Geotechnical and Environmental Consultants, Inc.

MEMORANDUM

Date: August 13, 2024
Revised June 18, 2025
Revised June 25, 2025

To: Jay Patel, P.E. – Ardurra (jpatel@ardurra.com)

From: William L. Fox, P.E. and Gene Williford, P.E.

Subject: Report of Preliminary Geotechnical Engineering Evaluation
SR 417 SANFORD AIRPORT CONNECTOR PD&E STUDY
From SR 417 to Red Cleveland Boulevard
Seminole County, Florida
CFX Contract No. 002067
CFX Project No. 417-246A
GEC Project No. 5603G

The Central Florida Expressway Authority (CFX) is evaluating a new expressway connection from State Road (SR) 417 (Seminole Expressway) to Orlando Sanford International Airport in Seminole County, Florida. The evaluation area encompasses an approximate 20-square-mile area bounded roughly by SR 417 to the southwest, East Lake Mary Boulevard and the Orlando Sanford International Airport to the north, Skyway Drive to the east, and Lake Jesup to the south. The geotechnical evaluation for this Project Development and Environment (PD&E) Study consists of a desktop data review to identify critical geotechnical conditions.

Quadrangle Map Review

Based on review of the U.S. Geologic Survey (USGS) Oviedo, Florida and Osteen, Florida Quadrangle Maps, the topography within the evaluation area is nearly level to moderately sloping with natural grades ranging from about elevation +10 feet near Lake Jesup to about elevation +50 feet near the Orlando Sanford International Airport. These elevations are based on National Geodetic Vertical Datum (NGVD). The overall evaluation area, along with the Preferred Alternative and pond alternative sites, are depicted on excerpts of the USGS Quadrangle maps of Oviedo, Florida and Osteen, Florida (**Figure 1**) in the **Appendix**.

According to the USGS Quadrangle Map, the southern part of the evaluation area contains swamps, low-lying wetlands and wooded lands. These features are prevalent along the northern side of Lake Jesup. Drainageways and sloughs are shown on the western and northern parts of the evaluation area south of and crossing East Lake Mary Boulevard. The eastern portion of the

site contains agricultural lands. Several small lakes, ponds and water features are interspersed throughout the evaluation area. Two wells are also depicted on the Quadrangle Map to the north of Palm Way.

The Preferred Alternative traverses mostly wooded lands, agricultural lands, and rural single-family residences. Two residential subdivisions are located near the middle part of the preferred alignment.

NRCS Soil Survey Map Review

The Natural Resources Conservation Service (NRCS) Soil Survey for Seminole County was reviewed for near-surface soil and groundwater information. The NRCS Soil Survey map of the evaluation area, along with the Preferred Alternative and pond alternative sites (**Figures 2A** and **2B**), is attached and the depicted soils are summarized in **Table 1**.

Table 1: Seminole County NRCS Soils (March 2023)

Unit No.	Soil Name		Depth (inches)	Soil Description	Classification		Depth to Seasonal High Groundwater Level (feet)	Hydrologic Soil Group
					Unified	AASHTO		
2	Adamsville-Sparr fine sands	Adamsville	0 – 4 4 – 80	Fine sand Fine sand	SP-SM SP-SM, SP	A-3, A-2-4 A-3, A-2-4	2.0 – 3.5	A
		Sparr	0 – 4 4 – 41 41 – 43 43 – 72 72 - 80	Fine sand Fine sand Sandy loam Fine sandy loam Sandy loam	SP-SM, SM SP-SM, SM SC-SM, SC, SM SC-SM, SC SC-SM, SC, SM	A-3, A-2-4 A-3, A-2-4 A-2-4 A-2, A-4, A-6 A-2, A-4, A-6	1.5 – 3.5	A/D
6	Astatula-Apopka fine sands, 0 to 5 percent slopes	Astatula	0 – 4 4 – 80	Fine sand Fine sand	SP-SM, SP SP-SM, SP	A-3 A-3	> 6	A
		Apopka	0 – 3 3 – 64 64 – 80	Fine sand Fine sand Sandy clay loam	SP-SM, SP SP-SM, SP SC-SM, SC	A-3 A-3 A-2-4, A-2-6, A-4, A-6	>6	A
9	Basinger and Delray fine sands	Basinger	0 – 5 5 – 30 30 – 50 50 – 80	Fine sand Fine sand Fine sand Fine sand	SP SP-SM, SP SP-SM, SP SP-SM, SP	A-3 A-3, A-2-4 A-3, A-2-4 A-3, A-2-4	0.0 – 1.0	A/D
		Delray	0 – 12 12 – 50 50 – 80	Fine sand Fine sand Sandy loam	SC-SM, SP-SM, SM SP-SM SC-SM, SC, SM	A-3, A-2-4 A-3, A-2-4 A-2-4, A-2-6	0.0 – 0.5	A/D
10	Basinger, Samsula, and Hontoon soils, depressional	Basinger	0 – 6 6 – 18 18 – 35 35 – 80	Mucky fine sand Fine sand Fine sand Fine sand	SP-SM, SP SP-SM, SP SP-SM, SP SP-SM, SP	A-3, A-2-4 A-3, A-2-4 A-3, A-2-4 A-3, A-2-4	+2.0 – 0.0	A/D
		Hontoon	0 – 30 30 – 80	Muck Fine sand	PT SP-SM, SM, SP	A-8 A-3, A-2-4	+2.0 – 0.0	A/D
		Samsula	0 – 80	Muck	PT	A-8	+2.0 – 0.0	A/D

Unit No.	Soil Name		Depth (inches)	Soil Description	Classification		Depth to Seasonal High Groundwater Level (feet)	Hydrologic Soil Group
					Unified	AASHTO		
11	Basinger and Smyrna fine sands, depressional	Basinger	0 – 5 5 – 15 15 – 25 25 – 80	Mucky fine sand Fine sand Fine sand Fine sand	SP-SM, SP SP-SM, SP SP-SM, SP SP-SM, SP	A-3, A-2-4 A-3, A-2-4 A-3, A-2-4 A-3, A-2-4	+2.0 – 0.0	A/D
		Smyrna	0 – 2 2 – 15 15 – 25 25 – 80	Fine sand Fine sand Fine sand Fine sand	SP-SM, SP SP-SM, SP SP-SM, SM SP-SM, SP	A-3, A-2-4 A-3 A-3, A-2-4 A-3	+2.0 – 0.0	A/D
13	EauGallie and Immokalee fine sands	EauGallie	0 – 5 6 – 18 18 – 30 30 – 45 45 – 64 64 – 80	Fine sand Fine sand Fine sand Fine sand Fine sand Fine sand	SP-SM, SP SP-SM, SP SP-SM, SM SP-SM, SP SC-SM, SC, SM SP-SM, SM	A-3 A-3 A-3, A-2-4 A-3, A-2-4 A-2-4, A-2-6 A-3, A-2-4	0.5 – 1.5	A/D
		Immokalee	0 – 4 4 – 42 42 – 62 62 – 80	Fine sand Fine and Fine sand Fine sand	SP-SM, SP SP-SM, SP SP-SM, SM SP-SM, SP	A-3 A-3 A-3, A-2-4 A-3	0.5 – 1.5	A/D
15	Felda and Manatee mucky fine sands, depressional	Felda	0 – 4 4 – 28 28 – 36 36 – 46 46 – 80	Mucky fine sand Fine sand Sandy clay loam Loamy sand Fine sand	SP-SM, SP SP-SM, SP SC-SM, SC, SM SP-SM, SP SP-SM, SP	A-3 A-3 A-2-4, A-2-6 A-3, A-2-4 A-3	+2.0 – 0.0	A/D
		Manatee	0 – 14 14 – 19 19 – 33 33 – 50 50 – 80	Mucky fine sand Loamy sand Sandy loam Fine sandy loam Loamy fine sand	SP-SM, SM SC-SM, SC, SM SC-SM, SC, SM SC-SM, SC, SM SC-SM, SC, SM	A-3, A-2-4 A-2-4 A-2-4 A-2-4 A-2-4	+2.0 – 0.0	B/D
17	Brighton, Samsula, and Sanibel mucks	Brighton, drained	0 – 8 8 – 80	Muck Mucky peat	PT PT	A-8 A-8	+1.0 – 0.0	A/D
		Samsula, drained	0 – 26 26 – 30 30 – 80	Muck Mucky fine sand Fine sand	PT SP-SM, SP SP-SM, SM, SP	A-8 A-3 A-3, A-2-4	+2.0 – 0.0	A/D
		Sanibel, drained	0 – 6 6 – 8 8 – 80	Muck Mucky fine sand Fine sand	PT SP-SM, SP SP-SM, SP	A-8 A-3 A-3	+1.0 – 0.0	A/D
19	Manatee, Floridana, and Holopaw soils, frequently flooded	Manatee, flooded	0 – 10 10 – 33 33 – 52 52 – 80	Fine sand Loamy sand Sandy clay loam Loamy fine sand	SP-SM, SM SC-SM, SC, SM SC-SM, SC, SM SC-SM, SC, SM	A-3, A-2-4 A-2-4 A-2-4 A-2-4	0.0 – 0.5	B/D
		Floridana, flooded	0 – 18 18 – 29 29 – 80	Mucky fine sand Fine sand Fine sandy loam	SP-SM, SM SP-SM, SP SC-SM, SC	A-3, A-2-4 A-3 A-2-4, A-2-6	0.0 – 0.5	C/D
		Holopaw, flooded	0 – 6 6 – 50 50 – 80	Fine sand Fine sand Fine sandy loam	SP-SM, SP SP-SM, SP SC-SM, SC, SM	A-3 A-3 A-2-4, A-2-6	0.0 – 1.0	A/D

Unit No.	Soil Name		Depth (inches)	Soil Description	Classification		Depth to Seasonal High Groundwater Level (feet)	Hydrologic Soil Group
					Unified	AASHTO		
20	Myakka and EauGallie fine sands	Myakka	0 – 5 5 – 28 28 – 45 45 - 80	Fine sand Sand, fine sand Sand, fine sand, loamy fine sand Sand, fine sand	SP-SM, SP SP-SM, SP SP-SM, SM SP-SM, SP	A-3 A-3 A-3, A-2-4 A-3	0.5 – 1.5	A/D
		EauGallie	0 – 5 5 – 18 18 – 30 30 – 41 41 – 60 60 – 8	Fine sand Fine sand Sand, fine sand Fine sand, sand Sandy loam, sandy clay loam Sand, loamy sand	SP-SM, SP SP-SM, SP SP-SM, SM SP-SM, SP SC-SM, SC, SM SP-SM, SM	A-3 A-3 A-3, A-2-4 A-3, A-2-4 A-2-4, A-2-6 A-3, A-2-4	0.5 – 1.5	A/D
22	Nittaw muck, occasionally flooded		0 – 2 2 – 10 10 – 60 60 – 80	Muck Sandy loam, fine sand, mucky fine sand Sandy clay, clay Sandy loam, fine sand	PT SP-SM, SM CL, CH SC-SM, SP-SM, SM, SP	A-8 A-3, A-2-4 A-7 A-3, A-2-4	0.0 – 0.5	C/D
23	Nitaw, Okeelanta, and Basinger soils, frequently flooded	Nittaw, flooded	0 – 4 4 – 9 9 – 80	Muck Mucky fine sand Fine sand	PT SP-SM, SM CL, CH	A-8 A-3, A-2-4 A-7	0.0 – 0.5	C/D
		Okeelanta, flooded	0 – 42 42 – 80	Muck Fine sand	PT SP-SM, SM, SP	A-8 A-3, A-2-4	0.0 – 0.5	A/D
		Basinger, flooded	0 – 4 4 – 22 22 – 38 38 – 80	Fine sand Fine sand Sand, fine sand Sand, fine sand	SP SP SP-SM, SP SP-SM, SP	A-3 A-3 A-3, A-2-4 A-3, A-2-4	0.0 – 0.5	A/D
24	Paola-St. Lucie sands, 0 to 5 percent slopes	Paola	0 – 3 3 – 25 25 – 80	Sand Sand Sand	SP SP SP	A-3 A-3 A-3	>6	A
		St. Lucie	0 – 2 2 – 80	Sand Sand	SP SP	A-3 A-3	>6	A
25	Pineda-Pineda, wet, fine sand, 0 to 2 percent slopes	Pineda	0 – 1 1 – 5 5 – 36 36 – 54 54 – 80	Fine sand Fine sand Fine sand Fine sandy loam Fine sand	SP-SM, SM SP-SM, SM SP-SM, SM SC-SM, SC, CL SP-SM, SM	A-3, A-2-4 A-3, A-2-4 A-3, A-2-4 A-2-4, A-4, A-6 A-3, A-2-4	0.5 – 1.5	A/D
		Pineda, wet	0 – 1 1 – 5 5 – 36 36 – 54 54 – 80	Fine sand Fine sand Fine sand Fine sandy loam Fine sand	SP-SM, SM SP-SM, SM SP-SM, SM SC-SM, SC, CL SP-SM, SM	A-3, A-2-4 A-3, A-2-4 A-3, A-2-4 A-2-4, A-4, A-6 A-3, A-2-4	+1.0 – 0.0	A/D

Unit No.	Soil Name		Depth (inches)	Soil Description	Classification		Depth to Seasonal High Groundwater Level (feet)	Hydrologic Soil Group
					Unified	AASHTO		
26	Udorthents, excavated		0 – 7 7 – 80	Fine sand Sand, fine sand	SP-SM, SP SP-SM, SP	A-3 A-3	3.5 – 6.0	A
27	Pomello fine sand, 0 to 5 percent slopes		0 – 4 4 – 55 55 – 67 67 – 80	Fine sand Fine sand Fine sand Fine sand	SP-SM SP-SM SP-SM SP-SM	A-3 A-3 A-2-4 A-3, A-2-4	2.0 – 3.5	A
29	St. Johns and EauGallie fine sands	St. Johns	0 – 12 12 – 22 22 – 54 54 – 80	Fine sand Fine sand Fine sand Fine sand	SP-SM, SP SP-SM, SP SP-SM, SM SP-SM, SP	A-3 A-3 A-3, A-2-4 A-3	0.5 – 1.5	B/D
		EauGallie	0 – 3 3 – 16 16 – 35 35 – 38 38 – 72 72 – 80	Fine sand Fine sand Fine sand Fine sand Sandy clay loam Loamy sand	SP-SM, SP SP-SM, SP SP-SM, SM SP-SM, SP SC-SM, SC, SM SP-SM, SM	A-3 A-3 A-3, A-2-4 A-3, A-2-4 A-2-4, A-2-6 A-3, A-2-4	0.5 – 1.5	B/D
31	Tavares-Millhopper fine sands, 0 to 5 percent slopes	Tavares	0 – 6 6 – 80	Fine sand Fine sand	SP-SM, SM SP-SM, SM	A-3, A-2-4 A-3, A-2-4	3.5 – 6.0	A
		Millhopper	0 – 6 6 – 64 64 – 72 72 – 80	Fine sand Fine sand Fine sandy loam Sandy clay loam	SP-SM, SM SP-SM, SM SC-SM, SM, CL SC, SM, CL	A-3, A-2-4 A-3, A-2-4 A-2-4, A-4, A-6 A-2-4, A-6	3.5 – 6.0	A
34	Urban land, 0 to 2 percent slopes		--	--	--	--	--	--
35	Wabasso fine sand, 0 to 2 percent slopes		0 – 4 4 – 16 16 – 28 28 – 32 32 – 48 48 – 80	Fine sand Fine sand Fine sand Fine sand Fine sandy loam Loamy fine sand	SP-SM, SM SP-SM, SM SP-SM, SM SP-SM, SM SC-SM, SC, CL SM	A-3, A-2-4 A-3, A-2-4 A-3, A-2-4 A-3, A-2-4 A-2-4, A-4, A-6 A-2-4, A-4	0.5 – 1.5	A/D

Information contained in the NRCS Soil Survey is very general and may be outdated. It may not, therefore, be reflective of actual soil and groundwater conditions, particularly if recent development in the site vicinity has modified soil conditions or surface/subsurface drainage. The NRCS seasonal high groundwater levels summarized above do not account for changes in groundwater due to development and are only relevant for the natural, undisturbed condition of the soils.

Sand and Shallow Groundwater

The shallow soils depicted on the Soil Survey map are comprised predominantly of fine sands with varying silt content (A-3, A-2-4) and fine sands with varying clay content (A-2-6, A-4, A-6), except in the swamps, lakes and drainageways, where depressional (organic/muck) soils are

present. Seasonal high groundwater level estimates for the majority of the soils in the evaluation area range from 0.5 foot to 3.5 feet below the natural ground surface. Sands with shallow groundwater are highlighted in blue on **Figures 2A** and **2B**.

The sand soils (A-3, A-2-4) are generally suitable for roadway construction, and most are classified by FDOT as Select material. Shallow groundwater can impact roadway grades and stormwater pond site selection, design and construction.

Muck and Ponded Water

Basinger, Samsula, and Hontoon soils (Soil Unit No. 10), Brighton, Samsula, and Sanibel mucks (Soil Unit No. 17), Nittaw muck (Soil Unit No. 22), and Nittaw, Okeelanta, and Basinger soils (Soil Unit No. 23) are located within the evaluation area. These soil units are classified as very poorly drained, organic soils (A-8) associated with freshwater drainageways, marshes and swamps. According to the NRCS, organic soils extend to depths of about 3.5 feet to more than 6.5 feet. However, relic sinkholes often located within lakes and wetlands can contain muck deposits more than 100 feet deep. The muck soil units are highlighted in pink on **Figures 2A** and **2B**.

Organic soils, classified as A-8 in the American Association of State Highway and Transportation Officials (AASHTO) system, are highly compressible and can have severe limitations for development if left untreated. Removal of the muck, or treatment by means of soil surcharge, is typically required to provide adequate support for the roadway embankment. Extreme muck depths may make removal impractical and a surcharge ineffective, and in that case, a bridge may be the only feasible alternative.

In addition, the NRCS Soil Survey identifies Basinger and Smyrna fine sands, depressional (Soil Unit No. 11) Felda and Manatee mucky fine sands (Soil Unit No. 15) and the Manatee, Floridana, and Holopaw soils (Soil Unit No. 19) as very poorly drained soils located in low, wet depressions, sloughs and swamps. For these soil units, the NRCS estimates seasonal high groundwater levels to be ponded for 6 to 12 months of the year. According to the NRCS, water typically ponds about 0.5 foot to 2 feet above the ground surface. In addition, these soils reportedly contain surficial organic soils to depths of about 0.5 foot to 1.5 feet. The sands with ponded water soil units are highlighted in green on **Figures 2A** and **2B**.

Urban land

The NRCS Soil Survey depicts the Urban land soil series (Soil Unit No. 34) within the evaluation area. Urban Land refers to areas where most of the ground surface is covered by asphalt, concrete, buildings, and other impervious surfaces that modify surface/subsurface drainage and

obscure or alter the soils so that their identification is not possible. The depth to seasonal high groundwater level for this soil unit is typically dependent upon the functioning of existing drainage systems.

Subsurface Drainage

The soils present within the evaluation area are generally identified by NRCS as hydrologic soil group A and dual hydrologic soil groups A/D, B/D and, less frequently, C/D. Group A soils identify drained areas and Group D soils represent undrained areas. Group A soils exhibit low runoff potential due to their sandy, permeable nature. Group B soils and Group C soils exhibit moderate runoff potential due to presence of soils with higher fines content beneath surficial sands that impede the downward flow of water. Group D soils exhibit high runoff potential due to a shallow groundwater table and/or impervious near-surface silt, clay or organic fines.

Group A soils can be conducive to stormwater infiltration and design of dry retention ponds. Group B soils and Group C soils can also be conducive to stormwater infiltration, but to a lesser degree due to their moderate to slow infiltration rates. Group D soils indicate poor infiltration characteristics and are more conducive to the design of wet detention ponds.

Potentiometric Surface Map Review

The Upper Floridan Aquifer Potentiometric Surface contour elevations map developed from September 2021 water level data (the most recent data available) from the Florida Department of Environmental Protection (FDEP), Florida Geological Survey Geospatial data was reviewed to evaluate the potentiometric surface elevations of the Floridan aquifer in the project area. The FDEP map indicates the potentiometric surface of the Floridan aquifer at the site grades from approximately +25 to +30 feet NGVD from the north to the south.

Artesian groundwater conditions can be predicted based on comparison of the Floridan aquifer potentiometric surface and ground surface elevations. Since the existing ground surface in the evaluation area grades from approximately +10 to +50 feet NGVD, artesian flow conditions can occur in areas where the ground surface elevation is lower than the potentiometric surface elevation. This condition is prevalent in the southern portion of the evaluation area and excavations associated with the future construction, such as pond bottom elevations, should be established to prevent penetration of the confining layer soils of the Upper Floridan Aquifer to prevent artesian boils occurring.

Regional Geology

Due to its prevalent geology, referred to as karst, Central Florida is prone to the formation of sinkholes, or large, circular depressions created by local subsidence of the ground surface. The nature and relationship of the three sedimentary layers typical of Central Florida geology cause sinkholes. The deepest, or basement, layer is a massive, cavernous limestone formation known as the Floridan aquifer. The Floridan aquifer limestone is overlain by a silty or clayey sand, clay, phosphate, and limestone aquitard (or flow-retarding layer) ranging in thickness from nearly absent to greater than 100 feet and locally referred to as the Hawthorn Group (Hawthorn). The Hawthorn is in turn overlain by a 40- to 70-foot-thick surficial layer of sand, bearing the water table aquifer. The likelihood of sinkhole occurrence at a given site within the region is determined by the relationship among these three layers, specifically by the water (and soil)-transmitting capacity of the Hawthorn at that location.

The water table aquifer is comprised of Recent and Pleistocene sands and is separated from the Eocene limestone of the Floridan aquifer by the Miocene sands, clays and limestone of the Hawthorn. Since the thickness and consistency of the Hawthorn layer is variable across Central Florida, the likelihood of groundwater flow from the upper to the lower aquifer (known as aquifer recharge) will also vary by geographical location. In areas where the Hawthorn is absent, water table groundwater (and associated sands) can flow downward to cavities within the limestone aquifer, like sand through an hourglass, recharging the Floridan aquifer, and sometimes causing the formation of surface sinkholes. This process of subsurface erosion associated with recharging the Floridan aquifer is known as raveling. Thus, in Central Florida, areas of effective groundwater recharge to the Floridan aquifer have a higher potential for the formation of surface sinkholes.

Sinkhole Risk

No method of geological, geotechnical, or geophysical exploration is known that can accurately predict the occurrence of sinkholes. It is common geotechnical practice in Central Florida to make a qualitative prediction of sinkhole risk on the basis of local geological conditions in the vicinity of a particular site.

Based on our review of the U.S. Geological Survey Map entitled "Recharge and Discharge Areas of the Floridan Aquifer in the St. Johns River Water Management District and Vicinity, Florida," 1984, the evaluation area lies within an area of generally no recharge and, therefore, we can conclude based solely on this data that the evaluation area is located in an area where the relative risk of sinkhole formation is low compared to the overall risk across Central Florida.

Preferred Pond Sites

The locations of the preferred pond sites are shown on the attached **Figure 1** and **Figures 2A** and **2B**. Summaries of readily available soil and groundwater information for the pond sites are presented in **Table 2**.

Table 2: Summary of Soil and Groundwater Information for Pond Sites

Pond Alternative	NRCS Soil Unit Nos.	NRCS Seasonal High Groundwater Level Depth Range (feet)	Soil and Groundwater Design Considerations (see notes below)
Pond 417-1A	15, 25	+2.0 – 1.5	(2), (3)
Pond 417-1B	15, 25	+2.0 – 1.5	(2), (3)
Pond 417-2A	15, 25	+2.0 – 1.5	(2), (3)
Pond 417-2B	25	+1.0 – 1.5	(2), (3)
Pond 417-3A	10	+2.0 – 0.0	(1)
Pond 417-3B	11, 20	+2.0 – 1.5	
Pond 417-Existing 1	10, 27	+2.0 – 3.5	
Pond 417-4B	10	+2.0 – 0.0	(1)

1. Soils associated with surficial organic soils. Additional cost for muck removal.
2. High silt and clay content soils present below a depth of 1-foot typically. Limited fill suitability.
3. Potentiometric surface elevation of Upper Floridan Aquifer above ground surface elevation. High risk of artesian conditions.

The organic Muck (M) soils (AASHTO A-8) are not suitable for reuse as fill and should not be used in embankment construction. The A-3 and A-2-4 soils are Select (S) materials and may be reused as select fill in accordance with FDOT Standard Plans provided these soils can be readily placed and compacted and are not mixed with less desirable materials. The A-2-4 materials may retain excess moisture and may be difficult to dry and compact. The clayey soils (A-2-6, A-4, A-6) should be treated as Plastic (P) materials. Reuse of these soils should be in accordance with FDOT Standard Plans. Plastic soils are not typically considered suitable for use as fill for embankment construction and excavation backfill because of the increased difficulty with handling, moisture conditioning and compacting these soils. These plastic soils may be blended with A-3 soils to help improve their compaction characteristics.

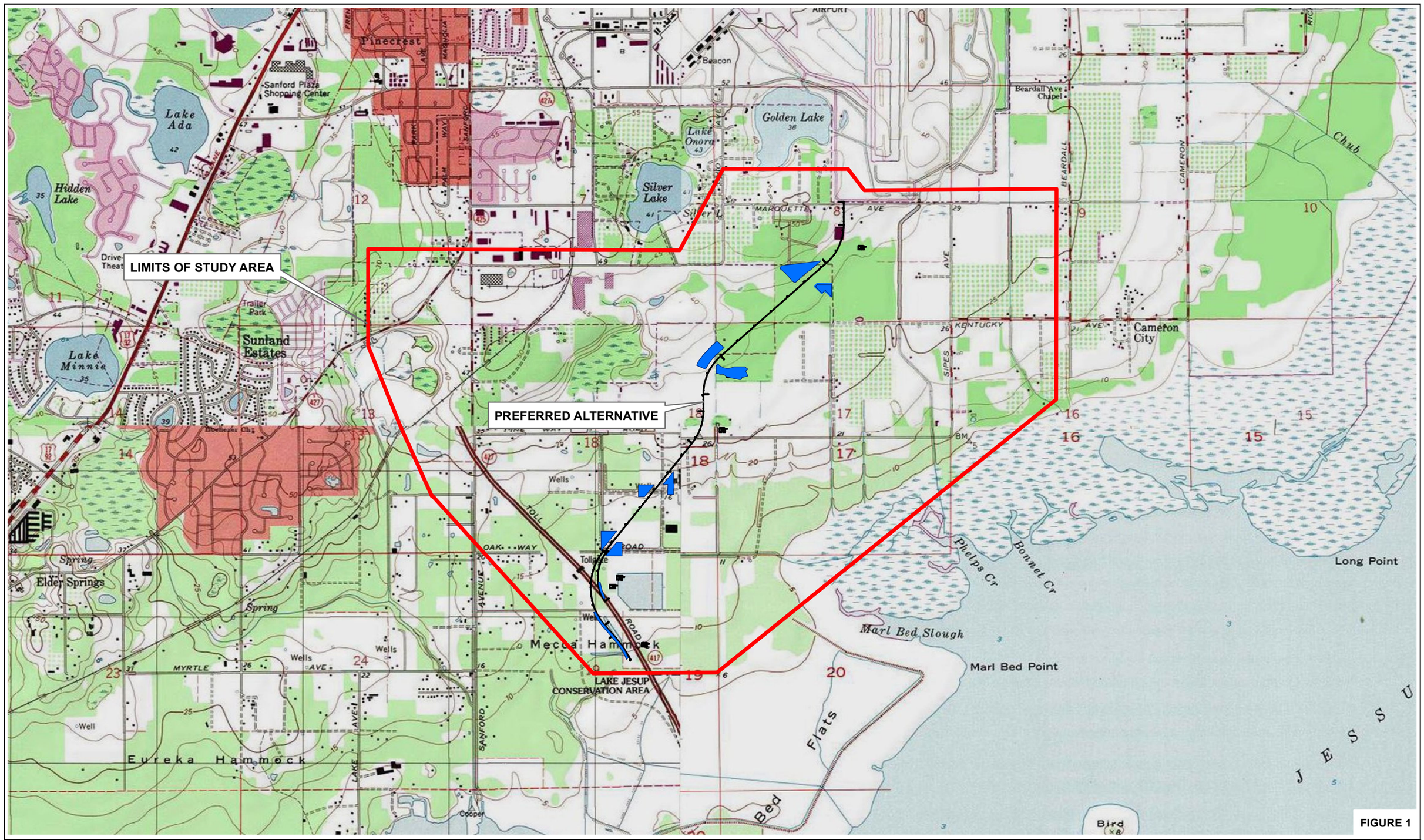
Limitations

This report has been prepared for the exclusive use of Ardurra and CFX, and for specific application to this project. GEC will not be held responsible for any other party's interpretation or use of this report's subsurface data or engineering analysis without our written authorization.

The sole purpose of this evaluation was to provide preliminary indications of subsurface conditions within the evaluation area as part of a preliminary geotechnical exploration program. This evaluation is preliminary in nature and is intended for project planning purposes only.

The information contained in this report should be disregarded if the nature, design, or location of the facilities is changed. If such changes are contemplated, GEC should be retained to review the new plans to assess the applicability of this report in light of the proposed changes.

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.



USGS Oviedo, FL Quadrangle Map
Dated: 1981
USGS Osteen, FL Quadrangle Map
Dated: 1981

N

0 1,000 2,000
Feet

VERNA E. WILLIFORD, IV, P.E.
P.E. LICENSE NUMBER 82275
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS, INC.
919 LAKE BALDWIN LANE
ORLANDO, FL. 32814

SR 417 SANFORD AIRPORT CONNECTOR PD&E STUDY

ROAD NO.	PROJECT NO.
SR 417	417-246A

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

USGS QUADRANGLE MAP

SHEET NO.

T:\J5603GE SR 417 Sanford Airport Connector\7 CADD Files\ArcGIS\5603G QUAD.mxd 6/25/2025

PREFERRED ALTERNATIVE

LIMITS OF STUDY AREA

Pond Existing 1

Pond 4B

Pond 3A

Pond 3B

Pond 2A

Pond 2B

SEMINOLE COUNTY SOIL SURVEY INDEX

- 2 - Adamsville-Sparr fine sands
- 6 - Astatula-Apopka fine sands, 0 to 5 percent slopes
- 9 - Basinger and Delray fine sands
- 10 - Basinger, Samsula, and Hontoon soils, depressional
- 11 - Basinger and Smyrna fine sands, depressional
- 13 - EauGallie and Immokalee fine sands
- 15 - Felda and Manatee mucky fine sands, depressional
- 17 - Brighton, Samsula, and Sanibel mucks
- 19 - Manatee, Floridana, and Holopaw soils, frequently flooded
- 20 - Myakka and EauGallie fine sands
- 22 - Nittaw muck, occasionally flooded
- 23 - Nittaw, Okeelanta, and Basinger soils, frequently flooded
- 24 - Paola-St. Lucie sands, 0 to 5 percent slopes
- 25 - Pineda-Pineda, wet, fine sand, 0 to 2 percent slopes
- 26 - Udorthents, excavated
- 27 - Pomello fine sand, 0 to 5 percent slopes
- 29 - St. Johns and EauGallie fine sands
- 31 - Tavares-Millhopper complex, 0 to 5 percent slopes
- 34 - Urban land, 0 to 2 percent slopes
- 35 - Wabasso fine sand, 0 to 2 percent slopes
- 99 - Water

FIGURE 2A

SAND / PONDED WATER

ORGANIC SOIL (MUCK) / LAKES AND OTHER WATER FEATURES

SAND / SHALLOW GROUNDWATER

N

0 500 1,000

Feet

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SR 417 SANFORD AIRPORT CONNECTOR PD&E STUDY

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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

NRCS SOIL SURVEY MAP

SHEET NO.

T:\J5603GE SR 417 Sanford Airport Connector\7 CADD Files\ArcGIS\5603G NRCS 2A.mxd 6/25/2025

PREFERRED ALTERNATIVE

Pond 3A

Pond 3B

Pond 2A

Pond 2B

Pond 1A

Pond 1B

LIMITS OF STUDY AREA

SEMINOLE COUNTY SOIL SURVEY INDEX

- 2 - Adamsville-Sparr fine sands
- 6 - Astatula-Apopka fine sands, 0 to 5 percent slopes
- 9 - Basinger and Delray fine sands
- 10 - Basinger, Samsula, and Hontoon soils, depressional
- 11 - Basinger and Smyrna fine sands, depressional
- 13 - EauGallie and Immokalee fine sands
- 15 - Felda and Manatee mucky fine sands, depressional
- 17 - Brighton, Samsula, and Sanibel mucks
- 19 - Manatee, Floridana, and Holopaw soils, frequently flooded
- 20 - Myakka and EauGallie fine sands
- 22 - Nittaw muck, occasionally flooded
- 23 - Nittaw, Okeelanta, and Basinger soils, frequently flooded
- 24 - Paola-St. Lucie sands, 0 to 5 percent slopes
- 25 - Pineda-Pineda, wet, fine sand, 0 to 2 percent slopes
- 26 - Udorthents, excavated
- 27 - Pomello fine sand, 0 to 5 percent slopes
- 29 - St. Johns and EauGallie fine sands
- 31 - Tavares-Millhopper complex, 0 to 5 percent slopes
- 34 - Urban land, 0 to 2 percent slopes
- 35 - Wabasso fine sand, 0 to 2 percent slopes
- 99 - Water

FIGURE 2B

SAND / PONDED WATER

ORGANIC SOIL (MUCK) / LAKES AND OTHER WATER FEATURES

SAND / SHALLOW GROUNDWATER

N

0 500 1,000

Feet

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SR 417 SANFORD
AIRPORT CONNECTOR
PD&E STUDY

ROAD NO.	PROJECT NO.
SR 417	417-246A

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

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