CENTRAL FLORIDA EXPRESSWAY AUTHORITY

CFX Contract Number: 001844
CFX Project Number: 528-307

ENVIRONMENTAL ASSESSMENT TECHNICAL MEMORANDUM

SR 528 & DALLAS BLVD INTERCHANGE

Martin Andersen Beachline Expressway

PROJECT DEVELOPMENT & ENVIRONMENT STUDY

Submitted By:

Signature: _____

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The Balmoral Group, LLC
July 11, 2023

the balmoral group

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Project Information

Project Name: State Road (SR) 528 & Dallas Blvd Interchange

Projects Limits: The project area covers SR 528 and the existing CFX right-of-way from the Econlockhatchee River bridge to approximately ¾ mile east of Dallas Boulevard. The project limits also contain the intersection and small areas of Dallas Boulevard and Starry Street in the Wedgefield neighborhood, located within Orange County.

County: Orange

Proposed Activity: This PD&E Study will analyze and evaluate the completion of the Dallas Boulevard interchange by adding a westbound off-ramp and eastbound on-ramp to SR 528 to provide enhanced access and mobility to the Wedgefield community and eastern Orange County.

Responsible Agency: Central Florida Expressway Authority (CFX)

Planning Organization: CFX

Phase: Project Development & Environment (PD&E) Study

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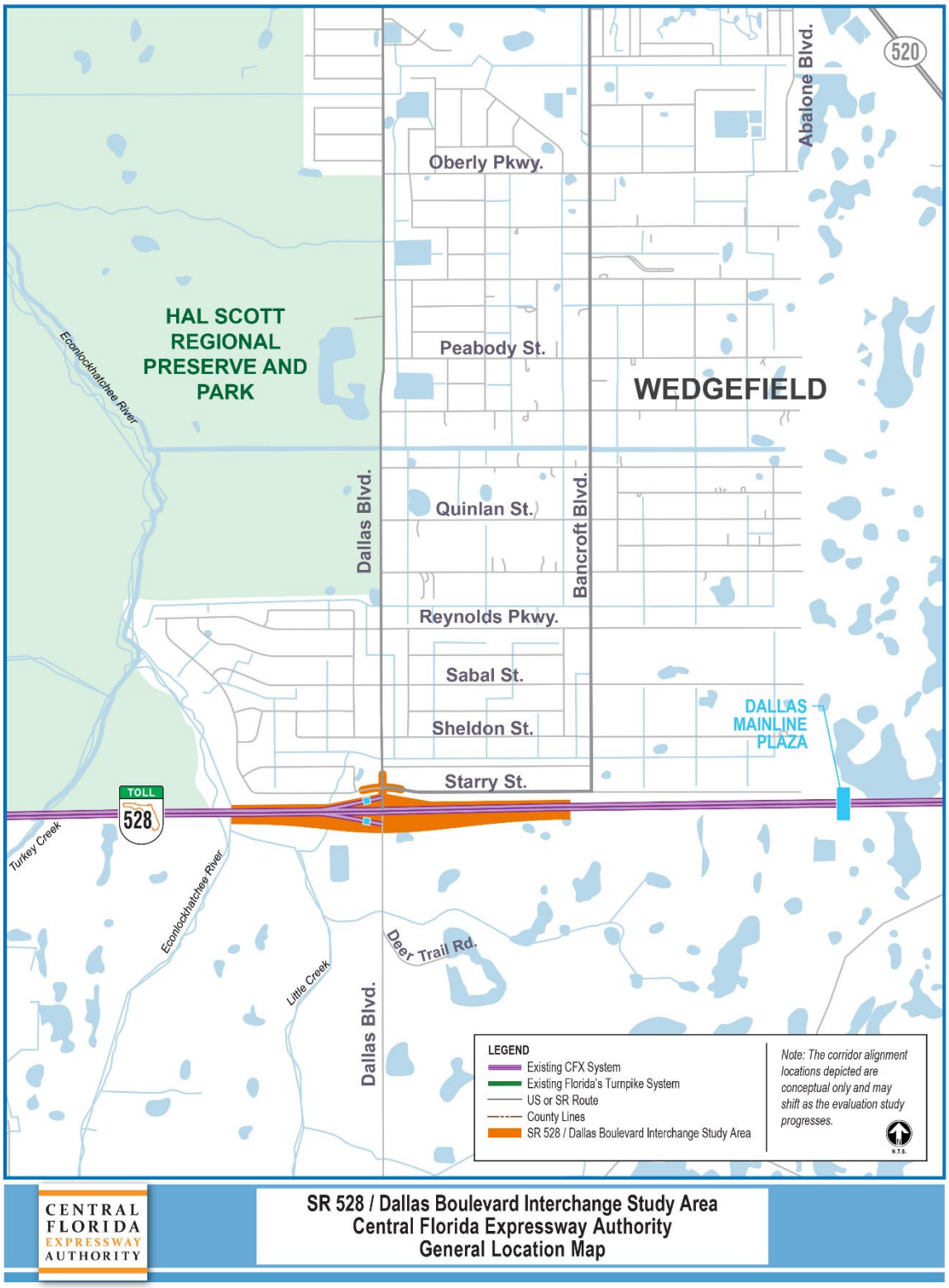
Project Location Map

Figure 1 - Project Location Map



Project Background & Description

Background

In December 2022, CFX began a Project Development and Environment (PD&E) Study of the State Road (SR) 528 & Dallas Blvd Interchange. The study is evaluating the completion of the Dallas Boulevard interchange by adding a westbound off-ramp and eastbound on-ramp to SR 528 to provide enhanced access and mobility to the Wedgefield community and eastern Orange County.

Study Description

Currently, the Dallas Boulevard interchange (Exit 24) on State Road (SR) 528 (Martin B. Andersen Beachline Expressway) is a half interchange – consisting of a westbound on-ramp and an eastbound off-ramp. The completion to a full interchange, by adding a westbound off-ramp and eastbound on-ramp, has been identified as a need to provide enhanced access and mobility to the Wedgefield community and eastern Orange County. Currently, residents within Wedgefield must travel north in the subdivision to access SR 520 and then travel south to access SR 528 in the eastbound direction – a distance that can range from approximately seven to thirteen miles – and vice versa when travelling westbound on SR 528. Therefore, this PD&E Study will analyze and evaluate the completion of the Dallas Boulevard interchange (Exit 24) by adding a westbound off-ramp and eastbound on-ramp.

Study Goals

The general objective of this study is to provide documented information necessary for the CFX to reach a decision on the type, design, and location of the completion of the existing SR 528 Dallas Boulevard interchange.

The goals of the SR 528/Dallas Blvd Interchange PD&E Study include:

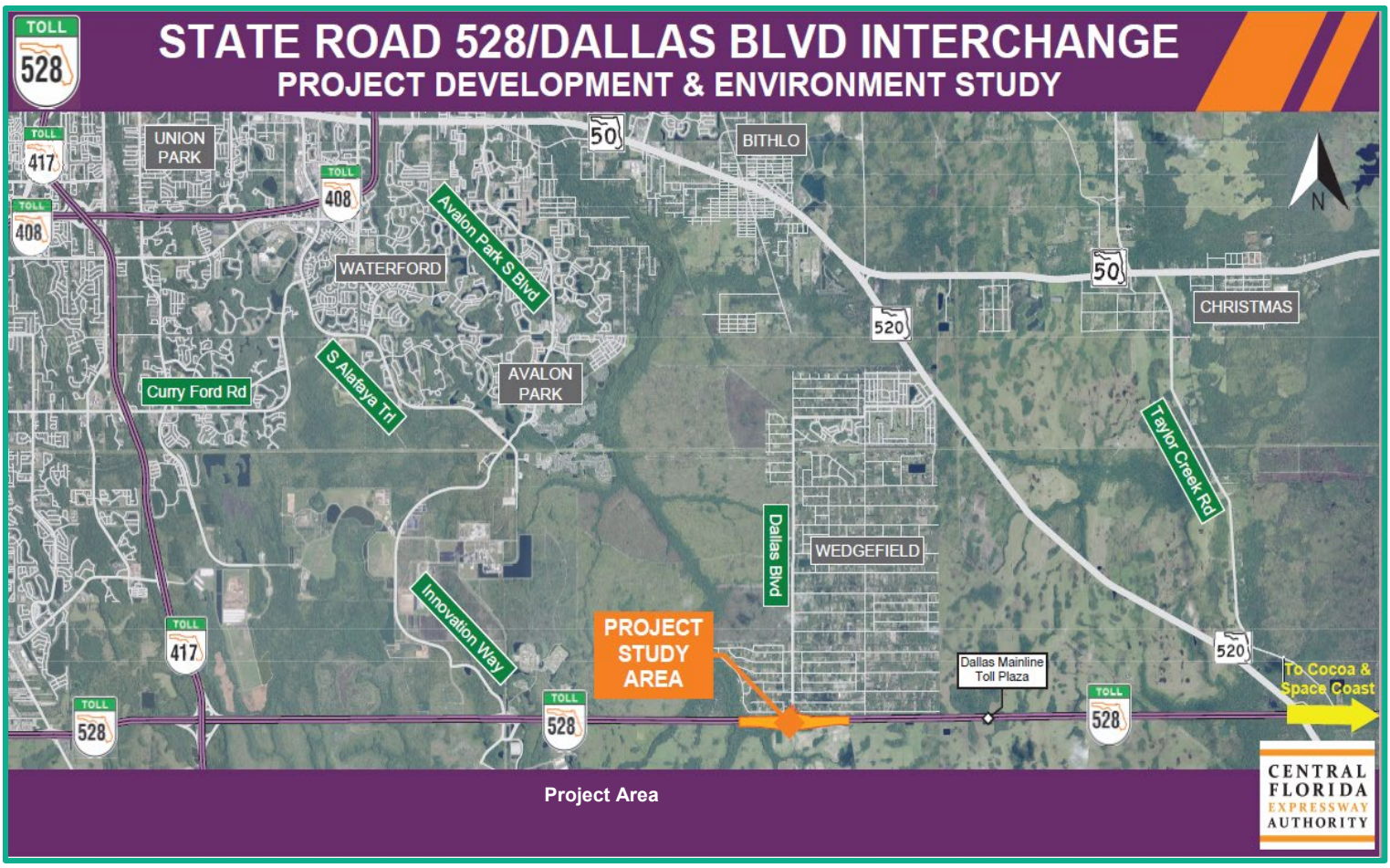
- Identify transportation mobility options and programs that could meet future demand.
- Complete a full interchange for SR 528 at Dallas Blvd.
- Enhance mobility for the area's current and future development.
- Identify a Preferred Alternative design concept that is consistent with the current and future goals of CFX.
- Ensure that conceptual designs accommodate current and future capacity improvements.
- Provide consistency with local plans and policies.
- Promote regional connectivity.

General Existing Conditions of Project Area

The project area, as defined within the PD&E Study, is the location where alternative concepts are being considered for the completion of a full interchange to SR 528 and roadway improvements to Dallas Blvd that will provide full access. For consistency in studying the existing and anticipated conditions of the area surrounding the PD&E Study Area, a half mile radius of the general existing conditions surrounding the project area are used, unless specifically called out. The entirety of the project area falls within unincorporated Orange County.

The project area covers SR 528 and the existing CFX right-of-way from the Econlockhatchee River Bridge to approximately ¾ mile east of Dallas Blvd. The project limits also contain the intersection and small areas of Dallas Blvd and Starry Street in the Wedgefield neighborhood, located within Orange County.

Figure 2 - Project Area Regional Context



Analysis of Impacts to Socioeconomic Resources

Social & Economic Environment Analysis

Social

Demographics

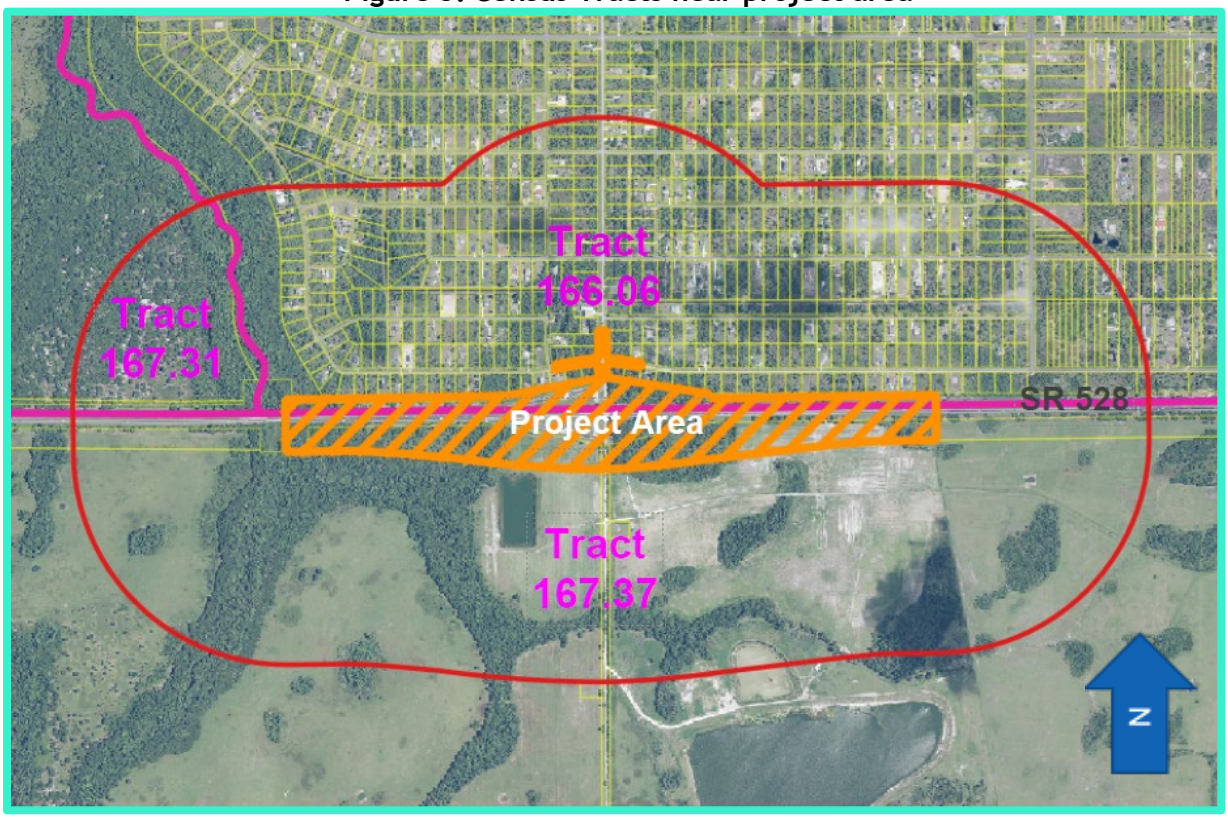
The study area was reviewed to identify minority and/or low-income populations as well as underrepresented population groups protected under *Title VI of the Civil Rights Act of 1964* and related nondiscrimination statutes and regulations. **Table 1** provides study area demographics based on the US Census Tracts in which the project is located. See **Figure 3** for the location of the tracts.

Table 1: Study Area Demographics by Census Tract

Census Tract	Total Population	Percent Minority Population	Percent Population Below Poverty Level	Percent Population Aged 65 and Over
167.37	5,809	28%	4%	18%
166.06	2,445	23%	3%	10%
167.31	7,246	38%	5%	5%
Orange County	1,340,469	56.0%	14.2%	12.0%

Source: 2020 U.S. Census (Total Population, Minority Population); 2020 ACS 5-Year Estimates (Poverty, 65 and Over)

Figure 3: Census Tracts near project area

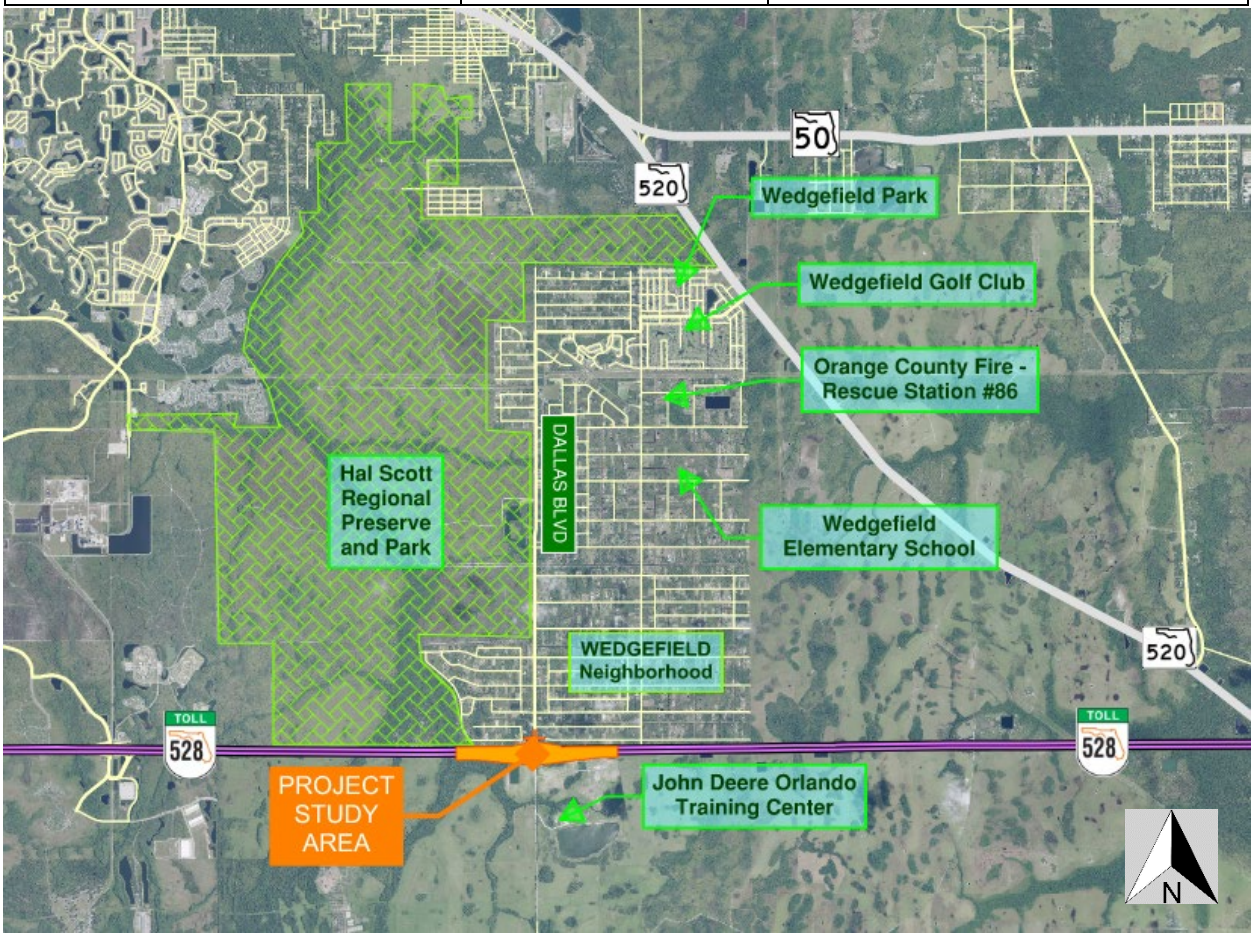


Community Features

A desktop review of the study area indicates that there are limited community facilities within or near the study area: The closest community feature to the study area is Hal Scott Regional Park & Preserve, which is approximately 4,600 feet from the study area. Additionally, the Wedgefield neighborhood is partially within the study area. **Table 2** presents community facilities within or near the study area.

Table 2: Community Features

Name	Type of Facility	Relative Location
Orange County Fire Station #86	Institutional	±3.5 Miles northeast of study area
Wedgefield Elementary School	Institutional	±2.84 Miles northeast of study area
Wedgefield Golf Club	Recreation	±3.68 Miles northeast of study area
Wedgefield Park	Recreation	±4.4 Miles northeast of study area
Hal Scott Regional Park & Preserve	Recreation	±4,600 feet northwest of study area
Wedgefield	Neighborhood	Partially within north of study area
John Deere Orlando Training Center	Industry	±2,650 feet south of study area



Economic

The proposed improvements will provide enhanced regional connectivity in eastern Orange County, and the improvements were anticipated in the *SR 528 (BEACHLINE EXPRESSWAY) 8-LANE CONCEPT Plan* developed by Atkins for CFX in 2012. The full interchange will improve mobility with the region, and provide better access to the Space Coast area, providing access to jobs, services, and recreation. The enhanced mobility will continue to drive economic development. These improvements will also support the additional infrastructure needed for the anticipated future development of the 50,000+ acres located at the southern terminus of Dallas Blvd.

Land Use Changes

Land uses within ½ mile of the project area were quantified using the Florida Department of Environmental Protection (FDEP) Florida Land Use Cover Classification System (FLUCCS). **Table 3** summarizes the land uses and their areas within a ½-mile buffer of the project area as shown on **Figure 4**.

Table 3: FLUCCS Codes Within Project Area

FLUCCS Code	Landcover Description	Area (acres) within 1/2 mi of project area
1100	Low Density, <2 dwelling units/acre	311.6
1190	Low Density, Under Construction	2.7
2110	Improved Pastures	607.9
3100	Herbaceous (Dry Prairie)	2.1
3200	Shrub and Brushland	104.9
3300	Mixed Upland Nonforested	48.8
4110	Pine Flatwoods	153.0
4200	Upland Hardwood Forests	23.2
4340	Upland Mixed - Coniferous / Hardwood	45.5
5100	Streams and Waterways	22.2
5300	Reservoirs	20.0
6170	Mixed Wetland Hardwoods	195.3
6210	Cypress	35.7
6250	Hydric Pine Flatwoods	1.3
6300	Wetland Forested Mixed	20.4
6410	Freshwater Marshes	14.1
6430	Wet Prairies	25.7
6440	Emergent Aquatic Vegetation	0.6
6460	Mixed Scrub-shrub Wetland	42.4
7400	Disturbed Lands	3.5
8140	Roads and Highways	55.6
8200	Communications	2.2
8370	Surface Water Collection Features	4.6

Figure 4: FLUCCS Within Project Area

Mobility

There are no existing transit routes or paratransit access in the immediate project vicinity. At the northeast of the Wedgefield area, LYNX Neighborhood Link Area 621-Bithlo, Neighborlink Service is in place. This area is 3.5+ miles from the Project Area. A review of the LYNX Transit Development Plan FY 2020–2029 indicates there are no proposed transit improvements within the Project Area or any nearby area within the "20-year Vision for All Routes and Service."

There are limited sidewalks in the project area, located only in the northern portion of the Wedgefield area and along Bancroft Blvd. Both of the alternatives being considered will provide pedestrian connection along the newly designed Dallas Blvd to provide future connectivity from the Wedgefield area to the undeveloped area to the south. Future County mobility projects could address additional sidewalk in the Wedgefield area.

The MetroPlan Orlando Metropolitan Transportation Plan does not identify any 2045 Needs within the Project area or the Wedgefield area.

This project's proposed improvements will increase automobile access in the area and provide more efficient connections to places of employment, services, and recreation. Additionally, the intersection will include sidewalks and designated pedestrian crossings to support future mobility improvements in the area.

Aesthetic Effects

Aesthetic impacts of the proposed improvements will include the construction of new roadway and bridges that are of a modern and more visually pleasing design. Additionally, the Mainline of SR 528 would be relocated 240 feet (Alternative 2) to 375 feet (Alternative 1) south of the current SR 528 alignment, further from the residential properties in the Wedgefield neighborhood. Ponds are likely to be constructed in the areas formerly occupied by the SR 528 mainline and ramps. Additionally, the new Brightline (All Aboard Florida) rail line was built upon elevated earthen berms for the rail lines and a bridge that is built at a height greater than 28 feet from the previously existing grade. The new SR 528 mainline will be built at a new height of approximately 21 – 23 feet, so SR 528 will not be visible from the south as it will be hidden behind the new Brightline Rail.

Additional analysis of Noise walls will occur during final design. However, in the context of the existing limited- access facility of SR 528, it is not anticipated that the alternatives will negatively impact the overall aesthetics of the area.

Relocation Potential

The project area lies entirely within existing CFX right-of-way. Construction of the Preferred Alternative is not anticipated to cause any impact.

Analysis of Impacts to Cultural Resources

Cultural Environment Analysis

Historic Sites/Districts & Archaeological Sites

Alternative Concept plans for the proposed interchange improvements at SR 528 and Dallas Blvd were evaluated for Cultural Resource impacts. The purpose of this review was to identify any previously recorded cultural resources within the project area. The study area was defined as the parcels where the proposed interchange work will occur (the potential construction area) in addition to a 152-meter (500-foot) buffer to address any potential viewshed effects to historic resources (see **Figure 5**). The present document is for information purposes only and does not satisfy requirements under the National Environmental Policy Act or Section 106 of the National Historic Preservation Act.

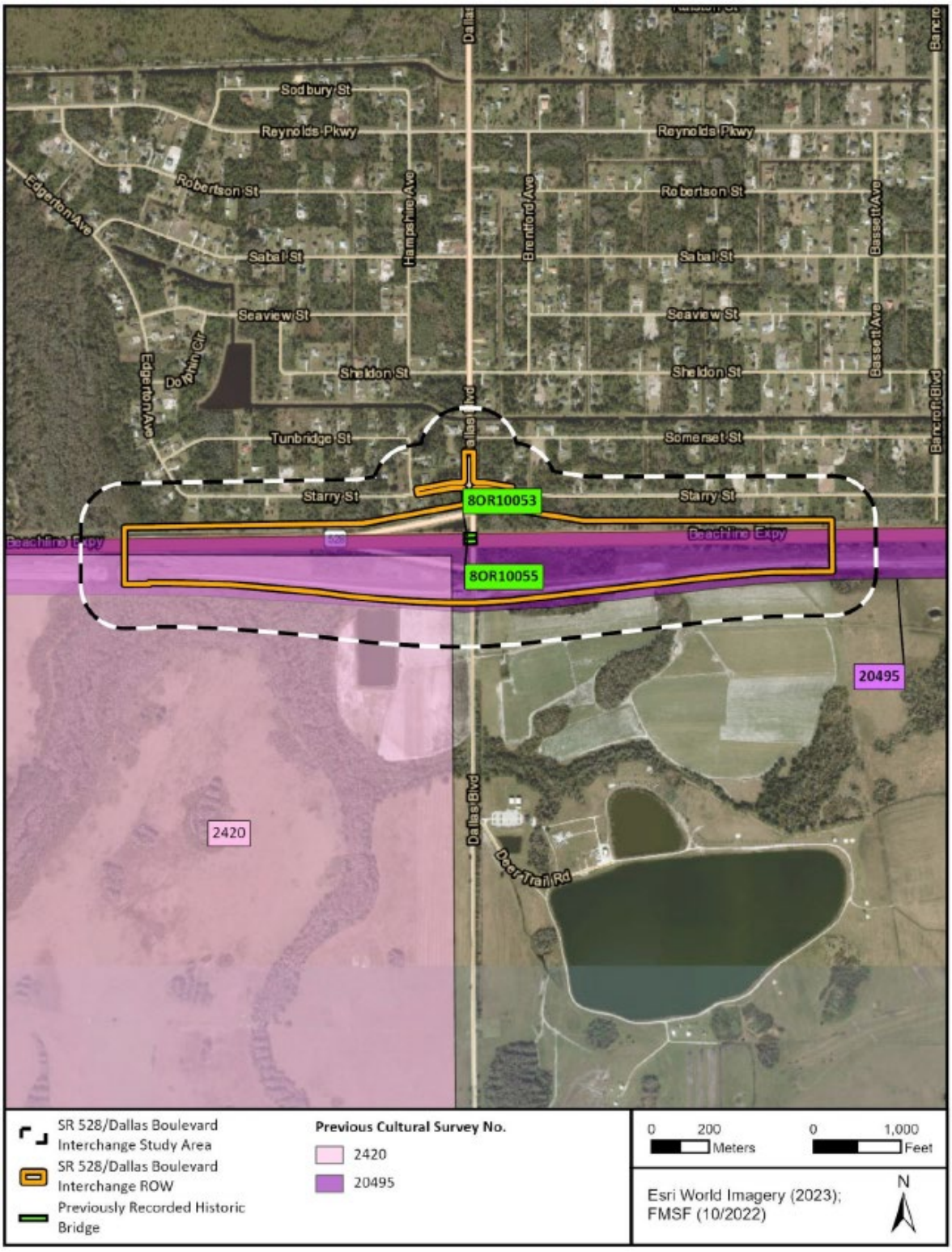
Review of the Florida Master Site File (FMSF) database indicates that two historic bridges (8OR10053 and 8OR10055) are located within the study area (see **Figure 5**). Neither bridge has been evaluated by the State Historic Preservation Office (SHPO) for eligibility on the National Register of Historic Places (NRHP). Both were constructed in 1967 and are girder-floorbeam bridges. The nearest archaeological sites are two precontact archaeological sites (8OR02192 and 8OR03127), which are located less than 500 meters (1,640 feet) south of the study area near Little Creek. Site 8OR02192 has been recommended potentially eligible for the NRHP by the SHPO, while 8OR03127 has been recommended ineligible.

Review of the FMSF database indicates that the current study area has been partially surveyed by prior studies that meet the current Module Three standards for cultural resource surveys (**Table 4**). Typically, portions of the study area that have been subjected previously to Module Three-compliant survey will not need additional archaeological survey, but they may need an updated architectural history survey. Given that some of the project corridor has not yet been surveyed for cultural resources and the presence of nearby NRHP-eligible resources, a Phase I Cultural Resource Assessment Survey (CRAS) will be considered as part of the design phase for this project. The full Cultural Resources Tech Memorandum is attached as **Appendix A**.

Table 4 - Cultural Resource Surveys Conducted Within Study Area

FMSF No.	Title	Year	Consultant
2420	*Cultural Resource Assessment Survey of the Proposed Magnolia Ranch Development Site, Orange County, Florida*	1990	Austin, Robert J. and Howard F. Hansen
20495	*Cultural Resource Assessment report for the All Aboard Florida Passenger Rail Project from Orlando to West Palm Beach*	2013	Janus Research

Figure 5 - Previously Recorded Resources & Surveys Within Study Area



Recreational Areas and Protected Lands

The project area lies entirely within existing CFX right-of-way. No Recreational Areas or Protected Lands are located within the project area or any areas anticipated to be impacted by construction activities. The proposed project would have no impact on Recreational Areas or Protected Lands, but recreational (Hal Scott Regional Park & Preserve – Managed by St. Johns River Water Management District) and protected lands (Econlockhatchee River – Managed by Orange County are located adjacent to the project area. Additional coordination and permitting during Final Design are recommended.

Analysis of Impacts to Natural Resources

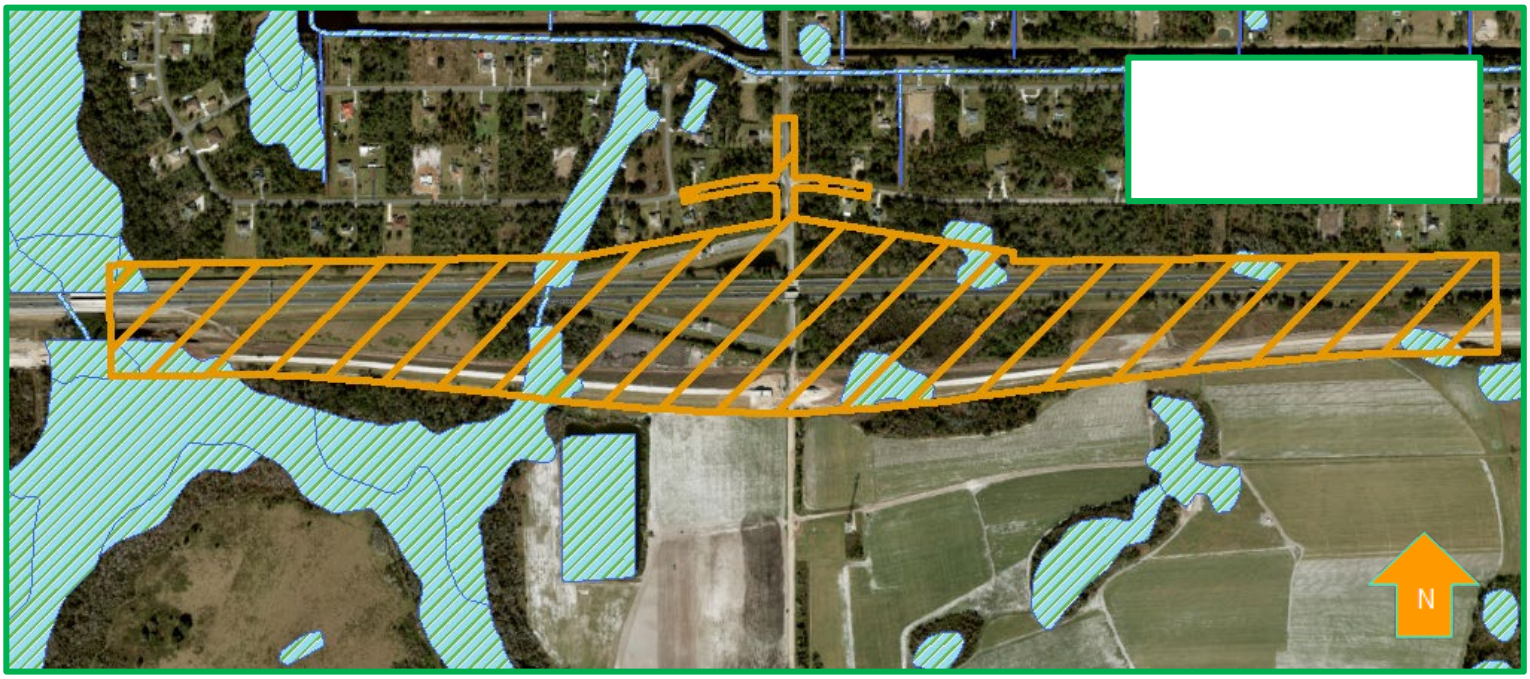
Analysis of Impacts to Natural Resources

A review was conducted of existing conditions related to natural resources for the project. Below is a summary of findings.

Wetlands and Other Surface Waters

An assessment of wetlands and surface waters was conducted within the project study area utilizing the National Wetland Inventory (NWI) data (see **Figure 6**). Three wetland types were identified to overlap with some portion of the project area: freshwater emergent wetland, freshwater forested/shrub wetland, and riverine wetland. The riverine wetlands near the western limits of the project area are part of the Econlockhatchee River System, which is designated as an Outstanding Florida Waters. Primary impacts to the wetlands and RPHZ would result from construction activities and in situ placement of structures and could be minimized using Best Management Practices (BMPs).

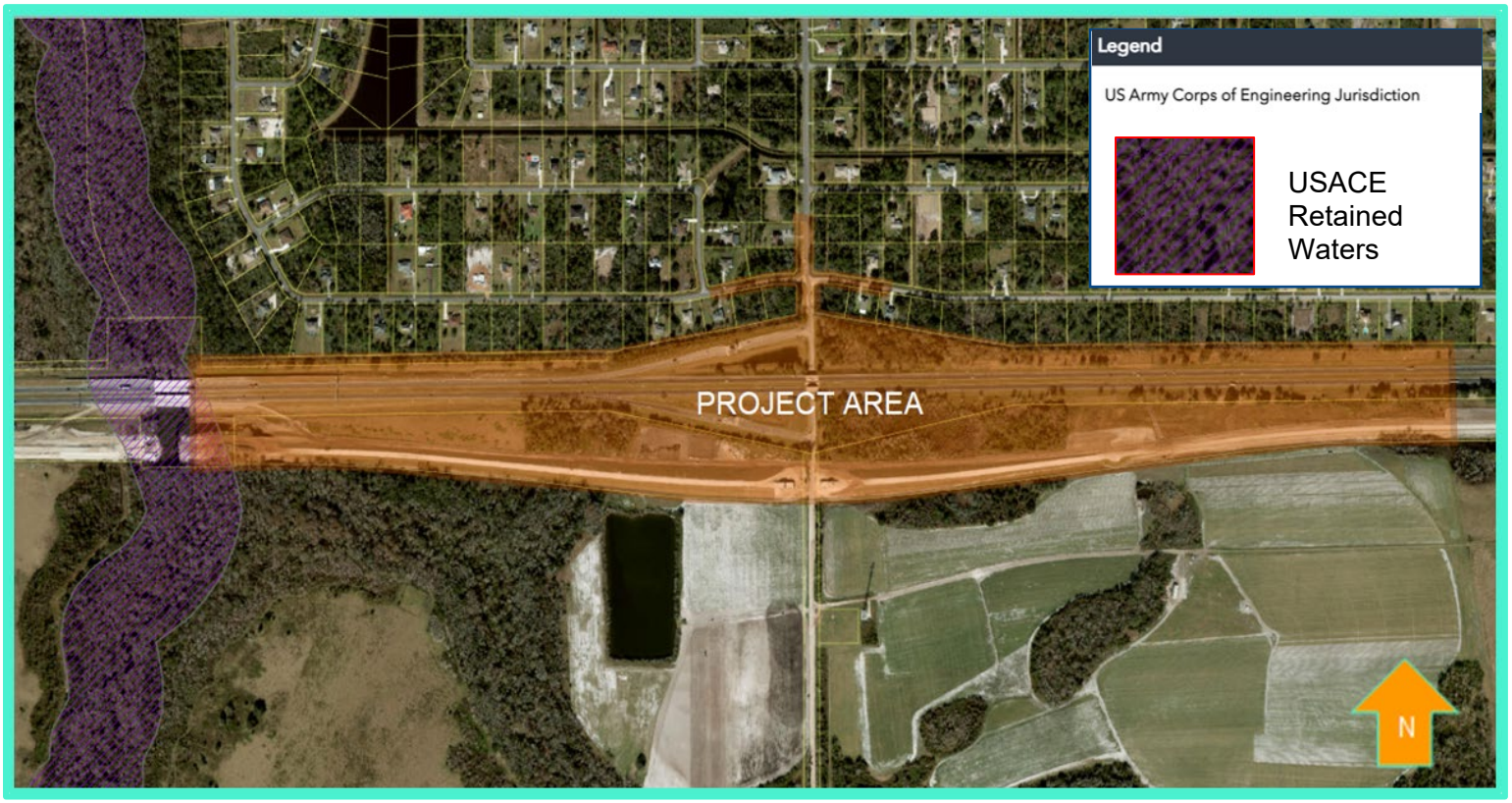
Figure 6: National Wetlands Inventory



Water Resources

The riverine wetlands near the western limits of the project area are part of the Econlockhatchee River System, which is designated as an Outstanding Florida Waters. Design of the project will ensure that coordination with and proper permitting through FDEP is performed. A review was conducted of existing conditions related to natural resources for the project. The project will meet all applicable SJRWMD criteria related to water quality. The project is currently a non-federal action receiving no federal monies; therefore, concurrence from the EPA is not required according to the Safe Drinking Water Act. Best Management Practices (BMPs) to control erosion, sediment release, and storm water runoff to minimize adverse impacts on surface water resources will be implemented during design, permitting and construction. Determination has been made that the USACE retained waters associated with the Econlockhatchee River at the western project area limits are within 300' of the project, therefore the Project will be subject to FDEP State 404 Program Permitting (**Figure 7**). The Level 1 PEIR (under separate cover) will have a comprehensive list of anticipated permits for the construction of a Preferred Alternative. A **Water Quality Impact Evaluation Checklist** is provided in **Appendix B**.

Figure 7 – USACE Retained Waters – 404 Permitting



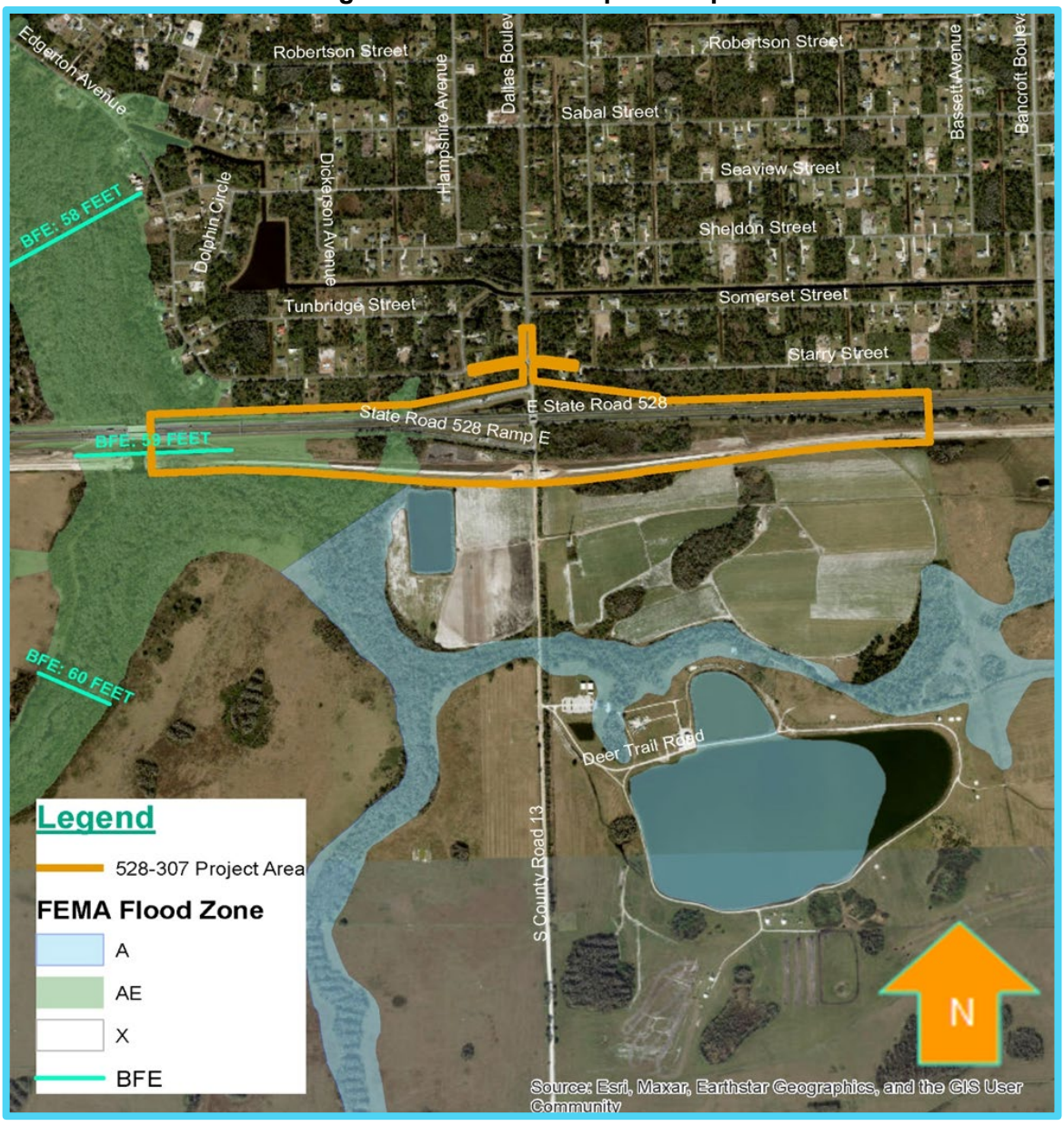
Wild and Scenic Rivers

The Econlockhatchee River is not designated as a Wild or Scenic River; therefore, the proposed project would have no impact on Wild and Scenic Rivers.

Floodplains

Approximately 27 acres of the ±145-acre project site (18.6%) are classified as being within the Federal Emergency Management Agency (FEMA) Flood Zone AE, within the Special Flood Hazard Areas, where an established Base Flood Elevation (BFE) has been determined (**Figure 8**). The remaining approximately 133 acres of the project site are classified as being within FEMA Flood Zone X, areas of minimal flood hazard. There is no FEMA Regulatory Floodway within the project study area (**Figure 8**).

Figure 8 – FEMA Floodplain Map



Coastal Barrier Resources

The proposed project would not be involved with coastal barrier resources and therefore would have no impact on Coastal Barrier Resources.

Protected Species and Habitat

A database review of potential species occurring within the project study area and immediate vicinity was conducted. Results of the database review are summarized below.

Based on a review of the U.S. Fish and Wildlife Service (USFWS) Critical Habitat Mapper, there is no USFWS designated critical habitat within the project study area. Areas identified by Florida Fish and Wildlife Conservation Commission (FWC) as Strategic Habitat Conservation Areas (SHCA) are located within the project study area. SHCA's are undeveloped natural areas identified by FWC as areas that could provide potential habitat to native plant and wildlife species and, therefore, may be considered for acquisition as conservation lands.

Based on Florida Natural Areas Inventory (FNAI) Biodiversity Matrix and USFWS IPaC (Information for Planning and Consultation) data, no listed plant or wildlife species have been documented in the project area.

Listed species with the potential to occur based on analysis using USFWS IPaC tool included Audubon's Crested Caracara (Polyborus plancusaudubonii), Eastern Black Rail (Laterallus jamaicensis), Everglade Snail Kite (Rostrhamus sociabilis plumbeus), Red-cockaded Woodpecker (Picoides borealis), Wood Stork (Mycteria Americana), and Eastern Indigo Snake (Drymarchon couperi). The project site lies within the Core Foraging Area (CFA) for Florida wood storks. There are no known wading bird rookeries or bald eagle nests within the project study area or within one (1) mile of the project site, based on spatial datasets from FWC.

Table 5 below lists species that may occur and their likelihood of occurrence. Likelihood of occurrence is based on potential habitat presence and documented occurrences of the species within various databases. A Low ranking indicates that suitable habitat is not likely within the proposed project site (based on USFWS habitat range spatial coverage) and the species has not been documented within one (1) mile of the proposed project site. A Moderate ranking indicates that either suitable habitat is within the proposed project site, or the species has been documented within 1 mile of the proposed project site. A High ranking indicates suitable habitat exists within the proposed project site and the species has been documented within 1 mile of the proposed project site.

Table 5: Listed Species with the Potential to Occur Within the Project Site

Common Name	Scientific Name	Status	Documented (<1 mile)	Habitat Present	Likelihood of Occurrence
Avian					
Audubon's Crested Caracara	*Polyborus plancus audubonii*	FT, ST	No	Yes	Moderate
American Kestrel	*Falco sparverius paulus*	ST	No	No	Low
Eastern Black Rail	*Laterallus jamaicensis*	FT, ST	No	Yes	Moderate
Everglade Snail Kite	*Rostrhamus sociabilis plumbeus*	FE, SE	No	Yes	Moderate
Florida Burrowing Owl	*Athene cunicularia*	ST	No	No	Low
Florida Sandhill Crane	*Grus canadensis*	ST	No	No	Moderate
Florida Scrub Jay	*Aphelocoma coerulescens*	FT	No	No	Moderate
Red-cockaded Woodpecker	*Picoides borealis*	FE, SE	No	Yes	Moderate
Wood Stork	*Mycteria americana*	FT, ST	No	Yes	Moderate
Reptilian					
Bluetail Mole Skink	*Eumeces egregius lividus*	FT, ST	No	No	Low
Eastern Indigo Snake	*Drymarchon couperi*	FT, ST	No	Yes	Moderate
Florida Pine Snake	*Pituophis melanoleucus mugitus*	ST	No	No	Low
Gopher Tortoise	*Gopherus polyphemus*	ST	No	No	Low
Sand Skink	*Neoseps reynoldsi*	FT, ST	No	No	Low
Short-tailed Snake	*Lampropeltis extenuate*	ST	No	No	Low
Striped Newt	*Notophthalmus perstriatus*	ST	No	No	Low

Legend:
FE - Federally Endangered; FT - Federally Threatened
SE - State Endangered; ST - State Threatened
Note: Coordination is not required with FWC for federally listed species

Federal Listed Fauna

Birds

Audubon's Crested Caracara (threatened)
Audubon's crested caracara (caracara) is listed as threatened by USFWS and FWC. This species has not been documented within one (1) mile of the project study area, but suitable habitat is located within the project limits. Therefore, it has been determined that the project will have a Moderate likelihood of occurrence for the species.

Eastern Black Rail (threatened)
The eastern black rail is listed as threatened by the USFWS. This species has not been documented within one (1) mile of the project study area, but suitable habitat is located within the project limits. Therefore, it has been determined that the project will have a Moderate likelihood of occurrence for the species.

Everglade Snail Kite (endangered)
The Everglade snail kite is listed as endangered by USFWS and FWC. The project limits are located within the USFWS consultation area for the snail kite; however, the species has not been documented within one (1) mile of the project limits. Suitable habitat is located within the project limits. Therefore, it has been determined that the project will have a Moderate likelihood of occurrence for the species.

Florid Scrub-Jay (threatened)
The Florida scrub-jay (scrub-jay) is listed as threatened by USFWS and FWC. The project limits are located within the USFWS consultation area for the scrub jay; however, the species has not been documented within one (1) mile of the project limits and suitable habitat is not located within the project limits. Therefore, it has been determined that the project will have a Low likelihood of occurrence with the species.

Red-Cockaded Woodpecker (endangered)
The red-cockaded woodpecker (RCW) is listed as endangered by USFWS and FWC. This species has not been documented within one (1) mile of the project study area, but suitable habitat is located within the project limits. Therefore, it has been determined that the project will have a Moderate likelihood of occurrence for the species.

Wood Stork (threatened)
The wood stork is listed as threatened by USFWS and FWC. No wood storks have been documented within one (1) mile of the project study area; however, there is suitable foraging habitat within the wetlands in the project study area and the project study area is within the core foraging area of the Lawne Lake and Eagle Nest Park nesting colonies. Therefore, it has been determined that the project will have a Moderate likelihood of occurrence for the species.

Reptiles

Bluetail Mole Skink & Sand Skink
The sand skink and bluetail mole skink are listed as threatened by USFWS and FWC. The project limits are located within the USFWS Consultation Area for sand skinks and contains suitable soils; however, no sand skinks have been documented within one (1) mile of the project site. Therefore, it has been determined that the project will have a Low likelihood of occurrence with these species.

Eastern Indigo Snake (threatened)
The eastern indigo snake is listed as threatened by USFWS and FWC. This species has not been documented within one (1) mile of the project study area, but suitable habitat is located within the project limits. Therefore, it has been determined that the project will have a Moderate likelihood of occurrence for the species.

State Listed Fauna

Birds

Southeastern American Kestrel (threatened)
The Southeastern American Kestrel is listed as threatened by the FWC According to FWC Potential Habitat map data, Southeastern American Kestrel potential habitat does not exist within one (1) mile of the project area and the species has not been documented within one (1) mile of the project site. Based on this information, it has been determined that the project will have a Low likelihood of occurrence with this species.

Florida Burrowing Owl (threatened)
The Florida Burrowing Owl is listed as threatened by the FWC. This species has not been documented within one (1) mile of the project study area, and suitable habitat is not located within the project limits. Therefore, it has been determined that the project will have a Low likelihood of occurrence for the species.

Florida Sandhill Crane (threatened)
The Florida sandhill crane is listed as threatened by the FWC. This species has not been documented within one (1) mile of the project study area, and suitable habitat is not located within the project limits. Therefore, it has been determined that the project will have a Low likelihood of occurrence for the species.

Reptiles

Florida Pine Snake (threatened)
The Florida Pine Snake is listed as threatened by the FWC. This species has not been documented within one (1) mile of the project study area, and suitable habitat is not located within the project limits. Therefore, it has been determined that the project will have a Low likelihood of occurrence for the species.

Short-tailed Snake (threatened)
The Short-tailed Snake is listed as threatened by the FWC. This species has not been documented within one (1) mile of the project study area, and suitable habitat is not located within the project limits. Therefore, it has been determined that the project will have a Low likelihood of occurrence for the species.

Gopher Tortoise (threatened)
The gopher tortoise is listed as threatened by the FWC and is a candidate species for listing under the ESA by USFWS. Potential suitable habitat is not present within the project; however, no gopher tortoises have been documented within one (1) mile of the project limits. At the time of the site reviews, no gopher tortoise burrows were observed within or adjacent to the project limits. If gopher tortoises or burrows are found within the project limits, CFX will coordinate with the FWC to secure all permits needed to relocate the tortoises and associated commensal species prior to construction. With the implementation of these measures, it has been determined that this project will have a Low likelihood of occurrence for the species.

Non-Listed Species

Bald Eagle

The bald eagle is a large raptor with a distinctive white head and yellow bill. This species has been federally de-listed by the USFWS. However, it remains federally protected under the Bald and Golden Eagle Protection Act (BGEPA) in accordance with the 16 United States Code 668 and the Migratory Bird Treaty Act of 1918. In addition, the FWC has implemented a bald eagle management plan (FWC 2008). During design and permitting, CFX will survey the project area for eagle nests. If a nest is observed within 660 feet of the project limits, CFX will coordinate with the USFWS to secure all necessary permits.

Florida Black Bear

The Florida black bear was removed from the FWC list of state-threatened species in August 2012; however, the Florida black bear remains protected under other rules and regulations, primarily through the Florida Black Bear Conservation Rule 68A-4.009 (F.A.C.) and the FWC Florida Black Bear Management Plan. Based on these regulations, pursuing, hunting, molesting, capturing, killing, or attempting those actions, whether or not such actions result in possession of the bear is unlawful. In addition, Rule 68A-4.009, F.A.C., generally prohibits anyone from possessing, injuring, shooting, wounding, trapping, collecting, or selling bears or their parts or attempting to engage in such actions without prior authorization from FWC. Black Bear Management Units (BMU) have also been established based on the seven geographically distinct bear subpopulations in Florida. The project study area is located within the Central BMU. Based on a review of GIS databases, there are no black bear nuisance reports or road kills reported within one (1) mile of the project site.

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Analysis to Impacts to Physical Resources

PHYSICAL ENVIRONMENT ANALYSIS

Highway Traffic Noise

A traffic noise analysis was performed in accordance with the FDOT PD&E Manual. A Traffic Noise Model was used to evaluate existing conditions, the No-Build Alternative and the Build Alternative Concepts for the Noise Sensitive Areas (NSAs) potentially impacted by traffic noise within 400 feet of the project corridor. While the various options meet acoustic criteria, Barriers WB-S1 and WB-S2 cannot meet the required FDOT and CFX cost reasonableness criteria. Consequently, WB-S1 and WB-S2 are not proposed for further consideration in the final design process. Based on the noise analyses performed to date, there are no feasible and reasonable solutions to mitigate the noise impacts at the locations.

The detailed **Traffic Noise Study Report** is attached (**Appendix C**).

Air Quality

As part of this project study, an air quality evaluation has been performed consistent with the FDOT PD&E Manual, Part 2, Chapter 19. Based on this initial evaluation, a detailed Air Quality analysis is not needed because the project does not meet the two qualifying criteria per Section 19.2.2.1, Part 2, Chapter 19 of the PD&E Manual. It does not require an Environmental Impact Statement, and it is not expected to have community impact regarding air quality.

This project is not expected to create adverse impacts on air quality because the project area is in attainment for all National Ambient Air Quality Standards (NAAQS) and because the project is expected to improve the Level of Service (LOS) and not change delay and congestion on all facilities within the study area.

Construction activities may cause short-term air quality impacts in the form of dust from earthwork and unpaved roads. These impacts will be minimized by adherence to applicable state regulations and to applicable FDOT Standard Specifications for Road and Bridge Construction. An **Air Quality Technical Memorandum** is attached (**Appendix D**)

Contamination Screening

A Contamination Screening Evaluation was prepared per the project scope as a part of the Evaluation of Physical Resources. The **Contamination Screening Evaluation Technical Memorandum (Appendix E)** includes a site figure indicating the location of potential contamination sites, brief summaries of the most recent assessment information available through Map Direct, and recommendations on necessity for additional evaluation.

Construction

Construction activities may cause short-term air quality impacts in the form of dust from earthwork and unpaved roads. These impacts will be minimized by adherence to applicable state regulations and to applicable FDOT Standard Specifications for Road and Bridge Construction.

Based on the existing land use within the limits of this project, construction of the proposed

roadway improvements will not have any noise or vibration impact. 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, CFX and the Contractor will investigate additional methods of controlling these impacts. Further, construction will likely temporarily impact existing traffic patterns, but as with all construction impacts, will be temporary in nature and efforts will be made to minimize negative impacts by adhering to applicable state regulations and to applicable FDOT Standard Specifications for Road and Bridge Construction.

Bicycles & Pedestrians

Both of the alternatives being considered will provide bicycle and pedestrian connection on the newly designed Dallas Blvd to provide connectivity in future buildout conditions from the Wedgefield area to the undeveloped area to the south for future development. Dallas Blvd has an entrance to the Hal Scott Regional Preserve and Park, and has a narrow bike lane/shared-use path alongside the north and southbound lanes, which would provide non-vehicular access to this cultural facility and connect to trails to the north. Additionally, the Wedgefield area has the Wedgefield Golf Club, Wedgefield Elementary School and Wedgefield Park. The sidewalk facilities throughout the Wedgefield area are limited only to Bancroft Blvd and the most northern portions of the Wedgefield neighborhood.

The MetroPlan Orlando Metropolitan Transportation Plan does not identify any 2045 Needs within the Project area or the Wedgefield area.

Appendix A – Cultural Resources Memorandum

MEMO

To: Greg Seidel, Balmoral; Bronce Stephenson, Balmoral

From: Jessica Fish, SEARCH

CC: Central Florida Expressway

Date: 3/22/2023

Re: SR 528/Dallas Boulevard Interchange (CFX Project # 528-307)

On March 21, 2023, SEARCH reviewed concept plans for the proposed interchange at State Road (SR) 528 and Dallas Boulevard (**Figure 1**). The purpose of this review was to identify any previously recorded cultural resources within the project area. The study area was defined as the parcels where the proposed interchange work will occur (the potential construction area) in addition to a 152-meter (500-foot) buffer to address any potential viewshed effects to historic resources (see **Figure 1**). This document is for information purposes only and does not satisfy requirements under the National Environmental Policy Act or Section 106 of the National Historic Preservation Act.

Review of the Florida Master Site File (FMSF) database indicates that two historic bridges (8OR10053 and 8OR10055) are located within the study area (see **Figure 1**). Neither bridge has been evaluated by the State Historic Preservation Office (SHPO) for eligibility on the National Register of Historic Places (NRHP). Both were constructed in 1967 and are girder-floorbeam bridges. The nearest archaeological sites are two precontact archaeological sites (8OR02192 and 8OR03127), which are located less than 500 meters (1,640 feet) south of the study area near Little Creek. Site 8OR02192 has been recommended potentially eligible for the NRHP by the SHPO, while 8OR03127 has been recommended ineligible.

Review of the FMSF database indicates that the current study area has been partially surveyed by prior studies that meet the current Module Three standards for cultural resource surveys (**Table 1**). Typically, portions of the study area that have been subjected previously to Module Three-compliant survey will not need additional archaeological survey, but they may need an updated architectural history survey. Given that some of the project corridor has not yet been surveyed for cultural resources and the presence of nearby NRHP-eligible resources, SEARCH recommends a Phase I cultural resource assessment survey for this project.

Table 1. Cultural Resource Surveys Conducted within the Study Area.

FMSF No.	Title	Year	Consultant
2420	*Cultural Resource Assessment Survey of the Proposed Magnolia Ranch Development Site, Orange County, Florida*	1990	Austin, Robert J. and Howard F. Hansen
20495	*Cultural Resource Assessment report for the All Aboard Florida Passenger Rail Project from Orlando to West Palm Beach*	2013	Janus Research

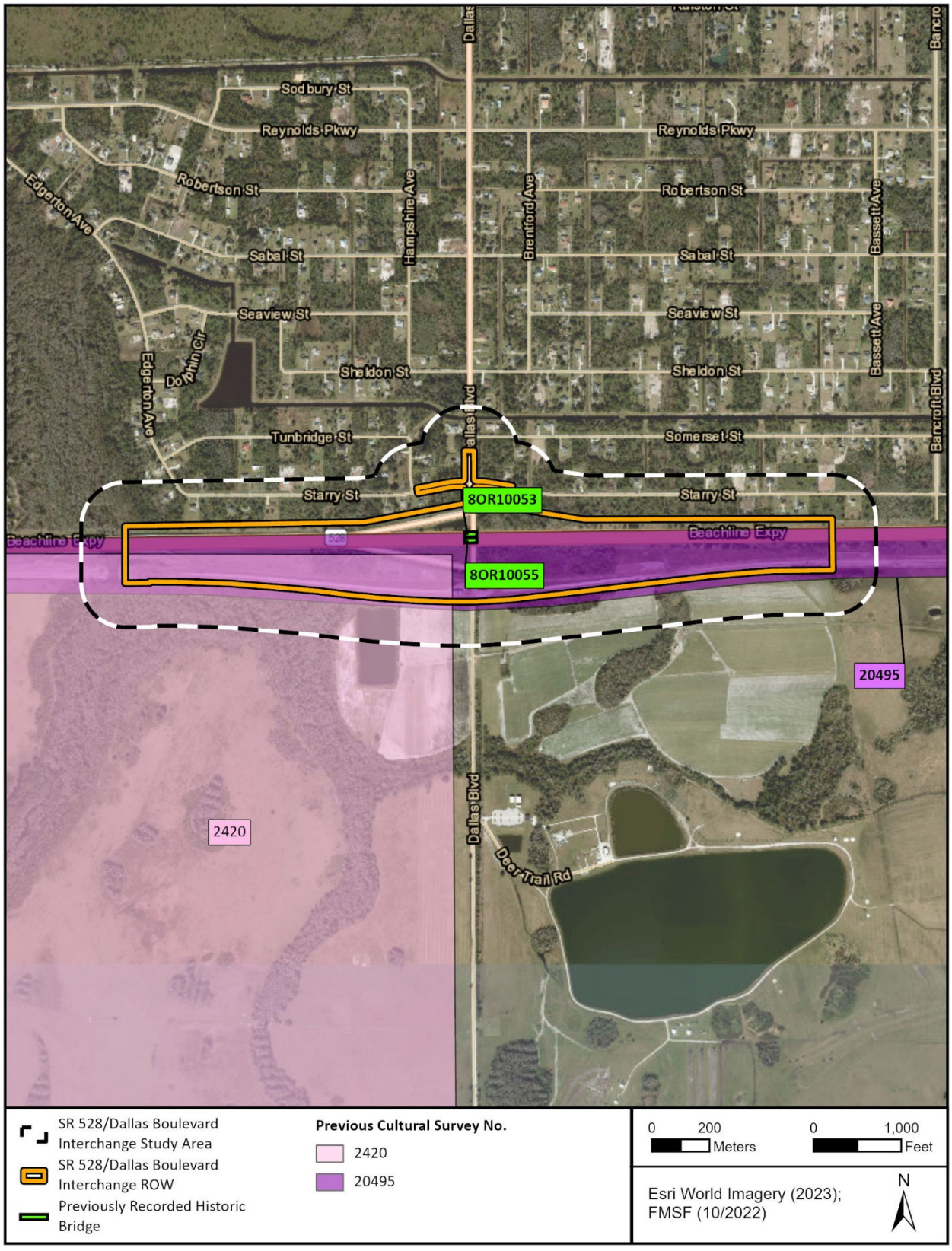

Figure 1. Previously recorded resources and surveys within the SR 528/Dallas Boulevard Interchange Study Area.

Appendix B – Water Quality Impact Evaluation (WQIE) Checklist

WATER QUALITY IMPACT EVALUATION CHECKLIST

PART 1: PROJECT INFORMATION

Project Name:	CFX Project 528-307
County:	Orange
FM Number:	
Federal Aid Project No:	
Brief Project Description:	State Road (SR) 528 & Dallas Blvd Interchange

PART 2: DETERMINATION OF WQIE SCOPE

Does project discharge to surface or ground water? ☒ Yes ☐ No

Does project alter the drainage system? ☐ Yes ☒ No

Is the project located within a permitted MS4? ☐ Yes ☒ No
Name: _____

If the answers to the questions above are no, complete the applicable sections of Part 3 and 4, and then check Box A in Part 5.

PART 3: PROJECT BASIN AND RECEIVING WATER CHARACTERISTICS

Surface Water
Receiving water names: Econlockhatchee River

Water Management District: St. Johns River Water Management District

Environmental Look Around meeting date: Click here to enter a date.
Attach meeting minutes/notes to the checklist.

Water Control District Name(s) (list all that apply): N/A

Groundwater
Sole Source Aquifer (SSA)? ☐ Yes ☒ No
Name _____
If yes, complete Part 5, D and complete SSA Checklist shown in Part 2, Chapter 11 of the PD&E Manual

Other Aquifer? ☐ Yes ☒ No
Name _____

Springs vents? ☐ Yes ☒ No
Name _____

Well head protection area? ☐ Yes ☒ No
Name _____
Groundwater recharge? ☐ Yes ☒ No

Name _____

Notify District Drainage Engineer if karst conditions are expected or if a higher level of treatment may be needed due to a project being located within a WBID verified as Impaired in accordance with Chapter 62-303, F.A.C.

Date of notification: Click here to enter a date.

PART 4: WATER QUALITY CRITERIA

List all WBIDs and all parameters for which a WBID has been verified impaired, or has a TMDL in **Table 1**. This information should be updated during each re-evaluation as required.

Note: If BMAP or RAP has been identified in **Table 1**, **Table 2** must also be completed.
*Attach notes or minutes from all coordination meetings identified in **Table 2**.*

EST recommendations confirmed with agencies? ☐ Yes ☒ No

BMAP Stakeholders contacted? ☐ Yes ☒ No
N/A

TMDL program contacted? ☐ Yes ☒ No

RAP Stakeholders contacted? ☐ Yes ☒ No
N/A

Regional water quality projects identified in the ELA? ☐ Yes ☒ No

If yes, describe:

Potential direct effects associated with project construction and/or operation identified? ☐ Yes ☒ No
If yes, describe:

Discuss any other relevant information related to water quality including Regulatory Agency Water Quality Requirements.

Project will meet all applicable SJRMWD criteria related to water quality. The project is currently non-federal action receiving no federal monies; therefore, conccurence from EPA is not required according to the Safe Drinking Water Act.

PART 5: WQIE DOCUMENTATION

☐ A. No involvement with water quality
☐ B. No water quality regulatory requirements apply.
☒ C. Water quality regulatory requirements apply to this project (provide Evaluator's information below). Water quality and stormwater issues will be mitigated through compliance with the design requirements of authorized regulatory agencies.
☐ D. EPA Ground/Drinking Water Branch review required. ☐ Yes ☐ No
Concurrence received? ☐ Yes ☐ No
If Yes, Date of EPA Concurrence: Click here to enter a date..
Attach the concurrence letter

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by CFX.

Evaluator Name (print): Gregory Seidel, P.E.	
Title: Chief Engineer	
Signature:	Date: July 6, 2023

Table 1: Water Quality Criteria

Receiving Waterbody Name (list all that apply)	FDEP Group Number / Name	WBID(s) Numbers	Classification (I,II,III,IIIL,IV,V)	Special Designations*	NNC limits**	Verified Impaired (Y/N)	TMDL (Y/N)	Pollutants of concern	BMAP, RA Plan or SSAC
Econlockhatchee River	Group 2/ Middle St. Johns	2991, 3052, 3054	IIIF	OFW	N/A	Yes	Yes	Bacteria	No

*** ONRW, OFW, Aquatic Preserve, Wild and Scenic River, Special Water, SWIM Area, Local Comp Plan, MS4 Area, Other**
**** Lakes, Spring vents, Streams, Estuaries**
Note: If BMAP or RAP has been identified in Table 1, Table 2 must also be completed.

Table 2: REGULATORY Agencies/Stakeholders Contacted

Receiving Water Name (list all that apply)	Contact and Title	Date Contacted	Follow-up Required (Y/N)	Comments

../../../PPMTimeline/AllItems.aspx

Appendix C – Traffic Noise Study Report

Traffic Noise Study Report

State Road (SR) 528 at Dallas Boulevard

Project Development and Environment (PD&E) Study
Orange County, Florida
CFX Project No: 528-307

Prepared For:
Central Florida Expressway Authority

Prepared By:
Environmental Transportation Planning, LLC
Ponte Vedra Beach, FL

In Association With:
Dewberry Engineers, Inc.
Orlando, FL

May 2023

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1.0 INTRODUCTION

CFX is conducting a Project Development and Environment (PD&E) Study of the State Road (SR) 528 (Martin B. Anderson Beachline Expressway) & Dallas Boulevard interchange.

Currently, the Dallas Boulevard interchange (Exit 24) is a half interchange consisting of a westbound on-ramp and an eastbound off-ramp. Completing a full interchange by adding a westbound off-ramp and eastbound on-ramp has been identified as a need to provide enhanced access and mobility to the Wedgefield community and eastern Orange County. Currently, residents within Wedgefield must travel north in the subdivision to access SR 520 and then south to access SR 528 in the eastbound direction, a distance ranging from approximately seven to thirteen miles, and vice versa when traveling westbound on SR 528. Therefore, this PD&E Study will analyze and evaluate the completion of the Dallas Boulevard interchange by adding a westbound off-ramp and eastbound on-ramp. The project study area is illustrated in **Figure 1.**

The general objective of the PD&E Study is to provide documented information necessary for CFX to decide on the type, design, and location of the proposed improvement within the project limits.

The goals of the project include:

- Identify a Preferred Alternative design concept that is consistent with the current and future goals of CFX.
- Complete a full interchange for SR 528 at Dallas Boulevard.
- Enhance mobility for the area's design concept that is consistent with the current and future development.
- Ensure that conceptual designs accommodate current and future capacity improvements.
- Provide consistency with local plans and policies.
- Promote regional connectivity.

1.1 Build Alternative

The PD&E is evaluating two potential Build Alternatives. Alternative 1 includes a roundabout intersection for Dallas Boulevard, while Alternative 2 involves a signalized intersection on the south side of SR 528. Both alternatives include shifting the SR 528 mainline to the south and the expansion of SR 528 to six lanes through the interchange. The alternative typical sections and

layouts are illustrated in **Appendices A**, **D, and E**. Additional engineering detail can be found in the project's associated engineering documentation.

1.2 No-Build Alternative

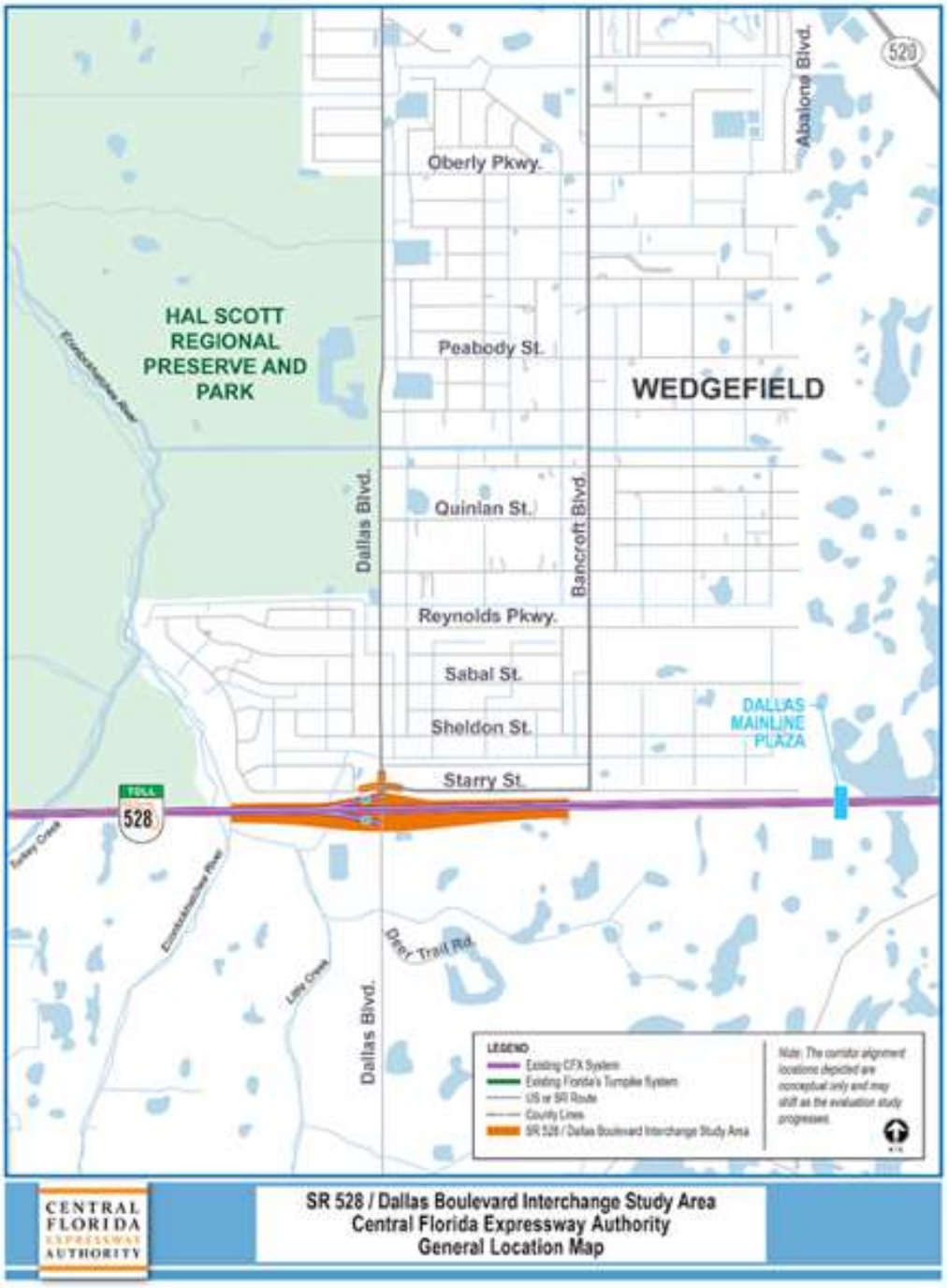
Consistent with Florida Department of Transportation (FDOT) guidelines, this analysis also considers an alternative that assesses what would happen to the environment in the future if this proposed project was not built. This Alternative, the No-Build Alternative, consists of the existing roadways within the study area, programmed improvements to existing facilities, and routine maintenance improvements. While the No-Build Alternative does not meet project needs, it provides a baseline condition to compare and measure the proposed project's effects.

1.3 Study Objective

This report summarizes the traffic noise analysis conducted for CFX Project #528-307. The analysis identifies the noise sensitive receptors within the study corridor, evaluates the noise levels predicted to occur due to the proposed project, and analyzes potential abatement options where noise impacts are predicted.

Sites not specifically identified in **Appendices D and E** are 1) not within the project limits or 2) are located too far from the roadway to be considered noise sensitive.

Figure 1: Project Location Map



2.0 METHODOLOGY

The traffic noise study conducted for this project is consistent with *Code of Federal Regulations* (C.F.R.), Title 23, § 772; Chapter 335, Section 335.17, *Florida Statutes*; Part II, Chapter 18 of the Florida Department of Transportation's (FDOT) *Project Development and Environment Manual*; and Federal Highway Administration's (FHWA) traffic noise analysis guidelines contained in *FHWA-HEP-10-025*. The FHWA Traffic Noise Model (TNM) - version 2.5 was used to predict traffic noise levels for this project. The analysis evaluated noise levels for the 2022 existing condition and the 2050 Design Year No-Build and Build Alternatives.

Noise receptor coordinates used in the TNM are located in exterior areas where frequent human use may occur, usually at the edge of the residential structure closest to the project roadways, unless the analyst's professional judgment determines otherwise.

Project engineering design files were used to determine the design alternative's location for input into TNM. Roadway elevation data for the study was obtained from the project engineering team. Data for the noise receptors and cross streets were obtained from the United States Geological Survey digital elevation models[1].

2.1 NOISE METRICS

Sound levels for this analysis are expressed in decibels (dB) using an "A"-scale weighting expressed as dB(A). This scale most closely approximates the response characteristics of the human ear to typical traffic sound levels. All reported sound levels are hourly equivalent noise levels [L_{eq}]. The L_{eq} is defined as the equivalent steady-state sound level that, in a given hourly period, contains the same acoustic energy as the time-varying sound level for the same hourly period.

2.2 TRAFFIC DATA

Traffic noise is heavily dependent on traffic volume and speed, with the amount of noise generated by traffic increasing as the vehicle speed and number of vehicles increase. Characteristics contributing to the 2050 Design Year's highest traffic noise levels were used to predict project noise levels. Worst-case noise conditions occur with the maximum traffic traveling at the posted speed and represent a Level of Service (LOS) C operating condition. However, if the traffic analysis indicates the roadway will operate below LOS C, the project's demand peak-hour directional traffic volumes are used per Chapter 18 of the FDOT PD&E Manual. Traffic volumes and speeds used in the analysis are included in **Appendix B**.

[1] USGS, https://apps.nationalmap.gov/lidar-explorer/#/

2.3 NOISE ABATEMENT CRITERIA

Land use plays an important role in traffic noise analyses. To determine which land uses are "noise sensitive," this noise impact analysis used the FHWA Noise Abatement Criteria (NAC). **Table 1** shows these criteria are divided into individual land use activity categories. The FDOT has established noise levels at which noise abatement must be considered for each category, referred to in this report as the FDOT NAC. Another criterion for determining project impacts warrant abatement consideration occurs when project noise levels are below the NAC but show a substantial increase (15.0 dB(A) or more) over existing levels.

Table 1: Noise Abatement Criteria

Hourly A-Weighted Sound Level-decibels (dB(A))				Description of Activity Category
Activity Category	Activity Leq(h) [1]		Evaluation Location	
	FHWA	FDOT		
A	57.0	56.0	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]	67.0	66.0	Exterior	Residential.
C[2]	67.0	66.0	Exterior	Active sports areas, amphitheaters, auditoriums, campgrounds, cemeteries, daycare centers, hospitals, libraries, medical facilities, parks, picnic areas, golf courses, places of worship, playgrounds, public meeting rooms, public/nonprofit institutional structures, radio studios, recording studios, recreational areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52.0	51.0	Interior	Auditoriums, daycare centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public/nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E[2]	72.0	71.0	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.

An illustration of typical exterior and interior noises and their corresponding sound level is presented in **Table 2**. This table gives the reader a better understanding of the noise levels discussed herein. In Florida, noise levels that reach 66.0 dB(A) at Activity Category B and C land use require noise abatement consideration. A 71.0 dB(A) noise level is required for an Activity Category E land use to be impacted by traffic noise.

Table 2: Comparative Sound Levels

Common Outdoor Activity	dB(A)	Inside Activity
Jet Flyover at 1,000 ft. Gas Lawn Mower at 3 ft.	--110-- --100--	Rock Band
Diesel Truck at 50 ft. (at50 mph) Busy Urban Area Daytime	--90-- --80--	Food Blender at 3 ft. Garbage Disposal at 3 ft.
Gas Mower at 100 ft. Commercial Area Heavy Traffic at 300 ft.	--70-- --60--	Vacuum Cleaner at 10 ft. Normal Speech at 3 ft. Large Business Office
Quiet Urban Daytime Quiet Urban Nighttime Quiet Suburban Nighttime	--50-- --40--	Dishwasher Next Room Theater, Large Conference Room (Background)
Quiet Rural Nighttime	--30-- --20--	Library Bedroom at Night
Lowest Threshold of Human Hearing	--10-- --0--	Lowest Threshold of Human Hearing
Source: *California Dept. of Transportation Technical Noise Supplement, Oct. 1998, Pg. 18*		

2.4 Noise Abatement Measures

When traffic noise impacts are identified, noise abatement must be considered. The potential abatement alternatives include traffic management techniques, alternative roadway alignments, buffer zones, and noise barriers. The most common type of noise abatement measure is the

construction of a noise barrier that reduces traffic noise by blocking the sound path between the roadway and the adjacent noise receptor.

Consistent with the FDOT PD&E Manual – Chapter 18, the following factors must be evaluated to determine if a noise barrier is considered feasible and reasonable:

- The barrier must reduce traffic-related noise levels by at least 5.0 dB(A) for at least two impacted receptors to be considered acoustically feasible. Receptors that receive the 5.0 dB(A) reduction, or higher, are defined as "benefited" by FDOT. Consequently, noise barriers are not evaluated for isolated and single receptors.
- To be considered acoustically reasonable, the noise barrier must achieve the FDOT noise reduction design goal of 7.0 dB(A) for at least one benefited receptor.
- The cost per benefited receptor (CBPR) is calculated by multiplying the barrier's total square footage by $30. Per Chapter 18, $30 per/ft^2 is the statewide average used to determine cost reasonableness regardless of barrier type (shoulder/traffic railing mounted, right-of-way post/panel, etc.) To be considered cost reasonable, a barrier that meets all acoustical criteria should not exceed $42,000 per benefited receptor.

In some locations, noise barriers may provide a benefit to non-impacted residences. Due to design considerations or aesthetics, CFX may propose noise barriers exceeding cost reasonableness limits. An example would be extending a noise barrier to maintain community continuity (i.e., avoiding terminating a noise barrier in the middle of a community).

Consistent with the FDOT Design Manual, Section 264[2], noise barrier heights are limited as follows:

- Noise barriers on bridge and retaining wall structures are limited to a maximum height of 8 feet; unless otherwise specified;
- Shoulder-mounted noise barriers at the edge of shoulder pavement are limited to a maximum height of 14 feet; and
- Non-shoulder mounted noise barriers (i.e., post and panel) outside the clear recovery zone are limited to a maximum height of 22 feet. If a non-shoulder barrier is placed within the clear recovery zone, it must be shielded.

Other factors must also be considered when evaluating a barrier's feasibility, including accessibility, sight distance, and aesthetics. Accessibility refers to the ingress and egress to properties that would be affected by constructing a noise barrier. Sight distance is a safety issue

[2] FDOT, *FDOT Design Manual*

related to drivers' ability to see far enough in each direction to enter the roadway safely. Aesthetics refers to the noise barrier's physical appearance from the highway and affected property.

3.0 TRAFFIC NOISE ANALYSIS

3.1 Identification of Noise Sensitive Sites

Using **Table 1** as a guide, the noise sensitive land uses analyzed within the study corridor fall under Activity Category B [residential].

No land uses in the study corridor warrant an Activity Category A, C, D, or E analysis. A search of building permits for potentially noise sensitive Category G (undeveloped) and non-noise-sensitive Category F lands within the study area did not identify any active permits for future buildings that would be considered noise sensitive. Another search will be conducted during the final design process. Any noise sensitive land permitted between the time of this report and the approval of the Project Environmental Impact Report will be analyzed for project noise impacts during the final design process if warranted.

3.2 Model Validation

Existing noise levels are measured in the project corridor to confirm if traffic is the primary noise source. These field measurements are also required to verify the accuracy of the TNM before it can be used to predict noise levels. Three 10-minute measurements were taken on February 28, 2023, using an Extech Instruments Model 407780 Type 2 Integrating Sound Level Meter. The sound level meter, calibrated at 114.0 dB(A) with an Extech Instruments Model 407766 calibrator, was adjusted to the A-weighted frequency scale, which approximates the frequency sensitivity of the human ear. Traffic data, including vehicle volumes, speeds by type, and meteorological conditions, were recorded during each measurement session. The data collection effort also recorded the travel speed for each type of vehicle using a Bushnell Speedster handheld radar gun.

One location within the study corridor was selected to undergo a series of three 10-minute measurements. The validation site, illustrated in **Appendix D – Page D-1**, was selected for measurement because it presented a clear view of free-flow traffic conditions on SR 528. No unusual noise events occurred during this location's three 10-minute monitoring sessions. During the monitoring session, the weather was 85°, with 53% humidity, under clear skies with light breezes ranging from five to eight miles per hour.

Validation of TNM occurs when the model-predicted noise levels are within three decibels of the field-measured levels. Since all noise levels in this analysis are based on one hour, each of the 10-

minute sessions' field-recorded traffic volumes was adjusted upward by a factor of six to reflect hourly traffic flow. Once adjusted, these volumes were input into the noise prediction model. As shown in **Table 3**, TNM predicted within the 3.0-decibel acceptance range for each 10-minute session. Consequently, the model is acceptable for predicting noise levels for this project.

Table 3: Field Measurement Data and TNM Validation Results

FIELD TRAFFIC COUNT: 2/23/2023										
Session #1: 3:07 PM										
SR 528	**Cars**		**Medium Trucks**		**Heavy Trucks**		**Buses**		**Motorcycles**	
	Volume	**Avg. Speed**	**Volume**	**Avg. Speed**	**Volume**	**Avg. Speed**	**Volume**	**Avg. Speed**	**Volume**	**Avg. Speed**
EB	311	70	13	66	18	65	0	0	1	70
WB	264	70	26	66	32	65	0	0	0	0
Field Measurement (dB(A)):					73.7					
TNM Prediction (dB(A)):					76.5					
Variance:					2.8					
Session #2: 3:18 PM										
SR 528	**Cars**		**Medium Trucks**		**Heavy Trucks**		**Buses**		**Motorcycles**	
	Volume	**Avg. Speed**	**Volume**	**Avg. Speed**	**Volume**	**Avg. Speed**	**Volume**	**Avg. Speed**	**Volume**	**Avg. Speed**
EB	324	70	12	66	16	65	1	70	1	70
WB	272	70	24	66	26	65	1	0	1	70
Field Measurement (dB(A)):					73.6					
TNM Prediction (dB(A)):					76.4					
Variance:					2.8					
Session #3: 3:29 PM										
SR 528	**Cars**		**Medium Trucks**		**Heavy Trucks**		**Buses**		**Motorcycles**	
	Volume	**Avg. Speed**	**Volume**	**Avg. Speed**	**Volume**	**Avg. Speed**	**Volume**	**Avg. Speed**	**Volume**	**Avg. Speed**
EB	351	70	11	66	15	65	0	0	3	70
WB	310	70	22	66	28	65	0	0	0	0
Field Measurement (dB(A)):					74.1					
TNM Prediction (dB(A)):					76.7					
Variance:					2.6					

3.3 Predicted Noise Levels

Traffic on SR 528 is the dominant noise source within the project's evaluation area. For this project, 41 receptor sites, all Activity Category B, were analyzed for project-related impacts. The noise analysis divided the project corridor into two Noise Study Areas (NSA). The 2022 existing condition and 2050 No-Build and Build Alternatives noise analysis results discussed in this section are also detailed in **Appendix C.**

When discussing noise level increases, the general rule that applies to perception is:

- A 3 dB(A) increase is barely perceptible to most people.
- A 5 dB(A) increase is noticeable to most people.
- A 10 dB(A) increase is perceived as twice as loud and considered a doubling noise.

A discussion of each NSA and the corresponding impact and abatement analysis is provided in the following sections.

3.3.1 Noise Study Area 1

NSA 1 is north of SR 528 and west of Dallas Boulevard. There are no existing barriers within this section. Twenty single-family residences were included in the analysis and are represented by receptors 1-1 through 1-20. This NSA and its associated receptors are illustrated in **Appendix D - Pages D-1 and D2** and **Appendix E – Pages E-1 and E-2**.

Currently, the average noise level for all NSA 1 receptors is 59.0 dB(A), with the highest noise level being 64.5 dB(A) at receptor 1-8. No residences are currently affected by traffic noise. Receptor 1-8 is predicted to exceed the 66.0 dB(A) NAC under the No-Build Alternative.

The overall traffic noise levels increase by an average of 2.9 dB(A) for Alternative 1 and 4.3 dB(A) for Alternative 2. Under Alternative 1, receptor 1-4 has the highest build-related noise level, 65.5 dB(A), a 4.4 dB(A) increase over the existing condition. With Alternative 2, receptor 1-4 has the highest build-related noise level, 67.2 dB(A), a 6.1 dB(A) increase over the existing condition. None of these increases are considered substantial (defined as 15.0 dB(A) or higher).

No receptors are predicted to meet or exceed the NAC under Alternative 1. For Alternative 2, three residences, represented by receptors 1-2 thru 1-4, are predicted to exceed the NAC, therefore, they are deemed impacted. Noise abatement was considered for Alternative 2 to mitigate the three impacts, as summarized in **Section 3.4.1**.

3.3.2 Noise Study Area 2

NSA 2 is north of SR 528 and east of Dallas Boulevard. There are no existing barriers within this section. Twenty-one single-family residences were included in the analysis and are represented by receptors 2-1 through 2-20. This NSA and its associated receptors are illustrated in **Appendix D -Pages D-2 and D3** and **Appendix E – Pages E-2 and E-3**.

Currently, the average noise level for all NSA 2 receptors is 58.5 dB(A), with the highest noise level being 61.9 dB(A) at receptor 2-4. No residences are currently affected by traffic noise, nor are any predicted to be impacted under the No-Build Alternative.

The overall traffic noise levels increase by an average of 4.8 dB(A) for Alternative 1 and 6.0 dB(A) for Alternative 2. Under Alternative 1, receptor 2-7 has the highest build-related noise level, 67.7 dB(A), a 6.2 dB(A) increase over the existing condition. With Alternative 2, receptor 2-4 has the highest build-related noise level, 70.0 dB(A), an 8.1 dB(A) increase over the existing condition. None of these increases are considered substantial.Four receptors are predicted to meet or exceed the NAC under Alternative 1. For Alternative 2, seven sites, represented by receptors 2-3 thru 2-8, are predicted to meet or exceed the NAC. Noise abatement was considered for both Build Alternatives to mitigate these impacts, as summarized in **Section 3.4.2** and **Section 3.4.3**.

3.4 Barrier Analysis

Noise barriers were evaluated to mitigate the impacts resulting from proposed build alternatives.

3.4.1 Alternative 1: Noise Barrier WB-R1

Barrier WB-R1 illustrated in **Appendix D - Page D-3** was evaluated parallel to the westbound SR 528 to abate the predicted traffic noise impacts to receptors 2-4 thru 2-7 in NSA 2 as a result of the Alternative 1 Roundabout. One analysis scenario evaluated placing a barrier near the CFX right-of-way line, while the other evaluated placing a barrier along the mainline and ramp shoulder edge of pavement (EOP).

As shown in **Table 4**, the shoulder barrier option, at the maximum allowed height of 14 feet, benefits (e.g., provides at least a 5 dB(A) reduction) seven homes (four impacted and three non-impacted) and meets the 7.0 dB(A) Noise Reduction Design Goal (NRDG). However, with a Cost Per Benefited Receptor (CPBR) calculated at $137,460, the barrier far exceeds the FDOT and CFX cost reasonableness criteria of $42,000 per benefited receptor. The ROW barrier options, ranging in height from 16 feet to the maximum allowed height of 22 feet, meet all acoustic criteria and benefit seven homes—still, the respective CPBRs are also substantially higher than the cost reasonableness criteria.

Barrier WB-R1 is not deemed reasonable per FDOT and CFX criteria; thus, it has been removed from further consideration.

Table 4: Noise Barrier WB-R1 Evaluation Summary

NSA 2: Barrier WB-R1 Evaluation Summary															
Evaluated Barrier Options				Number of Impacted Residential Sites	Number of Impacted Sites Within a Noise Reduction Range			Number of Benefited Sites [*1]				Total Estimated Cost [*4]	Cost per Benefited Receptor [*5]	Recommended for further consideration in final design?
Option	Barrier Type/Location	Height (feet)[*6]	Length (feet)		5-5.9 dB(A)	6-6.9 dB(A)	≥ 7.0 dB(A) [*2]	Impacted	Other [*3]	Total	Avg. Reduction dB(A)			
1 *Illustrated*	Shoulder	14	2,291	4	0	1	3	4	3	7	6.5	$ 962,220	$ 137,460	No
2 *Illustrated*	ROW	22	1,889		0	0	4	4	3	7	7.3	$ 1,246,740	$ 178,106	No
3	ROW	20	1,909		0	0	4	4	3	7	6.9	$ 1,145,400	$ 163,629	No
4	ROW	18	1,978		0	0	4	4	3	7	6.5	$ 1,068,120	$ 152,589	No
5	ROW	16	2,137		0	3	1	4	3	7	6.2	$ 1,025,760	$ 146,537	No

*1 = Minimum of 5.0 dB(A) required to be considered benefited by noise barrier.
*2 = FDOT Noise Reduction Design Goal is 7.0 dB(A) at a minimum of 1 benefited receptor.
*3 = Refers to non-impacted noise-sensitive sites.
*4 = Based on FDOT Statewide average of $30 per square foot.
*5 = FDOT Reasonable Cost Guideline is $42,000.
*6 = 8-ft max on MSE/Bridge; 14-ft max on shoulder; 22-ft max at ROW or offset from shoulder.

3.4.2 Alternative 2: Noise Barrier WB-S1

Barrier WB-S1 illustrated in **Appendix E - Page E-1** was evaluated parallel to the westbound SR 528 to abate the predicted traffic noise impacts to receptors 1-2 thru 1-4 in NSA 1 as a result of Alternative 2. One scenario evaluated placing a barrier near the CFX right-of-way line, while the other evaluated placing a barrier along the mainline and ramp shoulder edge of pavement (EOP).

As shown in **Table 5**, the shoulder barrier options benefit the three homes at the maximum allowed height of 14 feet but cannot meet the 7.0 dB(A) NRDG. Additionally, the respective CPBRs far exceed the FDOT and CFX cost reasonableness criteria. The ROW barrier options ranging in height from 20 feet to 22 feet meet acoustic criteria, with the 22-foot options meeting the 7.0 dB(A)NRDG. However, as with the shoulder barrier options, all ROW barrier options are substantially higher than the cost reasonableness criteria.

Barrier WB-S1 is not deemed reasonable per FDOT and CFX criteria; thus, it has been removed from further consideration.

Table 5: Noise Barrier WB-S1 Evaluation Summary

NSA 1: Barrier WB-S1 Evaluation Summary															
Evaluated Barrier Options				Number of Impacted Residential Sites	Number of Impacted Sites Within a Noise Reduction Range			Number of Benefited Sites *1				Total Estimated Cost *4	Cost per Benefited Receptor *5	Recommended for further consideration in final design?
Option	Barrier Type/Location	Height (feet)*6	Length (feet)		5-5.9 dB(A)	6-6.9 dB(A)	≥ 7.0 dB(A) *2	Impacted	Other *3	Total	Avg. Reduction dB(A)			
1	Shoulder	14	2,176	3	2	1	0	3	0	3	5.7	$ 913,920	$ 304,640	No
2 Illustrated	Shoulder	14	1,100		3	0	0	3	0	3	5.3	$ 462,000	$ 154,000	No
3	ROW	22	1,480		1	1	1	3	1	4	6.3	$ 976,800	$ 244,200	No
4 Ilustrated	ROW	22	970		1	1	1	3	1	4	6.2	$ 640,200	$ 160,050	No
5	ROW	20	970		2	1	0	3	0	3	5.7	$ 582,000	$ 194,000	No

*1 = Minimum of 5.0 dB(A) required to be considered benefited by noise barrier.
*2 = FDOT Noise Reduction Design Goal is 7.0 dB(A) at a minimum of 1 benefited receptor.
*3 = Refers to non-impacted noise-sensitive sites.
*4 = Based on FDOT Statewide average of $30 per square foot.
*5 = FDOT Reasonable Cost Guideline is $42,000.
*6 = 8-ft max on MSE/Bridge; 14-ft max on shoulder; 22-ft max at ROW or offset from shoulder.

3.4.3 Alternative 2: Noise Barrier WB-S2

Barrier WB-S2 illustrated in **Appendix E - Page E-3** was evaluated parallel to the westbound SR 528 to abate the predicted traffic noise impacts to receptors 2-3 thru 2-8 in NSA 21 as a result of Alternative 2. One scenario evaluated placing a barrier near the CFX right-of-way line, while the other evaluated placing a barrier along the mainline and ramp shoulder edge of pavement (EOP).

As shown in **Table 6**, the 14-foot-tall shoulder barrier option only benefits six of the seven impacted homes and meets the 7.0 dB(A) NRDG. However, the CPBR far exceeds the FDOT and CFX cost reasonableness criteria. The ROW barrier options, ranging in height from 14 to 22 feet, all meet acoustic criteria. However, as with the shoulder option, all the ROW barrier options are substantially higher than the cost reasonableness criteria.

Barrier WB-S2 is not deemed reasonable per FDOT and CFX criteria; thus, it has been removed from further consideration.

Table 6: Noise Barrier WB-S2 Evaluation Summary

NSA 2: Barrier WB-S2 Evaluation Summary															
Evaluated Barrier Options				Number of Impacted Residential Sites	Number of Impacted Sites Within a Noise Reduction Range			Number of Benefited Sites *1				Total Estimated Cost *4	Cost per Benefited Receptor *5	Recommended for further consideration in final design?
Option	Barrier Type/Location	Height (feet)*6	Length (feet)		5-5.9 dB(A)	6-6.9 dB(A)	≥ 7.0 dB(A) *2	Impacted	Other *3	Total	Avg. Reduction dB(A)			
1 *Illustrated*	Shoulder	14	2,066	7	1	3	2	6	0	6	6.6	$ 867,720	$ 144,620	No
2	ROW	22	2,395		0	2	5	7	0	7	8.4	$ 1,580,700	$ 225,814	No
3	ROW	20	2,395		1	1	5	7	0	7	7.8	$ 1,437,000	$ 205,286	No
4 *Illustrated*	ROW	18	2,395		2	1	4	7	0	7	7.3	$ 1,293,300	$ 184,757	No
5	ROW	16	2,395		1	1	4	6	0	6	6.8	$ 1,149,600	$ 191,600	No
6	ROW	14	2,395		1	3	1	5	0	5	6.3	$ 1,005,900	$ 201,180	No

*1 = Minimum of 5.0 dB(A) required to be considered benefited by noise barrier.
*2 = FDOT Noise Reduction Design Goal is 7.0 dB(A) at a minimum of 1 benefited receptor.
*3 = Refers to non-impacted noise-sensitive sites.
*4 = Based on FDOT Statewide average of $30 per square foot.
*5 = FDOT Reasonable Cost Guideline is $42,000.
*6 = 8-ft max on MSE/Bridge; 14-ft max on shoulder; 22-ft max at ROW or offset from shoulder.

4.0 CONCLUSION

None of the 41 analyzed residential sites are currently affected by traffic noise. The noise levels associated with the 2050 No-Build Alternative are predicted to meet or exceed the 66.0 dB(A) NAC at one site.

Build Alternative 1 - Roundabout Intersection

The analysis concluded that the overall traffic noise levels would increase by an average of 3.9 dB(A), with the average project-related noise level predicted to be 62.6 dB(A). The Alternative 1 2050 design year noise levels are predicted to meet or exceed the applicable NAC at four sites. The greatest noise level is predicted to be 67.7 dB(A) in NSA 2. None of the increases are considered substantial (i.e., 15 dB(A) or more over existing levels).

As required, noise abatement consideration was given to all four impacted sites. Five noise barrier options were evaluated to abate the project-related impacts. While the various options meet acoustic criteria, Barrier WB-R1 cannot meet the required FDOT and CFX cost reasonableness criteria. Consequently, WB-R1 is not proposed for further consideration in the final design process.

Build Alternative 2 - Signalized Intersection

The analysis concluded that the overall traffic noise levels would increase by an average of 5.1 dB(A), with the average project-related noise level predicted to be 63.9 dB(A). The Alternative 2 2050 design year noise levels are predicted to meet or exceed the applicable NAC at ten sites, three in NSA 1 and seven in NSA 2. The greatest noise level is predicted to be 70.0 dB(A) in NSA 2. None of the increases are considered substantial.

As required, noise abatement consideration was given to all ten impacted sites. Five noise barrier options were evaluated to abate the project-related impacts in NSA 1, while six were evaluated for NSA 2. While the various options meet acoustic criteria, Barriers WB-S1 and WB-S2 cannot meet the required FDOT and CFX cost reasonableness criteria. Consequently, WB-S1 and WB-S2 are not proposed for further consideration in the final design process.

Based on the noise analyses performed to date, there are no feasible and reasonable solutions to mitigate the noise impacts at the locations identified in **Appendix C**.

5.0 CONSTRUCTION NOISE AND VIBRATION IMPACTS

Construction of the proposed roadway improvements is not expected to have significant vibration or construction noise impacts. Applying the FDOT Standard Specifications for Road and Bridge Construction is anticipated to minimize or eliminate most potential short-term noise and vibration impacts. Should any construction noise or vibration issues arise during construction, the Project Engineer, in concert with the CFX Noise Specialist and the Contractor, will investigate additional methods of controlling these impacts.

6.0 COMMUNITY COORDINATION

6.1 Noise Impact Contours

To aid in promoting land use compatibility, this report, which provides information that can be used to protect future land development from becoming incompatible with anticipated traffic noise levels, can be used by Orange County and officials. In addition, generalized noise impact contours for the build alternatives have been developed, identifying the distances between the project and the location where traffic noise levels may approach or exceed the NAC for Activity Categories A, B, C, and E. The contour distances provided in **Table 7** do not account for any reduction in noise levels that berms, privacy walls, or intervening structures may provide. These distances also do not account for any increase in noise levels caused by local roads not included in the modeling, variation in the noise path, increased roadway elevation, or increased elevation

of a noise sensitive site (e.g., second-floor patio). To minimize the potential for incompatible land use, future noise sensitive land uses should be located beyond these distances.

Table 7: Critical Distance Impact Contours

Impact Contours			
Activity Category *1	**Corresponding Noise Abatement Criterion**	**Approximate Distance to SR 528**[*2]	
		North of SR 528	**South of SR 528**
Category A	56 dB(A)	880 ft	1090 ft
Category B and C	66 dB(A)	265 ft	in row
Category E	71 dB(A)	in row	in row

*1 Activity Categories as defined in 23 CFR 772.
*2 Does not account for variation caused by topography, local roads, intervening structures, etc.

6.2 Public Meetings

CFX held a public meeting for this project on April 27, 2023. Any comments received during the public meeting comment period about the PD&E Study in general and those pertinent to the noise analysis are documented under separate cover.

7.0 REFERENCES

FHWA. *Code of Federal Regulations*, Title 23 Part 772, "Procedures for Abatement of Highway Traffic Noise and Construction Noise." July 13, 2010.

FHWA. *Highway Traffic Noise: Analysis and Abatement Guidance, FHWA-HEP-10-025.* December 2011.

FHWA. *Recommended Best Practices for the Use of the FHWA Traffic Noise Model (TNM*. December 8, 2015.

FDOT. A+ Plus Aerial Photo Look-Up System. 2022.

FDOT. *FDOT Design Manual*

FDOT. *Project Development and Environment Manual:* Part II, Chapter 18. Effective July 1, 2020.

FDOT. *Standard Specifications for Road and Bridge Construction*.

FDOT. *Traffic Noise Modeling and Analysis Practitioners Handbook*. December 2018.

Google Earth, @2022 Google. Imagery and elevation data.

Section 335.17, *Florida Statutes. State Highway Construction; Means of Noise Abatement.* 2012.

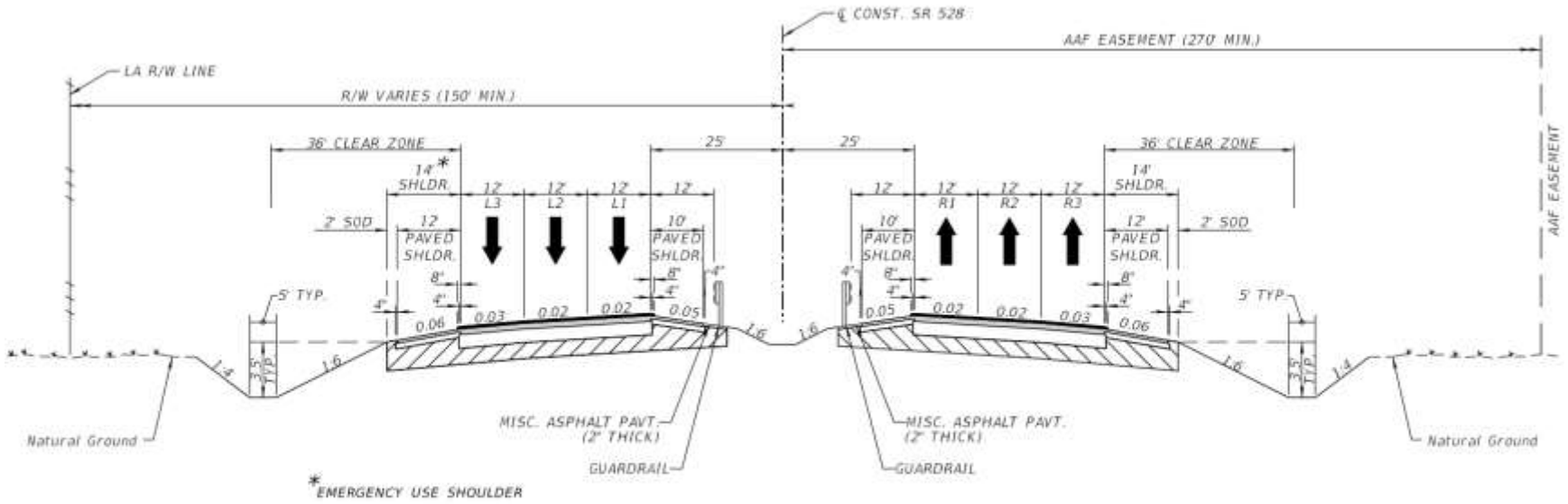
USGS. National Map 2022; https://apps.nationalmap.gov/lidar-explorer/#/.

Appendix A:

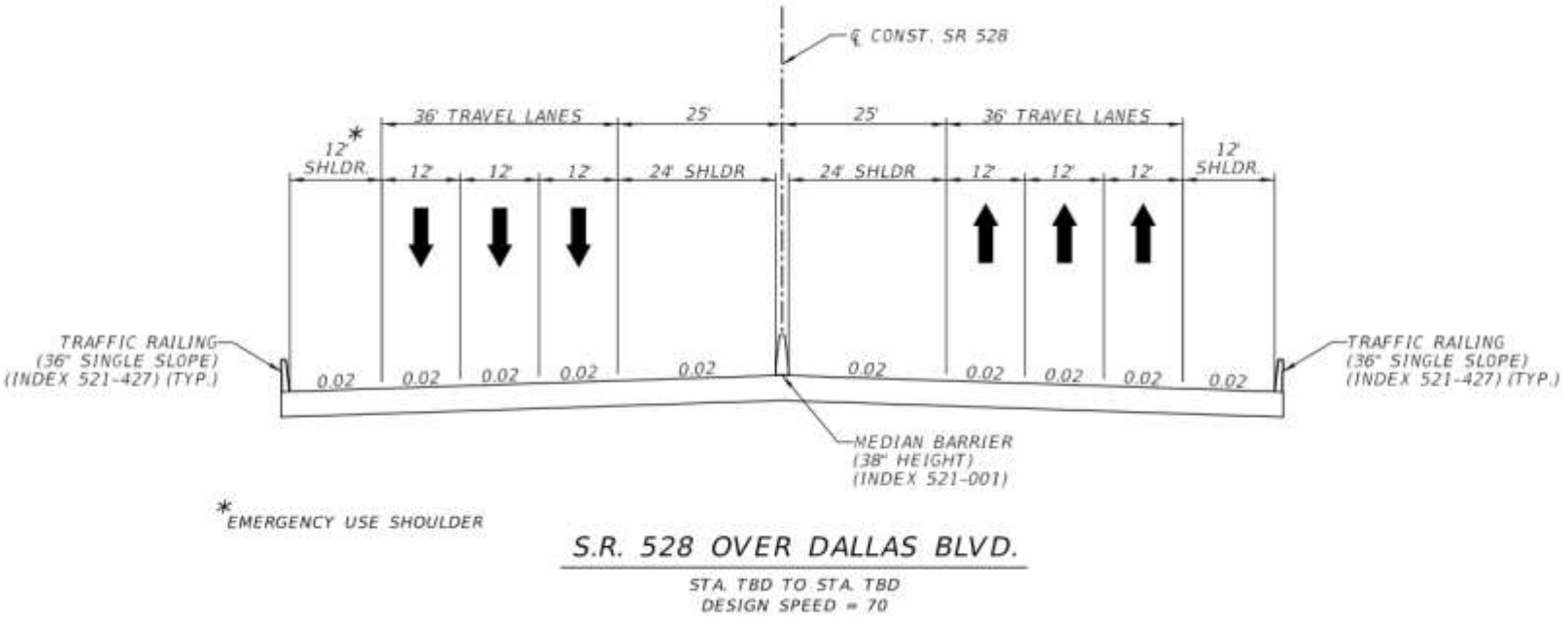
Typical Sections

Alternative 1 - Roundabout Intersection
Alternative 2 - Signalized Intersection

Alternative 1 - Roundabout Intersection

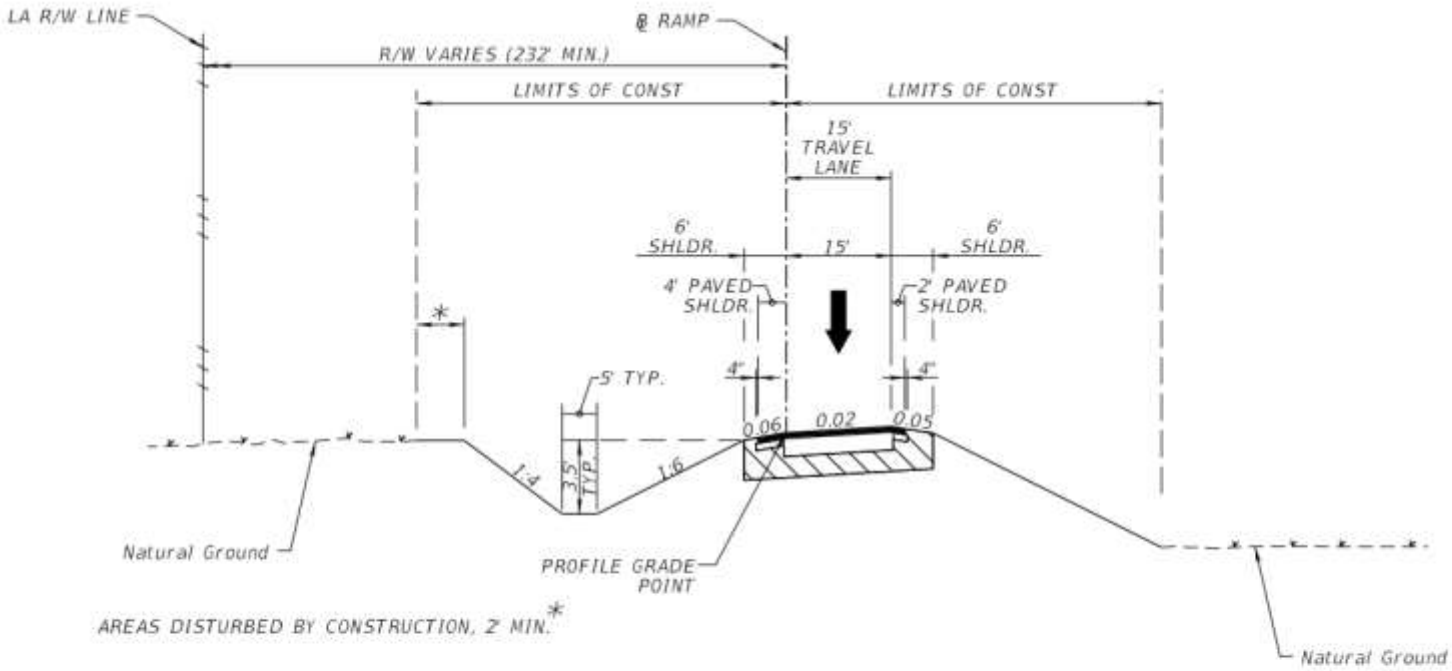


TYPICAL SECTION 1
SR 528 (BEACHLINE EXPRESSWAY)
STA. TBD TO STA. TBD
DESIGN SPEED = 70 MPH



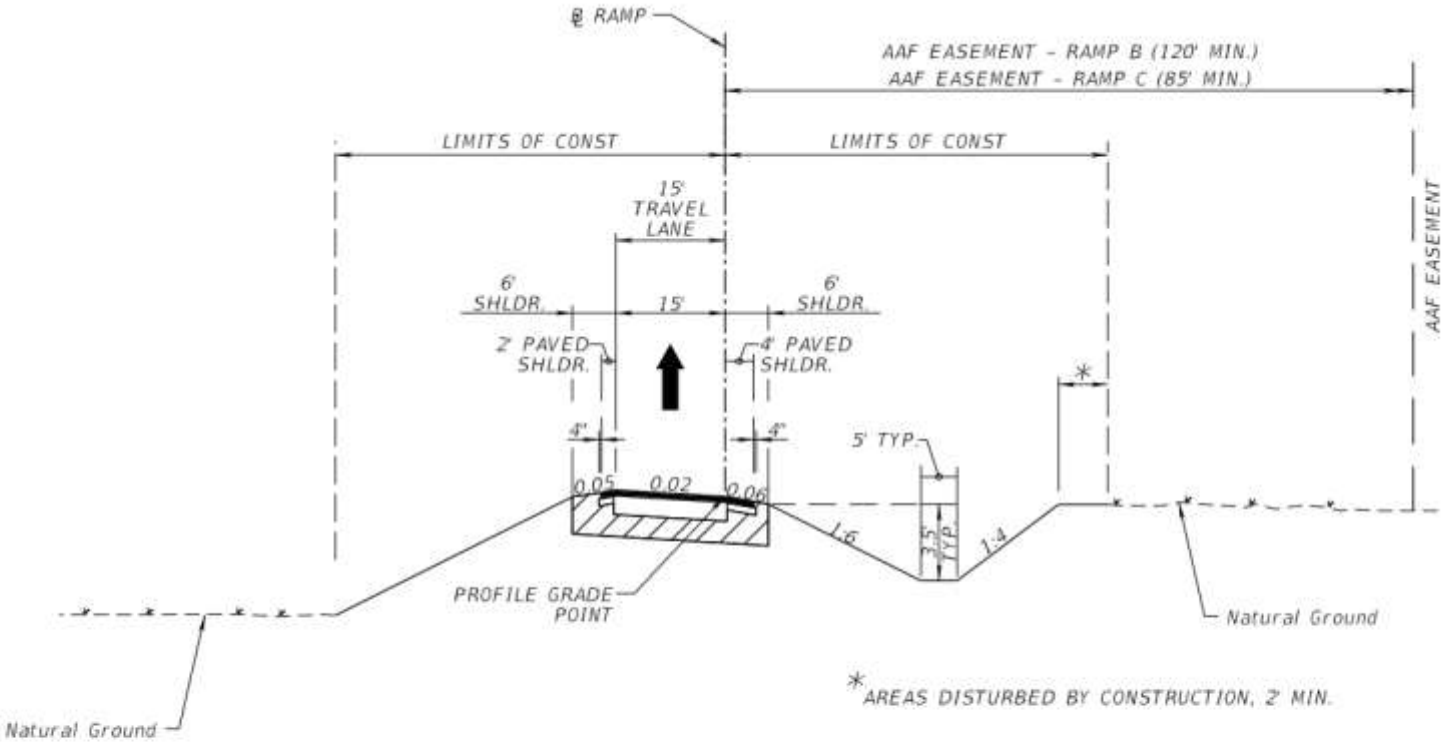
S.R. 528 OVER DALLAS BLVD.

STA. TBD TO STA. TBD
DESIGN SPEED = 70



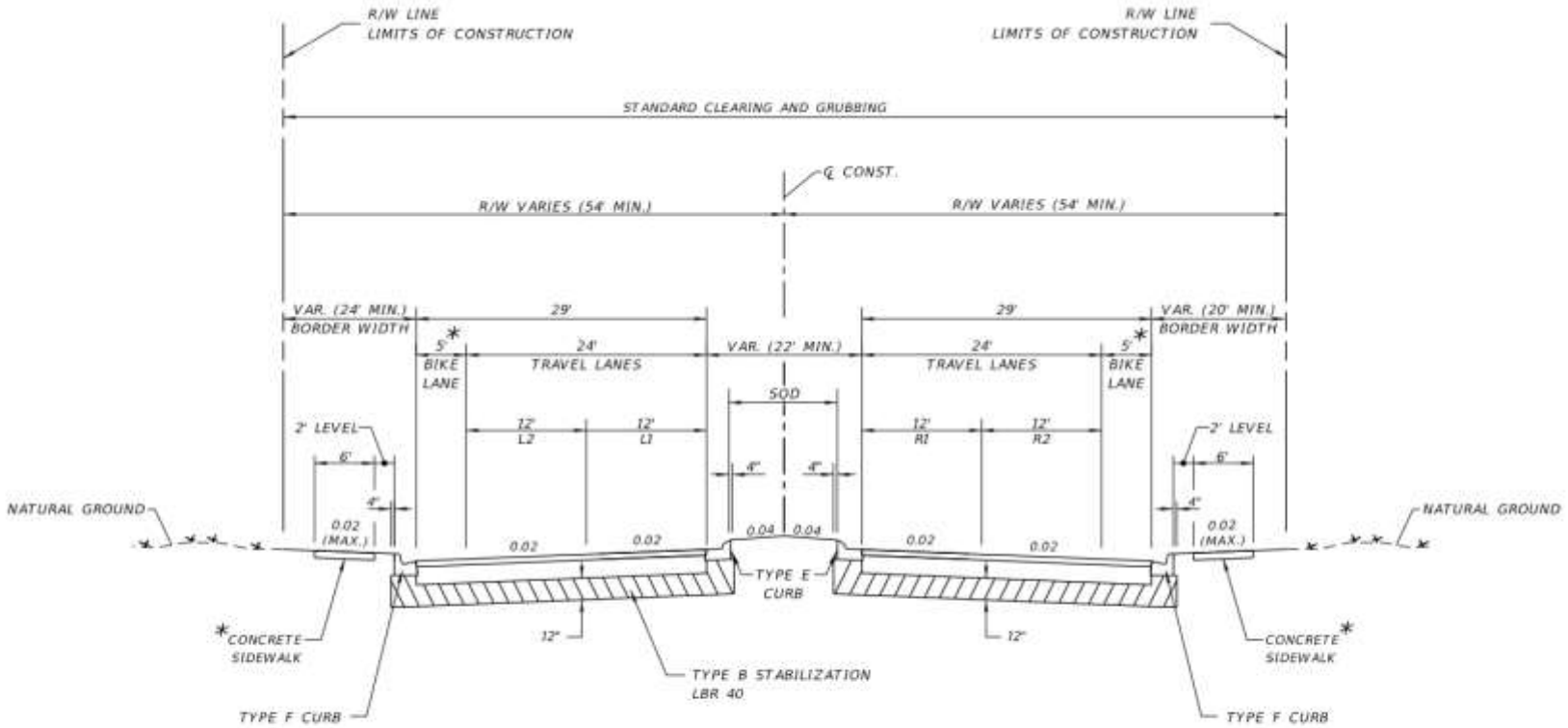
RAMP A (WB ON-RAMP)
RAMP D (WB OFF-RAMP)

STA. TBD TO STA. TBD
DESIGN SPEED = 50 MPH



RAMP B (EB OFF-RAMP)
RAMP C (EB ON-RAMP)

STA. TBD TO STA. TBD
DESIGN SPEED = 50 MPH

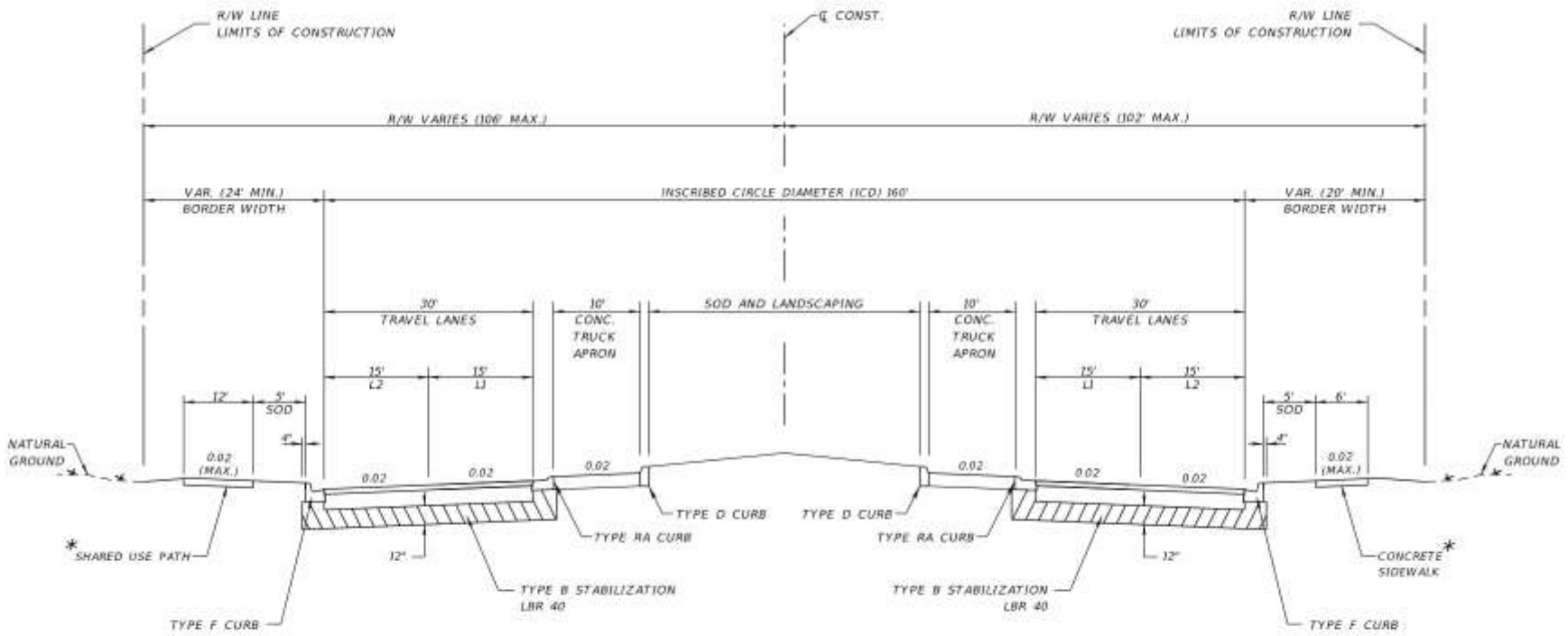


DALLAS BOULEVARD
TYPICAL SECTION IS BASED ON DESIGN ELEMENTS
FROM THE CONSTRUCTED AAF BRIDGE (SOUTH OF SR 528)

STA. TBD TO STA. TBD
DESIGN SPEED = 45 MPH

*SIDEWALK REPLACES BIKE LANE AS PART OF BICYCLE BYPASS.

BICYCLE SLIP LANE INTRODUCED UPSTREAM OF TURN LANE TAPER.



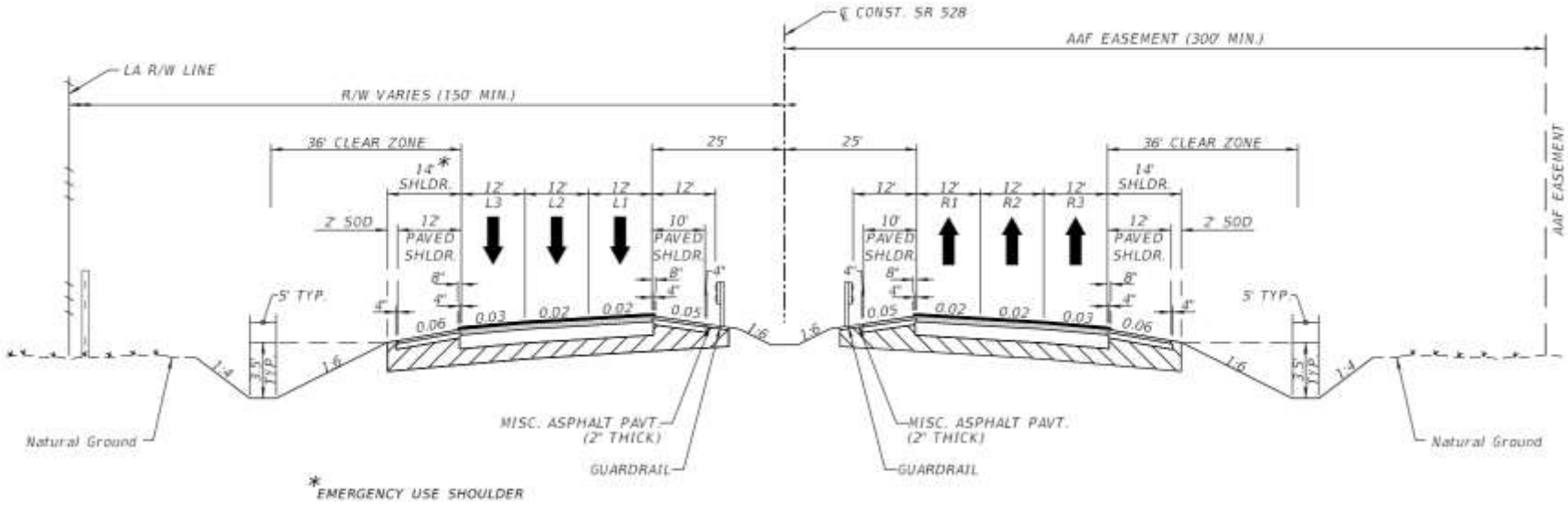
DALLAS BOULEVARD
(CIRCULATORY AND CONNECTING ROADWAYS)
TYPICAL SECTION IS BASED ON DESIGN ELEMENTS
FROM THE CONSTRUCTED AAF BRIDGE (SOUTH OF SR 528)

STA. TBD TO STA. TBD
DESIGN SPEED = 45 MPH

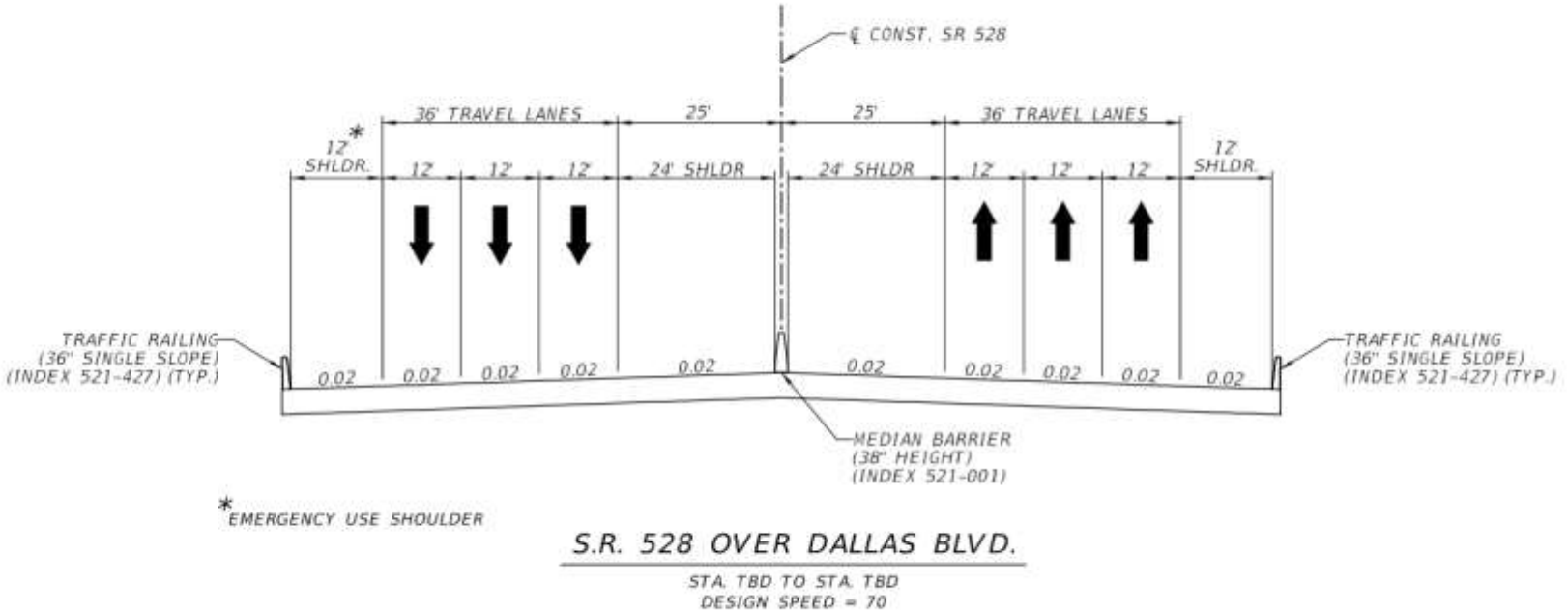
*SIDEWALK REPLACES BIKE LANE AS PART OF BICYCLE BYPASS.

BICYCLE SLIP LANE INTRODUCED UPSTREAM OF TURN LANE TAPER.

Alternative 2 - Signalized Intersection

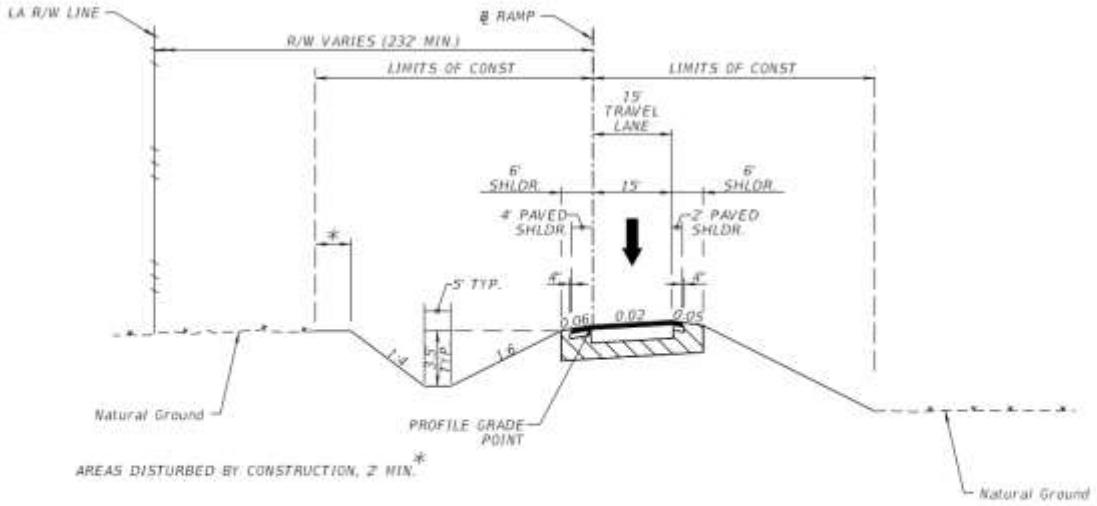


TYPICAL SECTION 1
SR 528 (BEACHLINE EXPRESSWAY)
STA. TBD TO STA. TBD
DESIGN SPEED = 70 MPH



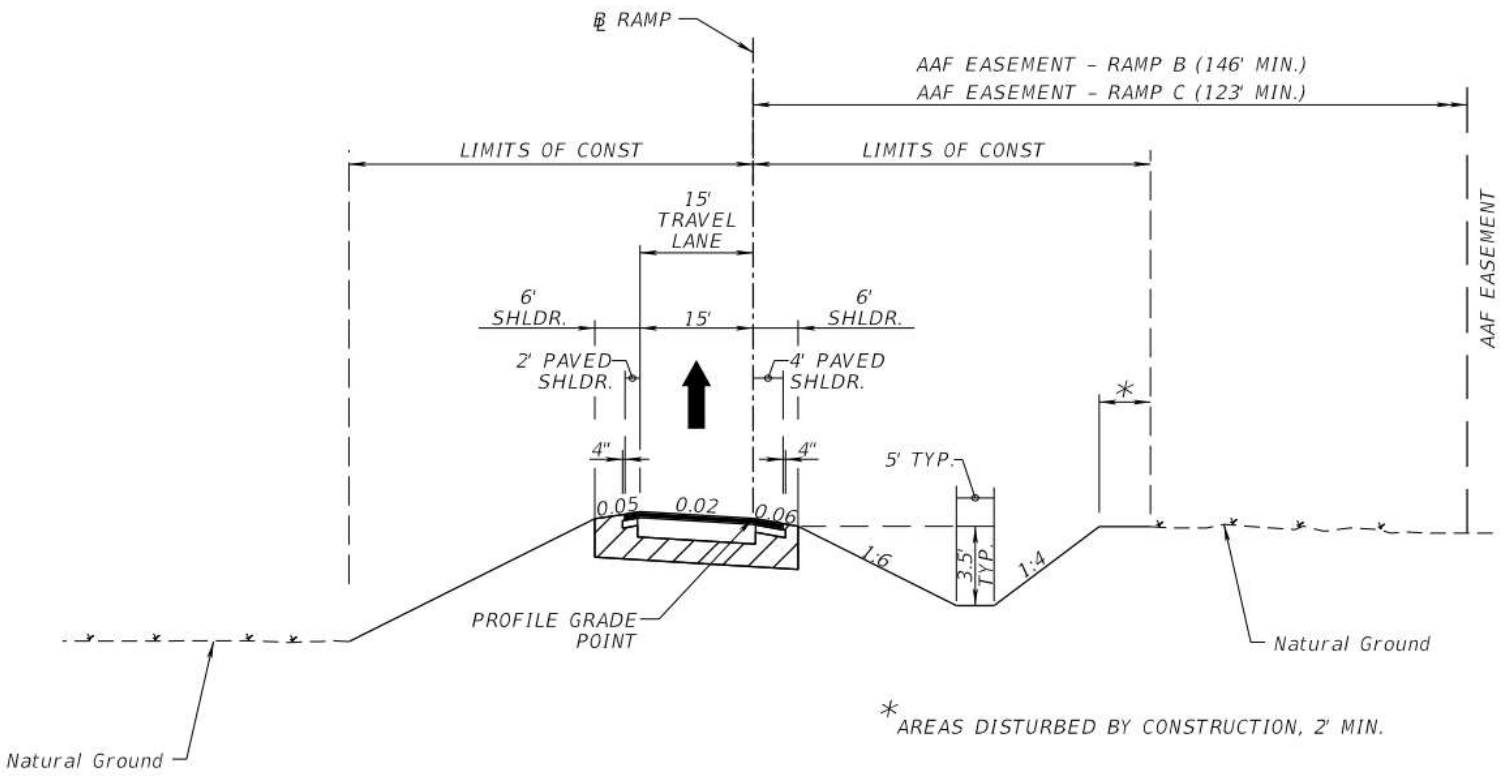
S.R. 528 OVER DALLAS BLVD.

STA. TBD TO STA. TBD
DESIGN SPEED = 70



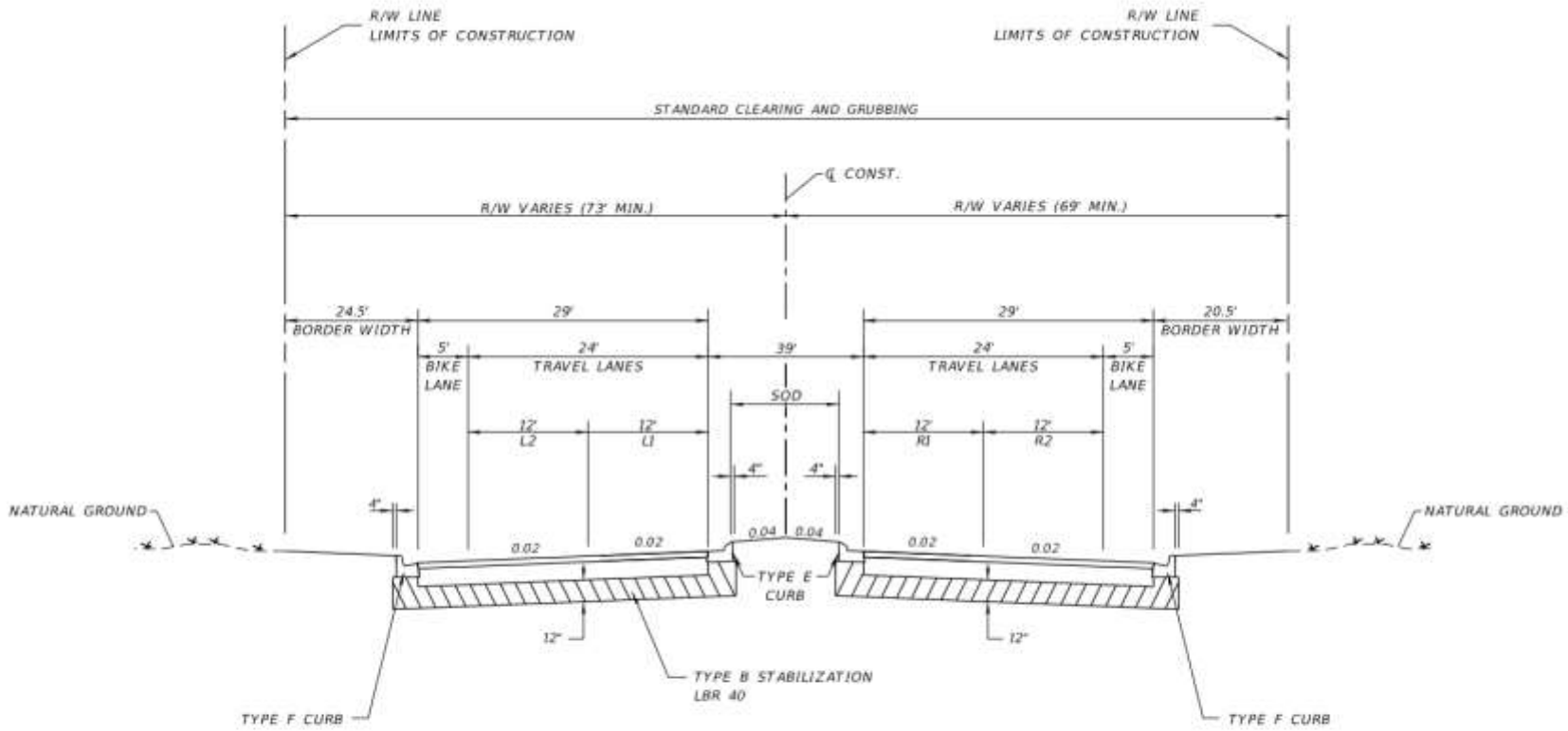
RAMP A (WB ON-RAMP)
RAMP D (WB OFF-RAMP)

STA. TBD TO STA. TBD
DESIGN SPEED = 30 MPH



RAMP B (EB OFF-RAMP)
RAMP C (EB ON-RAMP)

STA. TBD TO STA. TBD
DESIGN SPEED = 50 MPH



DALLAS BOULEVARD
TYPICAL SECTION IS BASED ON DESIGN ELEMENTS
FROM THE CONSTRUCTED AAF BRIDGE (SOUTH OF SR 528)

STA. TBD TO STA. TBD
DESIGN SPEED = 45 MPH

Appendix B:

Noise Study Traffic Data

Noise Analysis Traffic Data - SR 528 and Dallas Boulevard Interchange
2022 Existing Conditions

Freeway Mainline													
Mainline Segment	Number of Lanes	Two-Way AADT	Two-Way LOS C AADT	Peak Hour Peak Direction	LOS C Peak Hour Peak Direction	Design Hr. % T	Design Hr. % MT	Design Hr. % HT	Design Hr. % Buses	Design Hr. % Motorcycles	Standard K-factor	D-factor	Posted Speed (mph)
SR 528													
West of Innovation Way (ramps to/from east)	4	58,600	58,200	2,306	3,080	3.00%	1.85%	1.08%	0.07%	0.18%	10.0%	53.0%	70
From Innovation Way to Dallas Boulevard	4	60,500	58,200	2,401	3,080	3.00%	1.85%	1.08%	0.07%	0.18%	10.0%	53.0%	70
From Dallas Boulevard to SR 520	4	54,650	58,200	2,050	3,080	3.00%	1.85%	1.08%	0.07%	0.18%	10.0%	53.0%	70
East of SR 520	4	49,450	58,200	1,884	3,080	3.00%	1.85%	1.08%	0.07%	0.18%	10.0%	53.0%	70
SR 528 Ramps													
SR 528 Ramp	Number of Lanes	One-Way AADT	One-Way LOS C AADT	Peak Hour Peak Direction	LOS C Peak Hour Peak Direction	Design Hr. % T	Design Hr. % MT	Design Hr. % HT	Design Hr. % Buses	Design Hr. % Motorcycles	K-factor	D-factor	Operational Speed (mph)
Innovation Way													
Eastbound on	1	950	10,800	101	1,360	3.00%	1.85%	1.08%	0.07%	0.18%	11.1%	56.4%	45
Westbound off	1	950	10,800	85	1,360	3.00%	1.85%	1.08%	0.07%	0.18%	11.1%	56.4%	45
Dallas Boulevard													
Eastbound off	1	2,925	9,100	351	1,360	3.00%	1.85%	1.08%	0.07%	0.18%	11.0%	67.8%	45
Westbound on	1	2,925	9,100	545	1,360	3.00%	1.85%	1.08%	0.07%	0.18%	11.0%	67.8%	45
SR 520													
Eastbound off	1	3,800	11,700	402	1,360	3.00%	1.85%	1.08%	0.07%	0.18%	9.5%	61.2%	45
Westbound on	1	3,800	11,700	226	1,360	3.00%	1.85%	1.08%	0.07%	0.18%	9.5%	61.2%	45
Eastbound on	1	1,200	10,900	65	1,360	3.00%	1.85%	1.08%	0.07%	0.18%	9.4%	66.2%	45
Westbound off	1	1,200	10,900	139	1,360	3.00%	1.85%	1.08%	0.07%	0.18%	9.4%	66.2%	45
Arterials and Cross Streets													
Arterial Segment	Number of Lanes	Two-Way AADT	Two-Way LOS C AADT	Peak Hour Peak Direction	LOS C Peak Hour Peak Direction	Design Hr. % T	Design Hr. % MT	Design Hr. % HT	Design Hr. % Buses	Design Hr. % Motorcycles	K-factor	D-factor	Posted Speed (mph)
Dallas Boulevard													
North of Starry Street	1	4,200	8,900	323	580	2.00%	1.23%	0.72%	0.05%	0.12%	9.0%	72.8%	40
South of Starry Street	1	6,550	8,700	463	580	2.00%	1.23%	0.72%	0.05%	0.12%	9.0%	73.7%	40
Starry Street													
East of Dallas Boulevard	1	1,800	3,900	126	260	2.00%	1.23%	0.72%	0.05%	0.12%	9.0%	74.1%	30
West of Dallas Boulevard	1	300	4,100	20	260	2.00%	1.23%	0.72%	0.05%	0.12%	9.0%	71.0%	30

AADT: Annual Average Daily Traffic *MT: Medium Trucks* *HT: Heavy Trucks*

(1) Number of lanes are obtained from field observations and aerial maps.
(2) Traffic data are obtained from the PD&E study traffic development effort.
(3) Peak hour demand and LOS C peak hour maximum service volumes are provided directionally.
(4) LOS C targets are based on the FDOT 2020 Quality/Level of Service Handbook tables, and adjusted for local conditions.
(5) LOS C AADTs are estimated using K and D factors and the design hour peak direction LOS C maximum service volumes.
(6) The vehicle classification factors are obtained from Florida Traffic Online.
(7) Posted speed data are obtained by field observations.

Noise Analysis Traffic Data - SR 528 and Dallas Boulevard Interchange
2050 No Build Conditions - SR 528 4 Lanes

Freeway Mainline														
Mainline Segment	Number of Lanes	Two-Way AADT	Two-Way LOS C AADT	Peak Hour Peak Direction	LOS C Peak Hour Peak Direction	Design Hr. % T	Design Hr. % MT	Design Hr. % HT	Design Hr. % Buses	Design Hr. % Motorcycles	Standard K-factor	D-factor	Posted Speed (mph)
SR 528													
West of Innovation Way (ramps to/from east)	4	110,800	58,200	6,150	3,080	3.00%	1.85%	1.08%	0.07%	0.18%	10.0%	53.0%	70
From Innovation Way to Dallas Boulevard	4	114,300	58,200	6,370	3,080	3.00%	1.85%	1.08%	0.07%	0.18%	10.0%	53.0%	70
From Dallas Boulevard to SR 520	4	103,300	58,200	5,470	3,080	3.00%	1.85%	1.08%	0.07%	0.18%	10.0%	53.0%	70
East of SR 520	4	99,100	58,200	5,170	3,080	3.00%	1.85%	1.08%	0.07%	0.18%	10.0%	53.0%	70
SR 528 Ramps													
SR 528 Ramp	Number of Lanes	One-Way AADT	One-Way LOS C AADT	Peak Hour Peak Direction	LOS C Peak Hour Peak Direction	Design Hr. % T	Design Hr. % MT	Design Hr. % HT	Design Hr. % Buses	Design Hr. % Motorcycles	K-factor	D-factor	Operational Speed (mph)
Innovation Way													
Eastbound on	1	1,750	10,800	220	1,360	3.00%	1.85%	1.08%	0.07%	0.18%	11.1%	56.4%	45
Westbound off	1	1,750	10,800	220	1,360	3.00%	1.85%	1.08%	0.07%	0.18%	11.1%	56.4%	45
Dallas Boulevard													
Eastbound off	1	5,500	9,100	820	1,360	3.00%	1.85%	1.08%	0.07%	0.18%	11.0%	67.8%	45
Westbound on	1	5,500	9,100	900	1,360	3.00%	1.85%	1.08%	0.07%	0.18%	11.0%	67.8%	45
SR 520													
Eastbound off	1	7,050	11,700	820	1,360	3.00%	1.85%	1.08%	0.07%	0.18%	9.5%	61.2%	45
Westbound on	1	7,050	11,700	520	1,360	3.00%	1.85%	1.08%	0.07%	0.18%	9.5%	61.2%	45
Eastbound on	1	3,450	10,900	430	1,360	3.00%	1.85%	1.08%	0.07%	0.18%	9.4%	66.2%	45
Westbound off	1	3,450	10,900	430	1,360	3.00%	1.85%	1.08%	0.07%	0.18%	9.4%	66.2%	45
Arterials and Cross Streets													
Arterial Segment	Number of Lanes	Two-Way AADT	Two-Way LOS C AADT	Peak Hour Peak Direction	LOS C Peak Hour Peak Direction	Design Hr. % T	Design Hr. % MT	Design Hr. % HT	Design Hr. % Buses	Design Hr. % Motorcycles	K-factor	D-factor	Posted Speed (mph)
Dallas Boulevard													
North of Starry Street	1	11,100	8,700	800	580	2.00%	1.23%	0.72%	0.05%	0.12%	9.0%	74.3%	40
South of Starry Street	1	17,300	8,900	1,170	580	2.00%	1.23%	0.72%	0.05%	0.12%	9.0%	72.3%	40
Starry Street													
East of Dallas Boulevard	1	7,300	4,400	430	260	2.00%	1.23%	0.72%	0.05%	0.12%	9.0%	65.4%	30
West of Dallas Boulevard	1	1,800	5,400	90	260	2.00%	1.23%	0.72%	0.05%	0.12%	9.0%	53.1%	30

AADT: Annual Average Daily Traffic *MT: Medium Trucks* *HT: Heavy Trucks*

(1) Number of lanes are obtained from field observations, aerial maps and planned projects information.
(2) Traffic data are obtained from the PD&E study traffic development effort.
(3) Peak hour demand and LOS C peak hour maximum service volumes are provided directionally.
(4) LOS C targets are based on the FDOT 2020 Quality/Level of Service Handbook tables, and adjusted for local conditions.
(5) LOS C AADTs are estimated using K and D factors and the design hour peak direction LOS C maximum service volumes.
(6) The vehicle classification factors are obtained from Florida Traffic Online.
(7) Posted speed data are obtained by field observations.

Noise Analysis Traffic Data - SR 528 and Dallas Boulevard Interchange
2050 Build Conditions

Freeway Mainline														
Mainline Segment	Number of Lanes	Two-Way AADT	Two-Way LOS C AADT	Peak Hour Peak Direction	LOS C Peak Hour Peak Direction	Design Hr. % T	Design Hr. % MT	Design Hr. % HT	Design Hr. % Buses	Design Hr. % Motorcycles	Standard K-factor	D-factor	Posted Speed (mph)
SR 528													
West of Innovation Way (ramps to/from east)	6	110,800	89,000	6,150	4,620	3.00%	1.85%	1.08%	0.07%	0.18%	10.0%	52.0%	70
From Innovation Way to Dallas Boulevard	6	114,300	89,000	6,370	4,620	3.00%	1.85%	1.08%	0.07%	0.18%	10.0%	52.0%	70
From Dallas Boulevard to SR 520	6	108,500	89,000	5,630	4,620	3.00%	1.85%	1.08%	0.07%	0.18%	10.0%	52.0%	70
East of SR 520	6	99,900	89,000	5,290	4,620	3.00%	1.85%	1.08%	0.07%	0.18%	10.0%	52.0%	70
SR 528 Ramps													
SR 528 Ramp	Number of Lanes	One-Way AADT	One-Way LOS C AADT	Peak Hour Peak Direction	LOS C Peak Hour Peak Direction	Design Hr. % T	Design Hr. % MT	Design Hr. % HT	Design Hr. % Buses	Design Hr. % Motorcycles	K-factor	D-factor	Operational Speed (mph)
Innovation Way													
Eastbound on	1	1,750	10,800	220	1,360	3.00%	1.85%	1.08%	0.07%	0.18%	11.1%	56.4%	45
Westbound off	1	1,750	10,800	220	1,360	3.00%	1.85%	1.08%	0.07%	0.18%	11.1%	56.4%	45
Dallas Boulevard													
Eastbound off	1	5,500	9,100	820	1,360	3.00%	1.85%	1.08%	0.07%	0.18%	11.0%	67.8%	45
Westbound on	1	5,500	9,100	900	1,360	3.00%	1.85%	1.08%	0.07%	0.18%	11.0%	67.8%	45
Eastbound on	1	2,800	10,700	330	1,360	3.00%	1.85%	1.08%	0.07%	0.18%	9.4%	67.3%	45
Westbound off	1	2,800	10,700	330	1,360	3.00%	1.85%	1.08%	0.07%	0.18%	9.4%	67.3%	45
SR 520													
Eastbound off	1	7,050	11,700	820	1,360	3.00%	1.85%	1.08%	0.07%	0.18%	9.5%	61.2%	45
Westbound on	1	7,050	11,700	520	1,360	3.00%	1.85%	1.08%	0.07%	0.18%	9.5%	61.2%	45
Eastbound on	1	2,750	11,000	340	1,360	3.00%	1.85%	1.08%	0.07%	0.18%	9.5%	65.4%	45
Westbound off	1	2,750	11,000	340	1,360	3.00%	1.85%	1.08%	0.07%	0.18%	9.5%	65.4%	45
Arterials and Cross Streets													
Arterial Segment	Number of Lanes	Two-Way AADT	Two-Way LOS C AADT	Peak Hour Peak Direction	LOS C Peak Hour Peak Direction	Design Hr. % T	Design Hr. % MT	Design Hr. % HT	Design Hr. % Buses	Design Hr. % Motorcycles	K-factor	D-factor	Posted Speed (mph)
Dallas Boulevard													
North of Starry Street	2	12,500	18,800	890	1,240	2.00%	1.23%	0.72%	0.05%	0.12%	9.0%	73.3%	40
South of Starry Street	2	19,300	28,000	1,300	1,810	2.00%	1.23%	0.72%	0.05%	0.12%	9.0%	71.9%	40
Starry Street													
East of Dallas Boulevard	1	7,900	5,600	470	330	2.00%	1.23%	0.72%	0.05%	0.12%	9.0%	66.0%	30
West of Dallas Boulevard	1	1,800	5,400	90	260	2.00%	1.23%	0.72%	0.05%	0.12%	9.0%	53.1%	30

AADT: Annual Average Daily Traffic *MT: Medium Trucks* *HT: Heavy Trucks*

(1) Number of lanes are obtained from field observations, aerial maps and planned projects information.
(2) Traffic data are obtained from the PD&E study traffic development effort.
(3) Peak hour demand and LOS C peak hour maximum service volumes are provided directionally.
(4) LOS C targets are based on the FDOT 2020 Quality/Level of Service Handbook tables, and adjusted for local conditions.
(5) LOS C AADTs are estimated using K and D factors and the design hour peak direction LOS C maximum service volumes.
(6) The vehicle classification factors are obtained from Florida Traffic Online.
(7) Posted speed data are obtained by field observations.

Appendix C:

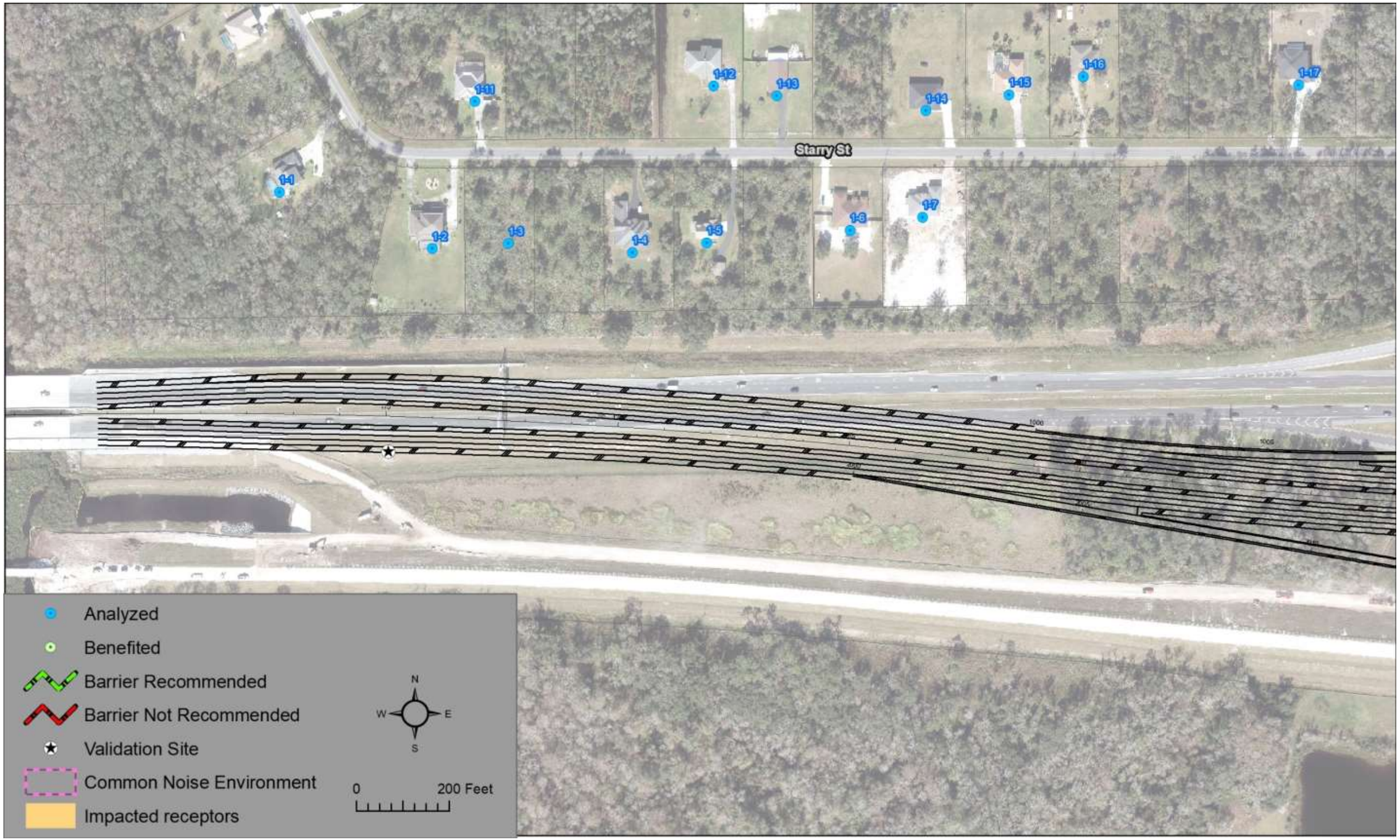
Noise Impact Comparison Matrix

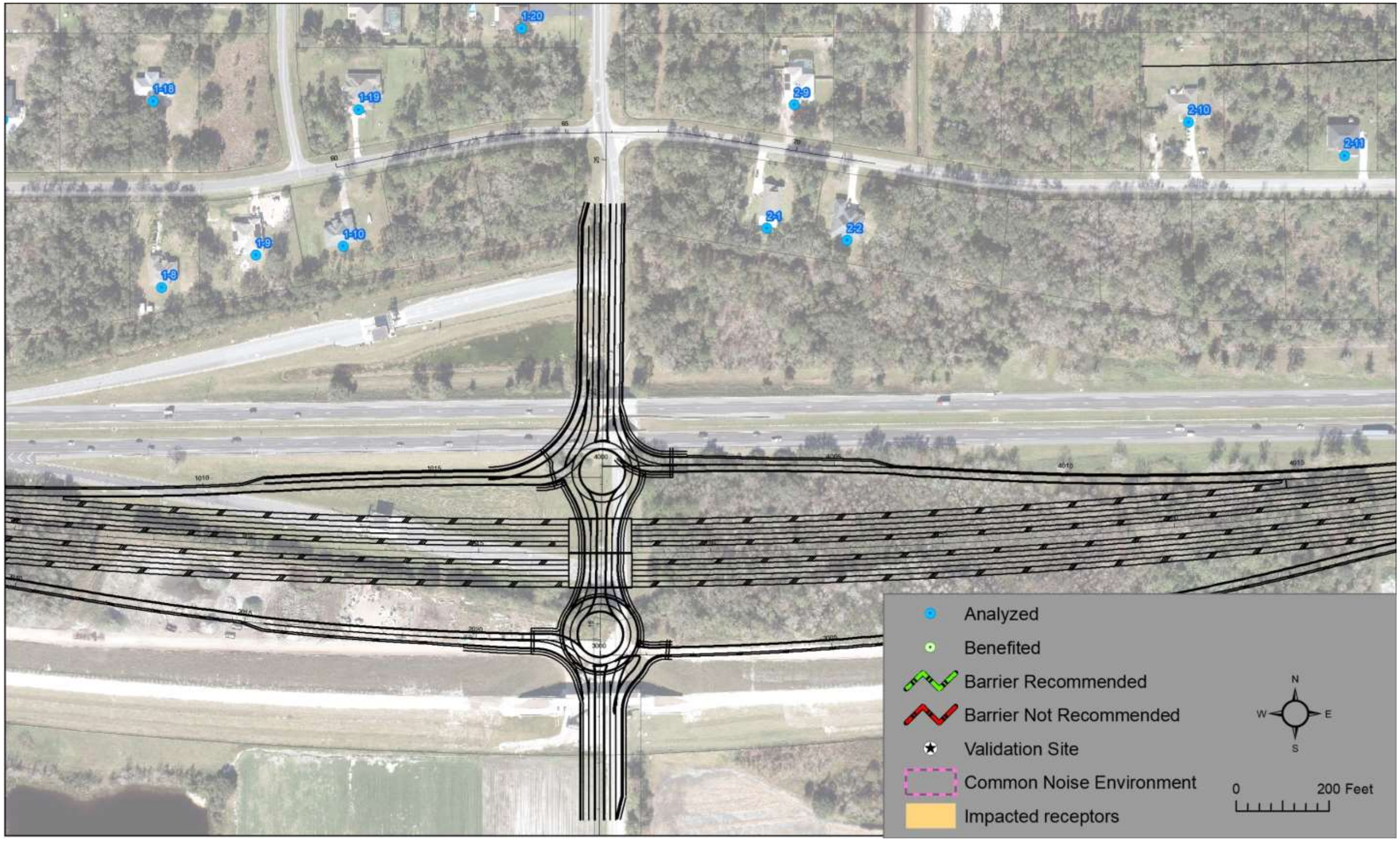
Noise Impact Comparison Matrix									
Noise Sensitive Sites			Predicted Noise Levels (dB(A)) *Red = Noise Level above NAC*						
Receptor ID	# Sites Represented	Impact Criterion (dB(A))	2022 Existing	2050 No-Build Alternative	2050 Build Alternative 1	Change From Existing	2050 Build Alternative 2	Change From Existing	*Consider Abatement*
NSA 1: North of SR 528 - East of Dallas Boulevard - Illustrated on Pages D-1 and D-2 - Appendix D									
1-1	1	66.0	58.9	60.5	62.0	3.1	63.8	4.9	-
1-2	1	66.0	60.5	62.1	65.3	4.8	***66.7***	6.2	***Yes***
1-3	1	66.0	60.2	61.8	65.0	4.8	***66.4***	6.2	***Yes***
1-4	1	66.0	61.1	62.7	65.5	4.4	***67.2***	6.1	***Yes***
1-5	1	66.0	60.7	62.4	64.7	4.0	65.9	5.2	-
1-6	1	66.0	60.7	62.4	63.7	3.0	65.6	4.9	-
1-7	1	66.0	60.3	62.2	63.0	2.7	65.2	4.9	-
1-8	1	66.0	64.5	***66.5***	64.4	-0.1	63.8	-0.7	-
1-9	1	66.0	62.7	64.8	63.5	0.8	62.9	0.2	-
1-10	1	66.0	62.5	64.6	63.5	1.0	62.9	0.4	-
1-11	1	66.0	56.1	58.1	59.8	3.7	61.3	5.2	-
1-12	1	66.0	55.8	57.9	59.4	3.6	61.9	6.1	-
1-13	1	66.0	56.1	58.2	59.6	3.5	61.7	5.6	-
1-14	1	66.0	57.0	59.3	60.1	3.1	62.2	5.2	-
1-15	1	66.0	56.9	59.1	59.8	2.9	61.9	5.0	-
1-16	1	66.0	56.7	58.7	59.3	2.6	61.8	5.1	-
1-17	1	66.0	57.4	59.7	59.5	2.1	61.0	3.6	-
1-18	1	66.0	56.7	58.9	59.4	2.7	60.5	3.8	-
1-19	1	66.0	57.5	59.8	59.8	2.3	61.0	3.5	-
1-20	1	66.0	57.3	59.7	60.9	3.6	61.5	4.2	-
NSA Summary	***20***		***59.0***	***61.0***	***61.9***	***2.9***	***63.3***	***4.3***	
NSA 2: North of SR 528 - West of Dallas Boulevard - Illustrated on Pages D-2 and D-3 - Appendix D									
2-1	1	66.0	60.3	62.4	63.3	3.0	62.9	2.6	-
2-2	1	66.0	60.3	62.4	63.6	3.3	62.8	2.5	-
2-3	1	66.0	60.6	62.6	65.3	4.7	***68.5***	7.9	***Yes***
2-4	1	66.0	61.9	63.9	***67.1***	5.2	***70.0***	8.1	***Yes***
2-5	1	66.0	61.0	63.0	***66.4***	5.4	***69.2***	8.2	***Yes***
2-6	1	66.0	61.1	63.1	***67.1***	6.0	***68.3***	7.2	***Yes***
2-7	1	66.0	61.5	63.6	***67.7***	6.2	***68.3***	6.8	***Yes***
2-8	2	66.0	60.2	62.4	65.9	5.7	***66.2***	6.0	***Yes***
2-9	1	66.0	58.7	61.3	61.4	2.7	62.0	3.3	-
2-10	1	66.0	56.2	58.6	61.1	4.9	61.9	5.7	-
2-11	1	66.0	58.0	61.1	62.9	4.9	63.4	5.4	-
2-12	1	66.0	57.7	60.6	63.4	5.7	63.6	5.9	-
2-13	1	66.0	54.6	57.1	60.0	5.4	61.5	6.9	-
2-14	1	66.0	56.3	58.9	60.9	4.6	62.9	6.6	-
2-15	1	66.0	56.0	58.5	60.7	4.7	62.6	6.6	-
2-16	1	66.0	56.9	59.7	61.9	5.0	63.4	6.5	-
2-17	1	66.0	57.0	59.5	61.8	4.8	63.5	6.5	-
2-18	1	66.0	57.1	59.7	62.1	5.0	63.5	6.4	-
2-19	1	66.0	56.8	59.4	61.7	4.9	62.5	5.7	-
2-20	1	66.0	57.4	60.3	61.9	4.5	62.3	4.9	-
NSA Summary	***21***		***58.5***	***60.9***	***63.3***	***4.8***	***64.5***	***6.0***	

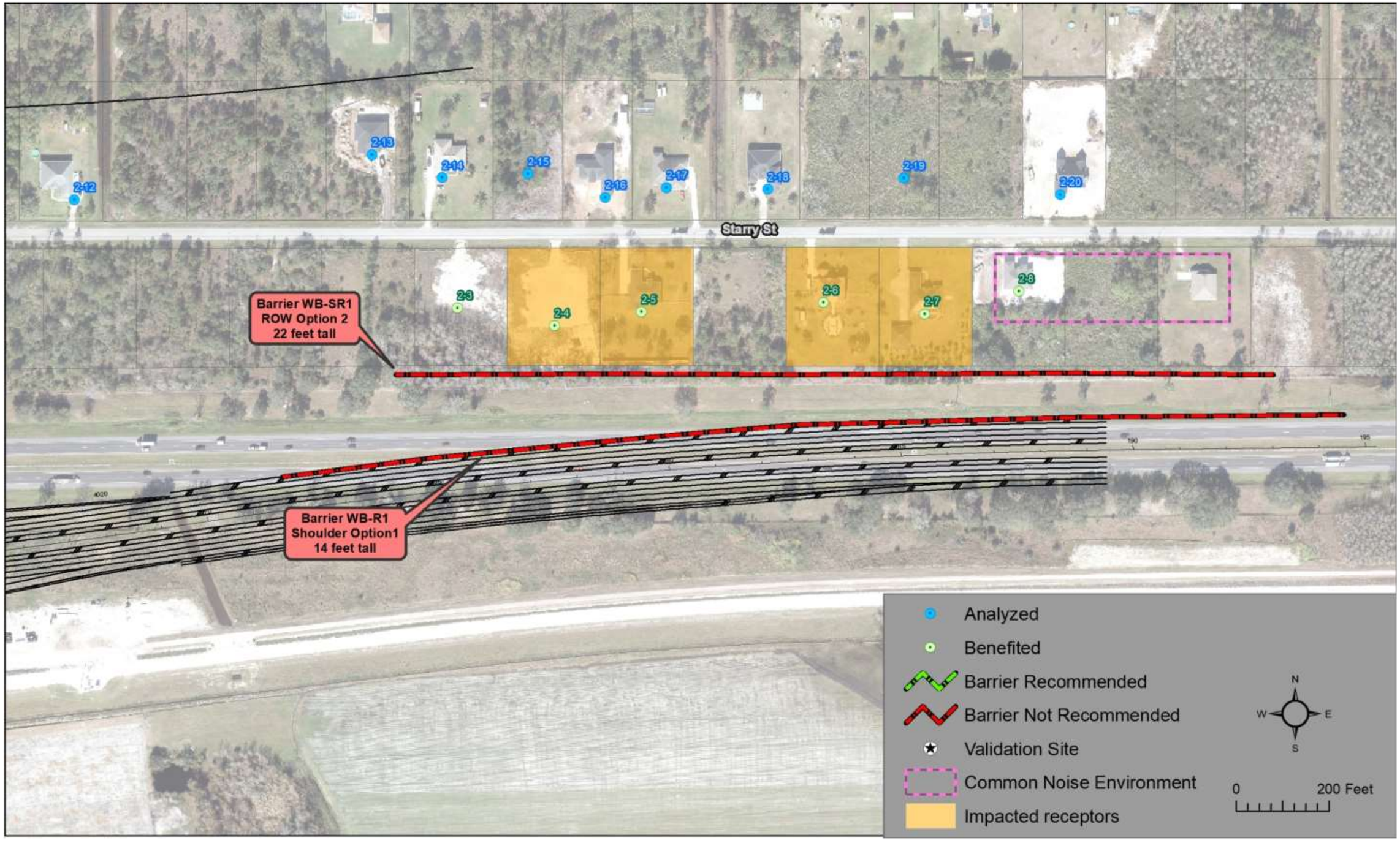
Appendix D:

Project Aerials
Barrier Analysis Locations

Alternative 1 - Roundabout Intersection


Starry St
1-1
1-2
1-3
1-4
1-5
1-6
1-7
1-11
1-12
1-13
1-14
1-15
1-16
1-17
Analyzed
Benefited
Barrier Recommended
Barrier Not Recommended
Validation Site
Common Noise Environment
Impacted receptors
N
W
E
S
0
200 Feet

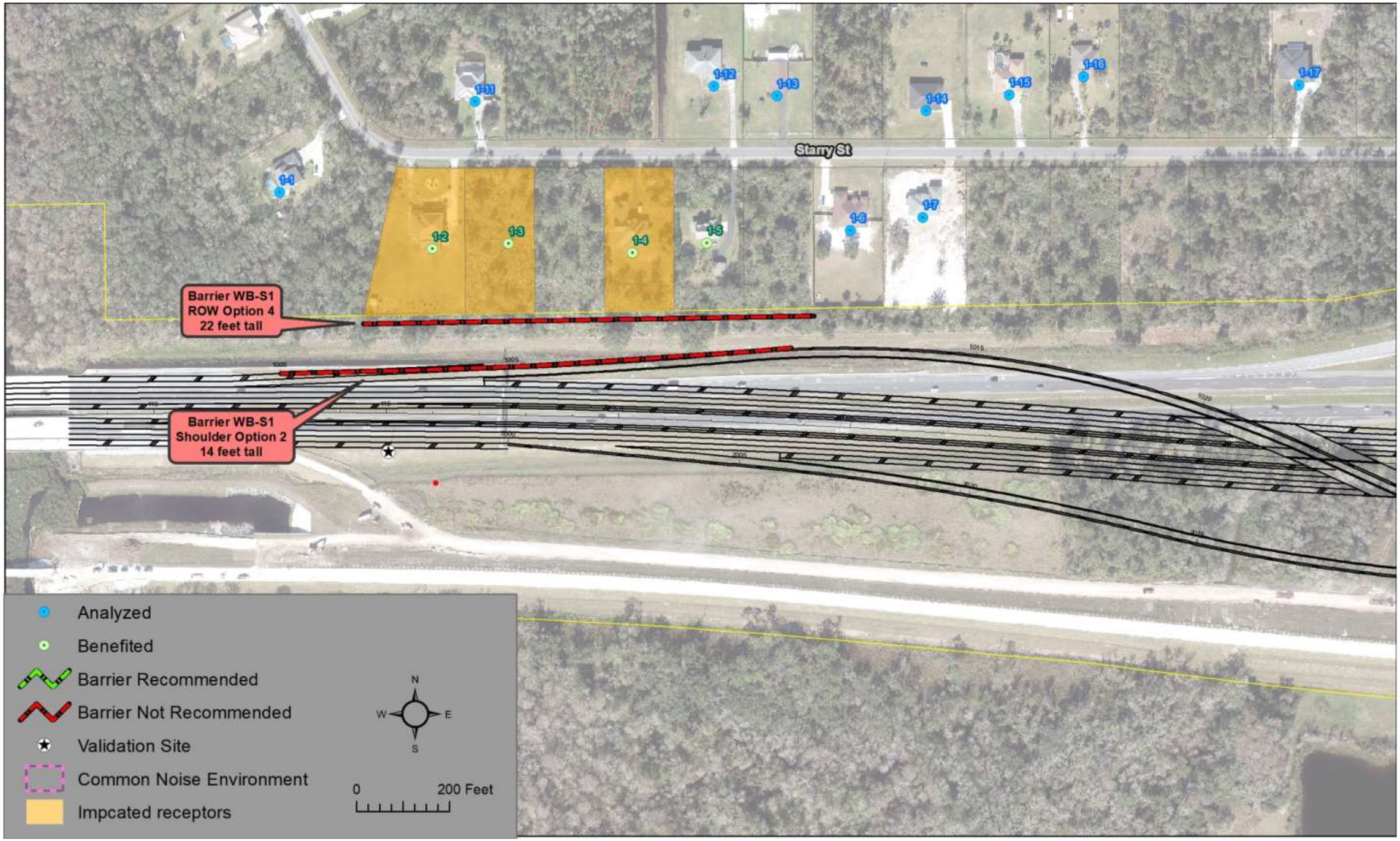

1-18
1-19
1-20
1-8
1-9
1-10
2-1
2-2
2-9
2-10
2-11
Analyzed
Benefited
Barrier Recommended
Barrier Not Recommended
Validation Site
Common Noise Environment
Impacted receptors
N
W
E
S
0
200 Feet

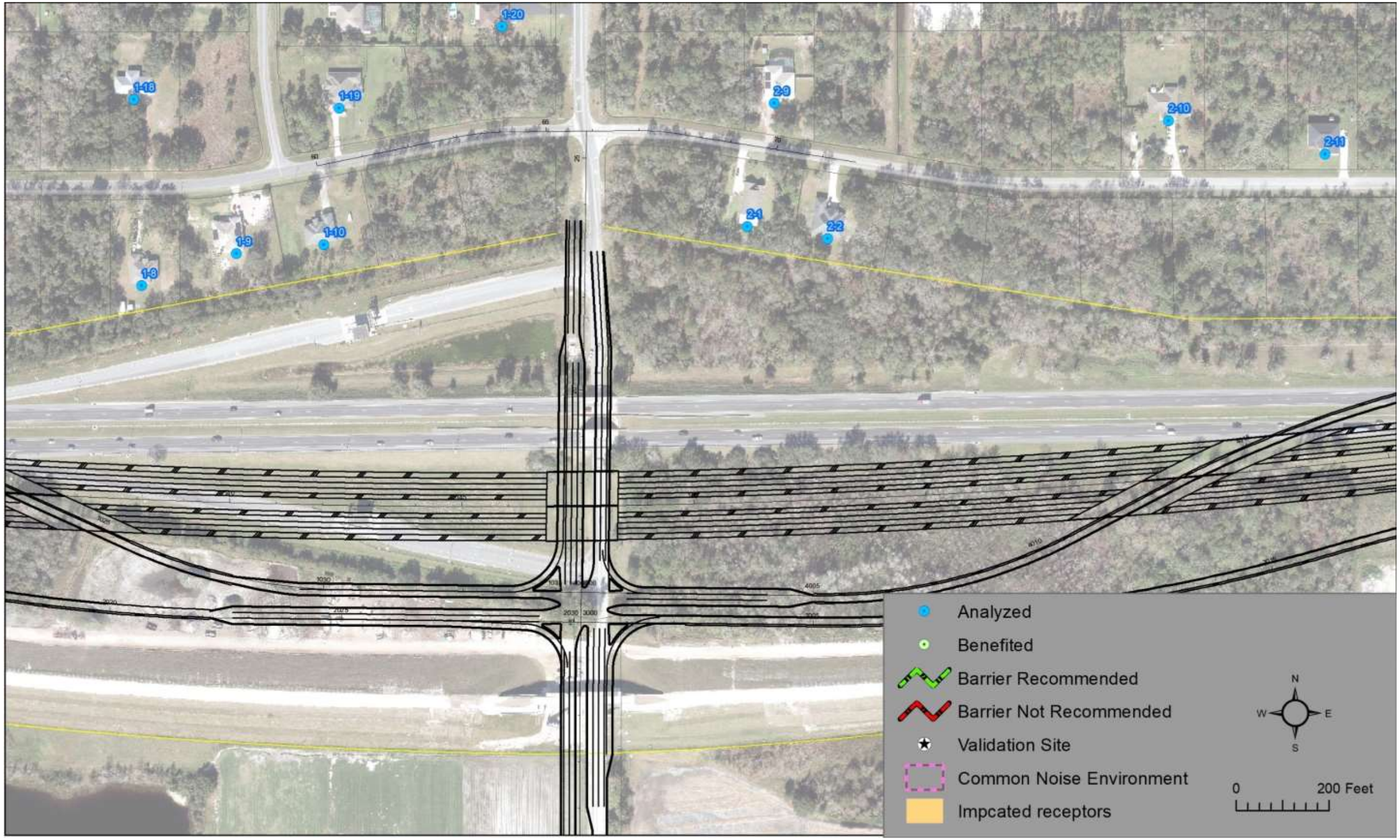

2-12
2-13
2-14
2-15
2-16
2-17
2-18
2-19
2-20
Starry St
2-3
2-4
2-5
2-6
2-7
2-8
Barrier WB-SR1
ROW Option 2
22 feet tall
Barrier WB-R1
Shoulder Option1
14 feet tall
Analyzed
Benefited
Barrier Recommended
Barrier Not Recommended
Validation Site
Common Noise Environment
Impacted receptors
N
W
E
S
0
200 Feet

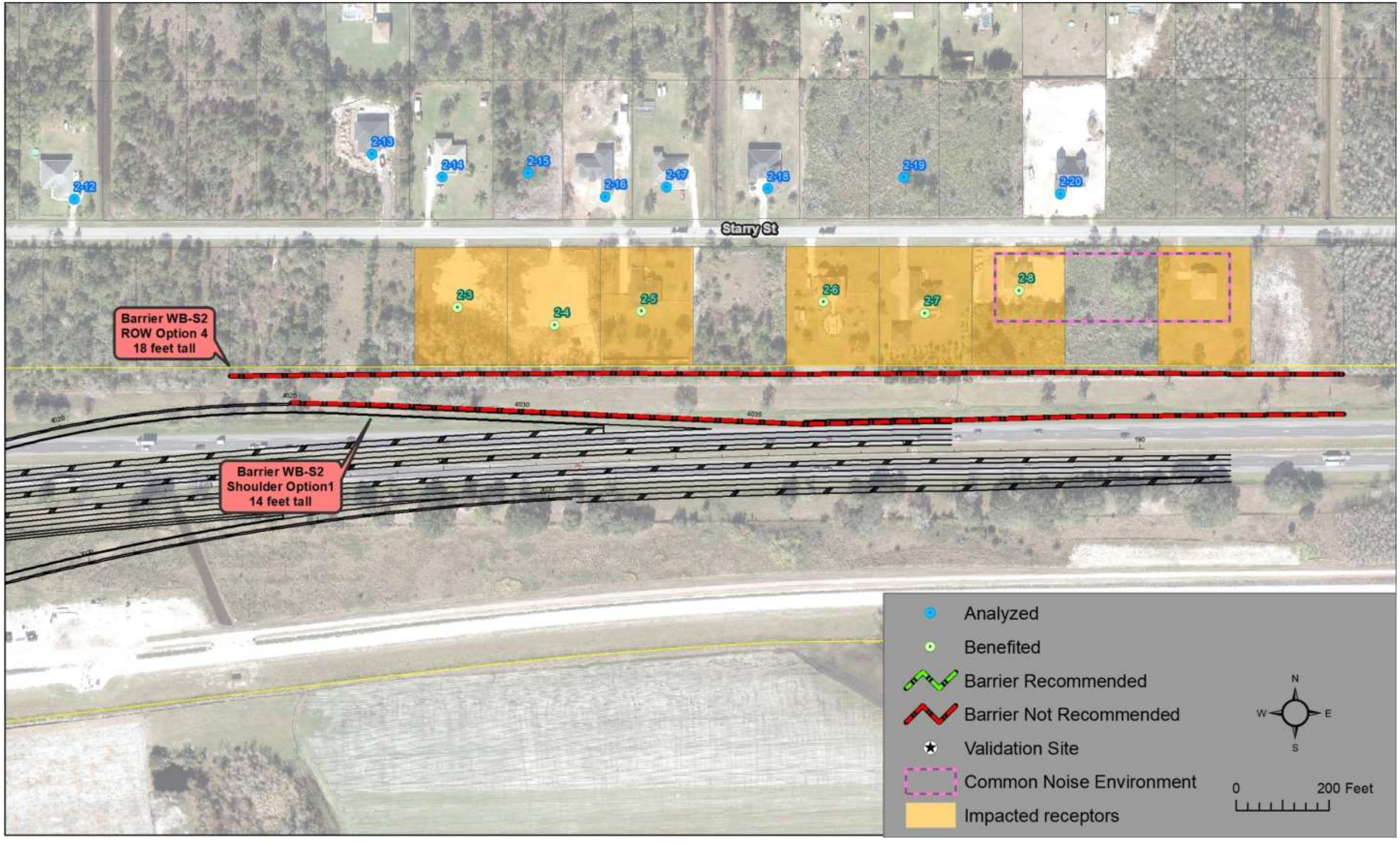
Appendix E:

Project Aerials
Barrier Analysis Locations

Alternative 2 - Signalized Intersection


Starry St
1-1
1-2
1-3
1-4
1-5
1-6
1-7
1-8
1-11
1-12
1-13
1-14
1-15
1-16
1-17
Barrier WB-S1
ROW Option 4
22 feet tall
Barrier WB-S1
Shoulder Option 2
14 feet tall
Analyzed
Benefited
Barrier Recommended
Barrier Not Recommended
Validation Site
Common Noise Environment
Impcated receptors
N
W
E
S
0
200 Feet


1-16
1-19
1-20
2-9
2-10
2-11
1-8
1-9
1-10
2-1
2-2
Analyzed
Benefited
Barrier Recommended
Barrier Not Recommended
Validation Site
Common Noise Environment
Impcated receptors
N
W
E
S
0
200 Feet


2-12
2-13
2-14
2-15
2-16
2-17
2-18
2-19
2-20
Starry St
2-3
2-4
2-5
2-6
2-7
2-8
Barrier WB-S2
ROW Option 4
18 feet tall
Barrier WB-S2
Shoulder Option1
14 feet tall
Analyzed
Benefited
Barrier Recommended
Barrier Not Recommended
Validation Site
Common Noise Environment
Impacted receptors
N
W
E
S
0
200 Feet

Appendix D – Air Quality Technical Memorandum

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

CFX Contract Number: 001844
CFX Project Number: 528-307

AIR QUALITY TECHNICAL MEMORANDUM

SR 528 & DALLAS BLVD INTERCHANGE

Martin Andersen Beachline Expressway

PROJECT DEVELOPMENT & ENVIRONMENT STUDY

the balmoral group

Introduction

In December 2022, the Central Florida Expressway Authority (CFX) began a Project Development and Environment (PD&E) Study to analyze and evaluate the completion of the Dallas Boulevard interchange by adding a westbound off-ramp and eastbound on-ramp to SR 528 to provide enhanced access and mobility to the Wedgefield community and eastern Orange County. This Technical Memorandum is to document the air quality analysis findings.

Project Description

Currently, the Dallas Boulevard interchange (Exit 24) on State Road (SR) 528 (Martin B. Andersen Beachline Expressway) is a half interchange – consisting of a westbound on-ramp and an eastbound off-ramp. The completion to a full interchange, by adding a westbound off-ramp and eastbound on-ramp, has been identified as a need to provide enhanced access and mobility to the Wedgefield community and eastern Orange County. Currently, residents within Wedgefield must travel north in the subdivision to access SR 520 and then travel south to access SR 528 in the eastbound direction – a distance that can range from approximately seven to thirteen miles – and vice versa when travelling westbound on SR 528. Therefore, this PD&E Study analyzes and evaluates the completion of the Dallas Boulevard interchange (Exit 24) by adding a westbound off-ramp and eastbound on-ramp.

Study Goals

The general objective of this study is to provide documented information necessary for the CFX to reach a decision on the type, design, and location of the completion of the existing SR 528 Dallas Boulevard interchange.

The goals of the SR 528/Dallas Blvd Interchange PD&E Study include:

- Identify transportation mobility options and programs that could meet future demand
- Complete a full interchange for SR 528 at Dallas Blvd
- Enhance mobility for the area's current and future development
- Identify a Preferred Alternative design concept that is consistent with the current and future goals of CFX
- Ensure that conceptual designs accommodate current and future capacity improvements
- Provide consistency with local plans and policies
- Promote regional connectivity

General Existing Conditions and Land Uses of the Project Area

The project area, as defined within the PD&E Study, is the extent of any alternative concepts. For consistency in studying the existing and anticipated conditions of the area surrounding the PD&E Study Area, a half mile radius of the general existing conditions surrounding the project area are used.

The entirety of the project area falls within the Orange County. Within the surrounding area, the majority of the land falls within unincorporated Orange County.

The Land Use in this area has remained a single-family residential subdivision (Wedgefield) to the north, the Econlockhatchee River and Hal Scott Regional Park & Preserve to the west and undeveloped agricultural land in the remainder of the surrounding area. **Figure 1** shows the Current Land Use designations of the area per Statewide Land Cover dataset.

Figure 1 - Project Area - Land Use Designations

Analysis and Results

As part of this project study, an air quality evaluation has been performed consistent with the FDOT PD&E Manual, Part 2, Chapter 19. Based on this initial evaluation, a detailed Air Quality analysis is not needed because the project does not meet the two qualifying criteria per Section 19.2.2.1, Part 2, Chapter 19 of the PD&E Manual. It does not require an Environmental Impact Statement, and it is not expected to have community controversy regarding air quality.

This project is not expected to create adverse impacts on air quality because the project area is in attainment for all National Ambient Air Quality Standards (NAAQS) and because the project is expected to improve the Level of Service (LOS) and not change the delay and congestion on all facilities within the study area.

Construction activities may cause short-term air quality impacts in the form of dust from earthwork and unpaved roads. These impacts will be minimized by adherence to applicable state regulations and to applicable FDOT Standard Specifications for Road and Bridge Construction.

References

• Florida Department of Transportation. "Air Quality", Part 2, Chapter 19. Project Development and Environment Manual, Florida Department of Transportation, Tallahassee, July 1, 2020.
• Chapter 62-204, F.S., Air Pollution Control – General Provisions. https://www.flrules.org/gateway/ChapterHome.asp?Chapter=62-204
• EPA, 1998. NOx, How Nitrogen Oxides Affect the Way We Live and Breathe. EPA – 456/F98-005.
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• EPA, 2014. National Emissions Inventory. https://epa.gov/air-emissionsinventories/nationalemissions-inventory-nei
• FDOT, CO FDOT Florida 2012 User's Guide and Screening Model. http://www.dot.state.fl.us/emo/software/software.shtm
• EPA, 2011 National Air Toxics Assessment Results. https://www.epa.gov/national-air-toxicsassessment/2011-nata-assessmentresults
• FHWA, Advisory T6640.8A, Guidance for Preparing and Processing Environmental and Section 4(F) Documents, October 30, 1987; available from the FHWA Environmental Guidebook. https://www.environment.fhwa.dot.gov/projdev/impta6640.asp
• FHWA, Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents. https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance /msat/
• FHWA, A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives. https://www.fhwa.dot.gov/environment/air_quality/air_toxics/research_and_analysis/mobile_source_air_toxics/msatemissions.cfm
• Memorandum of Understanding Between FHWA and FDOT Concerning the State of Florida's Participation in the Surface Transportation Project Delivery Program Pursuant to 23 U.S.C. 327, December 14, 2016. http://www.fdot.gov/environment/pubs/Executed-FDOT-NEPA-Assignment-MOU2016-1214.pdf

Appendix E – Contamination Screening Evaluation Technical Memorandum

Geotechnical and Environmental Consultants, Inc.

TECHNICAL MEMORANDUM

February 9, 2023

From: Richard McCormick, P.G. and Daniel C. Stanfill, P.E.

To: Mr. Michael Garau, P.E.

Subject: Existing Contamination Conditions Technical Memorandum
SR 528 AT DALLAS BOULEVARD INTERCHANGE
CFX 528-307
GEC Project No. 5228E

Based on TWO 4 under Contract Number 001844 dated December 1, 2022, Geotechnical and Environmental Consultants, Inc. (GEC) is pleased to present this Existing Contamination Conditions Memorandum for the CFX SR 528 at Dallas Boulevard Interchange PD&E study.

While this review of contamination status was performed using elements of the Chapter 20 of the FDOT PD&E Manual, it does not represent a complete contamination screening evaluation in accordance with Chapter 20 of the FDOT PD&E Manual. Only the most recent public file documents were reviewed, and the limited scope of this evaluation did not allow for a more complete file review.

Contamination Screening

GEC conducted this evaluation using limited elements of the Chapter 20 of the FDOT PD&E Manual dated July 1, 2020. The study area is defined by the following distances from the right-of-way:

- **All sites within 500 feet**
- **Non-landfill solid waste sites within 1,000 feet**
- **Solid waste landfills, CERCLA, or National Priorities List (NPL) sites within ½ mile**

GEC reviewed relevant information from the following sources of information:

- USGS Quadrangle Map of Orlando, Florida (**Figure 1**),
- National Resource Conservation Service (NRCS) Soil Survey (**Figure 1**), and
- Google Earth aerial photographs, including the historical railroad layer,
- Limited Florida Department of Environmental Protection (FDEP) Map Direct and Nexus Information Portal file research was performed for the sites of concern identified within the study area.

Based on the results of the contamination screening activities, GEC assigned Contamination Risk Ratings (CRRs) to 5 potential contamination sites in the Study Area. The Contamination Risk Rating (CRR) system was developed by FDOT and incorporates four levels of risk: **No, Low, Medium and High**. For a description of the four risk levels please refer to **Appendix A.**

The project study area is shown on a 2021 aerial photograph with site locations shown in attached **Figure 2**. Select portions of public record documents (Map Direct map) are included as **Appendix B**.

Table 1 – Potential Contamination Site Summary, presents the results of our evaluation. The information obtained from each source of information listed above is summarized for the study area and potential contamination site, along with the corresponding CRRs.

Contamination Risk Sites Summary

Our contamination risk ratings for the potential contamination sites are summarized below.

Table 1
Potential Contamination Site Summary

Site No.	Facility Name	Facility ID	Concerns	Risk Rating
1	Material Storage Area 1	N/A	This material storage area has been used since about 2018, in relation to the construction of the Brightline Rail line. It is unknown if fuel tanks, or hazardous materials have been stored on-site.	Medium
2	Material Storage Area 2	N/A	This material storage area has been used since about 2018, in relation to the construction of the Brightline Rail line. It is unknown if fuel tanks, or hazardous materials have been stored on-site.	Medium

Site No.	Facility Name	Facility ID	Concerns	Risk Rating
3	Sod Farm	N/A	Agricultural land and sod farms were and are frequently sprayed or treated with pesticides and herbicides, that may result in residual amounts of pesticides, herbicides, and arsenic.	Medium
4	Brightline Rail Line	N/A	Newly constructed rail line.	No
5	Chuluota to Kenansville Railroad	N/A	Dallas Boulevard is a historical railroad that was built in 1913. Historical railroads are suspect for contamination impacts from herbicides, grease and oil drippings off rail cars, and potentially coal tar from historically coal powered trains.	Medium

Level II Impact to Construction Impact Assessments and Recommendations

Level II Impact to Construction Assessments (ICAs) or construction support will be dependent on the roadway improvement plans, dewatering requirements and the amount of right of way required that includes properties with tanks or known areas of impacts described in **Table 1**.

A Contamination Screening Evaluation Report will be required for this project.

Limitations

The findings, opinions, conclusions, and recommendations presented herein are based in part on reasonably ascertainable information contained in the public record. GEC does not warrant or guarantee the accuracy or completeness of this information. Some of this public record information may be dated and not representative of conditions at the time of this report was prepared (February 2023), or in the future. Additional limitations are as follows:

- Not discussed in this report are properties that have been historically undeveloped land, are associated with residential use and do not appear to pose a contamination risk, or are professional/commercial establishments that are not associated with hazardous materials or petroleum products.
- This study also does not include surveys of wetlands, endangered species, asbestos containing materials, lead-based paints, or other potential hazardous building materials.

Use of This Memorandum

GEC has prepared this memorandum for the exclusive use of our client, The Balmoral Group, and CFX and for application to our client's project. GEC will not be held responsible for any

other party's interpretation or use of this report's data or recommendations without our written authorization.

GEC has performed the services described in this report in a manner consistent with that level of care and skill ordinarily exercised by members of our profession currently practicing in Central Florida. No other representation is made or implied in this document.

The conclusions and recommendations should be disregarded if the final project design differs from the project description in this report. If such changes are contemplated, GEC should be retained to review the new plans to assess the applicability of this report in light of proposed changes.

We appreciate the opportunity to work with The Balmoral Group and CFX on this project. If you have any questions concerning this report, or if we may be of further assistance, please contact us.

Sincerely,

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS, INC.

Richard P. McCormick, P.G.
Chief Geologist
Florida License No. 2096

Daniel C. Stanfill, P.E.
Senior Vice President
Florida License No. 42763

FIGURES

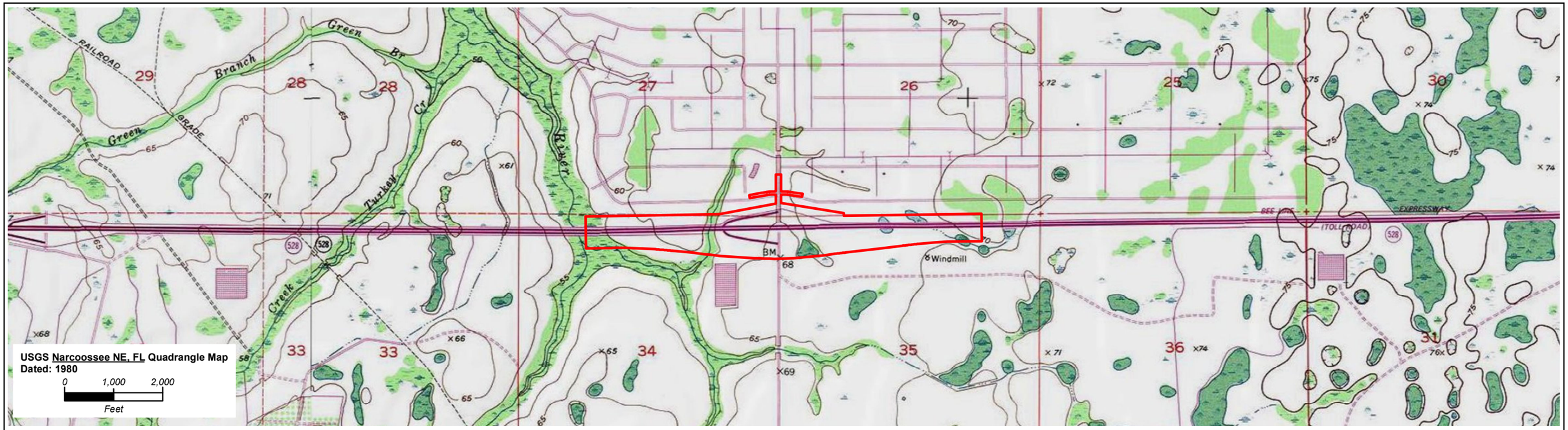

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FIGURE 1

	DANIEL C. STANFILL, P.E. P.E. LICENSE NUMBER 42763 GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS, INC. 919 LAKE BALDWIN LANE ORLANDO, FL 32814	STATE OF FLORIDA DEPARTMENT OF TRANSPORATATION			USGS QUADRANGLE AND NRCS SOIL SURVEY MAPS	SHEET NO.
		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
		SR 528	ORANGE	528-307		

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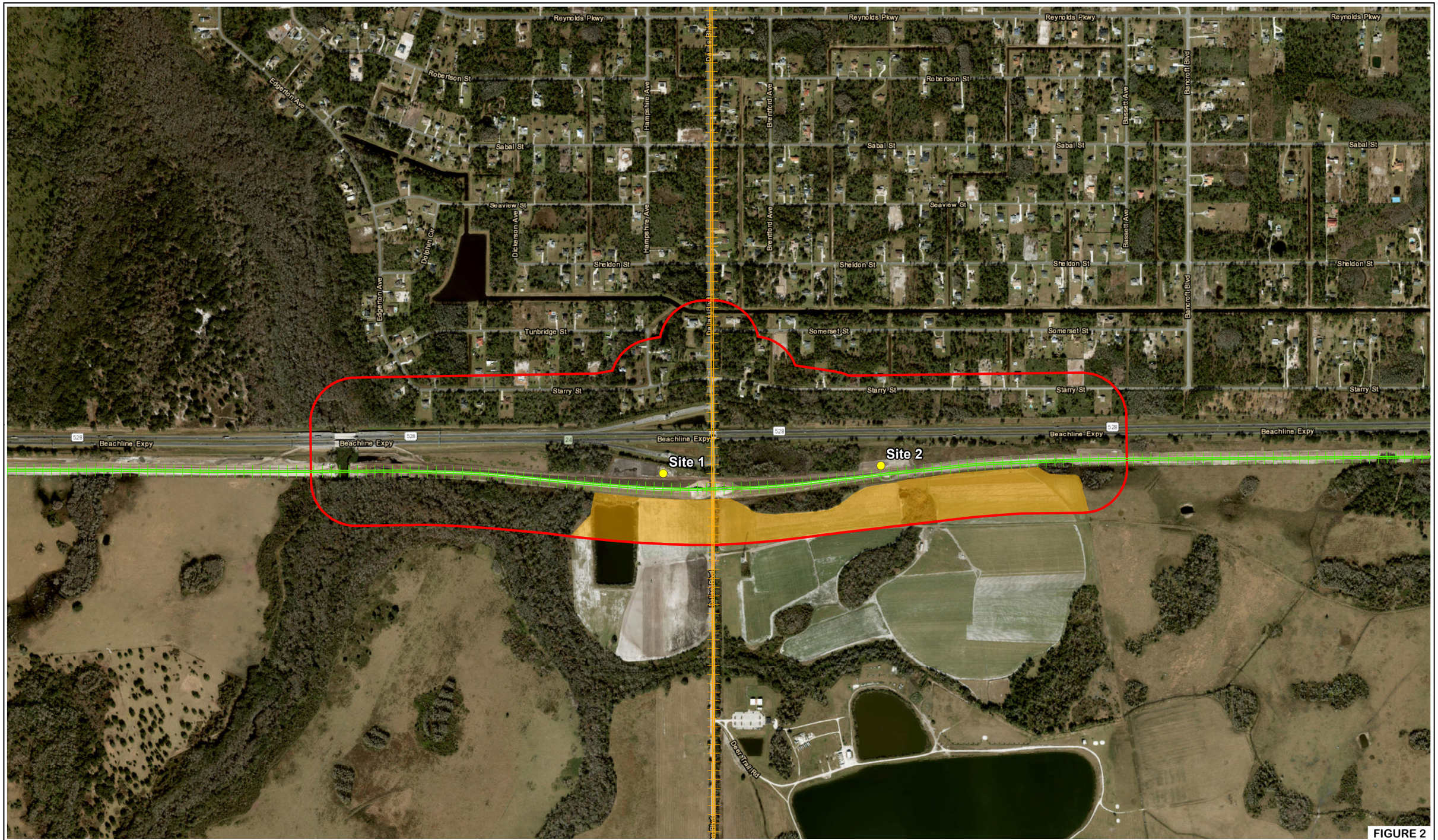

FIGURE 2

HIGH RISK RATING SITE LOCATION
MEDIUM RISK RATING SITE LOCATION
LOW RISK RATING SITE LOCATION
SOD FARM SITE NO. 3 (MEDIUM RISK RATING)
BRIGHTLINE RAIL LINE, SITE NO. 4 (NO RISK RATING)
HISTORICAL RAILROAD, SITE NO. 5 (MEDIUM RISK RATING)

N

0 500 1,000
Feet

RICHARD P. McCORMICK, P.G.
P.G. LICENSE NUMBER 2096
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS, INC.
919 LAKE BALDWIN LANE
ORLANDO, FL 32814

STATE OF FLORIDA
DEPARTMENT OF TRANSPORATATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	528-307

POTENTIAL CONTAMINATION SITE LOCATION MAP

SHEET NO.

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APPENDIX A

Contamination Risk Rating Descriptions

The contamination potential risk rating system was developed by FOOT and is included in Part 2, Chapter 20 of the PD&E Manual, dated July 1, 2020. The rating system incorporates four levels of risk:

1. **No** - A review of available information on the property and a review of the conceptual or design plans indicates there is no potential contamination impact to the project. It is possible that contaminants have been handled on the property. However, findings from the Level I evaluation indicate that contamination impacts are not expected.

2. **Low** - A review of available information indicates that past or current activities on the property have an ongoing contamination issue; the site has a hazardous waste generator identification (ID) number, or the site stores, handles, or manufactures hazardous materials. However, based on the review of conceptual or design plans and/or findings from the Level I evaluation, it is not likely that there would be any contamination impacts to the project.

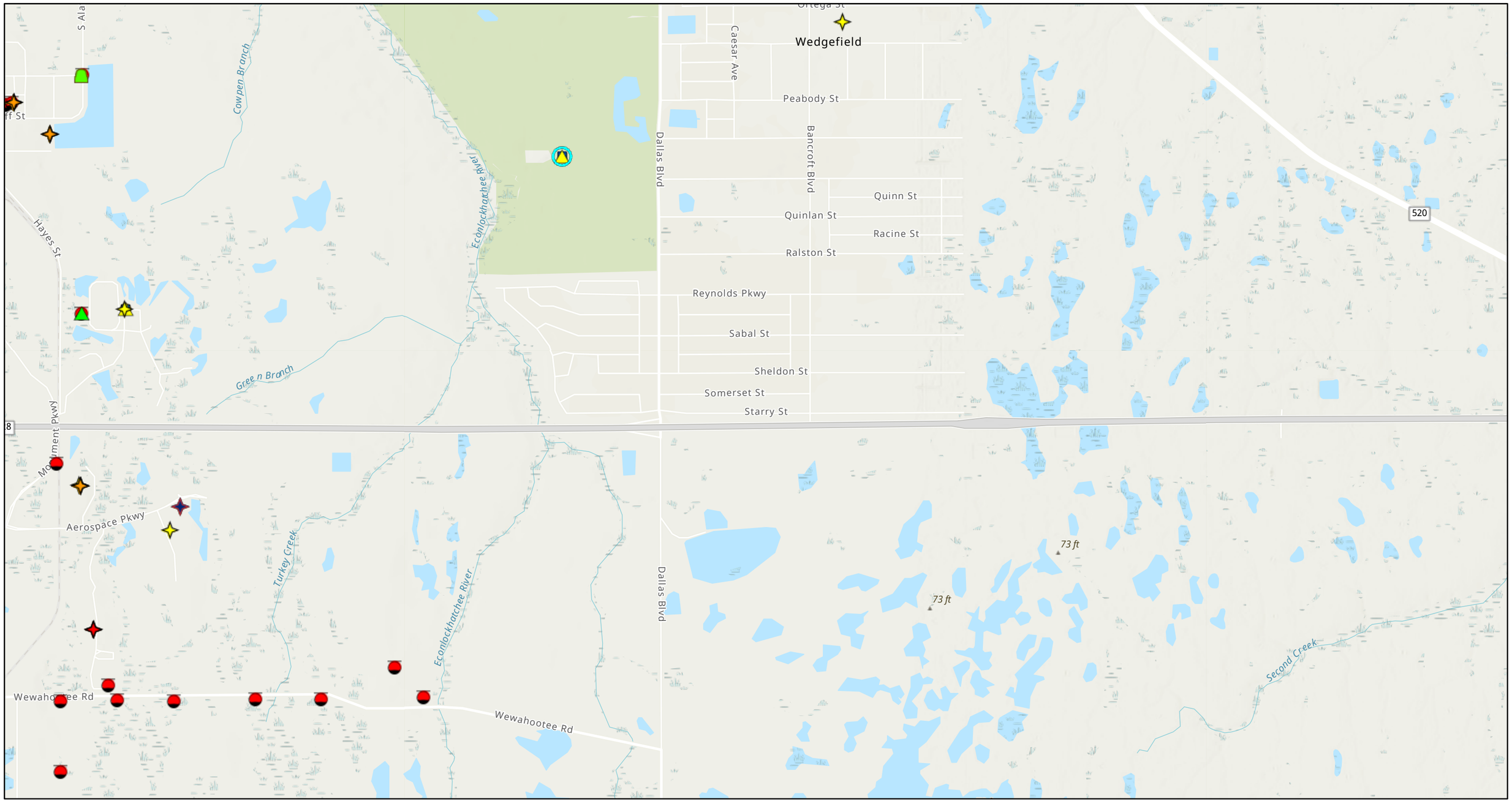
3. **Medium** - After a review of conceptual or design plans and findings from a Level I evaluation, a potential contamination impact to the project has been identified. If there is insufficient information (such as regulatory records or site historical documents) to make a determination as to the potential for contamination impact, and there is reasonable suspicion that contamination may exist, the property should be rated at least as a "Medium." Properties used historically as gasoline stations and which have not been evaluated or assessed by regulatory agencies, sites with abandoned in place underground petroleum storage tanks or currently operating gasoline stations should receive this rating.

4. **High** - After a review of all available information and conceptual or design plans, there is appropriate analytical data that shows contamination will substantially impact construction activities, have implications to ROW acquisition or have other potential transfer of contamination related liability to the FDOT.

APPENDIX B

Map Direct Map

Standard Map



February 9, 2023

- ERIC Waste Cleanup
- State-Owned Lands Cleanup Program (SOLCP) Sites
- ERIC Waste Cleanup
- Storage Tank Contamination Monitoring (STCM)

DEP Cleanup Sites

- OTHER WASTE CLEANUP
- PETROLEUM

Solid Waste Facilities

- Facility
- Small Quantity Hazardous Waste Generators (SQGs)
- Large Quantity Hazardous Waste Generators (LQGs)
- Compliance & Enforcement Tracking-Hazardous Waste Facilities
- Closed Hazardous Waste Facilities
- Small Quantity Hazardous Waste Generators (SQGs)
- Large Quantity Hazardous Waste Generators (LQGs)

1:45,862

0 0.5 1 2 mi

0 0.75 1.5 3 km

FDEP, DWM, FDEP,DWM, Esri, NASA, NGA, USGS, FEMA, County of Orange, FL, FDEP, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA, WRM