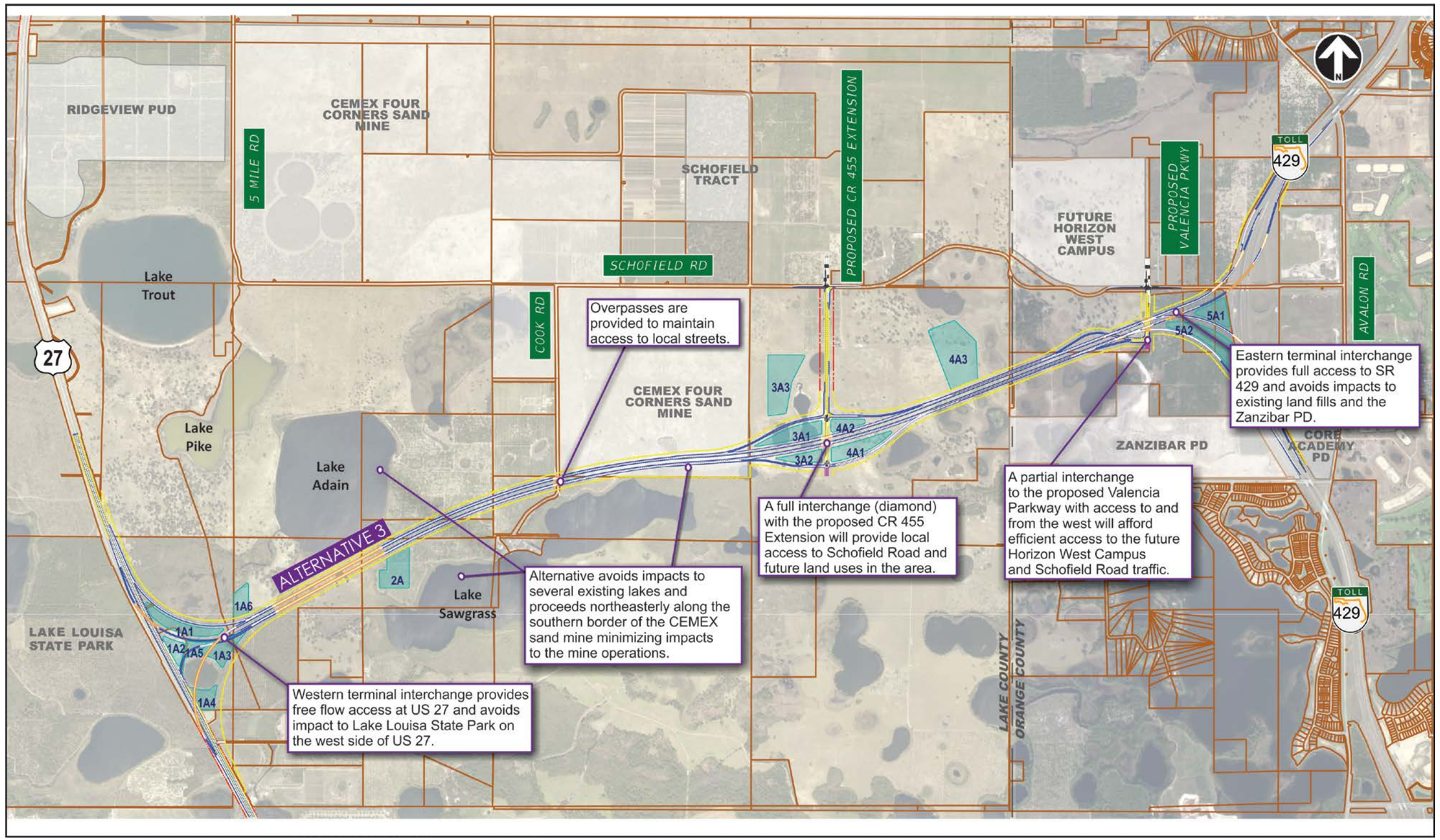

Figure 4-2 Preferred Alternative

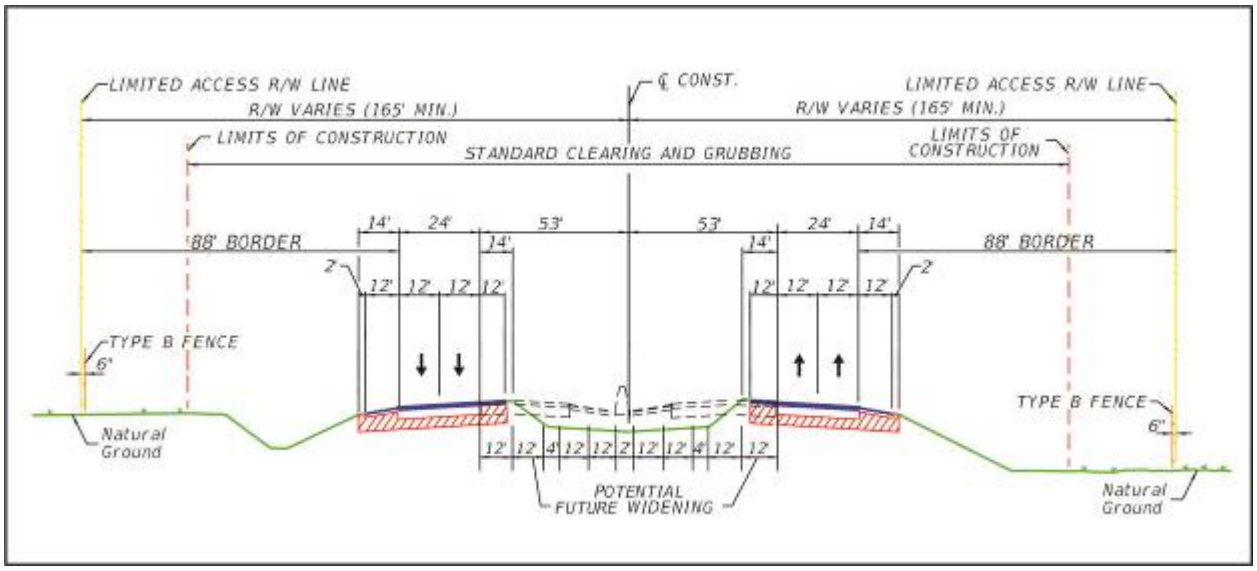

Figure 4-3 Preferred Alternative Typical Section

Lake Louisa State Park, a portion of US 27 will be slightly shifted to the east. Within this segment, the preferred alternative generally follows a northeast direction, thus avoiding impacts to Lakes Adain and Sawgrass.

Segment 2 (from Cook Road to the Lake/Orange County Line): Within this segment, the preferred alternative continues with the same typical section previously described under Segment 1. The alignment generally shifts slightly southward just east of Cook Road in order to minimize impacts to the CEMEX Four Corners Sand Mine property. A full diamond interchange will be provided at the proposed CR 455 Extension facility to provide local access.

Segment 3 (from the Lake/Orange County Line to the SR 429 and Schofield Road interchange [End Project]): Within Segment 3, the preferred alternative continues the same typical section described under Segment 1. A partial interchange at the proposed Valencia Parkway will provide access to and from the west. At the SR 429 with Schofield Road interchange, direct connect ramps will provide access to/from both Northbound and Southbound SR 429.

5.0 METHODOLOGY

This traffic noise analysis has been conducted following Code of Federal Regulations Title 23 Part 772 (23 CFR 772), *Procedures for Abatement of Highway Traffic Noise and Construction Noise*[1], using methodologies established by the FDOT in the *Project Development and Environment Manual*[2], Part 2, Chapter 18 (January 14, 2019). The analysis was conducted in accordance to the methodologies contained in the most recent version of FDOT's *Traffic Noise Modeling and Analysis Practitioner's Handbook*[3]*.* For the purposes of this analysis, "Build Alternative" refers to the recommended Build Alternative. "Existing Year" is defined as 2018 and "Design Year" is defined as 2045.

Prior to conducting a detailed noise analysis, a desktop review of the project was performed to determine if noise levels will likely increase as a result of the proposed improvements, if noise-sensitive receptor sites are located within the project area, or if noise impacts are likely to occur. The desktop review indicated that the proposed project improvements were likely to cause Design Year traffic noise levels to approach or exceed the Federal Highway Administration (FHWA) NAC at noise-sensitive sites within the project limits. Therefore, following the procedures in Chapter 18, a more detailed noise analysis was performed. The methods and results of this analysis are summarized within this section and involved the following procedures:

- Identification of noise-sensitive receptor sites,
- Field measurement of noise levels and noise model validation,
- Prediction of existing and future noise levels,
- Assessment of traffic noise impacts, and
- Consideration of noise abatement measures.

The FHWA's *Traffic Noise Model* (TNM) Version 2.5 (February 2004) was used to predict traffic noise levels and the effectiveness of various noise barrier design concepts. It should be noted that the official release of FHWA's TNM Version 3.0 is still pending at the time of this analysis and report. This model estimates the acoustic intensity at a noise-sensitive site (the receptor) from a series of roadway segments (the source). Model-predicted noise levels are influenced by several factors, such as vehicle

speed and distribution of vehicle types. Noise levels are also affected by characteristics of the source-to-receptor site path, including the effects of intervening barriers, obstructions (houses, trees, etc.), ground surface type (hard or soft), and topography.

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 to typical traffic noise levels. All reported noise levels are hourly equivalent noise levels [Leq(h)]. The Leq(h) is defined as the equivalent steady-state sound level that, in an hourly period, contains the same acoustic energy as the time-varying sound level for the same hourly period. These noise metrics are consistent with those established in 23 CFR 772.

NOISE ABATEMENT CRITERIA

The FHWA has established NAC for seven land use activity categories. These criteria determine when an impact occurs and when consideration of noise abatement is required. Maximum noise level thresholds have been established for five of these activity categories. These maximum thresholds, or criteria levels, represent acceptable traffic noise level conditions. Descriptions of the defined Activity Categories and associated NACs are presented in **Table 5.1**.

Table 5-1 Noise Abatement Criteria

[Hourly A-Weighted Sound Level-Decibels (dB(A))]

ACTIVITY CATEGORY	ACTIVITY Leq(h)[1]	EVALUATION LOCATION	DESCRIPTION OF ACTIVITY CATEGORY
A	57	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	Exterior	Residential
C[2]	67	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	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	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 23 CFR Part 772)
[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.

Noise abatement measures must be considered when predicted noise levels approach or exceed the NAC levels or when a substantial noise increase occurs. Following the FDOT procedure, "approach" is defined as within one dB(A) of the FHWA criteria. A substantial noise increase is defined as when the existing noise level is predicted to be exceeded by 15 dB(A) or more as a result of the transportation improvement project. Typical noise levels associated with common indoor and outdoor activities are shown in **Table 5.2**.

Table 5-2 Typical Noise Levels

COMMON OUTDOOR ACTIVITIES	NOISE LEVEL dB(A)	COMMON OUTDOOR ACTIVITIES
	---110---	Rock Band
Jet Fly-over at 1000 ft		
	---100---	
Gas Lawn Mower at 3 ft		
	---90---	
Diesel Truck at 50 ft, at 50 mph		Food Blender at 1 m (3 ft)
	---80---	Garbage Disposal at 1 m (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 Quiet Suburban Nighttime	**---40---**	Theater, Large Conference Room (Background)
	---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.

TRAFFIC DATA

Traffic data used in the TNM models for this project was provided by the CFX's traffic consultant. Peak-hour traffic volumes for the Existing Year, and Design Year No-Build

and Build alternatives were evaluated to identify the worst-case conditions for traffic noise. The traffic data is provided in **Appendix A.** According to Chapter 18 of the PD&E Manual, “Maximum peak-hourly traffic representing Level of Service (LOS) "C", or demand LOS of "A", "B", or "C" will be used (unless analysis shows that other conditions create a "worst-case" level).” In cases where traffic volumes on project roadways were predicted to operate at a LOS lower than LOS C (i.e., LOS D, E, or F), the LOS C project data were used. A vehicle volume resulting in LOS C operating conditions is considered the maximum volume that allows vehicles to travel at the speed limit and, consequently, produces the worst-case traffic noise environment. Therefore, noise levels are predicted using LOS C conditions when forecasted demand volumes exceed LOS C conditions. If forecasted demand volumes are less than LOS C volumes, demand traffic volumes are used to predict noise levels. An hourly truck factor of 2.0 percent was used for the Lake/Orange County Connector and the major local cross streets.

ELEVATION DATA

The relationship between the elevation of the road, and the ground elevation at nearby receptor sites and for potential noise barriers can affect predicted noise levels and the effectiveness of noise barriers. Roadway elevations for the Lake/Orange County Connector were taken from the project’s conceptual roadway profiles. Roadway elevations for the major local cross streets were estimated based on information from Google Earth Pro, LIDAR, and the U.S. Geological Survey. Ground elevations of other features were based on information contained in the roadway plans, from Google Earth Pro, or the U.S. Geological Survey.

RECEPTOR DATA

Representative receptor sites were used in the TNM model inputs to estimate noise levels associated with Design Year project-build conditions within the project study area. These sites were chosen based on noise sensitivity, roadway proximity, anticipated impacts from the proposed project, and homogeneity (i.e., the site is representative of other nearby sites). For single-family residences, traffic noise levels were predicted at the edge of the dwelling unit closest to the nearest primary roadway. Where residences

are clustered together, single receptor points were analyzed as representative of a group of sites with similar characteristics. For other noise-sensitive sites that may be impacted, traffic noise levels were predicted where the exterior activity occurs. Receptor points for Activity Category D interior sites are located adjacent to the edge of the building closest to roadway. Receptor sites were modeled five feet above the local ground elevation. Noise-sensitive receptors above the ground floor were modeled at an additional 10 feet/floor.

NOISE ABATEMENT CONSIDERATION

Noise abatement is considered when the NAC is approached or exceeded. The most common and effective noise abatement measure for projects such as this is construction of a noise barrier as close as possible to the impacted sites or along the outside edges of the elevated segments of the expressway. Noise barriers reduce noise by blocking the sound path between a roadway and a noise-sensitive area. To be effective, noise barriers must be long, continuous, and have sufficient height to block the path between the noise source and the receptor site. Noise barriers are evaluated as follows:

- Primary consideration is generally given to ground-mounted noise barriers located outside of the roadway's clear recovery zone and as close as possible within the roadway right-of-way to the impacted noise-sensitive sites. This location is typically within 5 to 15 feet of the ROW line. Heights ranging from 8 to 22 feet are evaluated in 2-foot increments. According to the FDOT *Design Manual*[4] referenced for this analysis, a noise barrier located outside of the clear zone should not exceed a maximum height of 22 feet.

- If a ground-mounted noise barrier located outside of the roadway's clear recovery zone cannot provide at least a 5 dB(A) reduction to an impacted noise-sensitive site or is not construction feasible, then a noise barrier located along the highway shoulder would be evaluated. According to the FDOT *Design Manual*, a shoulder-mounted noise barrier should not exceed 14 feet in height when on fill (i.e., embankment) or 8 feet in height when on structure.

- Finally, the length and height of the noise barrier is optimized based on the benefit provided at residences where predicted noise levels approach or exceed the NAC.

A wide range of factors are used to evaluate the feasibility and reasonableness of noise abatement measures.

Feasibility primarily concerns the ability to reduce noise levels by at least 5 dB(A) at the impacted receptor sites using standard construction methods and techniques. In order to be considered feasible by the CFX, a noise barrier must provide a 5 dB(A) reduction for at least two impacted receptors. Engineering considerations typically assessed during the feasibility analysis include access, drainage, utilities, safety, and maintenance.

Reasonableness implies that common sense and good judgment were applied in a decision related to noise abatement. A reasonableness analysis includes consideration of the cost of abatement, the amount of noise abatement benefit, and consideration of the viewpoints of the impacted and benefited property owners and residents. The CFX uses FDOT's standard construction cost for noise barriers: cost of $30/ft2 for all non-shoulder barriers and 8-ft shoulder barriers. A unit cost of $36/ft2 for 10-ft shoulder barriers; $38/ft2 for 12-ft shoulder barriers, and $40/ft2 for 14-ft shoulder barriers. All estimated costs rounded to the nearest dollar. To be deemed reasonable at residential properties, a noise barrier must, at a minimum, meet two important criteria:

- The estimated construction cost cannot exceed a reasonable cost criteria of $42,000 per benefited receptor site, and

- The noise barrier must reduce noise levels by at least 7 dB(A) at one or more impacted receptor sites.

The reasonableness and feasibility of noise abatement measures for non-residential/special use sites are assessed in accordance with the FDOT report *A Method to Determine Reasonableness and Feasibility of Noise Abatement at Special Use Locations*[5] (updated July 22, 2009).

6.0 TRAFFIC NOISE ANALYSIS

The traffic noise analysis includes existing field-monitored noise levels, noise model validation, and prediction of noise levels for Design Year Preferred Alternative. Field monitoring sites and model receptor locations representing noise-sensitive sites were established by field review, survey of aerial images, and Google Earth Pro images.

FIELD MONITORING

All field measurements were conducted following procedures documented in FHWA's *Measurement of Highway-Related Noise*[6]. The results for all of the field measurements are provided in **Table 6-1**. Field monitoring sheets documenting all monitoring events are provided in **Appendix B**.

All measurements were collected using a CEL-246 noise meter. The noise meter was calibrated before and after all measurements using a field calibrator. All measurements were taken at a height of 5 feet above ground level. Traffic data, including vehicle counts, classifications, and speeds, were collected during the sampling periods where necessary by the field team.

Ambient Noise Level Measurement

Since most of this project will be constructed along a new roadway alignment, field measurements of ambient noise levels in areas where existing traffic noise either does not exist or is a minor element of the overall noise level were necessary. Ambient noise levels were collected on April 10, 2019 and April 24, 2019 at four locations adjacent to the proposed roadway alignment. Each site was representative of a nearby noise-sensitive receptor with a noise environment similar to most areas along that particular section of the alignment. Short-term noise events from passing aircraft or barking dogs were noted; however, none were of a duration long enough to affect the noise measurements.

Model Validation

To validate the accuracy of the computer noise model for the project area, noise monitoring was performed on April 10, 2019 at a location along the west side of SR 429

just north of the southbound exit ramp to Schofield Road. All monitoring events for model validation were ten minutes in duration, consistent with FHWA and FDOT procedures.

Table 6-1 Field Measurement Data

TYPE OF MEASUREMENT	FIELD RECEPTOR SITE NUMBER - LOCATION	SAMPLE RUN	TIME	DISTANCE FROM EDGE OF NEAR TRAVEL LANE (Feet)	MEASURED NOISE LEVEL [dB(A)]	AVERAGE MEASURED NOISE LEVEL [dB(A)]	MODELED TRAFFIC NOISE LEVEL [dB(A)]	DIFFERENCE (Measured - Modeled) [dB(A)]
Ambient Noise Level Monitoring	**FM-1** – North side of Schofield Road near single-family home, Station 315+00.	1	4-10-19 1:42 PM	N/A	49.9	51.0	N/A	N/A
		2	4-10-19 1:52 PM		51.9		N/A	N/A
		3	4-10-19 2:02 PM		51.1		N/A	N/A
Ambient Noise Level Monitoring	**FM-2** – South side Cook Road near single-family home, Station 178+00.	1	4-10-19 2:30 PM	N/A	39.0	43.1	N/A	N/A
		2	4-10-19 2:42 PM		46.7		N/A	N/A
		3	4-10-19 2:52 PM		43.5		N/A	N/A
Ambient Noise Level Monitoring	**FM-3** – Zanzibar Community near SR 429, Station 1730+00.	1	4-24-19 11:35 AM	N/A	56.7	56	N/A	N/A
		2	4-24-19 11:46 AM		54.4		N/A	N/A
		3	4-24-19 11:56 AM		56.7		N/A	N/A
Ambient Noise Level Monitoring	**FM-4** – near pool area of Zanzibar residential community 1700+00.	1	4-24-19 9:51 AM	N/A	48.6	47.4	N/A	N/A
		2	4-24-19 10:02 AM		44.9		N/A	N/A
		3	4-24-19 10:12 AM		48.7		N/A	N/A
Noise Model Validation	**FR-1** – West side of SR 429 just north of southbound exit to Schofield Road, Station 2006+00.	A	4-10-19 12:51 PM	50	66.4	N/A	67.9	-1.5
		B	4-10-19 1:01 PM		67.2	N/A	68.2	-1.0
		C	4-10-19 1:11 PM		67.8	N/A	68.1	-1.3
		A	4-10-19 12:51 PM	100	63.1	N/A	66.0	-2.9
		B	4-10-19 1:01 PM		63.5	N/A	66.3	-2.8
		C	4-10-19 1:11 PM		64.4	N/A	66.2	-1.8

For the model validation site (FR-1), the variance between measured and predicted noise levels was less than 3 dB(A). Therefore, the noise model is predicting within the level of accuracy specified in Chapter 18.

NOISE-SENSITIVE SITES

Within the project limits, noise-sensitive land uses along the proposed Lake/Orange County Connector that are specified in the NAC include:

- **Activity Category B** (residential areas) – Includes 48 named single-family home residential communities and 3 individual single-family homes not in named communities.

- **Activity Category C** – Includes the pool area and Wingspread Loop trail at the Zanzibar residential community.

No Activity Category A lands, which are sites on which serenity and quiet are of extraordinary significance and serve an important public need, and where the preservation of those qualities is essential for the area to continue to serve its intended purpose, are found along the project corridor. No Activity Category D properties, which includes the interior use for a variety of land use facilities including medical facilities, places of worship, auditoriums, and more, are found along the project corridor. No Activity Category E properties such as outdoor seating areas at restaurants along the proposed roadway corridor. The remaining land uses along the corridor are mostly agricultural land that fall into Activity Category F and do not require a noise analysis as stipulated in 23 CFR 772.

Twenty-five (25) model receptor locations representative of the approximately 51 residential noise-sensitive sites and the two non-residential/special land use sites described above were input into the TNM model. These locations are described in **Table 6-2**. The identifiers for each model receptor generally include the first several letters of the community or site name along with sequential numbering for sites where more than one model receptor is located. Each line item in the table is a single receptor which represents one or more noise-sensitive site. These locations are also shown on aerial images in **Figures 6-1 through 6-6**.

Table 6-2 Noise Receptor Locations and Noise Analysis Results

Representative Model Receptor[1]	Site	Location (Station)	Description (Activity Category)	FDOT Noise Abatement [dB(A)]	Number of Noise Sensitive Sites	Distance to Nearest Traffic Lane[2] (Feet) Existing/No Build/Build	Predicted Traffic Noise Level [Leq(1h), dB(A)]		
							Existing	No Build	Build
US 27									
West Side									
SFH-1	3900 Commonwealth Blvd	421+00.00	Residential (B)	66	1	300 / 300 / 320	60.3	63.4	63.8
TL-1	Tradd's Landing - 4707 Cape Hatteras Dr	404+00.00	Residential (B)	66	3	215 / 215 / 200	62.0	65.1	65.4
TL-2	Tradd's Landing - 4719 Cape Hatteras Dr	406+00.00	Residential (B)	66	3	355 / 355 / 340	58.5	61.7	62.5
TL-3	Tradd's Landing - 4731 Cape Hatteras Dr	408+00.00	Residential (B)	66	3	555 / 555 / 540	55.1	58.4	59.4
TL-4	Tradd's Landing - 4747 Cape Hatteras Dr	409+00.00	Residential (B)	66	3	725 / 725 / 710	52.0	55.3	56.4
TL-5	Tradd's Landing - 4751 Cape Hatteras Dr	410+50.00	Residential (B)	66	3	845 / 845 / 830	50.3	53.5	54.6
TL-6	Tradd's Landing - 4801 Cape Hatteras Dr	411+50.00	Residential (B)	66	3	910 / 910 / 895	49.5	52.8	54.0
TL-7	Tradd's Landing - 4813 Cape Hatteras Dr	415+00.00	Residential (B)	66	3	860 / 860 / 845	50.3	53.5	54.7
TL-8	Tradd's Landing - 4833 Cape Hatteras Dr	417+00.00	Residential (B)	66	3	760 / 760 / 745	51.9	55.2	56.3
TL-9	Tradd's Landing - 4845 Cape Hatteras Dr	418+50.00	Residential (B)	66	3	975 / 975 / 960	48.5	51.8	52.9
Lake/Orange County Connector									
South Side									
SFH-2	6000 Cook Rd	172+50.00	Residential (B)	66	1	- / - / 790	43.1	43.1	54.5
North Side									
SFH-3	17421 Schofield Rd	2300+00	Residential (B)	66	1	780 / 780 / 780	51.0	51.0	54.2
SFH-4	17399 Schofield Rd	2300+00	Residential (B)	66	1	1040 / 1040 / 1040	51.0	51.0	52.3
SR 429									
West Side									
ZPD-Pool	Zanzibar PD - 16593 Olive Hill Dr	1610+00.00	Community Pool - Recreational Area (C)	66	1	- / - / 1560	41.9	47.7	52.3
ZPD-Trail	Zanzibar PD - Wingspread Loop	1728+00.00	Community Trail - Recreational Area (C)	66	1	- / - / 1210	47.6	53.1	56.7
ZPD-1	Zanzibar PD - 15971 Marina Bay Dr	1737+50.00	Residential (B)	66	3	260 / 260 / 300	64.5	**69.0**	**69.8**
ZPD-2	Zanzibar PD - 15959 Marina Bar Dr	1739+00.00	Residential (B)	66	3	345 / 345 / 375	60.5	65.0	65.9
ZPD-3	Zanzibar PD - 15947 Marina Bay Dr	1741+50.00	Residential (B)	66	3	445 / 445 / 460	59.2	63.8	64.7
ZPD-4	Zanzibar PD - 15935 Marina Bay Dr	1742+20.00	Residential (B)	66	3	555 / 555 / 570	58.2	62.9	63.7
ZPD-5	Zanzibar PD - 15923 Marina Bay Dr	1744+30.00	Residential (B)	66	3	651 / 615 / 630	57.0	61.8	62.6
W-1	Waterleigh - 16113 Wind View Ln	1780+00.00	Residential (B)	66	1	350 / 350 / 350	60.3	65.1	65.3
W-2	Waterleigh - 16107 Wind View Ln	1781+50.00	Residential (B)	66	1	320 / 320 / 320	60.4	65.0	65.3
W-3	Waterleigh - 16112 Wind View Ln	1783+00.00	Residential (B)	66	1	370 / 370 / 370	59.2	63.9	64.2
W-4	Waterleigh - 16118 Wind View Ln	1783+00.00	Residential (B)	66	1	450 450 / 450	56.1	61.1	61.1
East Side									
SFH-5	7602 Avalon Rd	1944+50.00	Residential (B)	66	1	370 / 370 / 285	54.1	65.7	59.2

Figure 6-1 Noise Analysis Maps Key Sheet

AERIAL IMAGERY BY: FDOT OFFICE OF SURVEYING AND MAPPING AERIAL PHOTO LOOK UP SYSTEM (APLUS) 2017 LAKE & ORANGE COUNTY	LEGEND Modeled Receptors Improvements	LAKE/ORANGE COUNTY CONNECTOR PD&E STUDY NOISE STUDY REPORT	CENTRAL FLORIDA EXPRESSWAY AUTHORITY ROAD NO.: LOCC COUNTY: LAKE & ORANGE CFX PROJECT NO.: 599-225	NOISE ANALYSIS MAP	FIGURE NO. 6-2 PAGE 6-6

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NOISE STUDY REPORT

CENTRAL FLORIDA
EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	CFX PROJECT NO.
LOCC	LAKE & ORANGE	599-225

NOISE ANALYSIS MAP

FIGURE NO. 6-3

ZANZIBAR PD

N

0 200

Feet

1730

1740

1800

1810

1820

429

ZPD-1

ZPD-2

ZPD-3

ZPD-4

ZPD-5

W-1

W-2

W-3

W-4

WATERLEIGH

Old YMCA Rd

STA. 1800+00.00
END

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PD&E STUDY
NOISE STUDY REPORT

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ROAD NO.	COUNTY	CFX PROJECT NO.
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NOISE ANALYSIS MAP

FIGURE NO. 6-4

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PD&E STUDY
NOISE STUDY REPORT

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ROAD NO.	COUNTY	CFX PROJECT NO.
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NOISE ANALYSIS MAP

FIGURE NO. 6-5

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LAKE/ORANGE COUNTY CONNECTOR
PD&E STUDY
NOISE STUDY REPORT

CENTRAL FLORIDA
EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	CFX PROJECT NO.
LOCC	LAKE & ORANGE	599-225

NOISE ANALYSIS MAP

FIGURE NO. 6-6

PREDICTED NOISE LEVELS

Traffic noise levels predicted along the project corridor for the Existing Conditions and the Design Year No-Build and Build Alternatives are presented in **Table 6-2**. Existing Year predicted noise levels for residential noise-sensitive sites ranges from 43.1 dB(A) to 64.5 dB(A) and for non-residential special-use sites ranges from 41.9 dB(A) at the Zanzibar pool area to 47.6 dB(A) at the Zanzibar Wingspread Loop trail. Design Year No Build predicted noise levels for residential noise-sensitive sites ranges from 43.1 dB(A) to 69.0 dB(A) and for non-residential special-use sites ranges from 47.7 dB(A) at the Zanzibar pool area to 53.1 dB(A) at the Zanzibar Wingspread Loop trail. Design Year Preferred Alternative predicted noise levels for residential noise-sensitive sites ranges from 52.3 dB(A) to 69.8 dB(A) and for non-residential special-use sites ranges from 52.3 dB(A) at the Zanzibar pool area to 56.7 dB(A) at the Zanzibar Wingspread Loop trail.

During the Design Year, traffic noise levels with the planned improvements are predicted to approach or exceed the relevant NAC at three residences. The feasibility and reasonableness of providing noise barriers to reduce traffic noise has been evaluated for all of the noise-sensitive sites predicted to be impacted due to the proposed improvements.

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NOISE BARRIER ANALYSIS

Following FDOT policy, it is required that the reasonableness and feasibility of noise abatement be considered when the FHWA NAC is approached or exceeded. The most common and effective noise abatement measure for projects such as this is the construction of noise barriers.

The Zanzibar residential community consists of single-family homes located west of the existing section of SR 429 between Old YMCA Road and ramps to/from Schofield Road and ramps to/from the proposed Lake/Orange County Connector between Station (Sta.) 1731+00 and 1800+00. With the planned improvements, the nearest travel lane will be up to approximately 30 feet closer to these homes. The Design Year, Build Alternative traffic noise levels at these homes are predicted to range from 62.7 to 69.8 dB(A). Three (3) homes, all in the first row, nearest to existing SR 429, are expected to experience Design Year noise levels with the planned improvements that approach or exceed the NAC [67.0 dB(A)]. The predicted Design Year, Preferred Alternative traffic noise levels are expected to increase by no more than 5.0 dB(A) above the existing levels. Therefore, traffic noise levels in this community are not expected to substantially increase above the existing conditions.

The results of the noise barrier evaluation for this community are summarized in **Table 6-3** and presented in **Figure 6-7.** Five barrier concepts were evaluated, four barrier concepts along the limited-access right-of-way line away from the roadway and closest to the noise-sensitive sites and one noise barrier concept along the west side shoulder of the eastbound Lake/Orange County Connector ramp to southbound SR 429 and SR 429 mainline.

Noise barrier concept NB-ZPD-01 is a 22-foot tall, 1,350-foot long noise barrier evaluated along the SB SR 429 limited access right-of-way line near the impacted sites. This noise barrier design concept is predicted to reduce noise levels at the residences by a maximum of 9.1 dB(A) and reduce noise levels by a minimum of 5.0 dB(A) at 12

residences. Therefore, noise barrier concept NB-ZPD-01 meets the noise level reduction goal of at least 7.0 dB(A), in accordance with the criteria used by CFX. Although the noise reduction criteria is met, the cost of noise barrier NB-ZPD-01 ($74,250 per benefited site) exceeds the reasonable cost criteria used by CFX of $42,000 per benefited receptor.

Noise barrier concept NB-ZPD-02 is a 16-foot tall, 1,350-foot long noise barrier evaluated along the SB SR 429 limited access right-of-way line near the impacted sites. This noise barrier design concept is predicted to reduce noise levels at the residences by a maximum of 7.6 dB(A) and reduce noise levels by a minimum of 5.0 dB(A) at nine residences. Therefore, noise barrier concept NB-ZPD-02 meets the noise level reduction goal of at least 7.0 dB(A), in accordance with the criteria used by CFX. Although the noise reduction criteria is met, the cost of noise barrier NB-ZPD-02 ($72,000 per benefited site) exceeds the reasonable cost criteria used by CFX of $42,000 per benefited receptor.

Noise barrier concept NB-ZPD-03 is a 16-foot tall, 750-foot long noise barrier evaluated along the SB SR 429 limited access right-of-way line near the impacted sites. This noise barrier design concept is predicted to reduce noise levels at the residences by a maximum of 7.6 dB(A) and reduce noise levels by a minimum of 5.0 dB(A) at six residences. Therefore, noise barrier concept NB-ZPD-03 meets the noise level reduction goal of at least 7.0 dB(A), in accordance with the criteria used by CFX. Although the noise reduction criteria is met, the cost of noise barrier NB-ZPD-03 ($60,000 per benefited site) exceeds the reasonable cost criteria used by CFX of $42,000 per benefited receptor.

Noise barrier concept NB-ZPD-04 is a 16 to 18-foot tall, 650-foot long noise barrier evaluated along the SB SR 429 limited access right-of-way line near the impacted sites. This noise barrier design concept is predicted to reduce noise levels at the residences by a maximum of 7.9 dB(A) and reduce noise levels by a minimum of 5.0 dB(A) at six residences. Therefore, noise barrier concept NB-ZPD-04 meets the noise level

reduction goal of at least 7.0 dB(A), in accordance with the criteria used by CFX. Although the noise reduction criteria is met, the cost of noise barrier NB-ZPD-04 ($54,500 per benefited site) exceeds the reasonable cost criteria used by CFX of $42,000 per benefited receptor.

Noise barrier concept NB-ZPD-05 is a 14-foot tall, 1,250-foot long noise barrier evaluated along the EB to SB Lake/Orange County Connector ramp shoulder. This noise barrier design concept is predicted to reduce noise levels at the residences by a maximum of 4.3 dB(A). Therefore, noise barrier concept NB-ZPD-05 does not meet the noise level reduction goal of at least 7.0 dB(A), in accordance with the criteria used by CFX. Noise barrier concept NB-ZPD-05 is

Based on the results of this analysis, noise abatement is not recommended for further consideration and public input for the impacted noise sensitive sites west of SR 429 between Old YMCA Road and ramps to/from Schofield Road and ramps to/from the proposed Lake/Orange County Connector.

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Table 6-3 Noise Barrier Analysis – Zanzibar Residences

Barrier Alternative	Barrier Height (feet)	Est, Barrier Length[1] (feet)	Barrier Location	Number of Impacted Residences	Number of Impacted Residences Within a Noise Reduction Range			Number of Benefited Residences				Total Estimated Cost[4]	Cost Per Benefited Residence
					5-5.9 dB(A)	6-5.9 dB(A)	≥ 7 dB(A)	Impacted[2]	Other[3]	Total	Average (maximum) Reduction dB(A)		
NB-ZPD-01	22	1350	Right-of-Way Ground Mount (STA 1735+00.00 – 1748+50.00)	3	3	6	3	3	9	12	6.6 (9.1)	$891,000	$74,250
NB-ZPD-02	16	1350	Right-of-Way Ground Mount (STA 1735+00.00 – 1748+50.00)		6	0	3	3	6	9	5.5 (7.6)	$648,000	$72,000
NB-ZPD-03	16	750	Right-of-Way Ground Mount (STA 1735+00.00 – 1742+50.00)		3	0	3	3	3	6	4.0 (7.6)	$360,000	$60,000
NB-ZPD-04	16-18	650	Right-of-Way Ground Mount **16 ft**:(STA 1737+50.00 – 1741+50.00) **18 ft**:(STA 1735+00.00 – 1741+50.00)		3	0	3	3	3	6	3.7 (7.9)	$327,000	$54,500
NB-ZPD-05	14	1250	Shoulder Mounted (STA. 1733+00.00 – 1745+50.00)		0	0	0	0	0	0	2.9 (4.3)	$700,000	N/A

[2] Residences with a predicted noise level that approaches or exceeds the NAC. [3] Not impacted benefited receptors

Notes on Noise Barrier Modeling for Barrier ZPD (includes 5 Receptor Points in the Zanzibar residential community):

1. Noise barrier design is one of two alternatives: mainline shoulder or ground-mounted noise barriers located outside of the roadway's clear recovery zone and as close as possible within the roadway right-of-way to the impacted noise-sensitive sites.
2. Impacted residences are defined as residences where the modeled noise levels exceed the Noise Abatement Criteria (≥ 66 dB(A)) or when traffic noise levels are predicted to increase by at least 15 dB(A) from existing noise levels.
3. Noise barrier concepts NB-ZPD-01 through NB-ZPD-04, all three impacted residences are benefited (i.e., reduction of 5 dB(A) or more) and up to nine nearby residences are benefitted.
4. Noise barrier concepts NB-ZPD-01 through NB-ZPD-04, all three impacted residences would meet the FDOT noise reduction design goal of 7 dB(A) used by CFX.
5. Unit cost of $30/ft2 for all non-shoulder barriers and 8-ft shoulder barriers. Unit cost of $36/ft2 for 10-ft, $38/ft2 for 12-ft, and $40/ft2 for 14-ft shoulder barriers. All estimated costs rounded to the nearest dollar.
6. Noise barrier concepts NB-ZPD-01 through NB-ZPD-04 exceed the reasonable cost criteria used by CFX of $42,000 per benefited receptor.

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LEGEND

Modeled Receptors
Impacted Receptors
Improvements

LAKE/ORANGE COUNTY CONNECTOR
PD&E STUDY
NOISE STUDY REPORT

CENTRAL FLORIDA
EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	CFX PROJECT NO.
LOCC	LAKE & ORANGE	599-225

NOISE ANALYSIS MAP

FIGURE NO. 6-7

7.0 SUMMARY AND RECOMMENDATIONS

Traffic noise levels were predicted for the noise-sensitive locations along the project corridor for the 2018 (existing) conditions, and for the 2045 (Design Year) No-build Alternative and Preferred Alternative. Approximately 51 residences, single-family homes, were identified as being sensitive to traffic noise along the proposed Lake/Orange County Connector within the limits of this project. Also, two non-residential special-use noise-sensitive sites, including a community pool and trail were identified along the project corridor. Design Year traffic noise levels at nearby residences are predicted to range from 52.3 to 69.8 dB(A). The Preferred Alternative noise levels at special land use sites are predicted to range from 52.3 dB(A) at the Zanzibar pool area to 56.7 dB(A) at the Zanzibar Wingspread Loop Trail during the Design Year. Noise impacts are predicted to occur at three residences. The three impacted residences are located in the Zanzibar residential community located just west of the eastbound Lake/Orange County Connector ramp to southbound SR 429. No other noise-sensitive sites within the project study area are predicted to experience traffic noise levels equal to or exceeding the Noise Abatement Criteria (NAC). None of the noise-sensitive sites are expected to experience a substantial noise level increase [i.e., greater than 15.0 dB(A) over existing levels] with the Preferred Alternative.

Noise barriers were considered for the three residences where Design Year traffic noise levels were predicted to equal or exceed the NAC. As such, noise barriers were considered at two locations to mitigate noise impacts. Since traffic management and alignment modifications were determined to not be viable abatement measures, noise barriers were determined to be the only potentially viable abatement measure that could be implemented for this project.

Five noise barrier concepts were evaluated for the three impacted noise-sensitive sites. Although four noise barrier concepts met the noise reduction criterion of 7.0 dB(A), noise abatement was not considered cost reasonable ($42,000 per benefited receptor) in accordance with the policy used by CFX.

Based on the noise analysis performed to date, there are no cost effective mitigations for these locations. Therefore, noise barriers are not recommended for further consideration or construction.

8.0 CONSTRUCTION NOISE AND VIBRATION

Based on the existing land use within the limits of this project, construction of the proposed roadway improvements is not anticipated to have any noise or vibration impacts. The closest identified site that would be sensitive to construction noise and/or vibration is the Orlando Health Horizon West located north of the project terminus, east of SR 429 and south of Porter Road. If noise-sensitive land uses develop adjacent to the roadway prior to construction, additional impacts could result. It is anticipated that the application of the FDOT Standard Specifications 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 concert with the CFX and the Contractor, will investigate additional methods of controlling these impacts.

9.0 COMMUNITY COORDINATION

To aid in promoting land use compatibility, a copy of the NSR, which provides information that can be used to protect future land development from becoming incompatible with anticipated traffic noise levels, is available to local agencies. In addition, generalized future noise impact contours for the properties in the immediate vicinity of the project have been developed for Noise Abatement Activity Categories B/C and E (i.e., residential/other sensitive land uses and sensitive commercial, respectively). These contours represent the approximate distance from the edge of the nearest proposed travel lane of the Lake/Orange County Connector to the limits of the area predicted to approach [i.e., within 1 dB(A)] or exceed the NAC in the design year 2045. These contours do not consider any shielding of noise provided by structures between the receiver and the proposed travel lanes. Within the project corridor, the distances between the proposed edge of the outside travel lane and the contour at various locations are presented in **Table 9-1**.

Table 9-1 Design Year Noise Impact Contour Distances

Lake/Orange County Connector Segment		**Approximate Distance from proposed nearest Lake/Orange County Connector Lane to Noise Contour Line (feet)**	
From	**To**	**71 dB(A) Activity Category E 51 dB(A) Activity Category D**	**66 dB(A) Activity Category B/C**
West of US 27	US 27 Interchange	100’	200’
US 27 Interchange	CR 455 Interchange	150’	350’
CR 455 Interchange	Valencia Pkwy/SR 429	150’	350’

10.0 REFERENCES

1. *Procedures for Abatement of Highway Traffic Noise and Construction Noise*; Title 23 Code of Federal Regulations Part 772; FHWA; July 2010.

2. *Project Development and Environment Manual, Part 2, Chapter 18*; FDOT; January 14, 2019.

3. *Traffic Noise Modeling and Analysis Practitioners Handbook; FDOT Environmental Management Office; January 2016*

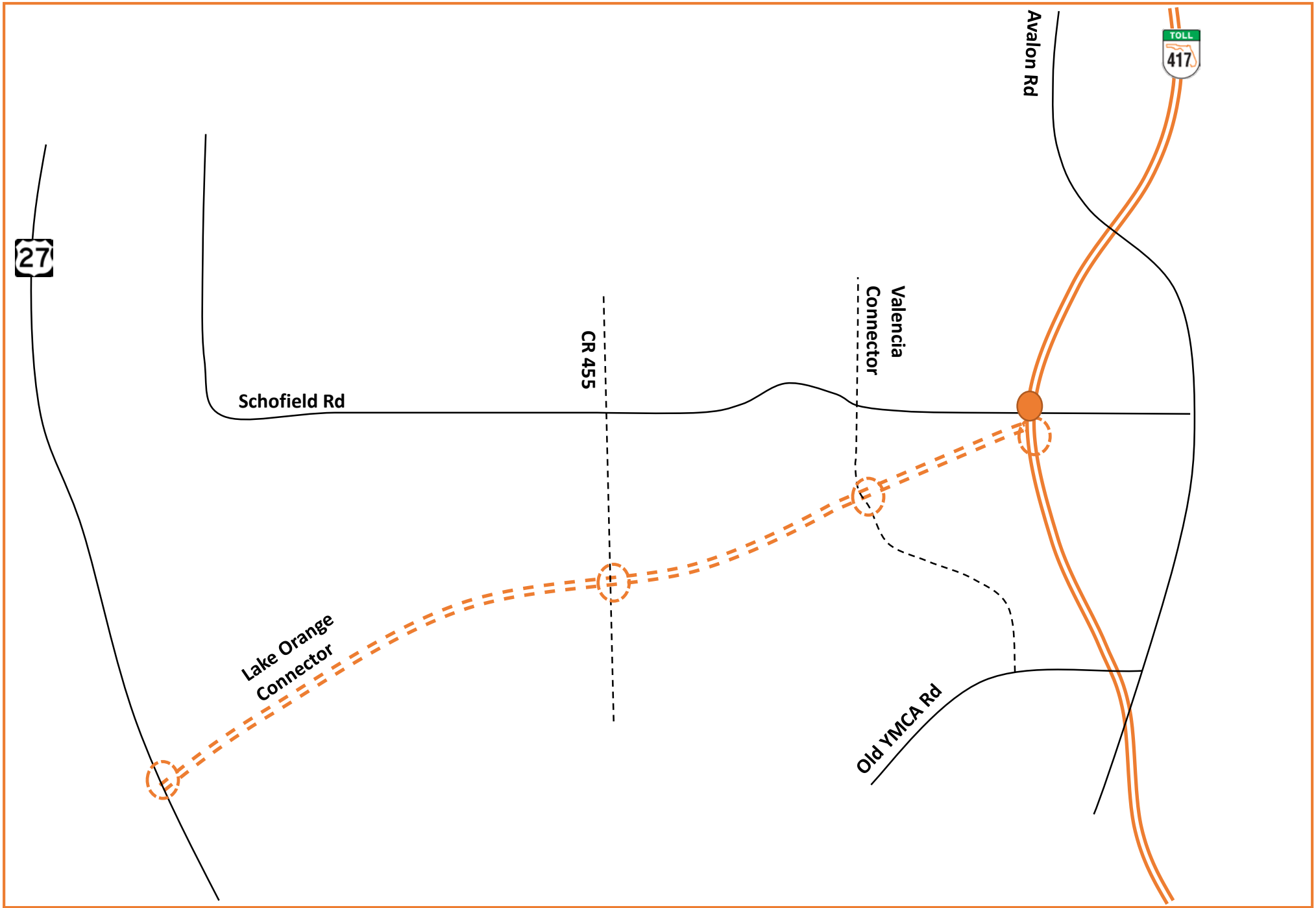
4. *Design Manual (Topic No. 625-000-002) Part 2, Chapter 264, Noise Walls and Perimeter Walls; FDOT;* January 1, 2019

5. *A Method to Determine Reasonableness and Feasibility of Noise Abatement at Special Use Locations;* University of Central Florida, 2009, Roger L. Wayson and John M. MacDonald. July 22, 2009 Update

6. FHWA Report Number FHWA-PD-96-046, *Measurement of Highway-Related Noise;* FHWA, Cynthia S.Y. Lee and Gregg Fleming; May, 1995.

APPENDIX A

TRAFFIC DATA



CENTRAL FLORIDA EXPRESSWAY AUTHORITY	**Lake Orange Connector**	**2045 DDHVs**	**Figure 1.2**

Location	Facility Type	Dir	Daily Truck Factor	K-Factor	AM D-Factor	PM D-Factor	2018 Existing			2045 No-Build DDHV			2045 Build DDHV			2018 No. Lanes	2045 No-Build No. Lanes	2045 Build No. Lanes	FDOT Peak Hour Peak Dir. Capacity at LOS "C"		
							AADT	AM Peak	PM Peak	AADT	AM Peak	PM Peak	AADT	AM Peak	PM Peak				2018 Existing	2045 No-Build	2045 Build
US 27 N. of LOC	Cross Street	NB	9%		45.0%	55.0%	27,000	985	1,235	46,300	1,880	2,295	52,500	1,835	2,960	3	3	3	3840	3840	3840
US 27 N. of LOC	Cross Street	SB	9%	9.0%	55.0%	45.0%		1,010	890		2,295	1,880		2,960	1,835	3	3	3	3840	3840	3840
US 27 NB On Ramp from LOC WB	Ramp	NB	7% 3+ Axles		40.0%	60.0%							17,000	750	1,120	0	0	1			1500
US 27 SB Off Ramp to LOC EB	Ramp	SB	7% 3+ Axles	11.0%	60.0%	40.0%								1,120	750	0	0	1			1500
US 27 NB Off Ramp to LOC EB	Ramp	NB	7% 3+ Axles		60.0%	40.0%							13,900	920	610	0	0	1			1500
US 27 SB On Ramp from LOC WB	Ramp	SB	7% 3+ Axles	11.0%	40.0%	60.0%								610	920	0	0	1			1500
US 27 S. of LOC	Cross Street	NB	9%		45.0%	55.0%	27,000	985	1,235	46,300	1,880	2,295	49,400	2,005	2,450	3	3	3	3840	3840	3840
US 27 S. of LOC	Cross Street	SB	9%	9.0%	55.0%	45.0%		1,010	890		2,295	1,880		2,450	2,005	3	3	3	3840	3840	3840
LOC btw US 27 and CR 455	Mainline	EB	7% 3+ Axles		60.0%	40.0%							30,900	2,040	1,360	0	0	2			1500
LOC btw US 27 and CR 456	Mainline	WB	7% 3+ Axles	11.0%	40.0%	60.0%								1,360	2,040	0	0	2			1500
LOC EB Off Ramp to CR 455	Ramp	EB	7% 3+ Axles		60.0%	40.0%							6,500	430	285	0	0	1			1500
LOC WB On Ramp from CR 455	Ramp	WB	7% 3+ Axles	11.0%	40.0%	60.0%								285	430	0	0	1			1500
LOC EB On Ramp from CR 455	Ramp	EB	7% 3+ Axles		60.0%	40.0%							12,100	805	530	0	0	1			1500
LOC WB Off Ramp from CR 455	Ramp	WB	7% 3+ Axles	11.0%	40.0%	60.0%								530	805	0	0	1			1500
LOC btw CR 455 and Valencia	Mainline	EB	7% 3+ Axles		60.0%	40.0%							36,500	2,415	1,605	0	0	2			3020
LOC btw CR 455 and Valencia	Mainline	WB	7% 3+ Axles	11.0%	40.0%	60.0%								1,605	2,415	0	0	2			3020
LOC EB Off Ramp to Valencia	Ramp	EB	4%		60.0%	40.0%							9,000	595	400	0	0	1			1500
LOC WB On Ramp from Valencia	Ramp	WB	4%	11.0%	40.0%	60.0%								400	595	0	0	1			1500
LOC btw CR 455 and Valencia	Mainline	EB	7% 3+ Axles										27,500	1,820	1,205	0	0	2			3020
LOC btw CR 455 and Valencia	Mainline	WB	7% 3+ Axles											1,205	1,820	0	0	2			3020
SR 429 NB On Ramp from LOC	Ramp	EB	7% 3+ Axles		60.0%	40.0%							21,000	1,390	925	0	0	1			1500
SR 429 SB Off Ramp to LOC	Ramp	WB	7% 3+ Axles	11.0%	40.0%	60.0%								925	1,390	0	0	1			1500
SR 429 NB Off Ramp to LOC	Ramp	EB	7% 3+ Axles		40.0%	60.0%							6,500	280	430	0	0	1			1500
SR 429 SB On Ramp from LOC	Ramp	WB	7% 3+ Axles	11.0%	60.0%	40.0%								430	280	0	0	1			1500
SR 429 N. or Schofield Rd	Mainline	NB	7% 3+ Axles		55.0%	45.0%	36,600	1,096	2,187	100,200	5,515	4,510	107,500	5,915	4,840	2	3	3	3020	4580	4580
SR 429 N. or Schofield Rd	Mainline	SB	7% 3+ Axles	10.0%	45.0%	55.0%		1,865	1,637		4,510	5,515		4,840	5,915	2	3	3	3020	4580	4580
SR 429 NB On Ramp from Schofield Rd	Ramp	NB	7% 3+ Axles		60.0%	40.0%	3,400	251	166	26,400	1,585	1,060	17,600	1,060	705	1	1	1	1500	1500	1500
SR 429 SB Off Ramp to Schofield Rd	Ramp	SB	7% 3+ Axles	10.0%	40.0%	60.0%		153	194		1,060	1,585		705	1,060	1	1	1	1500	1500	1500
SR 429 NB Off Ramp to Schofield Rd	Ramp	NB	7% 3+ Axles		40.0%	60.0%	800	15	49	8,600	345	520	9,800	395	590	1	1	1	1500	1500	1500
SR 429 SB On Ramp from Schofield Rd	Ramp	SB	7% 3+ Axles	10.0%	60.0%	40.0%		43	12		520	345		590	395	1	1	1	1500	1500	1500
SR 429 S. or Schofield Rd	Mainline	NB	7% 3+ Axles				34,000	860	2,070	82,400	4,275	3,970	85,200	4,140	4,080	2	3	3	3020	4580	4580
SR 429 S. or Schofield Rd	Mainline	SB	7% 3+ Axles					1,755	1,455		3,970	4,275		4,230	4,290	2	3	3	3020	4580	4580
CR 455 S. of LOC	Cross Street	NB	4%							26,100	1,410	940	14,600	815	390	0	2	2		1910	1910
CR 455 S. of LOC	Cross Street	SB	4%								940	1,410		390	815	0	2	2		1910	1910
CR 455 N. of LOC	Cross Street	NB	4%		60.0%	40.0%				26,100	1,410	940	22,000	1,190	795	0	2	2		1910	1910
CR 455 N. of LOC	Cross Street	SB	4%	9.0%	40.0%	60.0%					940	1,410		795	1,190	0	2	2		1910	1910
Valencia Connector N. of LOC	Cross Street	NB	4%		60.0%	40.0%				6,700	365	245	15,600	845	565	0	2	2		730	730
Valencia Connector N. of LOC	Cross Street	SB	4%	9.0%	40.0%	60.0%					245	365		565	845	0	2	2		730	730
Valencia Connector S. of LOC	Cross Street	NB	4%							6,700	365	245	8,400	365	360	0	2	2		730	730
Valencia Connector S. of LOC	Cross Street	SB	4%								245	365		360	365	0	2	2		730	730
Schofield Rd W. of SR 429	Cross Street	EB	4%		60.0%	40.0%	200	12	16	23,200	1,255	840	23,100	1,250	835	1	2	2	dirt rd	1910	1910
Schofield Rd W. of SR 429	Cross Street	WB	4%	9.0%	40.0%	60.0%		8	26		840	1,255		835	1,250	1	2	2	dirt rd	1910	1910
Schofield Rd E. of SR 429	Cross Street	EB	4%				4,200	165	182	26,700	1,090	1,375	25,800	1,120	1,535	1	2	2	830	1910	1910
Schofield Rd E. of SR 429	Cross Street	WB	4%					290	255		1,375	1,090		1,265	1,250	1	2	2	830	1910	1910

CFX Project Number: 599-225

State/Federal Route No.: US 27

Project Description: Project Development and Environment Study

Segment Description: US 27 S. of LOC

Existing Facility:

Year: 2018

	Direction 1	Direction2			
	SB	**NB**			
LOS C Peak Hour Directional Volume:	3840	3840	MT=	1.67%	% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	1010	985	HT=	2.19%	% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	890	1235	B=	0.66%	% of Design Hour Vol.
Posted Speed:	55	55	MC=	0.20%	% of Design Hour Vol.
			T24=	9.04%	% of 24 Hour Vol.
			Tpeak=	4.52%	% of Design Hour Vol.

No Build Alternative (Design Year):

Year: 2045

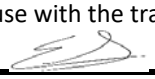
	Direction 1	Direction2			
	SB	**NB**			
LOS C Peak Hour Directional Volume:	3840	3840	MT=	1.67%	% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	2295	1880	HT=	2.19%	% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	1880	2295	B=	0.66%	% of Design Hour Vol.
Posted Speed:	55	55	MC=	0.20%	% of Design Hour Vol.
			T24=	9.04%	% of 24 Hour Vol.
			Tpeak=	4.52%	% of Design Hour Vol.

Build Alternative (Design Year):

Year: 2045

	Direction 1	Direction2			
	SB	**NB**			
LOS C Peak Hour Directional Volume:	3840	3840	MT=	1.67%	% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	2450	2005	HT=	2.19%	% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	2005	2450	B=	0.66%	% of Design Hour Vol.
Posted Speed:	55	55	MC=	0.20%	% of Design Hour Vol.
			T24=	9.04%	% of 24 Hour Vol.
			Tpeak=	4.52%	% of Design Hour Vol.

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

Prepared By: Stefan Escanes, PE  Date: 5/1/2019

Print Name Signature

CFX Project Number: 599-225

State/Federal Route No.: US 27

Project Description: Project Development and Environment Study

Segment Description: US 27 SB Ramps from LOC

Existing Facility:

Year: 2018

	Direction 1	Direction2			
	SB On	**SB Off**			
			T24=		% of 24 Hour Vol.
			Tpeak=		% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	-	MT=		% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	-	-	HT=		% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	-	-	B=		% of Design Hour Vol.
Posted Speed:	-	-	MC=		% of Design Hour Vol.

No Build Alternative (Design Year):

Year: 2045

	Direction 1	Direction2			
	SB On	**SB Off**			
			T24=		% of 24 Hour Vol.
			Tpeak=		% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	-	MT=		% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	-	-	HT=		% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	-	-	B=		% of Design Hour Vol.
Posted Speed:	-	-	MC=		% of Design Hour Vol.

Build Alternative (Design Year):

Year: 2045

	Direction 1	Direction2			
	SB On	**SB Off**			
			T24=	9.04%	% of 24 Hour Vol.
			Tpeak=	4.52%	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	-	MT=	1.67%	% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	610	920	HT=	2.19%	% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	920	610	B=	0.66%	% of Design Hour Vol.
Posted Speed:	45	45	MC=	0.20%	% of Design Hour Vol.

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

Prepared By: Stefan Escanes, PE  Date: 5/1/2019

Print Name Signature

CFX Project Number: 599-225

State/Federal Route No.: Lake Orange County Connector

Project Description: Project Development and Environment Study

Segment Description: LOC btw US 27 and CR 455

Existing Facility:

Year: 2018

	Direction 1	Direction2			
	EB	**WB**	T24=		% of 24 Hour Vol.
			Tpeak=		% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	-	MT=		% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	-	-	HT=		% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	-	-	B=		% of Design Hour Vol.
Posted Speed:	-	-	MC=		% of Design Hour Vol.

No Build Alternative (Design Year):

Year: 2045

	Direction 1	Direction2			
	EB	**WB**	T24=		% of 24 Hour Vol.
			Tpeak=		% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	-	MT=		% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	-	-	HT=		% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	-	-	B=		% of Design Hour Vol.
Posted Speed:	-	-	MC=		% of Design Hour Vol.

Build Alternative (Design Year):

Year: 2045

	Direction 1	Direction2			
	EB	**WB**	T24=	9.04%	% of 24 Hour Vol.
			Tpeak=	4.52%	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	1500	1500	MT=	1.67%	% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	2040	1360	HT=	2.19%	% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	1360	2040	B=	0.66%	% of Design Hour Vol.
Posted Speed:	70	70	MC=	0.20%	% of Design Hour Vol.

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

Prepared By: Stefan Escanes, PE  Date: 5/1/2019

Print Name Signature

CFX Project Number: 599-225

State/Federal Route No.: Lake Orange County Connector

Project Description: Project Development and Environment Study

Segment Description: LOC btw CR 455 and Valencia

Existing Facility:

Year: 2018

	Direction 1	Direction2			
	EB	**WB**			
			T24=		% of 24 Hour Vol.
			Tpeak=		% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	-	MT=		% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	-	-	HT=		% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	-	-	B=		% of Design Hour Vol.
Posted Speed:	-	-	MC=		% of Design Hour Vol.

No Build Alternative (Design Year):

Year: 2045

	Direction 1	Direction2			
	EB	**WB**			
			T24=		% of 24 Hour Vol.
			Tpeak=		% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	-	MT=		% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	-	-	HT=		% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	-	-	B=		% of Design Hour Vol.
Posted Speed:	-	-	MC=		% of Design Hour Vol.

Build Alternative (Design Year):

Year: 2045

	Direction 1	Direction2			
	EB	**WB**			
			T24=	9.04%	% of 24 Hour Vol.
			Tpeak=	4.52%	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	3020	3020	MT=	1.67%	% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	1820	1205	HT=	2.19%	% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	1205	1820	B=	0.66%	% of Design Hour Vol.
Posted Speed:	70	70	MC=	0.20%	% of Design Hour Vol.

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

Prepared By: Stefan Escanes, PE  Date: 5/1/2019

Print Name Signature

CFX Project Number: 599-225

State/Federal Route No.: Lake/Orange County Connector

Project Description: Project Development and Environment Study

Segment Description: LOC Ramps To/From Valencia PKWY

Existing Facility:

Year: 2018

	Direction 1	Direction2			
	EB Off	**WB On**	T24=		% of 24 Hour Vol.
			Tpeak=		% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	-	MT=		% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	-	-	HT=		% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	-	-	B=		% of Design Hour Vol.
Posted Speed:	-	-	MC=		% of Design Hour Vol.

No Build Alternative (Design Year):

Year: 2045

	Direction 1	Direction2			
	EB Off	**WB On**	T24=		% of 24 Hour Vol.
			Tpeak=		% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	-	MT=		% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	-	-	HT=		% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	-	-	B=		% of Design Hour Vol.
Posted Speed:	-	-	MC=		% of Design Hour Vol.

Build Alternative (Design Year):

Year: 2045

	Direction 1	Direction2			
	EB Off	**WB On**	T24=	9.04%	% of 24 Hour Vol.
			Tpeak=	4.52%	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	-	MT=	1.67%	% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	595	400	HT=	2.19%	% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	400	595	B=	0.66%	% of Design Hour Vol.
Posted Speed:	45	45	MC=	0.20%	% of Design Hour Vol.

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

Prepared By: Stefan Escanes, PE  Date: 5/1/2019

Print Name Signature

CFX Project Number: 599-225

State/Federal Route No.: Lake Orange County Connector

Project Description: Project Development and Environment Study

Segment Description: SR 429 NB On/Off Ramps from LOC

Existing Facility:

Year: 2018

	Direction 1	Direction2			
	NB On	**NB Off**	T24=		% of 24 Hour Vol.
			Tpeak=		% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	-	MT=		% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	-	-	HT=		% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	-	-	B=		% of Design Hour Vol.
Posted Speed:	-	-	MC=		% of Design Hour Vol.

No Build Alternative (Design Year):

Year: 2045

	Direction 1	Direction2			
	NB On	**NB Off**	T24=		% of 24 Hour Vol.
			Tpeak=		% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	-	MT=		% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	-	-	HT=		% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	-	-	B=		% of Design Hour Vol.
Posted Speed:	-	-	MC=		% of Design Hour Vol.

Build Alternative (Design Year):

Year: 2045

	Direction 1	Direction2			
	NB On	**NB Off**	T24=	9.04%	% of 24 Hour Vol.
			Tpeak=	4.52%	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	-	MT=	1.67%	% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	1390	280	HT=	2.19%	% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	925	430	B=	0.66%	% of Design Hour Vol.
Posted Speed:	45	45	MC=	0.20%	% of Design Hour Vol.

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

Prepared By: Stefan Escanes, PE  Date: 5/1/2019

Print Name Signature

CFX Project Number: 599-225

State/Federal Route No.: Lake Orange County Connector

Project Description: Project Development and Environment Study

Segment Description: SR 429 SB On/Off Ramps from LOC

Existing Facility:

Year: 2018

	Direction 1	Direction2			
	SB On	**SB Off**	Tpeak=		% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	-	MT=		% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	-	-	HT=		% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	-	-	B=		% of Design Hour Vol.
Posted Speed:	-	-	MC=		% of Design Hour Vol.

No Build Alternative (Design Year):

Year: 2045

	Direction 1	Direction2			
	SB On	**SB Off**	Tpeak=		% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	-	MT=		% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	-	-	HT=		% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	-	-	B=		% of Design Hour Vol.
Posted Speed:	-	-	MC=		% of Design Hour Vol.

Build Alternative (Design Year):

Year: 2045

	Direction 1	Direction2			
	SB On	**SB Off**	Tpeak=	4.52%	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	-	MT=	1.67%	% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	430	925	HT=	2.19%	% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	280	1390	B=	0.66%	% of Design Hour Vol.
Posted Speed:	45	45	MC=	0.20%	% of Design Hour Vol.

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

Prepared By: Stefan Escanes, PE  Date: 5/1/2019

Print Name Signature

CFX Project Number: 599-225

State/Federal Route No.: SR 429

Project Description: Project Development and Environment Study

Segment Description: SR 429 N. or Schofield Rd

Existing Facility:

Year: 2018

	Direction 1	Direction2			
	NB	**SB**	T24=	9.04%	% of 24 Hour Vol.
			Tpeak=	4.52%	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	3020	3020	MT=	1.67%	% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	1096	1865	HT=	2.19%	% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	2187	1637	B=	0.66%	% of Design Hour Vol.
Posted Speed:	70	70	MC=	0.20%	% of Design Hour Vol.

No Build Alternative (Design Year):

Year: 2045

	Direction 1	Direction2			
	NB	**SB**	T24=	9.04%	% of 24 Hour Vol.
			Tpeak=	4.52%	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	4580	4580	MT=	1.67%	% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	5515	4510	HT=	2.19%	% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	4510	5515	B=	0.66%	% of Design Hour Vol.
Posted Speed:	70	70	MC=	0.20%	% of Design Hour Vol.

Build Alternative (Design Year):

Year: 2045

	Direction 1	Direction2			
	NB	**SB**	T24=	9.04%	% of 24 Hour Vol.
			Tpeak=	4.52%	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	4580	4580	MT=	1.67%	% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	5915	4840	HT=	2.19%	% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	4840	5915	B=	0.66%	% of Design Hour Vol.
Posted Speed:	70	70	MC=	0.20%	% of Design Hour Vol.

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

Prepared By: Stefan Escanes, PE  Date: 5/1/2019

Print Name Signature

CFX Project Number: 599-225

State/Federal Route No.: SR 429

Project Description: Project Development and Environment Study

Segment Description: To SB Ramps

Existing Facility:

Year: 2018

	Direction 1	Direction2			
	NB	**SB**	T24=	9.04%	% of 24 Hour Vol.
			Tpeak=	4.52%	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	3020	3020	MT=	1.67%	% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	860	1755	HT=	2.19%	% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	2070	1455	B=	0.66%	% of Design Hour Vol.
Posted Speed:	70	70	MC=	0.20%	% of Design Hour Vol.

No Build Alternative (Design Year):

Year: 2045

	Direction 1	Direction2			
	NB	**SB**	T24=	9.04%	% of 24 Hour Vol.
			Tpeak=	4.52%	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	4580	4580	MT=	1.67%	% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	4275	3970	HT=	2.19%	% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	3970	4275	B=	0.66%	% of Design Hour Vol.
Posted Speed:	70	70	MC=	0.20%	% of Design Hour Vol.

Build Alternative (Design Year):

Year: 2045

	Direction 1	Direction2			
	NB	**SB**	T24=	9.04%	% of 24 Hour Vol.
			Tpeak=	4.52%	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	4580	4580	MT=	1.67%	% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	4140	4230	HT=	2.19%	% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	4080	4290	B=	0.66%	% of Design Hour Vol.
Posted Speed:	70	70	MC=	0.20%	% of Design Hour Vol.

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

Prepared By: Stefan Escanes, PE  Date: 5/1/2019

Print Name Signature

CFX Project Number: 599-225

State/Federal Route No.: Valencia Parkway

Project Description: Project Development and Environment Study

Segment Description: Valencia Connector N. of LOC

Existing Facility:

Year: 2018

	Direction 1	Direction2			
	NB	**SB**	T24=		% of 24 Hour Vol.
			Tpeak=		% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	-	MT=		% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	-	-	HT=		% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	-	-	B=		% of Design Hour Vol.
Posted Speed:	30	30	MC=		% of Design Hour Vol.

No Build Alternative (Design Year):

Year: 2045

	Direction 1	Direction2			
	NB	**SB**	T24=		% of 24 Hour Vol.
			Tpeak=		% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	-	MT=		% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	-	-	HT=		% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	-	-	B=		% of Design Hour Vol.
Posted Speed:	30	30	MC=		% of Design Hour Vol.

Build Alternative (Design Year):

Year: 2045

	Direction 1	Direction2			
	NB	**SB**	T24=	9.04%	% of 24 Hour Vol.
			Tpeak=	4.52%	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	730	730	MT=	1.67%	% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	845	565	HT=	2.19%	% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	565	845	B=	0.66%	% of Design Hour Vol.
Posted Speed:	40	40	MC=	0.20%	% of Design Hour Vol.

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

Prepared By: Stefan Escanes, PE  Date: 5/1/2019

Print Name Signature

CFX Project Number: 599-225

State/Federal Route No.: Schofield Rd

Project Description: Project Development and Environment Study

Segment Description: Schofield Rd W. of SR 429

Existing Facility:

Year: 2018

	Direction 1	Direction2			
	EB	**WB**	Tpeak=	4.52%	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	-	MT=	1.67%	% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	12	8	HT=	2.19%	% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	16	26	B=	0.66%	% of Design Hour Vol.
Posted Speed:	30	30	MC=	0.20%	% of Design Hour Vol.
			T24=	9.04%	% of 24 Hour Vol.

No Build Alternative (Design Year):

Year: 2045

	Direction 1	Direction2			
	EB	**WB**	Tpeak=	4.52%	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	1910	1910	MT=	1.67%	% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	1255	840	HT=	2.19%	% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	840	1255	B=	0.66%	% of Design Hour Vol.
Posted Speed:	30	30	MC=	0.20%	% of Design Hour Vol.
			T24=	9.04%	% of 24 Hour Vol.

Build Alternative (Design Year):

Year: 2045

	Direction 1	Direction2			
	EB	**WB**	Tpeak=	4.52%	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	1910	1910	MT=	1.67%	% of Design Hour Vol.
Demand Peak Hour Volume (AM Peak):	1250	835	HT=	2.19%	% of Design Hour Vol.
Demand Peak Hour Volume (PM Peak):	835	1250	B=	0.66%	% of Design Hour Vol.
Posted Speed:	40	40	MC=	0.20%	% of Design Hour Vol.
			T24=	9.04%	% of 24 Hour Vol.

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

Prepared By: Stefan Escanes, PE  Date: 5/1/2019

Print Name Signature

APPENDIX B

FIELD MONITORING WORKSHEETS

Site/Run #

Noise Measurement Data Sheet

Date: 4/10/2019 **Measurement Taken by:** SE

Project: Lake Orange Connector

Site ID: FR1 Run 1/2/3

Weather Conditions	Clear	Partly Cloudy ✓	Cloudy	Other
Temperature	Start: 75.6	End: 83.9 (°F)		
Wind Direction	Start: NW	End: NW		
Wind Speed (Start):	Min: 1.1	Max: 6.0	Average: 2.9	(mph)
Wind Speed (End):	Min: 0.0	Max: 3.6	Average: 0.8	(mph)
Humidity	Start: 66.4	End: (%)		

Equipment Data

			50'		**100'**
Sound Level Meter:	CEL-246	Serial Number	1588500		3173221
Date of Last Traceable Calibration:	6/29/2018				
Calibration:	Start: ✓	End:	✓	Difference:	0.0
Battery:	Start: Full	End:	Full		
Weighting Scale:	A	Response:	Fast		
Calibrator:	CEL-120	Serial Number:	2044846		

Results: Leq: (50') 66.4/67.2/67.8; (100') 63.1/63.5/64.4
in dB(A)

Major Noise Sources: SR 429

Bacground Noise Sources:

Other Notes/Observations:

Observed Traffic Data

Observed Traffic Data Site #: FR1 Run #: 1-3

Vehicle Types	FR1-1		FR1-2		FR1-3	
	Volume	Speed	Volume	Speed	Volume	Speed
Auto	NB: 131 SB: 120	NB: 71 SB: 73	NB: 134 SB: 123	NB: 75 SB: 74	NB: 129 SB: 114	NB: 73 SB: 68
Medium Truck	NB: 9 SB: 6	NB: 67 SB: 69	NB: 9 SB: 11	NB: 67 SB: 64	NB: 9 SB: 4	NB: 67 SB: 65
Heavy Truck	NB:18 SB: 19	NB: 64 SB: 68	NB: 23 SB: 11	NB: 65 SB: 62	NB: 17 SB: 15	NB: 68 SB: 68
Bus	NB: 1 SB: 0	NB: 64 SB: 0	NB: 0 SB: 0	NB: 0 SB: 0	NB: 0 SB: 0	NB: 0 SB: 0
Motorcycle	NB: 1 SB: 0	NB: 70 SB: 0	NB: 0 SB: 0	NB: 0 SB: 0	NB: 0 SB: 0	NB: 0 SB: 0

Site Sketch

Site/Run #

Noise Measurement Data Sheet

Date: 4/10/2019 **Measurement Taken by:** SE

Project: Lake Orange Connector

Site ID: FM1 Run 1/2/3

Weather Conditions	Clear	Partly Cloudy ✓	Cloudy	Other
Temperature	Start: 78.6	End: 85.0 (°F)		
Wind Direction	Start: NW	End: NW		
Wind Speed (Start):	Min: 0.0	Max: 0.9	Average: 0.2	(mph)
Wind Speed (End):	Min: 0.0	Max: 2.5	Average: 0.4	(mph)
Humidity	Start: 59.3	End: 43.8 (%)		

Equipment Data

Sound Level Meter:	CEL-246	Serial Number	1588500	
Date of Last Traceable Calibration:	6/29/2018			
Calibration:	Start: ✓	End: ✓	Difference:	0.0
Battery:	Start: Full	End: Full		
Weighting Scale:	A	Response:	Fast	
Calibrator:	CEL-120	Serial Number:	2044846	

Results: Leq: 49.9/51.9/51.1
in dB(A)

Major Noise Sources: Schofield Road occasional vehicle

Bacground Noise Sources: SR 429

Other Notes/Observations:

Site/Run #

Noise Measurement Data Sheet

Date: 4/10/2019 **Measurement Taken by:** SE

Project: Lake Orange Connector

Site ID: FM2 Run 1/2/3

Weather Conditions	Clear	Partly Cloudy ✓	Cloudy	Other
Temperature	Start: 81.3	End: 83.9 (°F)		
Wind Direction	Start: NW	End: NW		
Wind Speed (Start):	Min: 0.3	Max: 1.7	Average: 0.5	(mph)
Wind Speed (End):	Min: 0.0	Max: 2.1	Average: 0.4	(mph)
Humidity	Start: 58.9	End: 61.7 (%)		

Equipment Data

Sound Level Meter:	CEL-246	Serial Number	1588500	
Date of Last Traceable Calibration:	6/29/2018			
Calibration:	Start: ✓	End: ✓	Difference:	0.0
Battery:	Start: Full	End: Full		
Weighting Scale:	A	Response:	Fast	
Calibrator:	CEL-120	Serial Number:	2044846	

Results: Leq: 39.0/46.7/43.5
in dB(A)

Major Noise Sources:

Bacground Noise Sources: Birds

Other Notes/Observations:

Barking dog, run 2, 3:15min

Site/Run #

Noise Measurement Data Sheet

Date: 4/24/2019 **Measurement Taken by:** SE

Project: Lake Orange Connector

Site ID: FM3 1/2/3

Weather Conditions	Clear	Partly Cloudy ✓	Cloudy	Other
Temperature	Start: 84.4	End: 84.9 (°F)		
Wind Direction	Start: NW	End: NW		
Wind Speed (Start):	Min: 1.3	Max: 1.4	Average: 0.9	(mph)
Wind Speed (End):	Min: 2.0	Max: 3.3	Average: 1.9	(mph)
Humidity	Start: 38.8	End: 44.3 (%)		

Equipment Data

Sound Level Meter:	CEL-246	Serial Number	1588500		
Date of Last Traceable Calibration:	6/29/2018				
Calibration:	Start: ✓	End: ✓	Difference:	0.0	
Battery:	Start: Full	End: Full			
Weighting Scale:	A	Response:	Fast		
Calibrator:	CEL-120	Serial Number:	2044846		

Results: Leq: 56.7/54.4/56.7
in dB(A)

Major Noise Sources:

Bacground Noise Sources: occasional building construction

Other Notes/Observations:

Site/Run #

Noise Measurement Data Sheet

Date: 4/24/2019 **Measurement Taken by:** SE

Project: Lake Orange Connector

Site ID: FM4 Run 1/2/3

Weather Conditions	Clear	Partly Cloudy ✓	Cloudy	Other
Temperature	Start: 77.0	End: 84.2 (°F)		
Wind Direction	Start: NW	End: NW		
Wind Speed (Start):	Min: 0.4	Max: 1.8	Average: 0.2	(mph)
Wind Speed (End):	Min: 0.5	Max: 1.7	Average: 0.2	(mph)
Humidity	Start: 48.4	End: 48.5 (%)		

Equipment Data

Sound Level Meter:	CEL-246	Serial Number	1588500		
Date of Last Traceable Calibration:	6/29/2018				
Calibration:	Start: ✓	End: ✓	Difference:	0.0	
Battery:	Start: Full	End: Full			
Weighting Scale:	A	Response:	Fast		
Calibrator:	CEL-120	Serial Number:	2044846		

Results: Leq: 48.6/44.9/48.7
in dB(A)

Major Noise Sources:

Bacground Noise Sources:

Other Notes/Observations:

Run 2, 8:22, plane