Appendix F
Ecological Summary Report

ECOLOGICAL SUMMARY REPORT

Woodbury Road
Roadway Conceptual Analysis Study
From Lake Underhill Road to State Road 50
Orange County Project Number: Y18-810

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List of Acronyms and Abbreviations

AJD	Approved Jurisdictional Determination
BA	Biological Assessment
BE	Biological Evaluation
BRP	Biodiversity Resource Priorities
CFA	Core Foraging Area
CFR	Code of Federal Regulations
CLEAR	Conservation Lands, Easements, and Recreation
CLIP	Critical Lands and Waters Identification Project
CWA	Clean Water Act
E	Endangered
EPA	Environmental Protection Agency
ERP	Environmental Resource Permit
ESA	Endangered Species Act
ESR	Ecological Summary Report
FAC	Florida Administrative Code
FDACS	Florida Department of Agriculture and Consumer Services
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FL-SOLARIS	Florida State Owned Lands and Records Information System
FLUCFCS	Florida Land Use, Cover, and Forms Classification System
FNAI	Florida Natural Areas Inventory
FS	Florida Statute
FWC	Florida Fish and Wildlife Conservation Commission
FWS	U.S. Fish and Wildlife Service
GP	General Permit
ISMP	Imperiled Species Management Plan
MB	Mitigation Bank
MSE	MSE Group, LLC
NMFS	National Marine Fisheries Service
NRCS	Natural Resources Conservation Service
NWP	Nationwide Permit
NWPR	Navigable Waters Protection Rule
OCEPD	Orange County Environmental Protection Division
OCPW	Orange County Public Works
RCA	Roadway Conceptual Analysis
RCW	Red-Cockaded Woodpecker
RHA	Rivers and Harbors Act of 1899
ROW	Right-of-Way
SFH	Suitable Foraging Habitat
SJRWMD	St. Johns River Water Management District
SP	Standard Permit
SR	State Road
SSC	Species of Special Concern
SW	Surface Water

List of Acronyms and Abbreviations (Cont'd.)

T	Threatened
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USC	U.S. Code
USGS	U.S. Geological Survey
WL	Wetland

Executive Summary

An Ecological Summary Report (ESR) has been conducted for Woodbury Road from Lake Underhill Road to State Road (SR) 50 (study corridor) (**Figure 1**). The purpose of this ESR is to identify ecological features within the study corridor and evaluate potential impacts to these features (hydrologic and natural habitat, threatened and endangered species) that could result from roadway improvements (i.e., additional travel lanes and stormwater management).

Wetlands and Other Surface Waters

Seven wetland systems, 10 other surface waters, and 8 existing stormwater management systems (ponds) were identified within the study corridor. Aerial interpretation and ground-truthing were used to approximate wetland and other surface water limits throughout the corridor. Impacts to wetland and other surface water were assessed for each of the three alignment alternatives. Summary of impacts, by type and alignment configuration, are provided in **Table 1**.

Table 1: Approximate Wetland and Other Surface Water Impacts Associated with Alternative Alignments for the Woodbury Road RCA.

Alignment	*Wetland Impacts (acres)	*Upland-Cut Surface Waters (acres)	*Wetland-Cut Surface Waters (acres)
Alignment 1 (Preferred)	4.39	1.13	0.05
Alignment 2	6.19	1.13	0.05
Alignment 3	6.19	1.13	0.05

*Wetland and other surface water impacts were approximated using aerial interpretation and ground-truth activities.

Wetlands and other surface waters are regulated by federal, state, and local government policies. Impacts to jurisdictional wetlands and other surface waters will require coordination with regulatory agency during the permitting of the proposed project and may require mitigation to offset adverse impacts. These systems were not field delineated; instead, personnel used aerial interpretation and site reconnaissance to approximate wetland and surface water limits. Each jurisdictional system will be delineated in accordance with federal and state regulations during the design phase.

Threatened and Endangered Species

A desktop review of readily available public databases of known state and federally protected wildlife was conducted for the study corridor, followed by site reconnaissance to verify the presence or potential for species involvement within the area. Although the desktop review identified the potential presence of protected species, site reviews did not identify protected wildlife species, or significant habitat within the existing right-of-way (ROW). Proposed improvements associated with existing stormwater ponds include expansion which may provide additional habitat for wetland dependent species.

No federal and/or state protected wildlife species were identified within the study corridor. It is anticipated that coordination with U.S. Fish and Wildlife Service (FWS), and/or Florida Fish and Wildlife Conservation Commission (FWC) will not be required during the permitting of this project.

A desktop review of readily available public databases of known state and federally protected flora was conducted for the study corridor, followed by site reconnaissance to verify the presence or potential for species involvement within the area. The Florida Department of Agriculture and Consumer Services

(FDACS) regulates the economic use of plant species identified as endangered, threatened, or commercially exploited. Three commercially exploited plants were identified within the study corridor:

- Cinnamon fern (*Osmunda cinnamomea*)
- Royal fern (*Osmunda regalis*)
- Saw palmetto (*Serenoa repens*)

No federal and/or state protected plant species were identified during the ground-truth activities. FDACS does not regulate disturbance of plant species from construction activities; therefore, the presence of these plants within the study corridor will not require coordination with regulatory agencies.

Wildlife Crossings

The potential of implementing wildlife crossings within the Woodbury Road study corridor was evaluated using several criteria, including current ecological conditions, proximity of existing conservation lands, biodiversity matrix, and proposed future development. An evaluation was conducted for two potential wildlife crossing locations along the study corridor:

- Wildlife Crossing 1 – located north of Waterford Lakes
- Wildlife Crossing 2 – located North of Parkbury Drive

Based on the evaluation, wildlife crossings do not appear feasible at this time within the study corridor. Should proposed development plans change in the future, reassessment of these locations would be recommended.

1.0 Introduction

MSE Group, LLC (MSE) conducted an ecological review and prepared an Ecological Summary Report (ESR) for Orange County Public Works (OCPW) – Transportation Planning Division. OCPW – Transportation Planning Division is conducting a Roadway Conceptual Analysis (RCA) for Woodbury Road from Lake Underhill Road to State Road (SR) 50 (study corridor) in Orange County, Florida.

This report documents the ecological features within the study corridor, which include wetland and/or other surface water communities; the occurrence or potential for occurrence of federal- and/ or state-protected species and their habitat; and the likelihood of involvement of such features during project implementation, including coordination with local, state, and federal agencies for permitting and mitigation needs.

2.0 Project Description

The study corridor begins at Lake Underhill Road and extends north to SR 50 for approximately 1.5 miles (**Figure 1**). The RCA for Woodbury Road has been initiated to study the potential widening of the roadway from its current two-lane alignment to a four-lane divided roadway with appropriate stormwater management system (**Figure 2**). In addition to a four-lane facility, this RCA includes evaluating public safety (including bike lanes and sidewalks) and intersection improvements at Waterford Lakes Parkway with Woodbury Road to 600 feet west along Waterford Lakes Parkway.

3.0 Methodology

MSE conducted an ecological evaluation of the study corridor, which identified and documented current hydrologic and natural features, threatened and endangered species, and permitting options for Woodbury Road RCA. This evaluation included review and analysis of the following items:

- Public records databases, handbooks, and manuals
  - Florida Department of Transportation (FDOT) Florida Land Use, Cover, Forms and Classification System (FLUCFCS) Handbook (1999)
  - Florida Fish and Wildlife Conservation Commission (FWC)
  - U.S. Fish and Wildlife Service (FWS)
  - Florida Department of Environmental Protection (FDEP) Map Direct
  - Florida Natural Inventories (FNAI)
  - St. Johns River Water Management District (SJRWMD)
  - U.S. Army Corps of Engineers (USACE)
  - U.S. Geological Survey (USGS) topographic quadrangle maps (**Figure 3**)
  - Historical aerials
- Physical setting conditions (topography, soils) in the study corridor
- Land use types within the study corridor
- Ground-truth activities for wetlands and other surface water features
- Evaluation of habitat for wildlife species, including threatened and endangered species
- Review of potential wildlife crossing and conservation lands within the study corridor
- Review of available permit and mitigation options

3.1 Wetlands and Other Surface Waters

The jurisdictional extent of wetlands and other surface water systems were aerial interpreted, and field verified in general accordance with the *1987 Corps of Engineers Wetlands Delineation Manual* (Technical Report Y-87-1), *November 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic Gulf Coastal Plan Region,* and the State of Florida's *Delineation of the Landward Extent*

of Wetlands and Surface Waters (Chapter 62-340, Florida Administrative Code [FAC]). In the event wetland boundaries differed between the two methods, the more "wetland inclusive" extent was used to evaluate that particular wetland system's boundary. The landward extent of other surface water systems was recognized to be at the top-of-bank for ditches with side slopes of 1-foot vertical to 4-feet horizontal or steeper, or using the seasonal high for swales with side slopes flatter than 1-foot vertical to 4-feet horizontal. Wetlands and other surface waters observed were classified using the SJRWMD land use type data, and the U.S. Fish and Wildlife Service (FWS) classification system as described in their *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979). Ground-truthing of wetland and other surface water was conducted along the study corridor in August 2020. In the field, wetlands (WL) and other surface waters (SW) were generally identified from south to north and east to west within the study corridor. Stormwater management systems were identified and evaluated using the nomenclature associated with the Woodbury Road RCA study.

3.2 Protected Wildlife Species and Their Habitat

Database queries were conducted to evaluate the occurrence or potential for occurrence of wildlife species identified as threatened (T), endangered (E), or species of special concern (SSC) by governing regulatory agencies, followed by ground-truth activities in August 2020. Pedestrian transects for the occurrence or potential for occurrence of federal- and/or state-protected wildlife were conducted along the study corridor and within proposed pond sites. Wildlife observations included direct (visual observation of species, scat, nests, etc.), and audible detection.

4.0 General Site Conditions

4.1 Soils

The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soil Survey is a comprehensive published source of information regarding near-surface soil and depth-to-groundwater conditions. The NRCS Soil Surveys of Orange County, Florida, were reviewed for information regarding near-surface soil conditions within the study corridor (**Figure 4**).

The NRCS Soil Survey identified the following soil units within the limits of the study corridor:

- 3 – Basinger fine sand, frequently ponded, 0 to 1 percent slopes (Hydric)
- 20 – Immokalee fine sand
- 34 – Pomello fine sand, 0 to 5 percent slopes
- 37 – St. Johns fine sand
- 44 – Smyrna-Smyrna, wet, fine sand, 0 to 2 percent slopes (Hydric components)
- 54 – Zolfo Fine Sand, 0 to 2 percent slopes
- 99 – Water

Generally, the NRCS data suggests that the depth to the water table for these soil types ranges from 0 to 42 inches; these soil types are identified as very poorly to moderately well-drained soils, with permeability ranging from moderately high to very high (NRCS, Web Soil Survey).

4.2 Current Land Use

Land use data available from SJRWMD and ground-truth activities were used to identify and describe land use types within the study corridor. Land Use types found within the study corridor are described below as listed in the FDOT FLUCFCS Handbook.

Predominant land use types along the study corridor consists of residential areas, institutional, commercial, and undeveloped/natural lands. Current land use was field verified and revised, if necessary (**Figure 5** and **Appendix A**). A description of current land use types is provided below.

4.2.1 Uplands

- **FLUCFCS 1200 – Medium Density, 2 > 5 dwelling units/acre** – This land use type best describes the single-family residential units located adjacent to the north and south bound ROW of the study corridor.
- **FLUCFCS 1300 – High Density, 6 or more dwelling units/acre** – This land use type best describes the multi-family residential units located adjacent to the ROW of the study corridor.
- **FLUCFCS 1400 – Commercial and Services** – This land use type consist of commercial business including gas stations, restaurants, dry cleaning, and day care located adjacent to the ROW of the study corridor.
- **FLUCFCS 1550 – Other Light Industrial** – This land use type is located at the southern end of the study corridor, east of Woodbury Road, and includes a daycare facility.
- **FLUCFCS 1700 – Institutional** – This land use type describes an elementary school and church facilities located adjacent to the ROW of the study corridor.
- **FLUCFCS 1900 – Open Land** – This land use type best describes the south portion of proposed Alt Pond 4B located east of Woodbury Road, south of SR 50, and west of SR 408. This area is vegetatively comprised of prickly pear (*Opuntia* spp.), bahia grass (*Paspalum notatum*), dog fennel (*Eupatorium capillifolium*), saw palmetto (*Serenoa repens*), blackberry (*Rubus* spp.), grapevine (*Vitis* spp.), beautyberry (*Callicarpa americana*), golden rain tree (*Koelreuteria paniculata*), and rattlebox (*Crotalaria* spp.).
- **FLUCFCS 4110 – Pine Flatwood** – This land use type is found within undeveloped areas of the study corridor, east and west of Woodbury Road. This land use consists of a canopy of slash pine (*Pinus elliotti*) and live oaks (*Quercus* spp.), with a subcanopy and groundcover of max myrtle (*Myrica cerifera*), saw palmetto, beautyberry, and bahia grass.
- **FLUCFCS 4340 – Upland Mixed – Coniferous/ Hardwood** – This land use type is located south of SR 50 and east of Woodbury Road. This land use is vegetatively comprised of Carolina willow (*Salix caroliniana*), slash pine, saw palmetto, Brazilian pepper (*Schinus terebinthifolius*), grapevine, cesarweed (*Urena lobata*), live oak, loblolly bay (*Gordonia lasianthus*), air potato (*Dioscorea* spp.), rattlebox, and bahia grass.
- **FLUCFCS 8140 – Roads and Highways** – This land use type consists of the study corridor, including Woodbury Road, SR 408, SR 50, and Lake Underhill Road.

4.2.2 Wetlands and Other Surface Waters

Wetland systems were identified from south to north and east to west along the study corridor with wetland system identified as WL, and other surface waters identified using SW (**Figure 6**). The land use type of each system identified was then classified using the FDOT FLUCFCS handbook.

- **FLUCFCS 5120 – Streams and Waterways (Upland-Cut)** – This land use best describes the canal running west to east passing under Woodbury Road through a double box culvert (**SW1**). This land use consists of open water with maintained bahia grass side slopes.

- **FLUCFCS 5120 – Streams and Waterways (Upland-Cut)** – This land use best describes ditches and swales (**SW2 through SW10**) located within the existing ROW of the study corridor. Vegetation typical of this land use includes alligator weed (*Alternanthera philoxeroides*), white-top sedge (*Dichromena colorata*), and bahia grass.
- **FLUCFCS 5300 – Reservoirs** – This land use type best describes existing stormwater management systems located within the study corridor and includes Retention 1, Pond 24A, Pond 24B, Pond 305-10, Pond 9B, Existing Pond 1, and the pond within Woodbury Apartments. These systems are comprised of open water with maintained bahia grass side slopes.
- **FLUCFCS 6250 – Hydric Pine Flatwood** – This land use type is found within **WL2**, **WL5**, and **WL 6** along the study corridor. This land use is vegetatively comprised of slash pine, Brazilian pepper, water oak, primrose willow (*Ludwigia* spp.), dahoon holly, red root (*Lachnanthes caroliana*), cinnamon fern, sedges (*Carex* spp.), muscadine grapevine, and areas of open water.
- **FLUCFCS 6300 – Wetland Forested Mixed** – This land use type best describes **WL1**, **WL3**, **WL4** and **WL7** along the study corridor. These areas are vegetatively comprised of cypress (*Taxodium* spp.), slash pine, Chinese tallow (*Triadica sebifera*), water oak (*Quercus nigra*), red maple (*Acer rubrum*), sweetbay magnolia (*Magnolia grandiflora*), loblolly bay, wax myrtle, dahoon holly (*Illex cassine*), royal fern, maidencane (*Panicum hemitomon*), muscadine grapevine, Virginia creeper (*Parthenocissus quinquefolia*), and standing water.

5.0 Protected Flora

FNAI is a non-profit conservation organization that maintains a database of recorded occurrences of rare habitat types and imperiled plant and wildlife species. While FNAI classifies imperiled species on a 5-tiered rarity ranking system based both globally and state-wide, they also include federal and state protection statuses for such species. FNAI is not a regulatory or law enforcement agency; however, FNAI's database was consulted for this study due to their comprehensive species occurrence records.

The Florida Department of Agriculture and Consumer Services (FDACS) regulates the economic use of flora identified as endangered, threatened, or commercially exploited. Typical economic uses include gathering live wild plants for resale as ornaments or harvesting of plant material (e.g., saw palmetto berries) for resale. Incidental destruction of rare flora caused by land clearing associated with construction or agriculture is not regulated or prohibited by FDACS.

The FNAI and FDACS list of protected and commercially exploited flora was reviewed for species known to occur within Orange County, Florida, and the potential for such species to occur within the study corridor. Protected flora species are those categorized by FWS and/or FWC as T, E, or SSC, thereby receiving a level of protection because of their status. The potential occurrence of protected flora species identified within the study corridor is based on the type of vegetative communities present. The probability of each species occurring within the study corridor was ranked using the following requirements:

1. **No** – indicates no suitable habitat present. Suitable habitat is defined as intact natural land that is typically used by the species under consideration.
2. **Low** – indicates that marginally suitable habitat may exist within the study corridor, but the species was not observed during field observations. Marginal describes natural land that has been altered from its native state due to human activity, ecological succession, or conversion; however, the species under consideration could still inhabit the environment.

3. **Moderate** – indicates that suitable habitat exists within the study corridor, but the species was not observed during field observations.
4. **High** – indicates that suitable habitat exists within the study corridor and the species of interest was observed during field observations.

Table 1 provides a summary of federally and/or state-protected flora species known to occur in Orange County and their potential for occurrence within the study corridor.

Table 2: Federally and State-Protected Flora Species Known to Occur within Orange County, Florida, and Potential for Occurrence within the Woodbury Road RCA Study Corridor

Scientific Name	Common Name	FWS Status	FWC Status	Occurrence Potential	Habitat
Bonamia grandiflora	Florida bonamia	T	E	Low	Sand pine scrub with evergreen scrub oaks, bare sunny sand areas, road rights-of-way, fire lanes
Calopogon multiflorus	Many-flowered grass-pink	--	T	Low	Fire maintained damp pinelands and meadows
Centrosema arenicola	Sand butterfly pea	--	E	Low	sandhill, scrubby flatwoods, dry upland woods
Chionanthus pygmaeus	Pygmy fringe tree	--	E	Low	scrub, sandhill, xeric hammock
Clitoria fragrans	Scrub pigeon-wing	T	E	No	Turkey oak barrens with wire grass, bluejack and turkey oak; also scrub and scrubby high pine
Coelorachis tuberculosa	Piedmont jointgrass	--	T	Low	Found in moist to wet areas such as bogs and pine woods
Coleataenia abscissa	Cutthroatgrass	--	E	Low	Seepage slopes
Deeringothamnus pulchellus	Beautiful pawpaw/White squirrel-banana	E	E	Low	Open slash or longleaf pine flatwoods with wiregrass and dwarf live oak understory
Eriogonum longifolium var. gnaphalifolium	Scrub buckwheat	T	E	Low	Sandhill, oak-hickory scrub on yellow sands, high pineland between scrub and sandhill, turkey oak barrens
Glandularia tampensis	Tampa vervain	--	E	Low	Tampa mock vervain: live oak–cabbage palm hammocks and pine–palmetto flatwoods
Illicium parviflorum	Star anise	--	E	Low	Banks of spring-run or seepage streams, bottomland forest, hydric hammock, baygall dominated by red maple and sweet bay
Lechea cernua	Nodding pinweed	--	T	Low	Dry sandy areas, sand pine scrub, scrub, dunes, and sandy ridges
Lechea divaricata	Pine pinweed	--	E	Low	Scrub and scrubby flatwoods

Scientific Name	Common Name	FWS Status	FWC Status	Occurrence Potential	Habitat
Lupinus aridorum	Scrub lupine/McFarlin's lupine	E	E	Low	Sand pine and rosemary scrub
Matelea floridana	Florida spiny-pod	--	E	Low	Mesic hammock
Monotropa hypopithys	Pinesap	--	E	Low	Moist, shaded, temperate forests
Najas filifolia	Narrowleaf naiad	--	T	Low	Freshwater ponds
Nemastylis floridana	Celestial lily	--	E	Low	Wet flatwoods, prairies, marshes, cabbage palm hammocks edge
Nolina atopocarpa	Florida beargrass	--	T	No	Flatwoods, savannas, shell middens
Nolina brittoniana	Britton's beargrass	E	E	Low	Scrub, sandhill, scrubby flatwoods, xeric hammock
Ophioglossum palmatum	Hand fern	--	E	Low	Old leaf bases of cabbage palms in maritime hammocks and wet hammocks
Paronychia chartacea	Papery whitlow-wort	T	E	Low	Sandy openings around sandhill upland lakes and karst ponds; Lake Whales Ridge scrub
Pecluma plumula	Plume polypody	--	E	Low	Tree branches, limestone in hammocks, wet woods, and limesinks
Pecluma ptilota var. bourgeauana	Comp polypody	--	E	Low	Swamp plume polypody: rockland hammocks, strand swamps, and wet woods; often on tree bases and fallen logs
Platanthera integra	Yellow fringeless orchid	--	E	Low	Wet woods and pine barrens, often in sand soils
Polygonella lewtonii	Lewton's polygala	E	-	No	White sand scrub
Polygonella myriophylla	Small's jointweed/ sandlace	E	E	Low	Open, sandy areas within scrub, mostly white sand
Prunus geniculata	Scrub plum	E	E	Low	Sandhill and oak scrub
Pteroglossaspis ecristata	Giant orchid	--	T	Low	Sandhill, scrub, pine flatwoods, pine rocklands
Salix floridiana	Florida willow	--	E	Low	Wet, mucky soils in bottomland forests, floodplains, hydric hammocks, swamps, edges of spring-runs, and streams
Schizachyrium niveum	Scrub bluestem	--	E	Low	White sand patches in rosemary scrub; also, sand pine scrub and oak scrub
Stylisma abdita	Scrub stylisma	--	E	Low	Scrub, high pine

Scientific Name	Common Name	FWS Status	FWC Status	Occurrence Potential	Habitat
Warea amplexifolia	Clasping warea	E	E	Low	Sandhill with longleaf pine and wiregrass; Lake Wales Ridge
Zephyranthes simpsonii	Redmargin zephyrlily	--	T	Low	Wet pinelands, pastures, and roadsides
Commercially Exploited					
Encyclia tampensis	Butterfly orchid	--	--	Low	On trees in hammocks, hardwood swamps, cypress swamps
Epidendrum conopseum	Green-fly orchid	--	--	Low	On trees in moist hammocks, cypress and hardwood swamps
Lycopodium cernua	Nodding club-moss	--	--	Low	Wet depressions, ditches
Osmunda cinnamomea	Cinnamon fern	--	--	High	Swamps, wetlands
Osmunda regalis	Royal fern	--	--	High	Swamps, wetlands
Rhapidophyllum hystrix	Needle palm	--	--	Low	Hammocks, bottomlands
Rhododendron canescenx	Pink azalea	--	--	Low	Wet to well-drained woodlands
Serenoa repens	Saw palmetto	--	--	High	Wet to dry flatwoods and hammocks

E = Endangered, T = Threatened, SSC= Species of Special Concern, T S/A = Threatened Similar in Appearance
Data Source: Florida Natural Areas Inventory (FNAI) Tracking List Orange County Updated April 2019, visited August 2020; Atlas of Florida Plants Institute for Systematic Botany; Florida Department of Agriculture (FDA) Endangered, Threatened, and Commercially Exploited Species
FWS North Florida Ecological Service Office Species Account

6.0 Federally and State-Protected Wildlife Species

Literature reviews and database queries were conducted to identify federally and/or state-protected wildlife species known to occur in Orange County, Florida, and the potential occurrence of such species to inhabit the study corridor. Federally and/or state-protected wildlife species are those categorized by FWS and/or FWC as T, E, or SSC, thereby receiving a level of protection because of their status. The potential occurrence of protected wildlife species identified within the study corridor is based on the type and quality of present vegetative communities and the surrounding land uses. The probability of each wildlife species occurring within the study corridor was ranked using the following requirements:

1. **No** – indicates no suitable habitat present. Suitable habitat is defined as intact natural land that is typically used by the species under consideration.
2. **Low** – indicates that marginally suitable habitat may exist within the study corridor, but the species was not observed during field observations. Marginal describes natural land that has been altered from its native state due to human activity, ecological succession, or conversion; however, the species under consideration could still inhabit the area.
3. **Moderate** – indicates that suitable habitat exists within the study corridor, but the species was not observed during field observations.

4. **High** – indicates that suitable habitat exists within the study corridor and the species of interest was observed during field observations.

Table 2 provides a summary of those federally and/or state-protected species known to occur in Orange County and their potential for occurrence within the study corridor. A discussion of federal and/or state-protected wildlife with the occurrence potential to be found within the study area, or the study area falls within the species consultation area, are discussed in detail below.

Table 3: Federally and State-Protected Wildlife Species Known to Occur in Orange County, Florida, and the Potential for Occurrence within the Woodbury Road RCA Study Corridor

Scientific Name	Common Name	Protection Status	Occurrence Potential	Consultation Area	Habitat
Fish					
Pteronotropis welaka	Bluenose shiner	ST	No	--	Quiet backwaters and pools of blackwater streams and rivers and spring runs; usually with thick vegetation nearby
Reptiles					
Alligator mississippiensis	American alligator	FT(S/A)	Moderate	--	Various aquatic habitats
Drymarchon corais couperi	Eastern indigo snake	FT	Low	--	Wide variety of habitats
Gopherus polyphemus	Gopher tortoise	ST	No	--	Sandhills, scrub, hammocks, dry prairies, flatwoods, mixed forests
Lampropeltis extenuata	Pine snake	ST	Low	--	Sandhills, scrubby flatwoods, xeric hammocks, ruderal areas
Plestiodon reynoldsi	Sand Skink	FT	No	No	Rosemary scrub, scrubby flatwoods, sand pine, oak scrub
Lampropeltis extenuate	Short-tailed snake	ST	Low	--	Longleaf pine-turkey oak, sand pine scrub, xeric hammocks
Birds					
Haliaeetus leucocephalus	*Bald eagle	--	Low	--	Forested areas adjacent to bodies of water
Polyborus plancus	Audubon's Crested Caracara	FT	Low	Yes	Open country, dry prairie, ruderal areas
Rostrhamus sociabilis	Everglade snail kite	FE	Low	Yes	Freshwater marshes, vegetated fringes of shallow lakes and ponds
Athene cunicularia floridiana	Florida burrowing owl	ST	Low	--	Sparsely vegetated sandhills, dry prairies, ruderal areas
Grus canadensis	Florida sandhill crane	ST	Low	--	Shallow wetlands, freshwater marshes, wet prairies
Aphelocoma coeruluscens	Florida scrub-jay	FT	Low	Yes	Scrub, scrubby flatwoods
Egretta carruela	Little blue heron	ST	Moderate	--	Marshes, ponds, rivers
Picoides borealis	Red-cockaded woodpecker	FE	Low	Yes	Open, mature pine flatwoods

Scientific Name	Common Name	Protection Status	Occurrence Potential	Consultation Area	Habitat
Egretta Tricolor	Tricolored heron	ST	Moderate	--	Marshes, ponds, rivers
Platalea ajaja	Roseate spoonbill	ST	Low	--	Coastal mangroves, Brazilian pepper on man-made dredge spoil islands, willow heads of freshwater
Mycteria americana	Wood stork	FT	Moderate	--	Fresh and brackish forested wetlands, swamps, ponds, marshes

Occurrence Potential = No, Low, Moderate, High
Consultation Area = Identified within consultation area as depicted by FWS and/or FWC GIS Data
Code Key: FE = Federally designated Endangered, ST = State-designated Threatened, FT = Federally designated Threatened, FT S/A = Federally-designated Threatened due to Similar in Appearance
Data Source: URL:FWS ECOS accessed August 2020: https://ecos.fws.gov/ecp0/reports/species-listed-by-state-report?stateAbbrev=FL&stateName=Florida&statusCategory=Listed&status=listed
Florida's endangered species, and threatened species dated December 2018: https://myfwc.com/media/1945/threatend-endangered-species.pdf
FNAI.org accessed August 2020.
*Protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act

6.1 Bald Eagle

Although the bald eagle (*Haliaeetus leucocephalus*) has been delisted, under the Endangered Species Act, the species remains protected through the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. Florida has one of the densest concentrations of nesting bald eagles in the lower 48 states, with several clustered around significant lake, river, and coastal systems throughout the state (FWC Bald Eagle Management). Bald eagles typically nest and roost in forested habitats consisting of mature canopy trees located along habitat edges, allowing an unobstructed view of surrounding areas. Daytime roosts are in the highest trees and adjacent to shorelines. High quality foraging habitat for bald eagles has a diversity and abundance of prey, access to shallow water, and tall trees or structures (FWC, Bald Eagle).

The FWC Bald Eagle Nest locator (updated through 2017) was queried for known bald eagle nest sites within a 1-mile radius of the study corridor. No documented bald eagle nest sites were identified within a 1-mile radius, and no active nest sites were identified during the site reconnaissance.

It is anticipated that the roadway and stormwater management improvements along the study corridor will not adversely impact the bald eagle.

6.2 Federally Protected Wildlife Species

6.2.1 American Alligator

FWS considers the American alligator (*Alligator mississippiensis*) threatened due to similarity in appearance to the federally endangered American crocodile (*Crocodylus acutus*). The American alligator inhabits fresh and brackish marshes, ponds, lakes, rivers, swamps, bayous, and large spring runs. They have been found in salt marsh and estuarine habitats in some parts of the state (Scott 2004). Alligators play a vital role in creating and maintaining microhabitats (gator holes), which can serve as refuge to water source habitats and benefit a host of species. Nests consist of a mound of compacted earth and vegetation usually 4–7 feet in diameter (Scott 2004). Nesting season occurs in the spring. The alligator has a wide variety of food sources, including fish, ducks, wading birds, raccoons, and turtles.

Although the alligator is known to inhabit stormwater management ponds and canals, proposed improvements within the study corridor associated with surface waters are limited to expansions of existing systems; therefore, proposed improvements are not anticipated to adversely impact the American alligator.

6.2.2 Audubon's Crested Caracara

FWS lists the crested caracara (*Polyborus plancus audubonii*) as threatened. It is typically found in dry or wet prairies with scattered cabbage palms and improved and unimproved pasturelands (FWS Multispecies Recovery Plan for South Florida). Nest sites are typically found in the tallest cabbage palm or other structures free of dense vegetation. Caracara birds are opportunistic feeders with their diets consisting of insects, fish, snakes, turtles, birds, and mammals (rabbits, skunks, prairie dogs).

The study corridor lies within the consultation area of the crested caracara (**Figure 7**); however, it is heavily developed and lacks large open area typical of the caracara's preferred habitat. Based on the location of the study area, and the lack of suitable nesting and foraging habitat, it is anticipated that proposed improvements will not adversely impact the Audubon's crested caracara.

6.2.3 Florida Scrub-Jay

FWS lists the Florida scrub-jay (*Aphelocoma coerulescens*) as threatened. This species is typically found in sand pine, xeric oak scrub, scrubby flatwoods with sandy soils, and fire-dominated habitat types. The scrub-jay's diet consists mainly of acorns, arthropods, berries, seeds, and a wide variety of insects (Woolfenden & Fitzpatrick 1996).

Although the study corridor is located within the FWS consultation area for the Florida scrub-jay (**Figure 8**), suitable habitat for this species is not found within or immediately adjacent to the study corridor. It is anticipated that proposed roadway and stormwater management improvements to the study corridor will not adversely impact the Florida scrub-jay.

6.2.4 Red-Cockaded Woodpecker

FWS lists the red-cockaded woodpecker (*Picoides borealis*) (RCW) as endangered. The RCW is known to inhabit mature pine forests where they can bore out cavities. RCWs favor environments that have a diversity of grass, forb, and shrub species. Their diet consists mainly of insects and arthropods, with fruit and seeds making up a small portion (FWS March 9, 2020).

Although the study corridor falls within the FWS consultation area for the RCW (**Figure 9**), suitable nesting and foraging habitat are not within or immediately adjacent to the study corridor. In addition, RCW's were not observed during site reconnaissance.

It is anticipated that proposed roadway and stormwater management improvements to the study corridor will not adversely impact the RCW.

6.2.5 Everglade Snail Kite

FWS lists the Everglade snail kite (*Rostrhamus sociabilis plumbeus*) as endangered -. The snail kite is found near large, open freshwater marshes and lakes with shallow water and low density of emergent vegetation of natural and man-made systems. The apple snail (*Pomacea paludosa*) is the snail kite's main food source, which makes the snail kite's survival directly dependent on the hydrology and water quality of watersheds associated with the Everglades, lake Okeechobee, and the Kissimmee and the upper St. Johns Rivers (FWS Multi-Species Recovery Plan for South Florida).

The study corridor is located within the FWS consultation area (**Figure 10**) for the snail kite; however, no suitable foraging or nesting habitat is located within the study corridor. It is anticipated that the proposed roadway improvements will not adversely impact the Everglade snail kite.

6.2.6 Wood Stork

FWS lists the wood stork (*Mycteria americana*) threatened. This species is typically found in freshwater marshes, swamps, lagoons, ponds, flooded fields, depressions in marshes, and brackish wetlands. The critical foraging areas for this species include areas of very shallow water, generally 6–10 inches in depth, where there is an abundance of small fishes and other aquatic life. These small fishes may include mosquitofish, sailfin mollies, flagfish, and several species of sunfish. Wood storks may also prey on frogs, salamanders, snakes, crayfish, insects, and baby alligators (Scott 2004). Suitable foraging habitat (SFH) is defined in *The Corps of Engineers, Jacksonville District, U.S. Fish and Wildlife Service, Jacksonville Ecological Services Field Office and State of Florida Effect Determination Key for the Wood Stork in Central and North Peninsular Florida* (2008) as "any area containing patches of relatively open (25% aquatic vegetation), calm water, and having a permanent or seasonal water depth between 2 and 15 inches." Examples of SFH include freshwater marshes and stock ponds, shallow, seasonally flooded roadside or agricultural ditches, narrow tidal creeks or shallow tidal pools, managed impoundments, and depressions in cypress heads and swamp sloughs. FWS has identified core foraging areas (CFA) around wood stork colonies that are deemed important for reproductive success. The CFA within the study corridor is identified as a 15-mile radius from known wood stork colonies.

The study corridor is located within the 15-mile CFA of three wood stork colonies (FWS Wood Storks 2010 – 2019 GIS Database) (**Figure 11**):

- Lake Mary Jane – last active 2019, 11.09 miles south
- Orlando Wetland Park – last active 2018, 12.36 miles east
- Lake Lawne – last active 2019, 14.75 miles west

Based on the location of the study corridor within the CFA, the *Corps of Engineers and U.S. Fish and Wildlife Service Effect Determination Key for the Wood Stork in Central and North Peninsular Florida (2008)* (Key) was evaluated for the study corridor. Following the Key:

- Project is more than 2,500 feet from a colony site
- Project impacts to SFH are less than or equal to 0.5 acre

Review of the preferred alignment suggests the potential impacts to SFH are less than or equal to 0.5 acre and are not considered critical foraging habitat; therefore, the proposed project is anticipated to receive a finding of "*not likely to adversely affect (NLAA)*" this species.

6.3 State-Protected Wildlife Species

6.3.1 Gopher Tortoise

FWC lists the gopher tortoise (*Gopherus polyphemus*) as threatened. The gopher tortoise inhabits subterranean burrows in dry upland habitats. Vegetative communities most often inhabited by gopher tortoises include longleaf pine sandhills, xeric oak hammocks, scrub, pine flatwoods, dry prairies and coastal dunes. Gopher tortoises can also be found in pastures, ruderal fields, and grassy roadsides. To be suitable for gopher tortoises, the habitat must have well-drained sandy soils for digging burrows, herbaceous plants, and open sunny areas for nesting and basking. Periodic natural fires play an important role in maintaining tortoise habitat by opening up the canopy and promoting growth of herbaceous plants for foraging. If natural fires are suppressed, the habitat becomes unsuitable for gopher tortoises (Cox 1987). Gopher tortoise burrows are an important habitat to many native species. It is estimated that 39 invertebrates and 42 vertebrate species use the gopher tortoise burrow to some degree (Cox 1987). Of those species, protected species that frequently inhabit the gopher tortoise burrow include the Florida pine snake, eastern indigo snake, and burrowing owl. This commensal relationship warranted field investigation for such species within the study corridor.

The study corridor is largely developed, with little suitable habitat for the gopher tortoise. During site review, no gopher tortoises or their burrows were observed within study corridor or proposed stormwater management sites. It is anticipated that the proposed project will not adversely impact gopher tortoises or their burrows.

6.3.2 Florida Pine Snake

FWC lists the Florida pine snake (*Pituophis melanoleucus*) as threatened. The Florida pine snake is found in sandhills, including old fields and pastures, with a moderate to open canopy and dry sandy soils, in which it burrows. The pine snake is also found in sand pine scrub and scrubby flatwoods; it often coexists with pocket gophers and gopher tortoises (FNAI 2018). The diet of the Florida pine snake primarily consists of moles, rabbits, mice, rats, squirrels, lizards, and other snakes and their eggs (Ernst and Ernst 2003).

The study corridor is largely developed, with little suitable habitat for the Florida pine snake. The Florida pine snake was not observed within the limits of the study corridor; therefore, is anticipated that the proposed project will not adversely impact the Florida pine snake.

6.3.3 Florida Sandhill Crane

FWC lists the Florida sandhill crane (*Grus canadensis*) as threatened. The Florida sandhill crane is a non-migratory bird found in freshwater marshes, prairies, and pastures (FNAI 2018). These birds nest in freshwater ponds and marshes that have an average water depth of 5 to 13 inches, and sites vary from year to year due to the fluctuation of water levels. Their preferred habitat contains short vegetation (less than 20 inches in uplands), and they generally avoid areas with tall vegetation or dense canopies (FWC 2020). The sandhill crane is often found foraging in a variety of open habitats, including roadsides. Their diet consists of berries, seeds, insects, mice, small birds, snakes, lizards, and frogs.

Foraging and nesting habitat may be found within the study corridor within the maintained ROW and existing stormwater pond locations; however, the species was not observed during the site review. It is anticipated that the proposed roadway and stormwater improvements within the study corridor will not adversely impact the Florida sandhill crane.

6.3.4 Wading Birds

FWC lists the roseate spoonbill (*Platalea ajaja*), little blue heron (*Egretta caerulea*), and tricolored heron (*Egretta tricolor*) as threatened. These species are typically found in marshes, ponds, lakes, meadows, mudflats, lagoons, streams, mangrove lagoons, and other bodies of shallow waters. Their diet consists of various types of fishes, amphibians, and invertebrates. Nesting generally occurs in both coastal and freshwater environments in swamps and/or mangrove forests. They are known to share nesting sites with other wading birds to form rookery colonies (Rodgers 1996).

Foraging habitat is present within and immediately adjacent to the study corridor; however, these species were not observed during the site review. Proposed improvements within the study corridor include expanding and creating stormwater management ponds, which are anticipated to provide additional foraging habitat for wading birds; therefore, it is anticipated that proposed improvements within the study corridor will not adversely impact these species or their habitat.

6.4 Wildlife Observations

Wildlife species observed within the study corridor during field review included southern black racer (*Coluber constrictor*), red-shoulder hawk (*Buteo lineatus*), blue jay (*Cyanocitta cristata*), great blue heron (*Ardea herodias*), northern cardinal (*Cardinalis cardinalis*), mourning dove (*Zeanida macroura*), black

vulture (*Coragyps atratus*), and armadillo (*Dasypus novemcinctus*).

7.0 Regulatory Requirements

Federal, state, and local government agencies are charged with protecting jurisdictional wetlands and surface waters, protected wildlife species, and their habitats. A discussion of each agency's general requirements in protecting such features is provided below.

7.1 Federal Requirements

7.1.1 U.S. Army Corps of Engineers

The Department of the Army, through its regulatory division, regulates the discharge of dredge or fill material into waters of the United States (WOTUS) under Section 404 of the Clean Water Act (CWA), and in navigable waters of the United States. under Sections 9 and 10 of the Rivers and Harbors Act of 1899 (RHA) (USACE and EPA 2007). The term "navigable waters of the United States" is defined to include all waters that are subject to the ebb and flow of the tide, and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce (33 CFR 329.4 RHA). Since 1970, the USACE and U.S. Environmental Protection Agency (EPA) have defined wetlands under the CWA as "areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" and "wetlands [that] generally include swamps, marshes, bogs, and similar areas" (EPA Section 404 of the CWA).

On June 22, 2020, the Navigable Waters Protection Rule (NWPR) became affective codifying the definition of "water of the United States" under the CWA. The NWPR includes four categories of jurisdictional waters and provides specific exclusions for many water features that traditionally had been regulated (Federal Register Vol. 85, No 77. April 21, 2020). In this final rule, "waters of the United States" include the following:

1. Territorial seas and traditional navigable waters
2. Perennial and intermittent tributaries that contribute surface flow to such waters
3. Certain lakes, ponds, and impoundments of jurisdictional waters (dams)
4. Wetlands adjacent to other jurisdictional waters

To determine if a wetland system is considered jurisdictional under the USACE rules and regulations, an applicant may submit an Approved Jurisdictional Determination (AJD) request. USACE will review wetland and/or other surface water systems within limits of a project to determine if they are classified as waters of the United States under the NWPR.

If federal jurisdiction is determined, impacts to wetland systems would require coordination with USACE to obtain one of the following three types of permits (USACE Sourcebook):

- **Nationwide Permits (NWP)** – NWPs are used to allow filling of wetlands and other jurisdictional waterbodies in situations where the impacts to these systems will have minimal adverse environmental impact. NWPs allow certain categorical activities to take place so long as the activity does not exceed impact thresholds.
    - **NWP 14 – Linear Transportation Projects** – This permit is available for projects such as roadways, highways, railways, trails, airport runways, and taxiways. For issuance of an NWP-14 in non-tidal waters, a project must have 0.5-acre or less of impacts to USACE-regulated waters.

- **General Permits (GP)** – GPs are issued on a nationwide or regional basis for a category of activities that are substantially similar in nature and cause only minimal individual and cumulative impacts. GPs are reviewed every 5 years and have been developed to reduce the burden of the regulatory program on the public and ensure timely issuance of permits.
- **Standard Permits (SP)** – SPs are required when the proposed project does not meet the criteria of a GP or NWP. SPs require a 21-day comment period under public notice.

In addition to direct wetland impacts, USACE considered secondary impacts (lighting, noise, trash) that may result from the upland activity. During the design phase, unavoidable direct and secondary impacts to "waters of the United States" may be offset through appropriate mitigation.

7.1.2 U.S. Fish and Wildlife Service

FWS regulates protected wildlife species under the Endangered Species Act (ESA) of 1973. FWS typically becomes involved during the wetland permitting process through a Section 7 Consultation with USACE. In accordance with the Fish and Wildlife Coordination Act (16 USC 661-666c), consultation with FWS and FWC is necessary when "waters of any stream or other body of water are proposed or authorized to be impounded, diverted,…or otherwise controlled or modified" under a federal permit.

Section 10 of the ESA is designed to regulate a wide range of activities affecting endangered or threatened organisms and their habitats (protected resources). With some exceptions, the ESA prohibits activities affecting these protected species and their habitats unless authorized by a permit from FWS or the National Marine Fisheries Service (NMFS). Permitted activities are designed to be consistent with the conservation of the species and this action is undertaken when USACE permitting is not required.

During consultation with FWS, the agency will evaluate the project and provide one of the following determinations for each species identified within the project area:

- **No effect** – USACE has determined that the project will not adversely impact the species and no further coordination with FWS is required.
- **May affect** – USACE has determined that the proposed project may impact a protected resource. USACE will consult with FWS to take either of the following actions:
  - Request concurrence with "may affect, but not likely to adversely affect."
  - Request initiation of formal consultation for determinations of "may affect, likely to adversely affect."

  Both requests should include written analysis explaining the determination in the form of a Biological Assessment (BA) or a Biological Evaluation (BE) (FWS 2016).

Desktop analysis and ground-truth activities along the study corridor did not identify critical foraging, resting, or nesting habitat for wildlife species identified as threatened or endangered by FWS; therefore, coordination with FWS is not anticipated during the permitting phase of this project. Should proposed pond locations or alignments shift, additional field reviews may be warranted.

7.2 State Requirements

7.2.1 St. Johns River Water Management District

The state of Florida defines wetlands as "those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and under normal circumstances, do support, a prevalence of vegetation typically adapted for life in saturated soils" (Chapter 62-340.200 FAC). SJRWMD regulates impacts to wetlands and/or other surface waters, pursuant to Part IV Chapter 373 of the Florida Statute (FS), and in accordance with Chapter 62-330 FAC for area of the Woodbury Road RCA. SJRWMD

requires an Environmental Resource Permit (ERP) that authorizes activities in a manner that prevents flooding, manages surface water, and protects water quality, wetlands, and other surface waters. As part of the permit process, SJRWMD rules and regulations require the applicant to evaluate the elimination or reduction of impacts to wetland and/or other surface water systems. When reviewing an application, SJRWMD considers the following:

- The degree of impact to the wetland and other surface water functions caused by a proposed activity.
- Whether the impact to these functions can be mitigated.
- The practicability of design modification that could eliminate or reduce impacts to these functions, including alignment alternatives for a proposed linear system.

Pursuant to Section 10.1.1(f) of the ERP Applicant's Handbook (General and Environmental) Volume 1 (June 1, 2018), an applicant must ensure that a regulated activity will not cause adverse secondary impacts to the water resources. Secondary impact criterion consists of the following four parts in which an applicant must provide reasonable assurance that secondary impacts from construction, alteration, and intended or reasonable expected uses of a proposed project:

- will not cause violations of water quality standards or adverse impacts to the functions of wetlands or other surface waters.
- will not adversely impact the ecological value of uplands to federal and/or state protected aquatic and wetland dependent wildlife species for enabling existing nesting or denning by these species (excluding areas needed for foraging or wildlife corridors).
- will not impact any significant historical or archeological resource.
- will not cause adverse impacts in later phases that are very closely linked and casually related to the intended project.

SJRWMD regulates cumulative impacts pursuant to Section 10.1.1(g) of SJRWMD's ERP Applicant Handbook. Cumulative impacts consist of wetland and/or other surface water impacts within the same drainage basin as the proposed project. Cumulative impacts to water quality are evaluated by criterion set in Section 10.1.1(C), and by evaluating impacts to functions identified in **Section 10.2.2 ERP Applicant's Handbook**.

Design modifications to reduce and eliminate impacts must be explored. Impacts remaining after practicable design modification may be offset through mitigation. Mitigation is required for direct impacts to wetland systems greater than 5 acres in size. In addition, SJRWMD assesses secondary impacts with an average of 25 feet into the system. In order to reduce and/or eliminate secondary impacts, SJRWMD may require a 15-foot minimum/25-foot average upland buffer around a preserved wetland system.

Impacts to wetland systems may be offset through preservation or the purchase of mitigation credits from an approved mitigation bank.

During the design phase of this project wetlands and other surface water systems will need to be delineated in accordance with state and federal regulations to accurately determine impacts and mitigation requirements. Mitigation in the form of bank credits area available for this project from several mitigation banks. The preferred mitigation bank for use for Orange County projects is TM-Econ Mitigation Bank Phase IV (Orange County). TM-Econ Mitigation Bank Phase IV has federal and state credits available (USACE RIBITS and SJRWMD Mitigation Bank, 2020).

7.2.2 Florida Fish and Wildlife Conservation Commission

Under Article IV Section 9 of the Florida Constitution, FWC has the authority to "exercise regulatory and executive powers of the state with respect to wildlife animal life and freshwater aquatic life" (FWC Imperiled Species Management Plan [ISMP] 2016). State-protected wildlife species, prohibitions, and permits are identified in Chapter 68A-27 FAC. FWC maintains Florida's ISMP 2016-2026, which is designed to conserve 57 fish and wildlife species over the next 10 years. FWC's Species Conservation Planning Section issue permits authorizing impacts to Florida's protected land-dwelling wildlife. Protected wildlife species are those identified as endangered, threatened, or species of special concern, as well as migratory birds and other species protected by state rules. Species Conservation Measures and Permitting Guidelines (FWC 2016) have been developed for 26 species to assist in determining permit needs and minimizing impacts to wildlife. The guidelines are intended to provide clear information on requirements established in the FAC related to intentional and incidental take permitting, and guidance on species range, survey methodology, and recommended practices.

Desktop analysis and ground-truth activities along the study corridor did not identify critical foraging, resting, or nesting habitat for wildlife species identified as threatened, endangered or species of special concern by FWC; therefore, coordination with FWC is not anticipated during the permitting phase of this project. Should proposed pond locations or alignments shift, additional field reviews may be warranted.

7.3 Local Government

7.3.1 Orange County Environmental Protection Division

The Orange County Environmental Protection Division (OCEPD) is a local government agency that regulates wetlands pursuant to Article X – Wetland Conservations Areas Section 15 (Conservation Ordinance of Orange County). This ordinance classifies wetland systems by size, hydrologic connection, and use of the system by protected wildlife species. All wetland systems within unincorporated Orange County, Florida, are classified using the following criteria:

- Class I – System has a hydrologic connection to natural surface water bodies, or lake littoral zone; is 40 acres or larger in size; or provides critical habitat to federal- and/or state-protected wildlife species.
- Class II – System consists of isolated wetlands or formerly isolated wetlands that have been altered to have a direct connection to other surface water drainage, and the system is greater than or equal to 5 acres or is not otherwise classified as a Class I wetland.
- Class III – System is isolated wetland less than 5 acres and does not qualify as a Class I or Class II system.

Class I wetland systems receive the greatest protection and may be impacted only when no alternative exists for the reasonable use of the land where there is an overriding public benefit. Class II wetland systems may be impacted except when contrary to public interest. Class III wetland systems may be impacted in every case.

OCEPD evaluates secondary impacts like that of SJRWMD with a 15-foot minimum, 25-foot average width into a system. In addition, direct and secondary impacts may be offset through appropriate mitigation.

8.0 Potential Impacts to Wetlands, Surface Waters, Wildlife, and Their Habitat

8.1 Potential Wetland and Other Surface Water Impacts

Current ecological conditions within the study corridor were evaluated to determine the potential for adverse wetland and/or other surface water impacts associated with three alignment alternates and stormwater management pond locations. The potential for adverse impacts to wetlands, other surface waters, and protected flora and fauna are described below.

8.1.1 Direct Impacts to Wetland and/or Other Surface Waters

The approximate area of direct wetland and/or other surface water impacts associated with each alignment and pond location are identified below in **Table 3** and depicted in **Figure 12**.

Table 4: Approximate Wetland and Other Surface Water Impacts Associated with Woodbury Road RCA

Wetland/Other Surface Water ID	FLUCFCS Code	Roadway Impact (ac)*	Proposed Pond ID	Proposed Pond Impact (ac)**
Alignment 1				
Wetland 1	6210	0.15	--	--
Wetland 2	6250	0.19	--	--
Wetland 3	6300	0.07	--	--
Wetland 4	6300	--	--	--
Wetland 5	6250	0.09	--	--
Wetland 6	6250	--	Alt Pond 4B	2.7
Wetland 7	6300	--	Retention 1	1.19
TOTAL		0.50		3.89
Upland-Cut Surface Water 1	5120	0.13		
Upland-Cut Surface Water 2	5120	0.13		
Upland-Cut Surface Water 3	5120	0.50		
Upland-Cut Surface Water 4	5120	0.05		
Upland-Cut Surface Water 5	5120	0.16		
Upland-Cut Surface Water 6	5120	0.07		
Upland-Cut Surface Water 7	5120	0.09		
Upland-Cut Surface Water 8	5120	--		
Upland-Cut Surface Water 9	5120	--		
Wetland-cut Surface Water 10	5130	0.005		
Reservoirs**	5300	--	--	--
TOTAL		1.135		
Alignment 2				
Wetland 1	6210	0.15	--	--
Wetland 2	6250	0.19	--	--
Wetland 3	6300	0.07	--	--
Wetland 4	6300	--	Alt Pond 3A	1.8
Wetland 5	6250	0.09	--	--
Wetland 6	6250	--	Alt Pond 4B	2.7
Wetland 7	6300	--	Retention Pond	1.19

Wetland/Other Surface Water ID	FLUCFCS Code	Roadway Impact (ac)*	Proposed Pond ID	Proposed Pond Impact (ac)**
TOTAL		0.50		5.69
Upland-Cut Surface Water 1	5120	0.13		
Upland-Cut Surface Water 2	5120	0.13		
Upland-Cut Surface Water 3	5120	0.50		
Upland-Cut Surface Water 4	5120	0.05		
Upland-Cut Surface Water 5	5120	0.16		
Upland-Cut Surface Water 6	5120	0.07		
Upland-Cut Surface Water 7	5120	0.09		
Upland-Cut Surface Water 8	5120	--		
Upland-Cut Surface Water 9	5120	--		
Wetland-cut Surface Water 10	5130	0.005		
Reservoirs**	5300	--	--	--
TOTAL		1.135		
Alignment 3				
Wetland 1	6210	0.15	--	--
Wetland 2	6250	0.19	--	--
Wetland 3	6300	0.07	--	--
Wetland 4	6300	--	Alt Pond 3A	1.8
Wetland 5	6250	0.09	--	--
Wetland 6	6250	--	Alt Pond 4B	2.7
Wetland 7	6300	00	Retention Pond	1.19
TOTAL		0.50		5.69
Upland-Cut Surface Water 1	5120	0.13		
Upland-Cut Surface Water 2	5120	0.13		
Upland-Cut Surface Water 3	5120	0.50		
Upland-Cut Surface Water 4	5120	0.05		
Upland-Cut Surface Water 5	5120	0.16		
Upland-Cut Surface Water 6	5120	0.07		
Upland-Cut Surface Water 7	5120	0.09		
Upland-Cut Surface Water 8	5120	--		
Upland-Cut Surface Water 9	5120	--		
Wetland-cut Surface Water 10	5130	0.005		
Reservoirs**	5300	--	--	--
TOTAL		1.135		

* Impact acreages are based on approximate limits through aerial interpretation and limited ground-truthing activities.
** Previously permitted storm water management systems would not be jurisdictional unless inhabited by protected wildlife species.

8.1.2 Secondary Impacts

Federal, state, and local regulatory agencies with jurisdiction over the proposed wetland impacts evaluate potential secondary impacts to wetlands and wildlife during the permitting process. Secondary impacts from construction may include lighting, collisions with wildlife from vehicles, and impacts to water quality.

Secondary impacts to the habitat function of wetlands associated with adjacent upland construction activities will typically not be considered adverse if upland buffers, with a minimum width of 15 feet and an average width of 25 feet, are provided adjacent to the wetlands that will remain. Buffers, except for drainage features, must be maintained in their natural/undisturbed condition, provided the construction or use of these features does not adversely impact wetlands. Wetlands or other surface waters cannot be filled to create upland buffers.

Secondary impacts associated with the proposed project will need to be evaluated during the design phase to ensure the proposed hydroperiod of the stormwater management system does not adversely affect the hydrology of an adjacent wetland systems.

Secondary wetland impacts will need to be evaluated during the permitting process when final design and direct wetland impacts have been determined.

8.1.3 Cumulative Impacts

SJRWMD requires an applicant to provide reasonable assurance that construction activities will not cause unacceptable cumulative impacts to wetlands and other surface waters in the same drainage basin as the proposed project. SJRWMD takes into consideration any potential future projects that may have environmental impacts, which, without the current project, would not otherwise be constructed.

If an applicant proposes to mitigate these adverse impacts within the same drainage basin as impacts, and if mitigation fully offsets these impacts, then the proposed construction will be considered to have no unacceptable cumulative impacts to wetlands and other surface waters. Mitigation banking for unavoidable impacts is anticipated to be used. Mitigation credits within the same drainage basin are anticipated to be used. Options for banking are summarized in Section 9.0, Mitigation Assessment.

8.1.4 Avoidance and Minimization

The proposed improvements to Woodbury Road will improve the road's level of service and enhance safety for the general public. When evaluating practicable design modification to reduce or eliminate wetland impacts, regulatory agencies may not require avoidance and minimization when the following events occur:

- The ecological value the functions provide is low, and the proposed mitigation will provide greater long-term ecological value.
- Proposed mitigation all or part of a plan that provides regional ecological value and provides greater long-term ecological value that the area of wetland or other surface water proposed for impacts.

In compliance with state and local roadway design criteria, improvements to Woodbury Road may provide little opportunity to avoid or minimize adverse wetland impacts within the existing ROW. The Woodbury Road RCA identifies several proposed stormwater management pond locations within the study corridor. Site planning has included reconfiguration of existing stormwater management ponds using existing ponds and avoidance of wetland impacts.

It is anticipated that jurisdictional wetlands and/or other surface water systems within the Woodbury Road study corridor will be avoided and/or minimized to the greatest extent practical while maintaining safety and function. Further avoidance and minimization efforts of wetlands should be evaluated during the final design.

8.1.5 Potential Impacts to Federally and/or State-Protected Wildlife Species

The potential impact to federal- and/or state-protected wildlife species was evaluated based upon

occurrence determinations for Orange County, Florida, as shown in **Table 2**, and ground-truth activities. Review of current ecological conditions within the study corridor found suitable habitat for wetland dependent species including wading birds and the American alligator; however, impacts to forested wetland systems are not anticipated to adversely affect these species. Coordination with FWS and/or FWC is not anticipated during the permitting process of this project. Should proposed pond locations or roadway alignment shift, additional wildlife surveys may be warranted.

9.0 Mitigation Assessments

Federal, state, and local government agencies with regulatory authority over wetland and/or other surface waters generally require mitigation to offset unavoidable impacts as a condition of the permit. Mitigation requirements are based on a compilation of wetland parameters including quality, type, function, and size. Impacts to wetlands and/or other surface waters will be avoided and minimized to the maximum extent possible while maintaining safe and sound engineering and construction practices. Primarily, avoidance and minimization efforts are related to the proposed stormwater management pond locations.

A mitigation plan that adequately offsets adverse impacts will be developed and implemented during the permitting phase. Adverse wetland impacts that may result from the construction of this project will be mitigated, satisfying the requirements of Part IV, Chapter 373, FS and 33 U.S. Code (USC) 1344. Compensatory mitigation for this project will be completed through the use of mitigation banks and/or any other mitigation options that satisfy regulatory agency requirements.

Mitigation bank service areas and mitigation credit availability for Econlockhatchee River Nested Basins include Colbert-Cameron, East Central Florida, Lake X, Farmton, TM-Econ Phase III, and TM-Econ Phase IV. Orange County Environmental Protection Division's TM-Econ Phase IV is available for use, and the preferred option for required mitigation. Below is a summary of TM-Econ Phase IV's service areas and available credits.

Table 5: Summary of Available Mitigation Credits for Woodbury Road RCA.

Mitigation Bank (MB)	Mitigation Service Area	*Credits Available
TM-Econ MB Phase IV, Orange County	(18) St. Johns River (Canaveral Marshes to Wekiva), (19) Econlockhatchee River Nested, (23) Lake Jesup, part of (20) Southern St. Johns River, Boggy Creek, Lake Hart, Lake Myrtle, and East Lake Toho	224.67 State 394.88 Federal

***Based on State Mitigation Ledger and RIBITS Credit Ledger Summary (December 2020)

10.0 Wildlife Crossing

As part of the RCA ecological evaluation, the opportunity of implementing wildlife crossings within the study corridor was evaluated. Wildlife crossings are most often associated with linear projects where natural habitat is located on both sides of a proposed crossing and where habitat can be protected from site conversion through preservation or conservation. Wildlife crossings allow for terrestrial wildlife to move uninterrupted and safely through a roadway corridor from one side to the other.

10.1 Evaluation Criteria

Detailed analysis of the study corridor for wildlife crossing implementation included review of the following:

- Biodiversity Resource Priorities (BRP)
- Identification and location of conservation lands and/or public lands
- Current and future development plans

10.1.1 Biodiversity Resource Priorities

The Critical Lands and Waters Identification Project (CLIP) was developed between FNAI, University of Florida GeoPlan Center and Center for Landscape Conservation Planning, and FWC. CLIP is a collection of spatial data that identifies statewide priorities for a broad range of resources in Florida. CLIP is organized into a set of core resources layers that are combined into five resource categories:

- Biodiversity
- Landscape
- Surface Water
- Groundwater
- Marine

The biodiversity matrix is based upon a location meeting one core data layer to meet that priority class criteria. If a location meets more criteria, then the priority is moved higher for that location. The four core data layers included in the BRP matrix include:

- Strategic Habitat Conservation Areas
- Vertebrate Potential Habitat Richness
- Rare Species Habitat Conservation Priorities
- Priority Natural Communities

Based on review of the BRP (**Figure 13**) areas north of SR 408 and south of SR 50 have been assigned priority rankings between 2 and 4.

10.1.2 Conservation Lands

FDEP maintains GIS data available to the public through FDEP Map Direct. The Florida State Owned Lands and Records Information System (FL-SOLARIS) was implemented to maintain a database of property "owned, leased, rented, or otherwise occupied" by any state government agency. In 2017 FL-SOLARIS provided Conservation Lands, Easements, and Recreation (CLEAR), which contains conservation easements for federal, municipal, county, and special districts, as well as other entities as specified in 253.87, FS. This data is refreshed every 5 years (FDEP FL-SOLARIS).

Review of FDEP's Map Direct FL-SOLARIS CLEAR data (**Figure 14**) shows two areas north of SR 408 and south of SR 50 that have been placed in conservation.

10.1.3 Current Corridor Condition

Woodbury Road is currently a two-lane road with sidewalks and maintained ROW. This section of Woodbury road consists of residential, commercial, and institutional development, with areas of natural, undeveloped forested uplands and wetlands. Undeveloped areas are being evaluated for future development along the study corridor. Current undeveloped, forested wetlands and uplands are scattered and bisected by development including roads, residential and commercial development. Continuous, uninterrupted natural habitat is not present within the study corridor.

10.1.4 Future Corridor Condition

The Woodbury Road study corridor is largely developed; it contains two parcels with potential for development. Of those two parcels, one has been identified for a stormwater pond location. The second site is under review for residential development. The future corridor conditions are not anticipated to change from the current conditions.

10.2 Selection of Potential Wildlife Crossing Locations

Two critical evaluation criteria are reviewed when determining the implementation and placement of wildlife crossings:

- The presence of natural habitat on both sides of the roadway that is protected from site alteration.
- The ability to construct a fence to guide wildlife to that crossing.

Therefore, if a potential wildlife crossing location currently has natural habitat on both sides of the roadway, is under private ownership, and the property owner prohibits the construction of a fence, or reserves the right to move or remove the wildlife fence in the future, the long-term viability of the location is greatly diminished.

Using the criteria outlined above, the viability of wildlife crossings within the Woodbury Road study corridor is very limited. This study found little evidence of use by protected wildlife species; however, common wildlife species, like raccoons, rabbits, opossums, snakes and turtles, are known to occur along Woodbury Road.

Using the evaluation criteria above, two potential wildlife locations were evaluated (**Figure 15**):

- Wildlife Crossing Location 1 – North of Waterford Lakes
- Wildlife Crossing Location 2 – North of Parkbury Drive

10.3 Application of Evaluation Criteria to Potential Wildlife Crossing Locations

Wildlife Crossing Location 1 is located north of Waterford Lakes Parkway. The following items were noted at this location:

- BPR – This location is classified with a priority ranking between 2 and 4 for both sides of Woodbury Road.
- Conservation Easements – FL-SOLARIS CLEAR data indicates that a portion of the wetland system located east of Woodbury Road has been placed in conservation, the remainder of the system is not within conservation.
- Current and Future Land Use – This area has natural habitat consisting of forested uplands and wetlands located on both sides of Woodbury Road; however, the west side of Woodbury Road is being evaluate for use as a stormwater management pond under this RCA.

Wildlife Crossing Location 2 is located north of Parkbury Drive, south of SR 50. This area has natural habitat consisting of forested uplands and wetlands located on both sides of Woodbury Road. The following observations were made at this location:

- BPR – This location is classified with a priority ranking between 2 and 4 for both sides of Woodbury Road.
- Conservation Easements – FL-SOLARIS CLEAR data indicates that a portion of the wetland system located west of Woodbury Road, south of the existing stormwater pond, has been placed in conservation.
- Current and Future Land Use – This area has natural habitat consisting of forested uplands and wetlands located on both sides of Woodbury Road; however, the west side of Woodbury Road is being evaluate for expansion of the existing stormwater management pond under this RCA. The uplands located east of Woodbury Road contain a transient camp site littered with large amount of household debris.

10.4 Wildlife Crossing Summary

Wildlife Crossing Location 1 – Based on information and analysis presented above, a wildlife crossing is not justified in this location due to the lack of sustainable natural communities (preservation or conservation lands) on both sides of the roadway that would prevent future development. A wildlife crossing at this location may be reconsidered in the future should the land be placed under conservation.

Wildlife Crossing Location 2 – Based on information and analysis presented above, a wildlife crossing is not justified at this location due to the lack of sustainable natural communities (preservation or conservation lands) on both sides of the roadway that would prevent future development. A wildlife crossing at this location may be reconsidered in the future should the land be placed under conservation.

11.0 Conclusion

An ESR has been conducted for Woodbury Road from Lake Underhill Road to SR 50 (**Figure 1**). The purpose of the ESR was to evaluate potential impacts to hydrologic and natural features and threatened and endangered species, permitting and mitigation needs associated with roadway alignments and stormwater pond locations within the study corridor.

11.1 Wetlands and Other Surface Waters

Seven wetland systems, 10 other surface waters (roadside ditches and swales) and 8 existing stormwater ponds were identified within the study corridor. Three alignments were reviewed for potential wetland and/or other surface water impacts. A summary of each alignment and proposed impacts is provided below.

Alignment	*Wetland Impacts (acres)	*Upland-Cut Surface Waters (acres)	*Wetland-Cut Surface Waters (acres)
Alignment 1 (Preferred)	4.39	1.13	0.05
Alignment 2	6.19	1.13	0.05
Alignment 3	6.19	1.13	0.05

*Wetland and other surface water impacts were approximated using aerial interpretation and ground-truth activities.
Note: Impacts associated with upland-cut surface waters previously permitted will not require mitigation.

It should be noted that wetland and other surface water limits were not delineated, and proposed impacts have been approximated based on aerials, soil data, and ground-truth activities for the purpose of this study. Wetland systems should be delineated in accordance with federal and state regulations during the design phase.

Wetland and other surface waters are regulated by USACE, SJRWMD, and OCEPD. Impacts to jurisdictional impacts will require coordination with regulatory agency during the permitting of the proposed project and may require mitigation to offset adverse impacts. Mitigation is available for wetland and other surface water impacts through TM-Econ Mitigation Bank Phase IV.

Threatened and Endangered Species

The study corridor was reviewed for the potential occurrence of federal and state protected flora and fauna. Upon completion of a desktop review and ground-truth activities no protected wildlife species were identified within the existing ROW. It is anticipated that coordination with FWC and/or FWS will not be

required during the permitting phase of this project; however, should proposed pond locations or alignment be revised an updated threatened and endangered species survey should be conducted.

No federal and/or state protected plant species were identified during the study. FDACS regulates the economic use of species identified as endangered, threatened, or commercially exploited. Three commercially exploited species were identified within the study corridor:

- Cinnamon fern (*Osmunda cinnamomea*)
- Royal fern (*Osmunda regalis*)
- Saw palmetto (*Serenoa repens*)

FDACS does not regulate destruction of plant species by land clearing associated with construction activities; therefore, the presence of these species within the study corridor will not require coordination with regulatory agencies.

Wildlife Crossings

The potential for wildlife crossings along the Woodbury Road study corridor was evaluated based on several criterion including current ecological conditions, existing conservation lands, biodiversity matrix, and proposed future development. An evaluation was conducted for two potential wildlife crossing locations along the study corridor:

- Wildlife Crossing 1 – located north of Waterford Lakes
- Wildlife Crossing 2 – located North of Parkbury Drive

Based on the evaluation, wildlife crossings do not appear feasible at this time within the study corridor.

Should proposed development plans change in the future, reassessment of these locations would be recommended.

12.0 Bibliography

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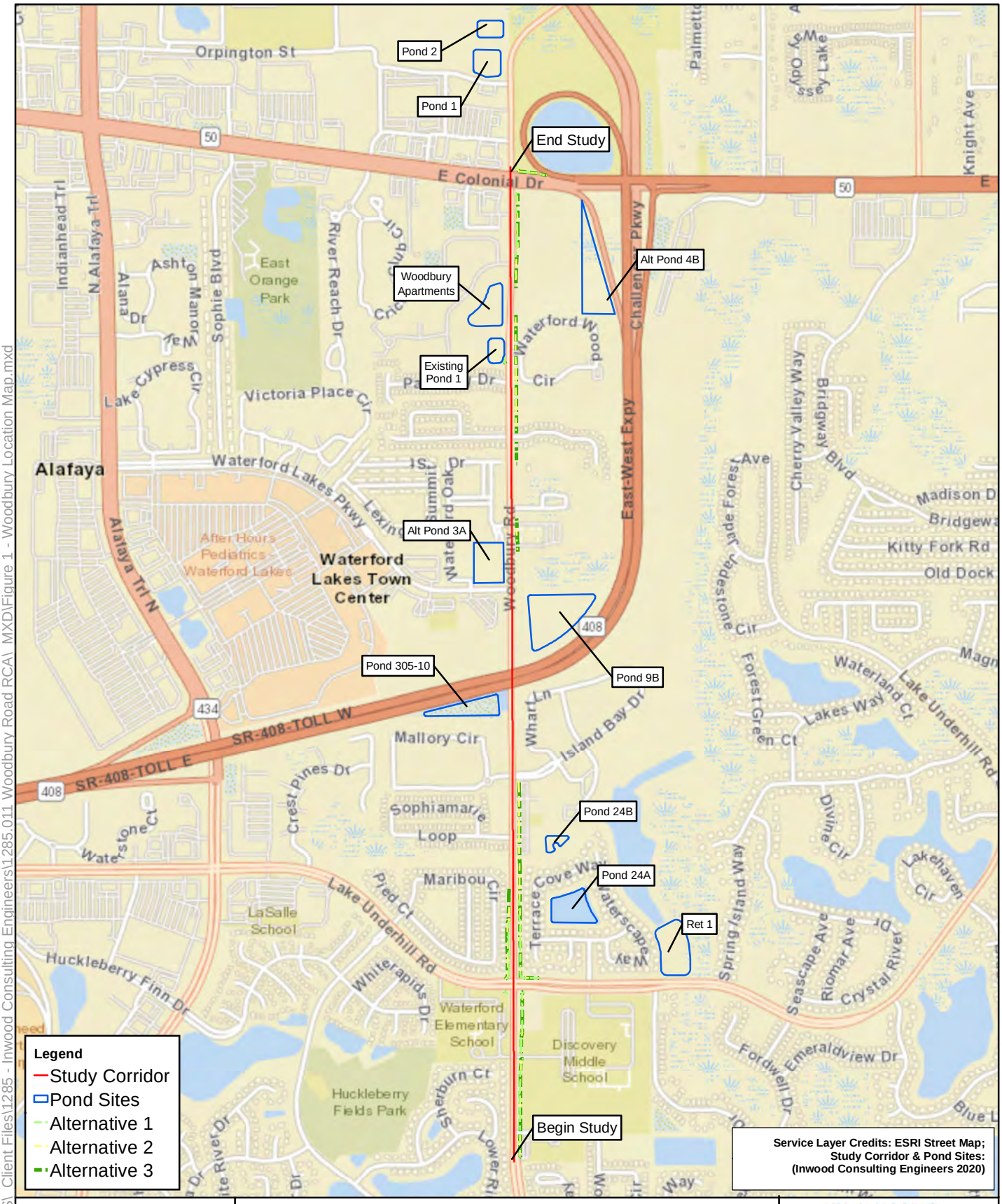
Figures



Document Path: T:\GIS_Client Files\1285 - Inwood Consulting Engineers\1285.011 Woodbury Road RCA_MXD\Figure 1 - Woodbury Location Map.mxd

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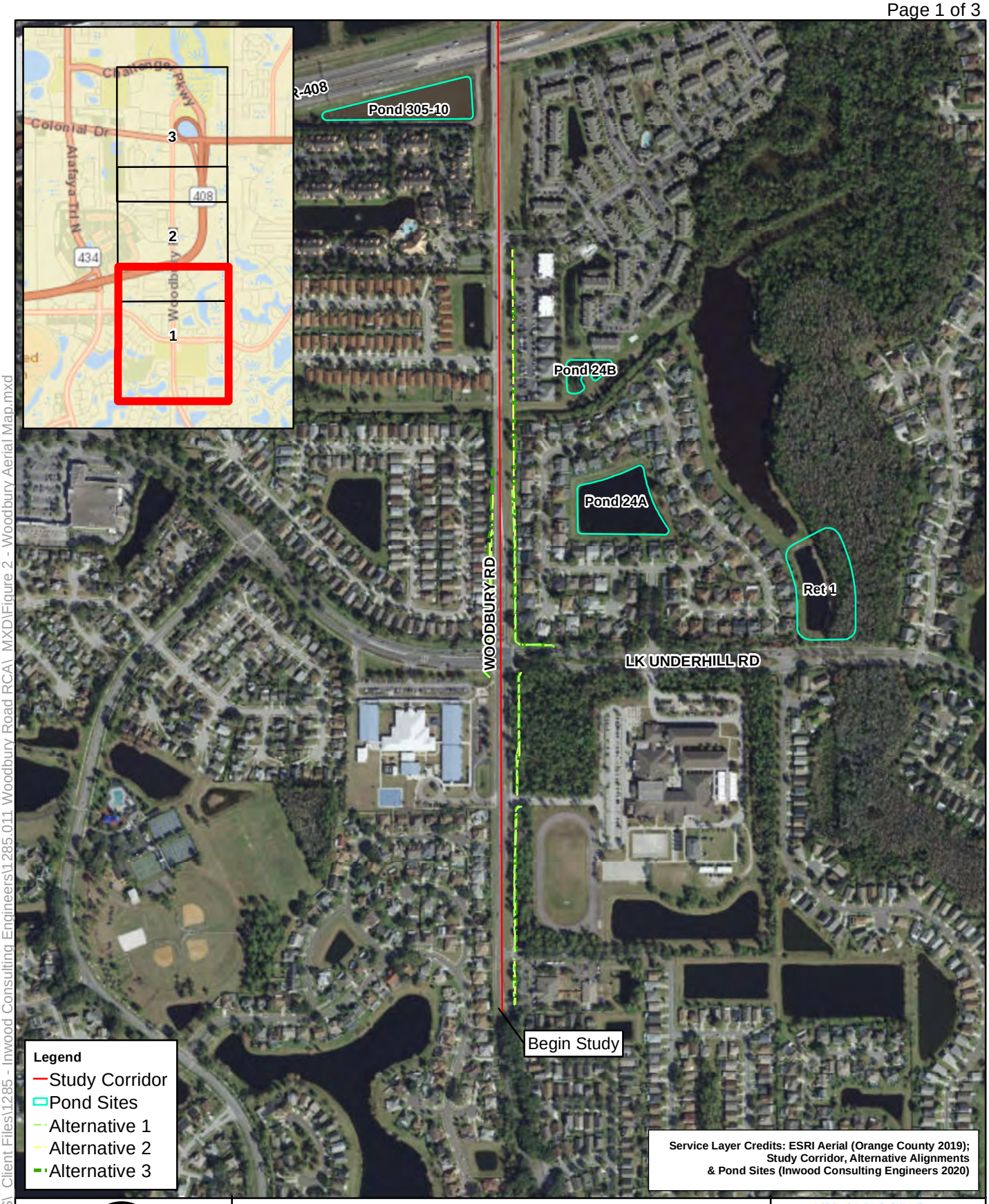
DES: KJT	APR: MLP/JC
DATE: 12/8/2020	OC: Y18-810-CH

Location Map
Woodbury Road Roadway Conceptual Analysis Study
from Lake Underhill Road to State Road 50
Orange County, Florida

ORANGE COUNTY FLORIDA

Figure 1



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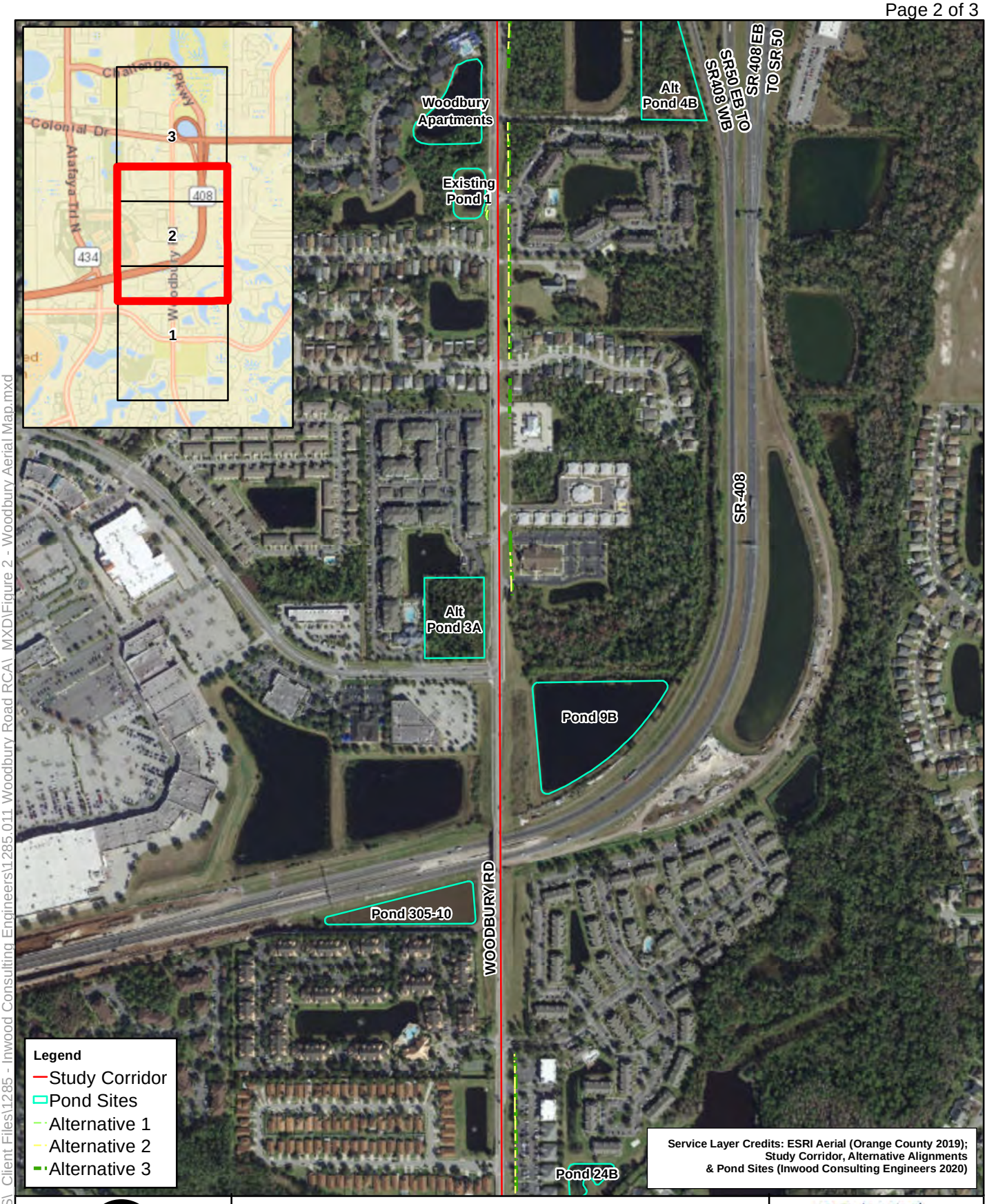
Aerial Map
Woodbury Road Roadway Conceptual Analysis Study
from Lake Underhill Road to State Road 50
Orange County, Florida

ORANGE COUNTY FLORIDA

Figure 2

Document Path: T:\GIS_Client Files\1285 - Inwood Consulting Engineers\1285.011 Woodbury Road RCA_MXD\Figure 2 - Woodbury Aerial Map.mxd



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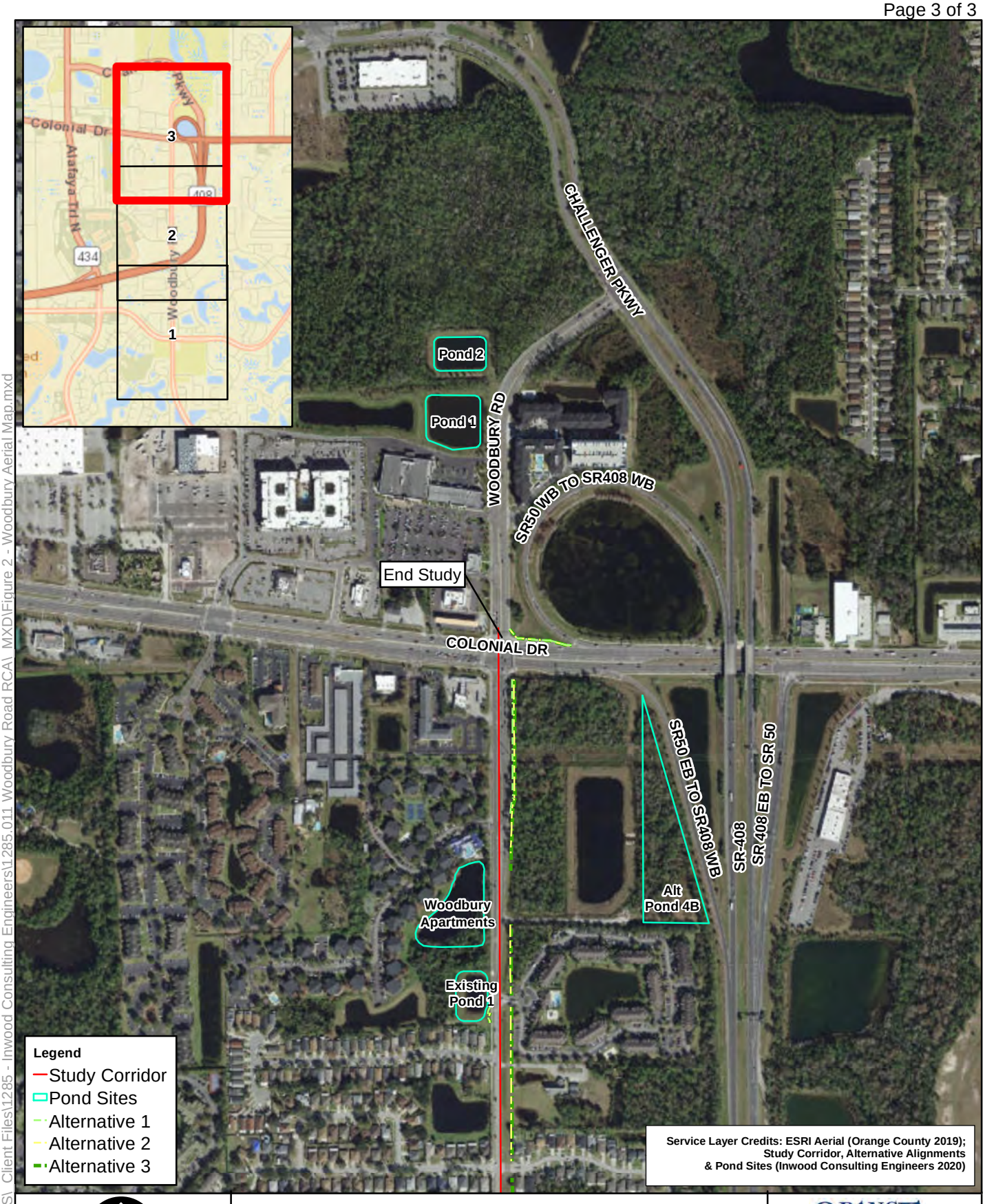

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ORANGE COUNTY FLORIDA

Figure 2

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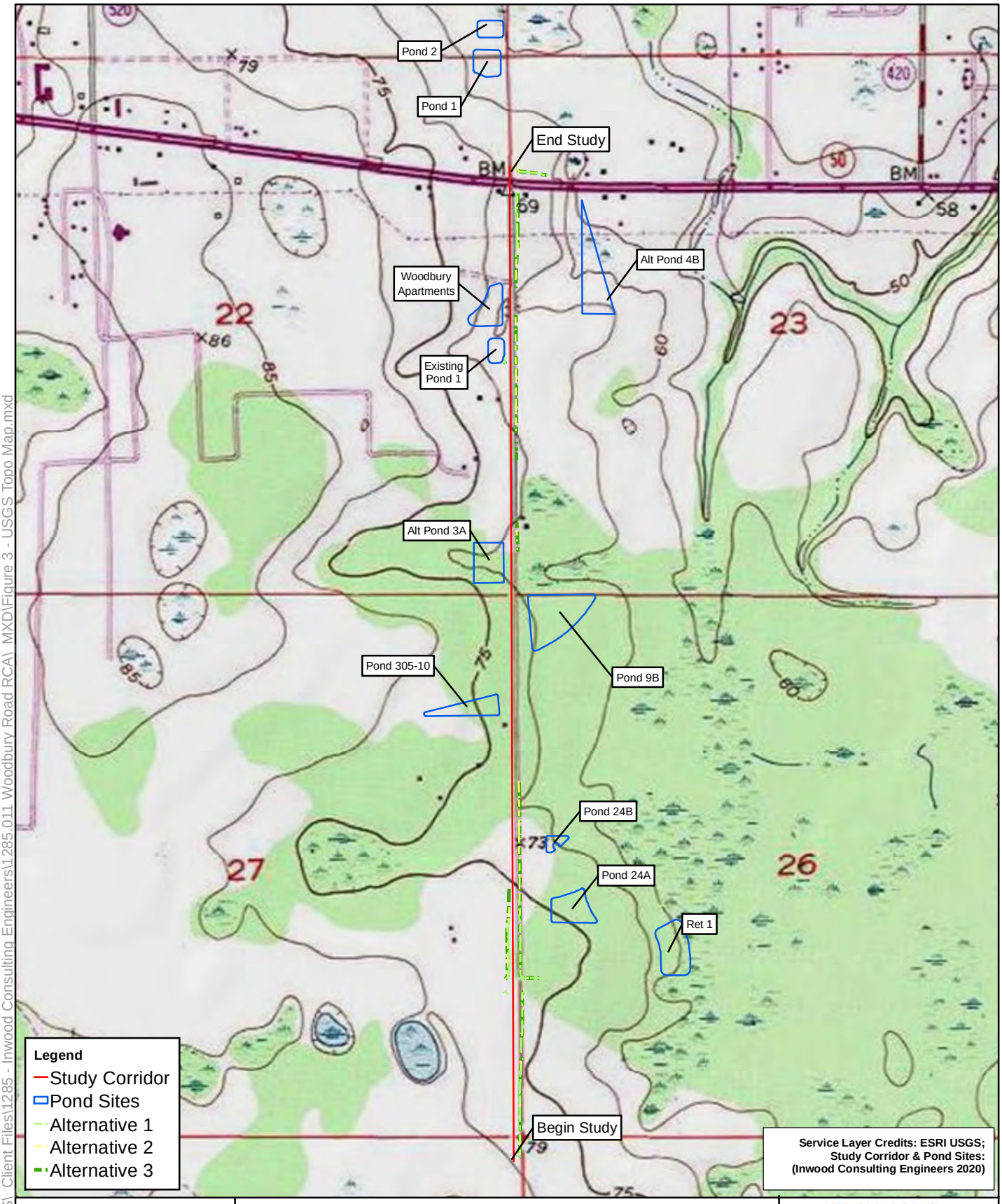

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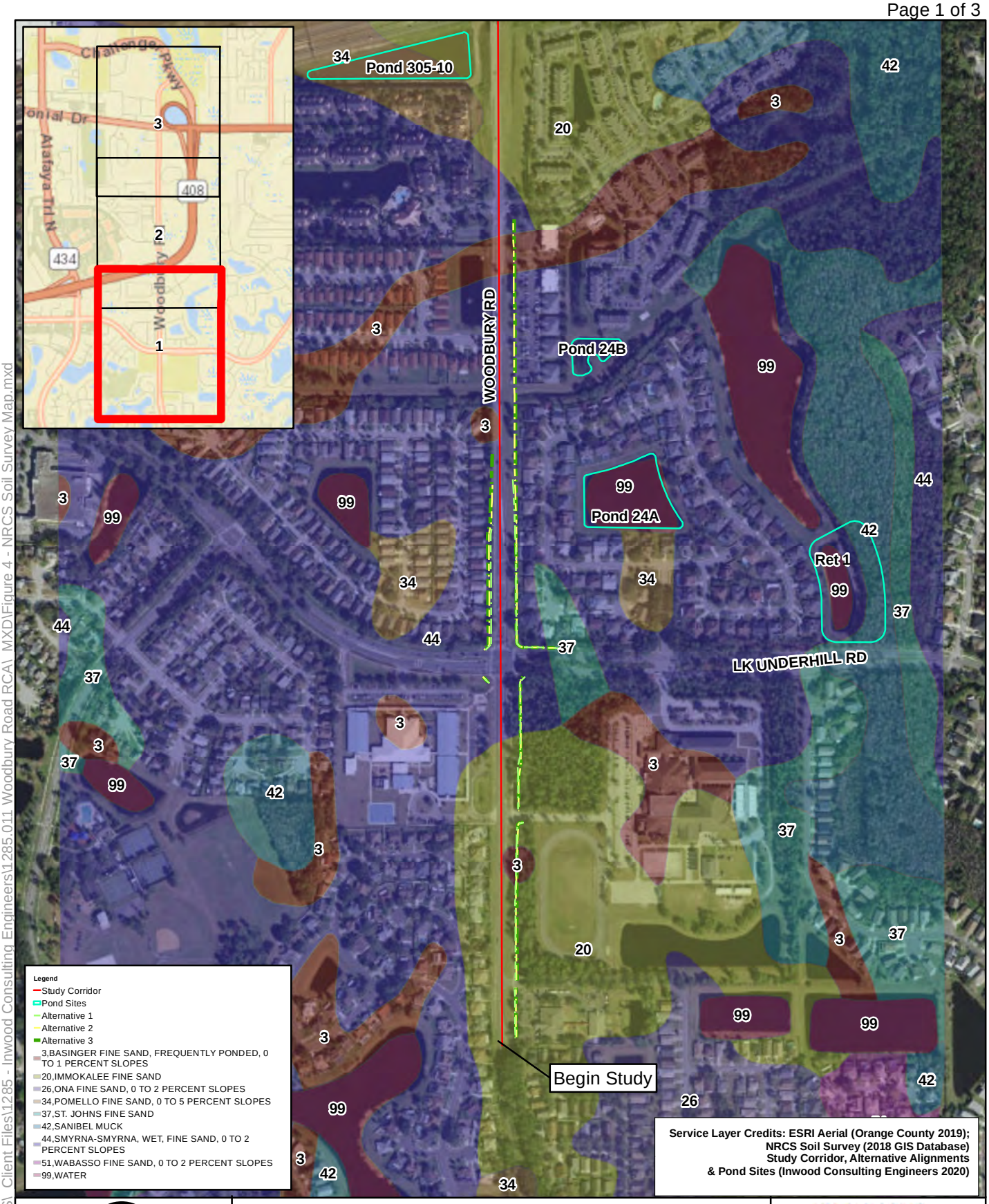
DATE: 12/8/2020	OC: Y18-810-CH

USGS Topographic Quadrangle Map
Woodbury Road Roadway Conceptual Analysis Study
from Lake Underhill Road to State Road 50
Orange County, Florida

ORANGE COUNTY FLORIDA

Figure 3



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NRCS Soil Map
Woodbury Road Roadway Conceptual Analysis Study from Lake Underhill Road to State Road 50
Orange County, Florida

DES: KJT	APR: MLP/JC
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Figure 4

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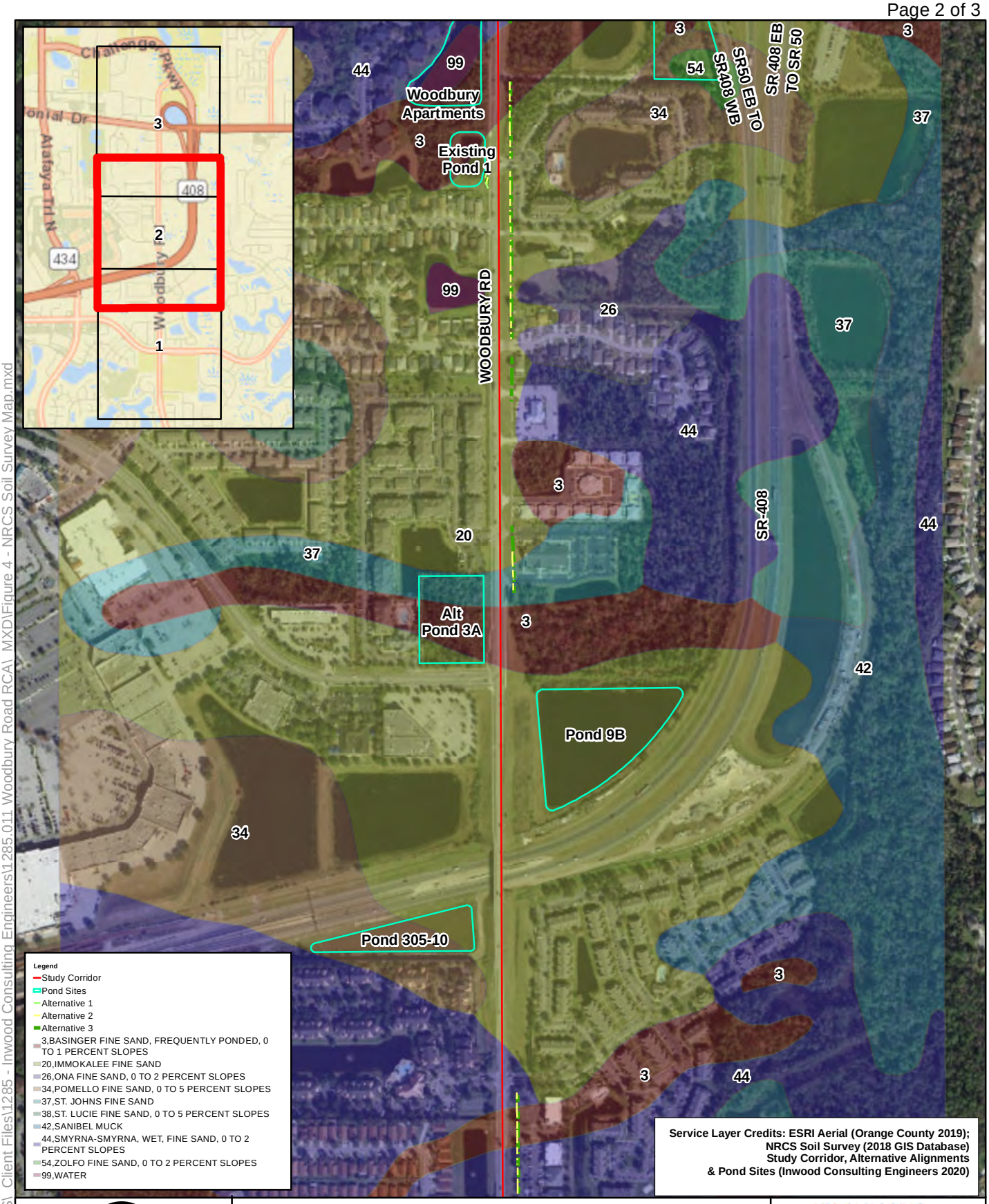

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NRCS Soil Map
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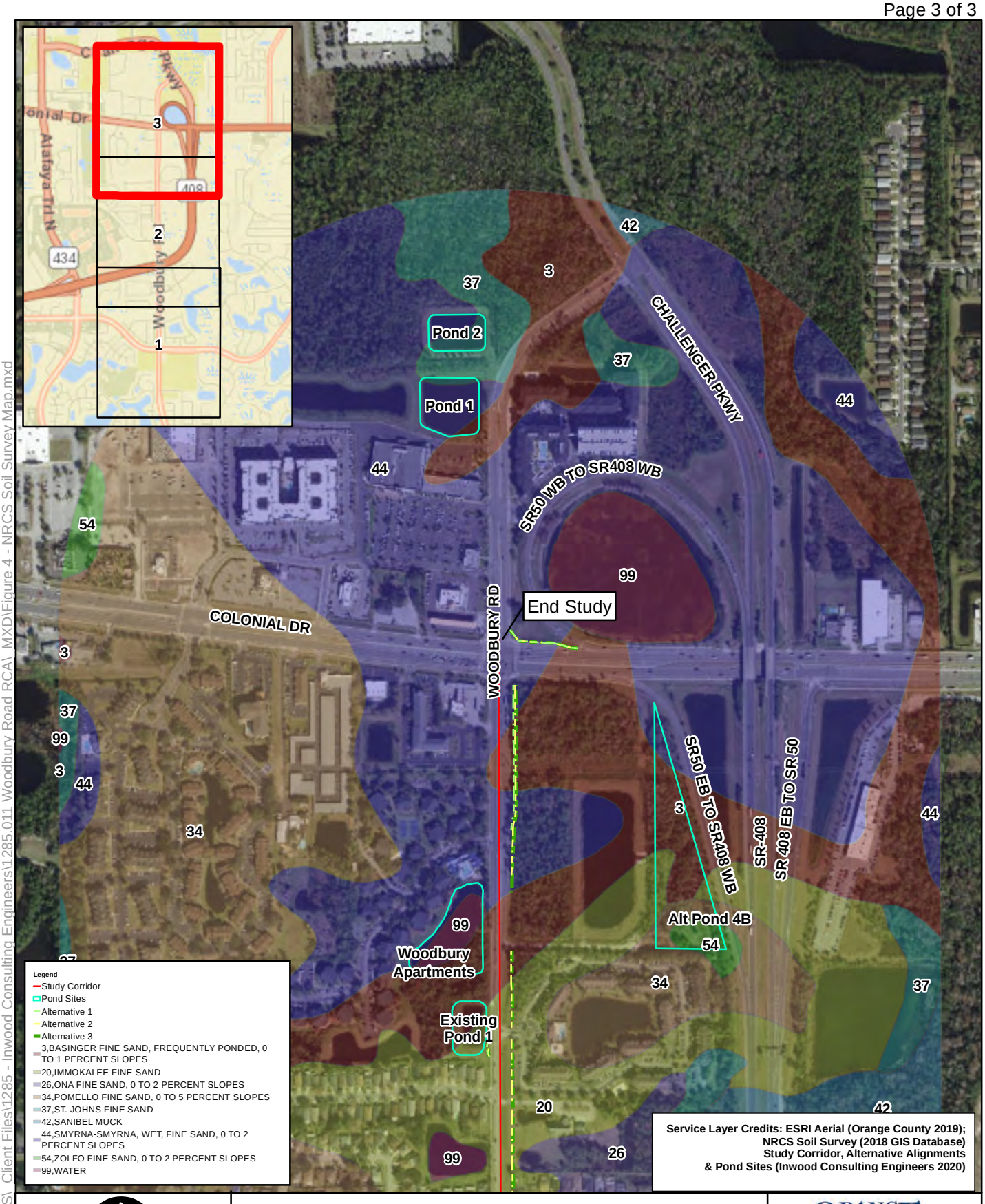
Orange County, Florida

ORANGE COUNTY FLORIDA

Figure 4



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ORANGE COUNTY FLORIDA

Figure 4

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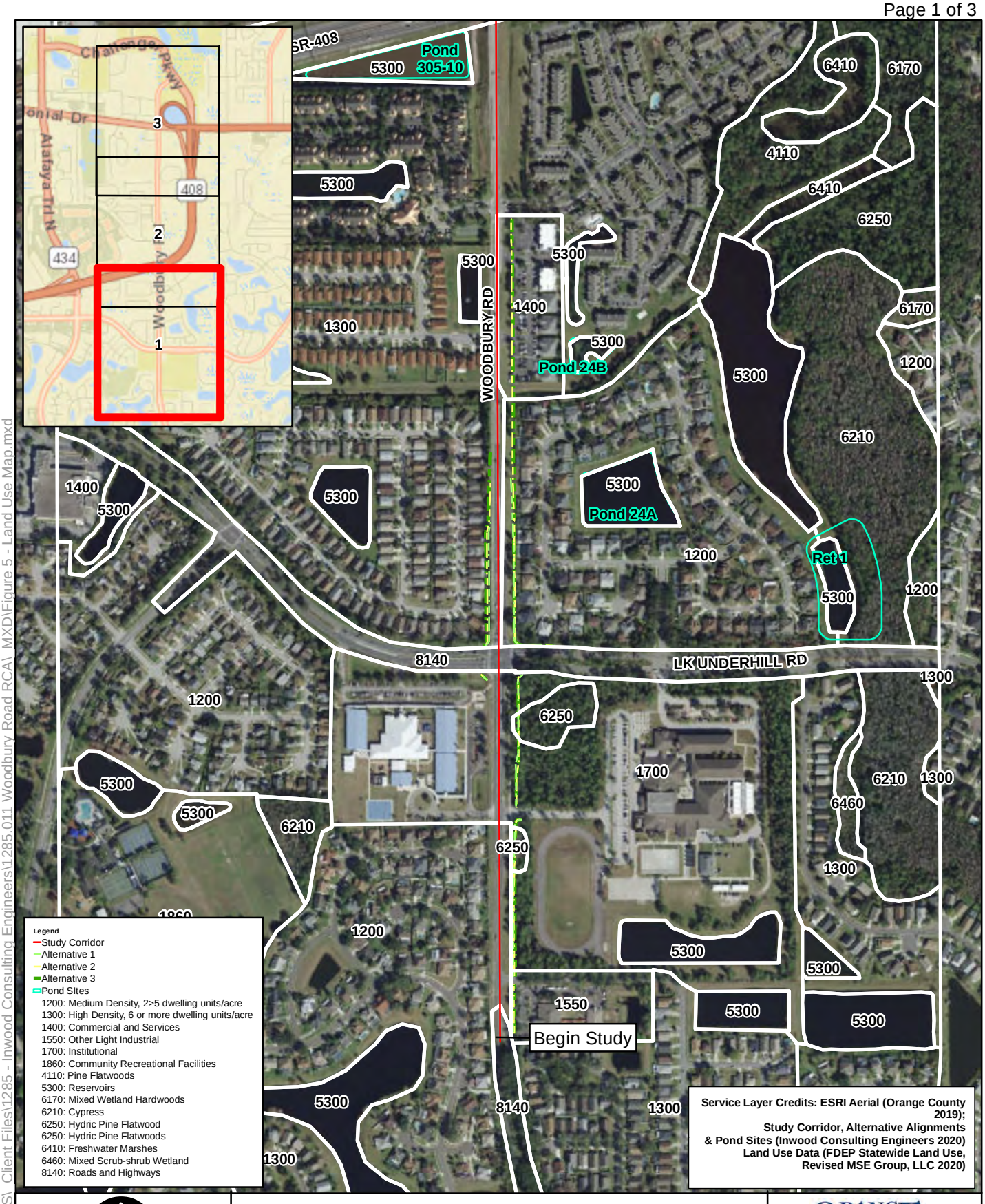

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Land Use Map
Woodbury Road Roadway Conceptual Analysis Study
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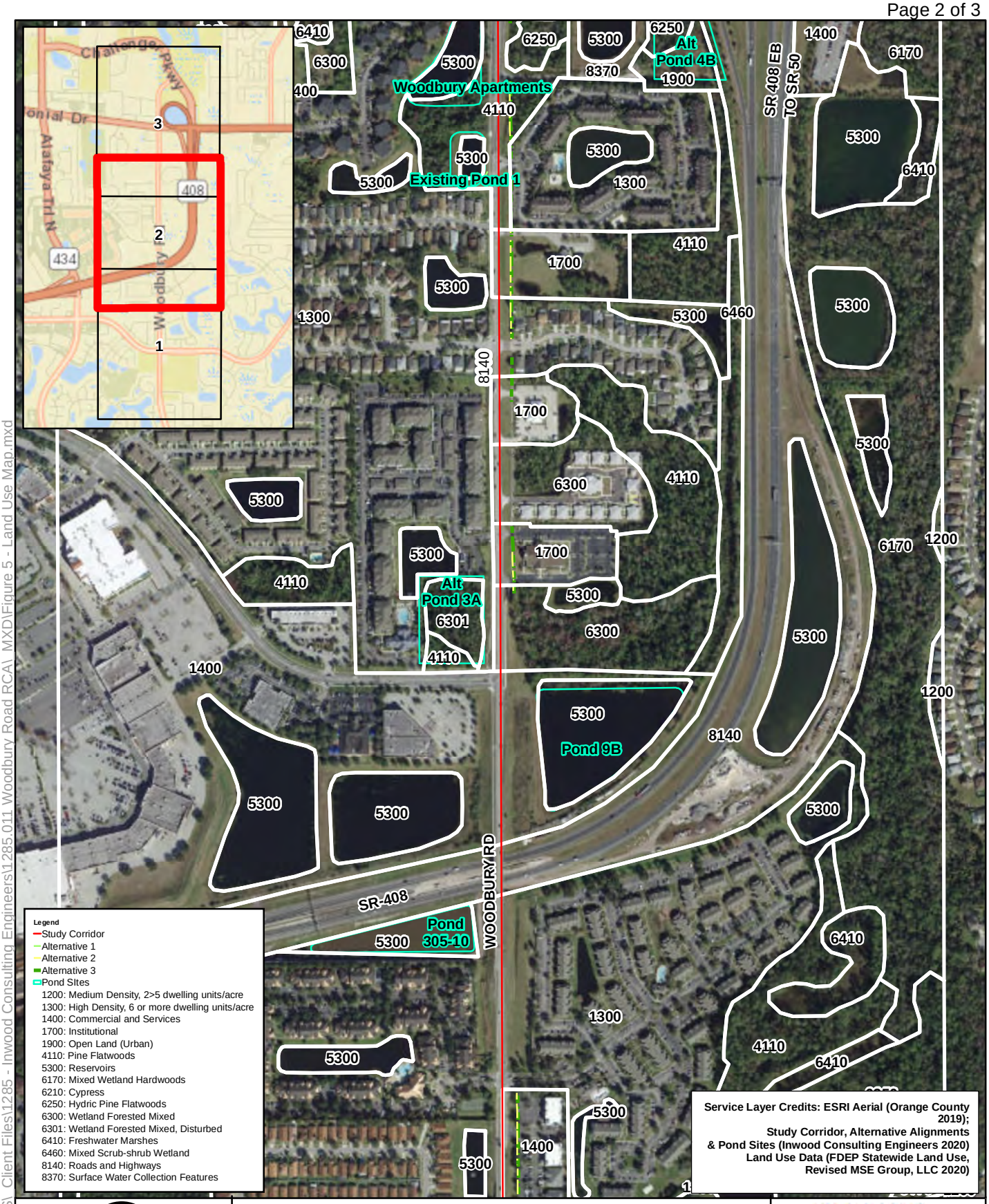
Orange County, Florida

ORANGE COUNTY FLORIDA

Figure 5



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Land Use Map
Woodbury Road Roadway Conceptual Analysis Study
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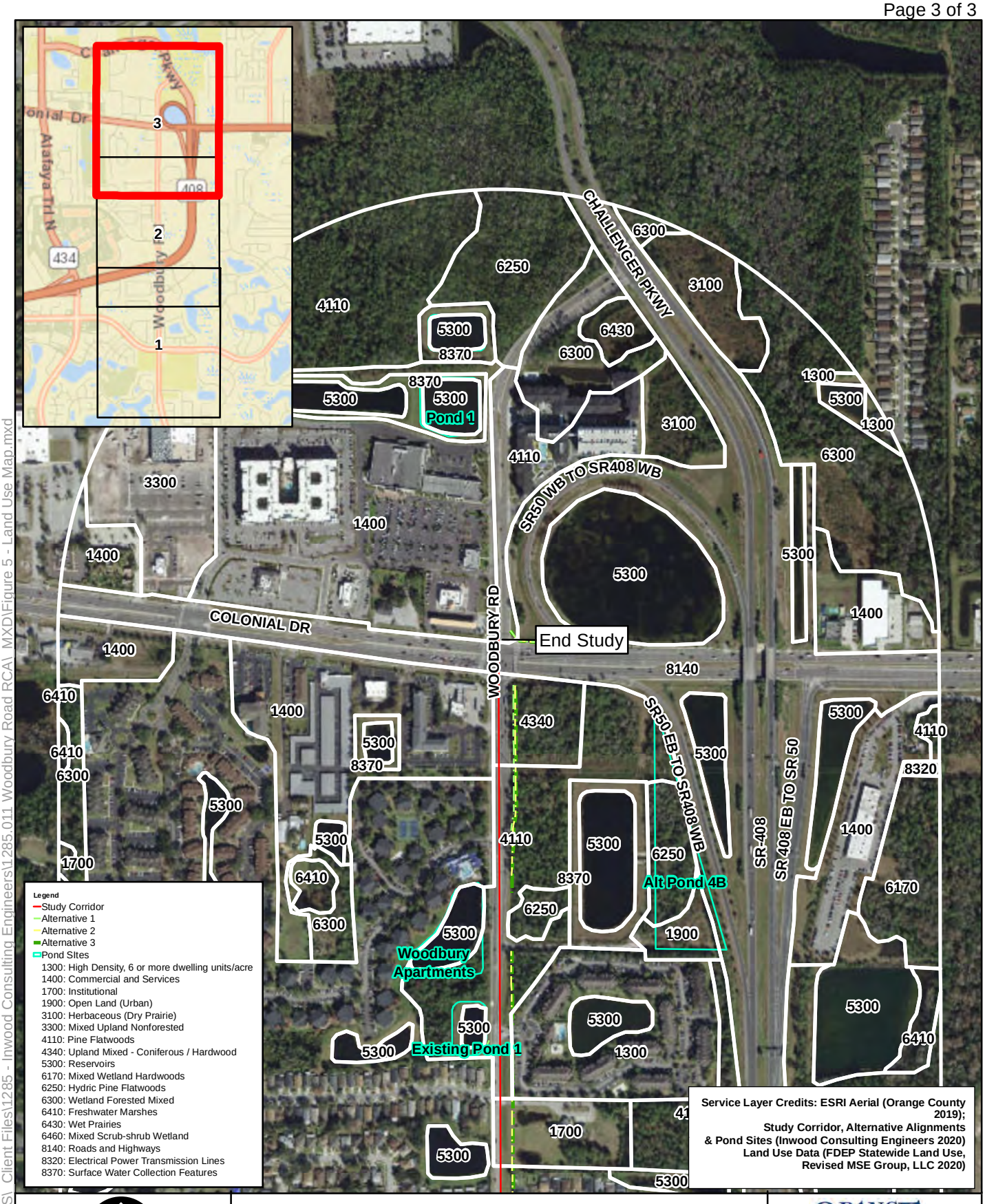

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Land Use Map
Woodbury Road Roadway Conceptual Analysis Study
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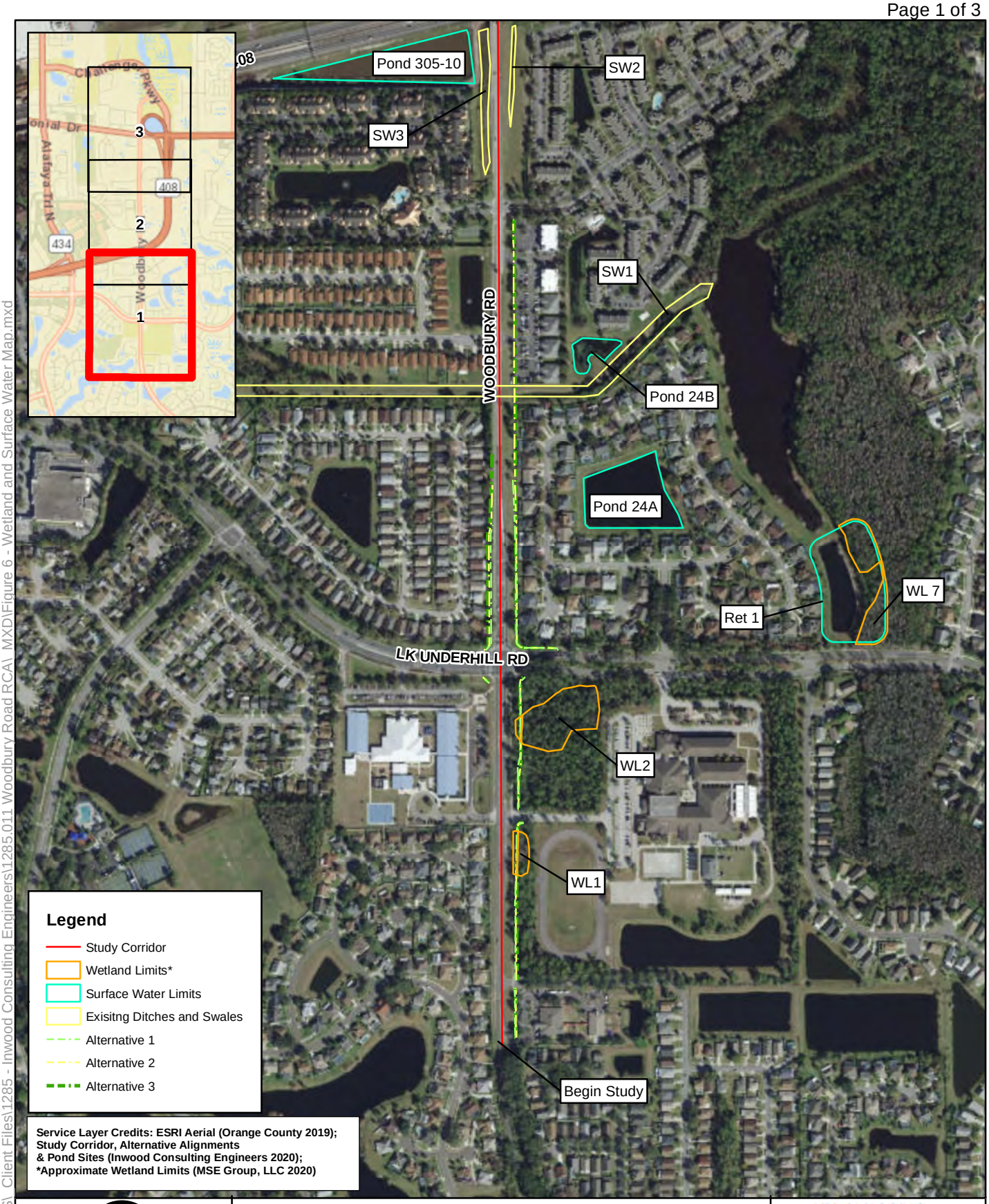
Orange County, Florida

ORANGE COUNTY FLORIDA

Figure 5



Document Path: T:\GIS_Client Files\1285 - Inwood Consulting Engineers\1285.011 Woodbury Road RCA_MXD\Figure 6 - Wetland and Surface Water Map.mxd

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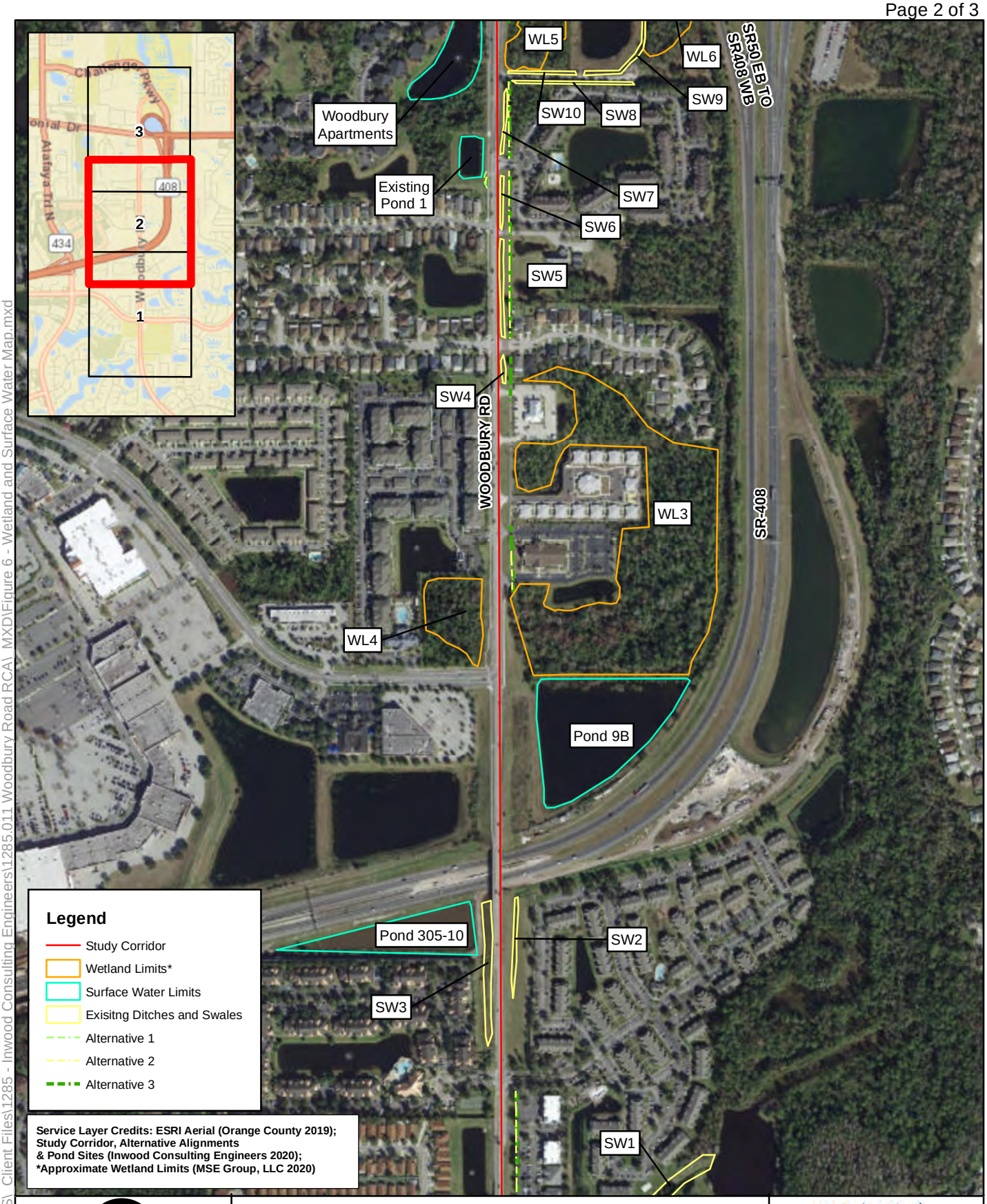
DATE: 12/11/2020	OC: Y18-810-CH

Wetlands and Surface Waters Map
Woodbury Road Roadway Conceptual Analysis Study
from Lake Underhill Road to State Road 50
Orange County, Florida

ORANGE COUNTY FLORIDA

Figure 6



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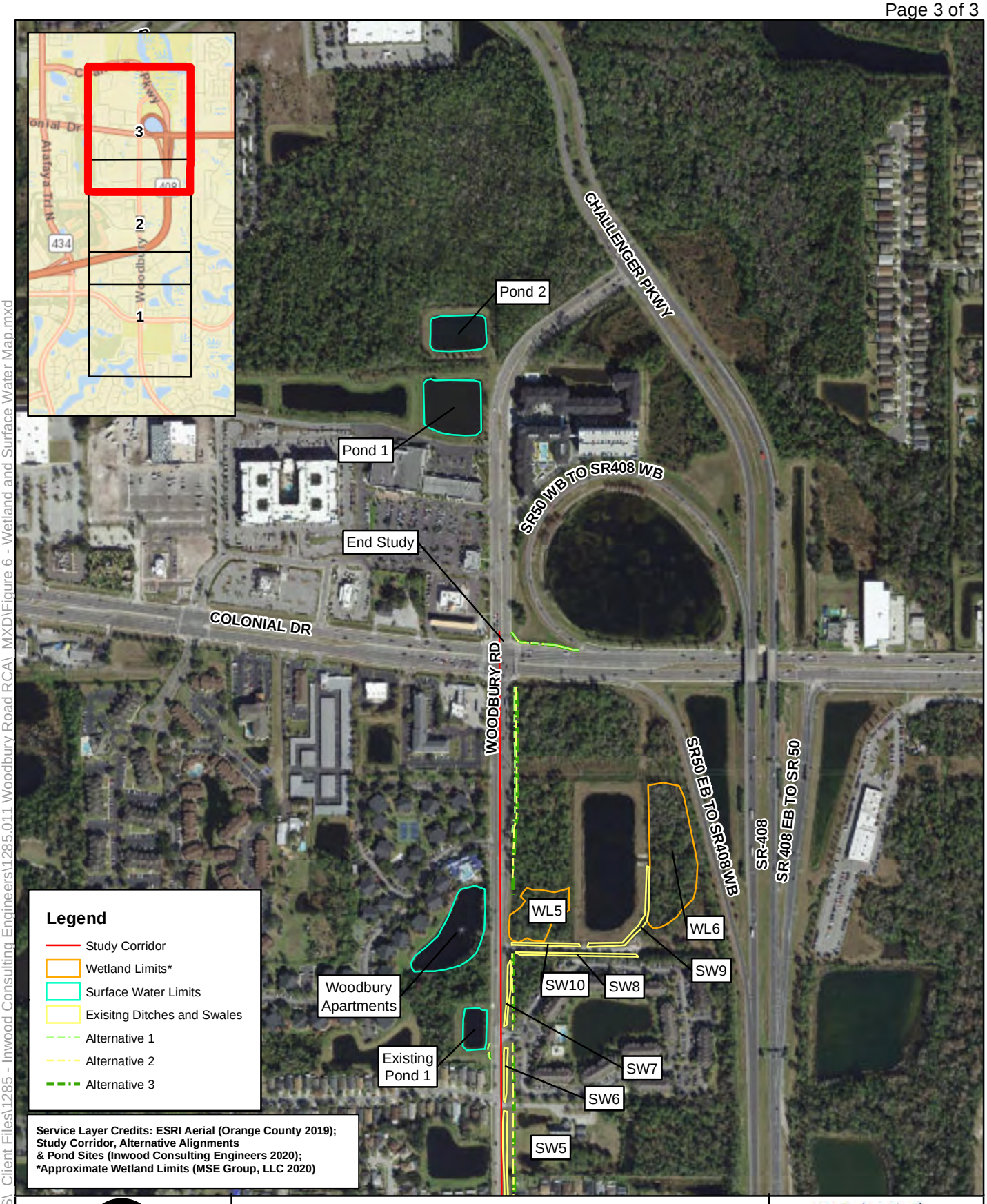
DATE: 12/11/2020 | OC: Y18-810-CH

Wetlands and Surface Waters Map
Woodbury Road Roadway Conceptual Analysis Study
from Lake Underhill Road to State Road 50
Orange County, Florida

ORANGE COUNTY FLORIDA

Figure 6

Document Path: T:\GIS_Client Files\1285 - Inwood Consulting Engineers\1285.011 Woodbury Road RCA_MXD\Figure 6 - Wetland and Surface Water Map.mxd



0 300 600 Feet

DES: LMO | APR: KJT

DATE: 12/11/2020 | OC: Y18-810-CH

Wetlands and Surface Waters Map
Woodbury Road Roadway Conceptual Analysis Study
from Lake Underhill Road to State Road 50
Orange County, Florida

ORANGE COUNTY FLORIDA

Figure 6

Document Path: T:\GIS_Client Files\1285 - Inwood Consulting Engineers\1285.011 Woodbury Road RCA_MXD\Figure 6 - Wetland and Surface Water Map.mxd

0 25 50 Miles

DES: LMO | APR: MLP/JC

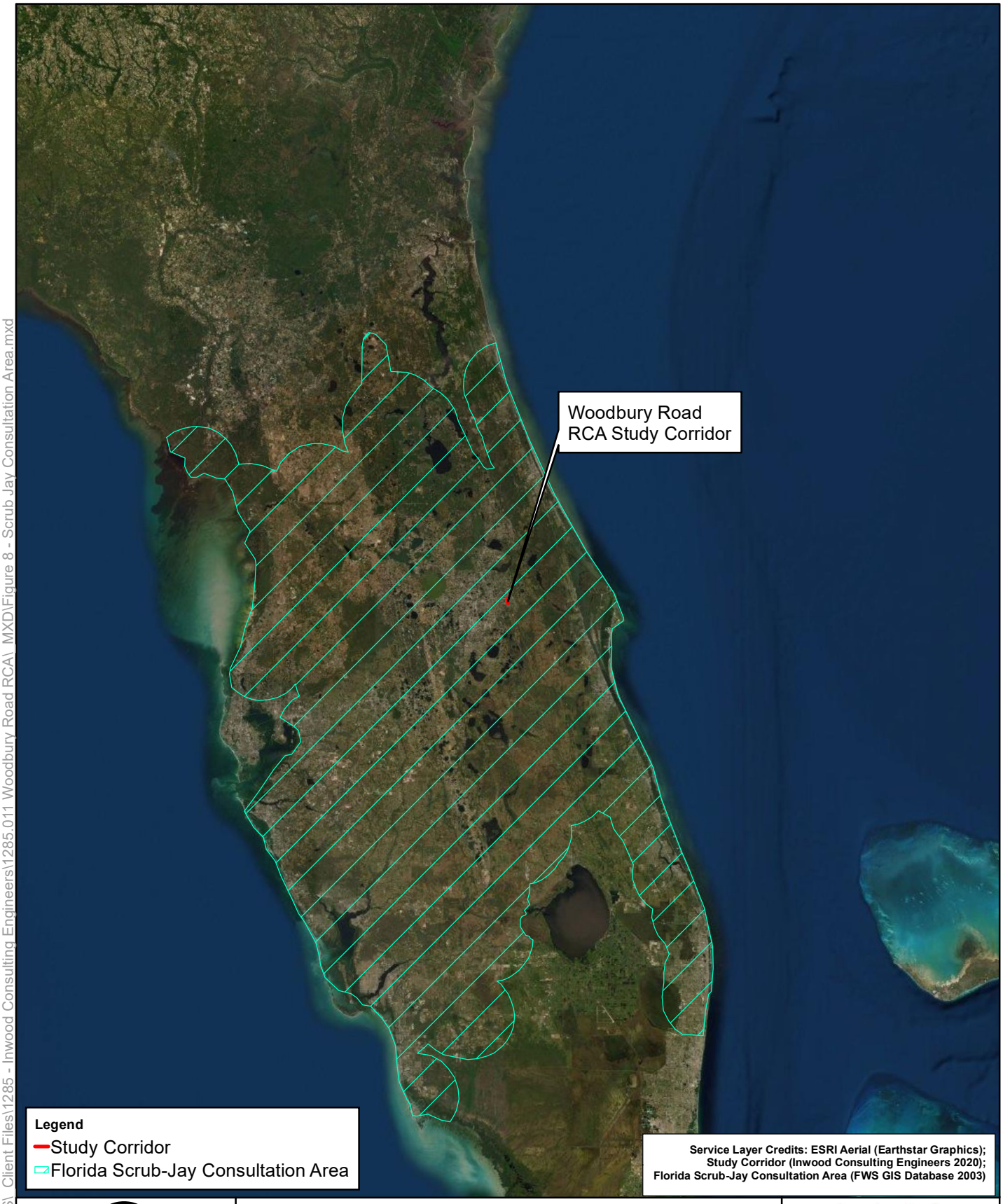
DATE: 12/8/2020 | OC: Y18-810-CH

Crested Caracara Consultation Area Map
Woodbury Road Roadway Conceptual Analysis Study
from Lake Underhill Road to State Road 50
Orange County, Florida

ORANGE COUNTY FLORIDA

Figure 7

Document Path: T:\GIS_Client Files\1285 - Inwood Consulting Engineers\1285.011 Woodbury Road RCA_MXD\Figure 7 - Crested Caracara Consultation Area.mxd



0 25 50 Miles

DES: LMO	APR: MLP/JC
DATE: 12/8/2020	OC: Y18-810-CH

Florida Scrub-Jay Consultation Area Map
Woodbury Road Roadway Conceptual Analysis Study
from Lake Underhill Road to State Road 50
Orange County, Florida

ORANGE COUNTY FLORIDA

Figure 8

Document Path: T:\GIS_Client Files\1285 - Inwood Consulting Engineers\1285.011 Woodbury Road RCA_MXD\Figure 8 - Scrub Jay Consultation Area.mxd

0 12.5 25 Miles

DES: LMO	APR: MLP/JC
DATE: 12/8/2020	OC: Y18-810-CH

Red-Cockaded Woodpecker Consultation Area Map
Woodbury Road Roadway Conceptual Analysis Study
from Lake Underhill Road to State Road 50
Orange County, Florida

ORANGE COUNTY FLORIDA

Figure 9

Document Path: T:\GIS_Client Files\1285 - Inwood Consulting Engineers\1285.011 Woodbury Road RCA_MXD\Figure 9 - Red-Cockaded Woodpecker Consultation Area.mxd

0 25 50 Miles

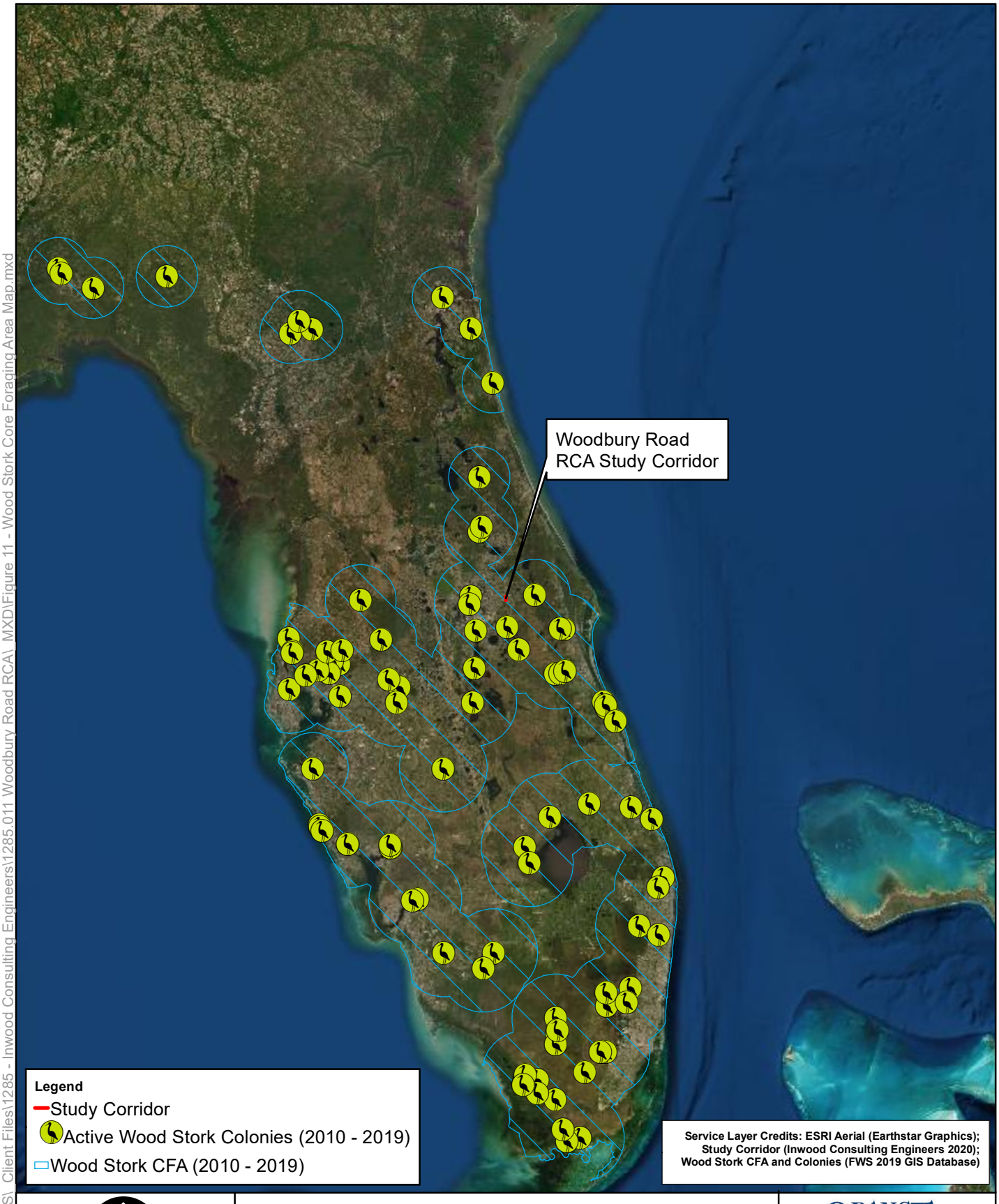
DES: LMO	APR: MLP/JC
DATE: 12/8/2020	OC: Y18-810-CH

Everglades Snail Kite Consultation Area Map
Woodbury Road Roadway Conceptual Analysis Study
from Lake Underhill Road to State Road 50
Orange County, Florida

ORANGE COUNTY FLORIDA

Figure 10

Document Path: T:\GIS_Client Files\1285 - Inwood Consulting Engineers\1285.011 Woodbury Road RCA_MXD\Figure 10 - Snail Kite Consultation Area.mxd



0 25 50 Miles

DES: LMO | APR: MLP/JC

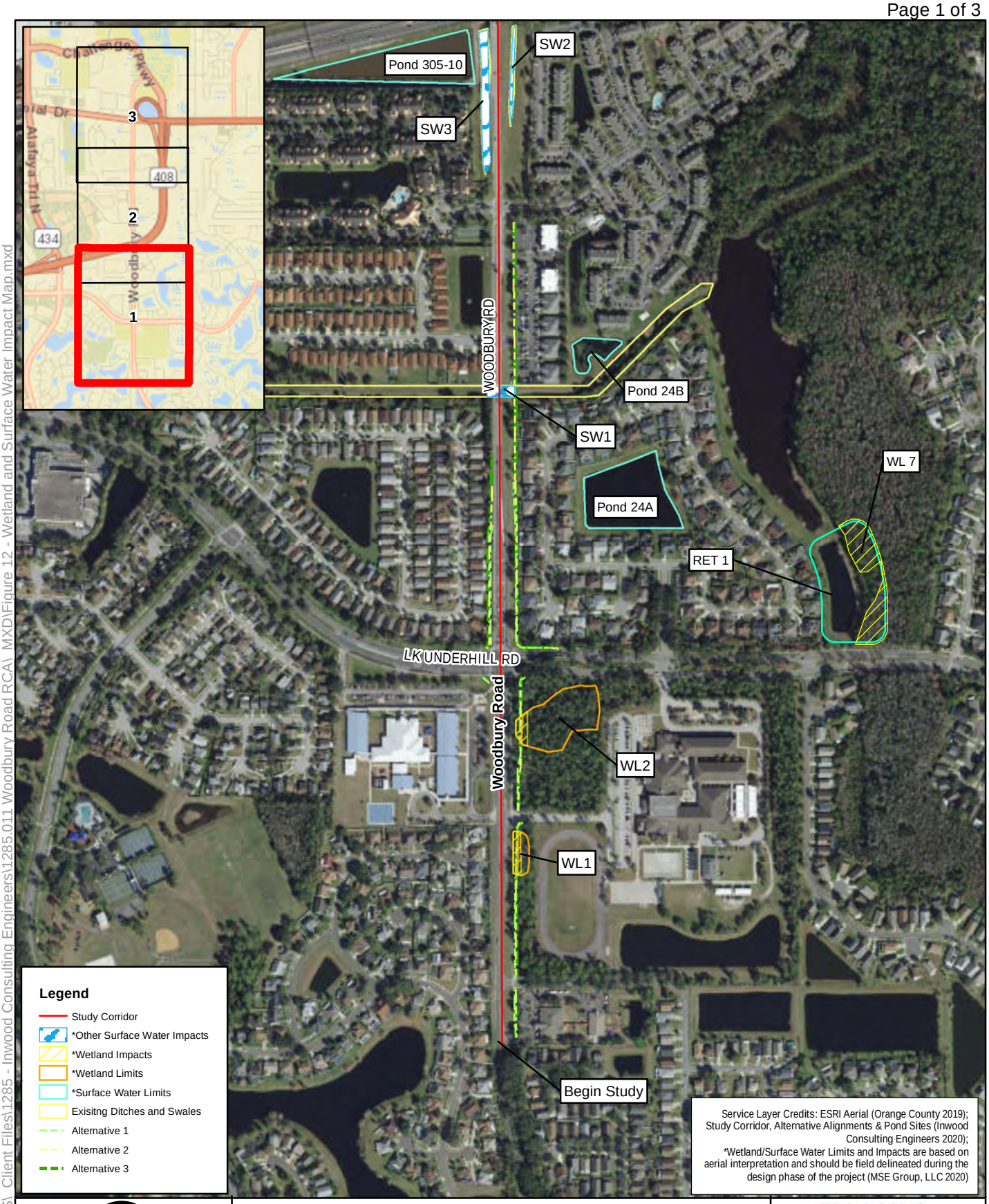
DATE: 12/8/2020 | OC: Y18-810-CH

Wood Stork Colonies and Core Foraging Area Map
Woodbury Road Roadway Conceptual Analysis Study
from Lake Underhill Road to State Road 50
Orange County, Florida

ORANGE COUNTY FLORIDA

Figure 11

Document Path: T:\GIS_Client Files\1285 - Inwood Consulting Engineers\1285.011 Woodbury Road RCA_MXD\Figure 11 - Wood Stork Core Foraging Area Map.mxd



0 300 600 Feet

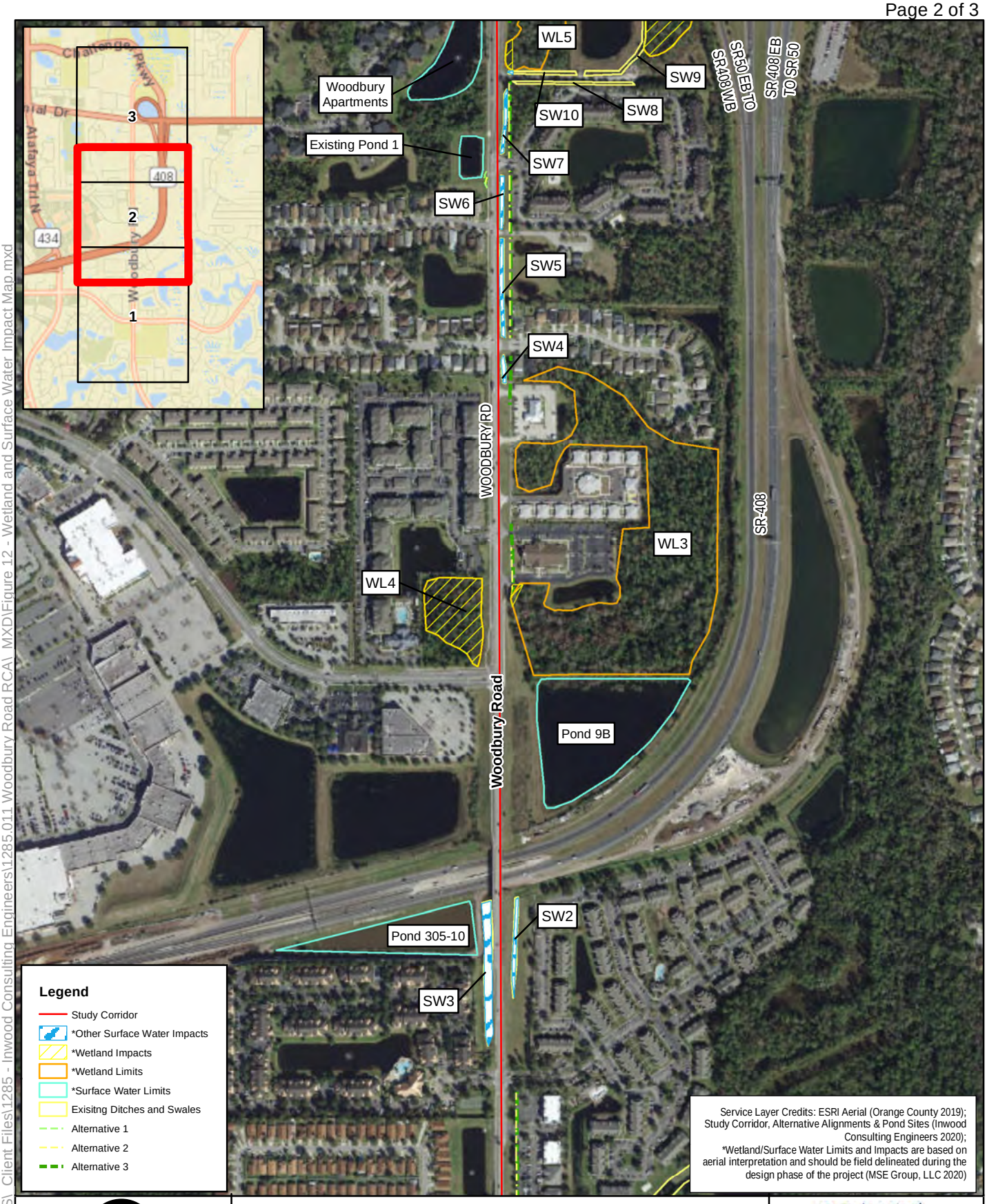
Wetland/Other Surface Water Impacts Map
Woodbury Road Roadway Conceptual Analysis Study
from Lake Underhill Road to State Road 50
Orange County, Florida

DES: LMO	APR: KJT
DATE: 12/11/2020	OC: Y18-810-CH

ORANGE COUNTY FLORIDA

Figure 12

Document Path: T:\GIS_Client Files\1285 - Inwood Consulting Engineers\1285.011 Woodbury Road RCA_MXD\Figure 12 - Wetland and Surface Water Impact Map.mxd



0 300 600 Feet

DES: LMO | APR: KJT

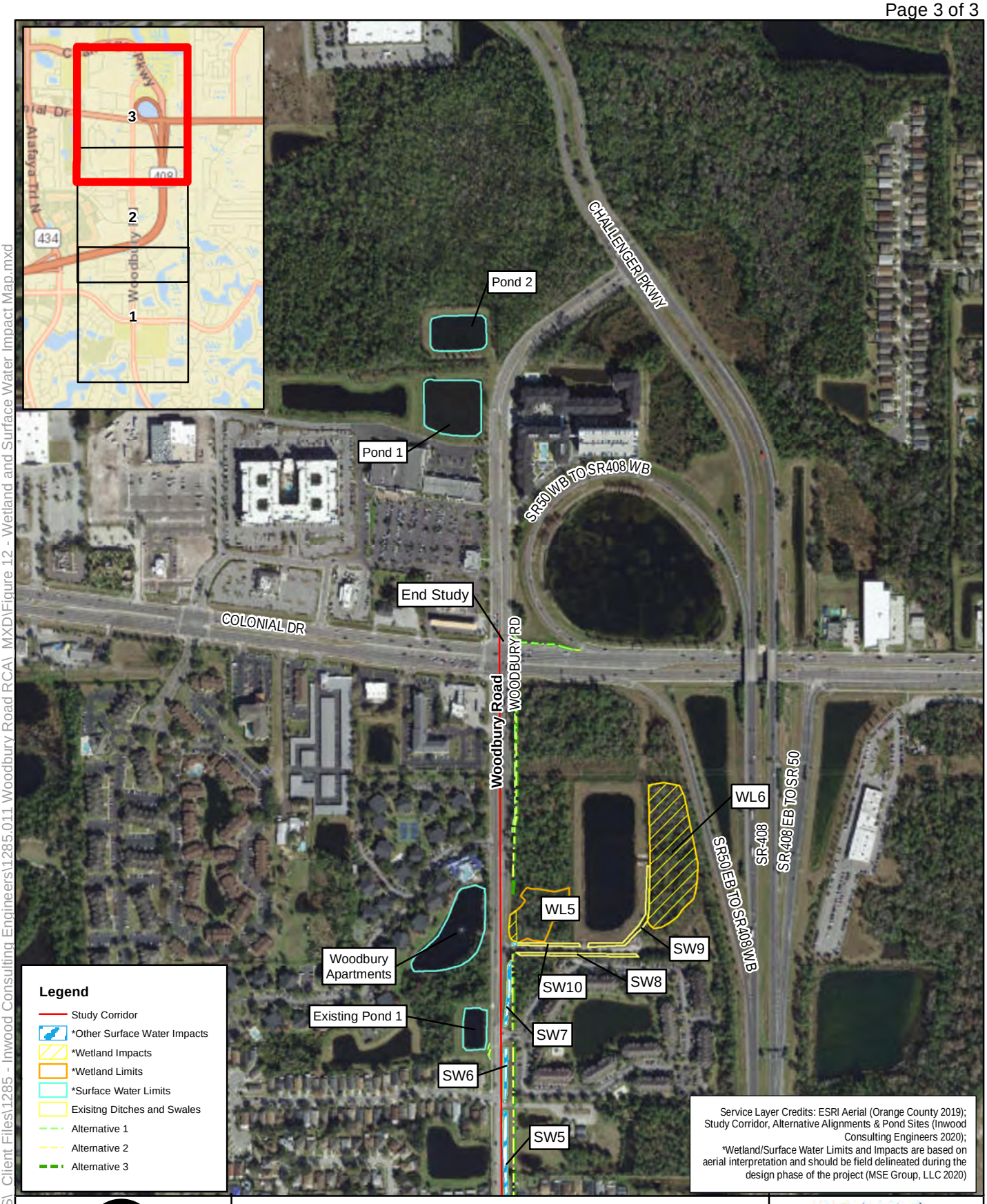
DATE: 12/11/2020 | OC: Y18-810-CH

Wetland/Other Surface Water Impacts Map
Woodbury Road Roadway Conceptual Analysis Study
from Lake Underhill Road to State Road 50
Orange County, Florida

ORANGE COUNTY FLORIDA

Figure 12

Document Path: T:\GIS_Client Files\1285 - Inwood Consulting Engineers\1285.011 Woodbury Road RCA_MXD\Figure 12 - Wetland and Surface Water Impact Map.mxd



Document Path: T:\GIS_Client Files\1285 - Inwood Consulting Engineers\1285.011 Woodbury Road RCA_MXD\Figure 12 - Wetland and Surface Water Impact Map.mxd

0 300 600 Feet

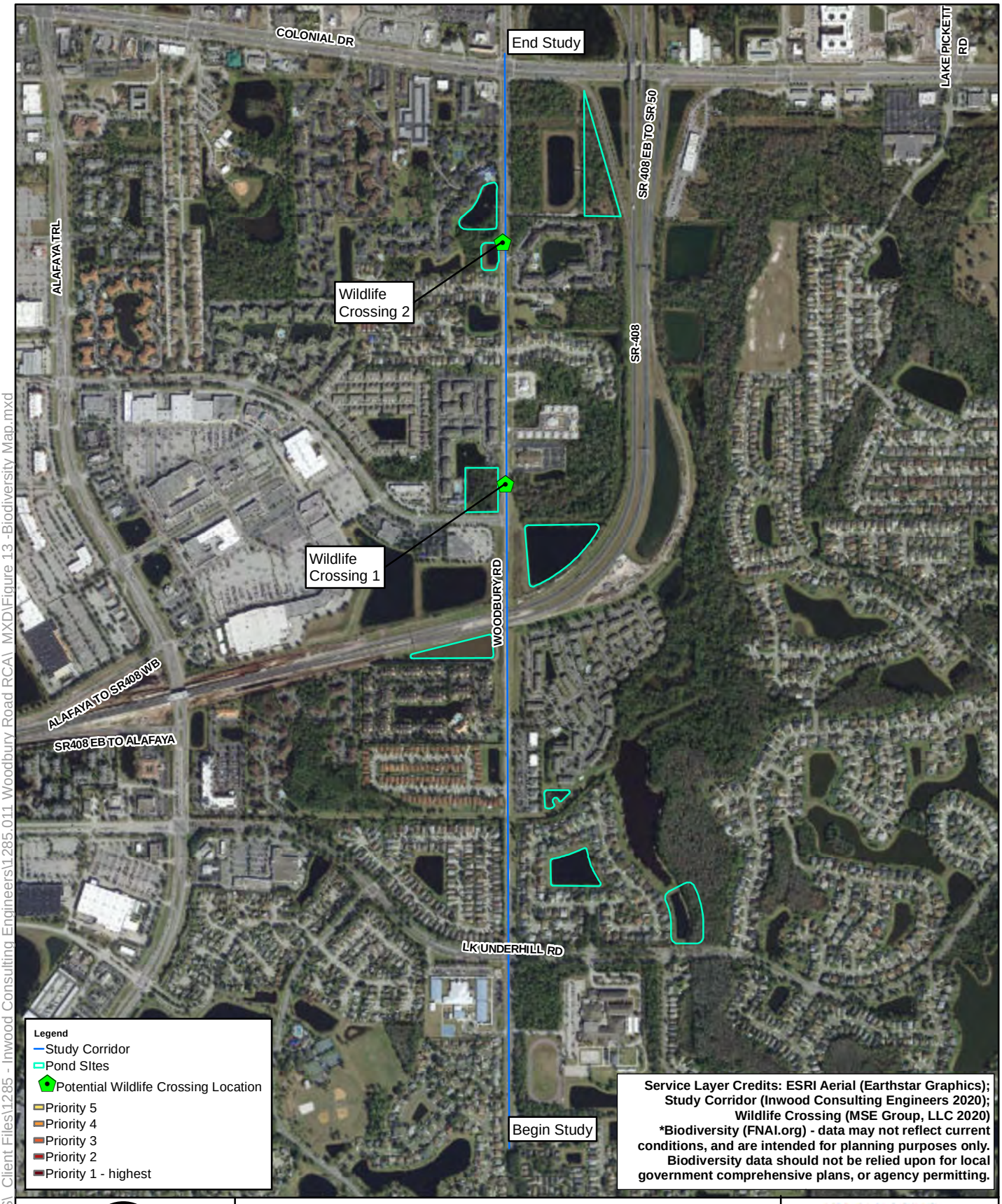
DES: LMO | APR: KJT

DATE: 12/11/2020 | OC: Y18-810-CH

Wetland/Other Surface Water Impacts Map
Woodbury Road Roadway Conceptual Analysis Study
from Lake Underhill Road to State Road 50
Orange County, Florida

ORANGE COUNTY FLORIDA

Figure 12



Document Path: T:\GIS_Client Files\1285 - Inwood Consulting Engineers\1285.011 Woodbury Road RCA_MXD\Figure 13 -Biodiversity Map.mxd

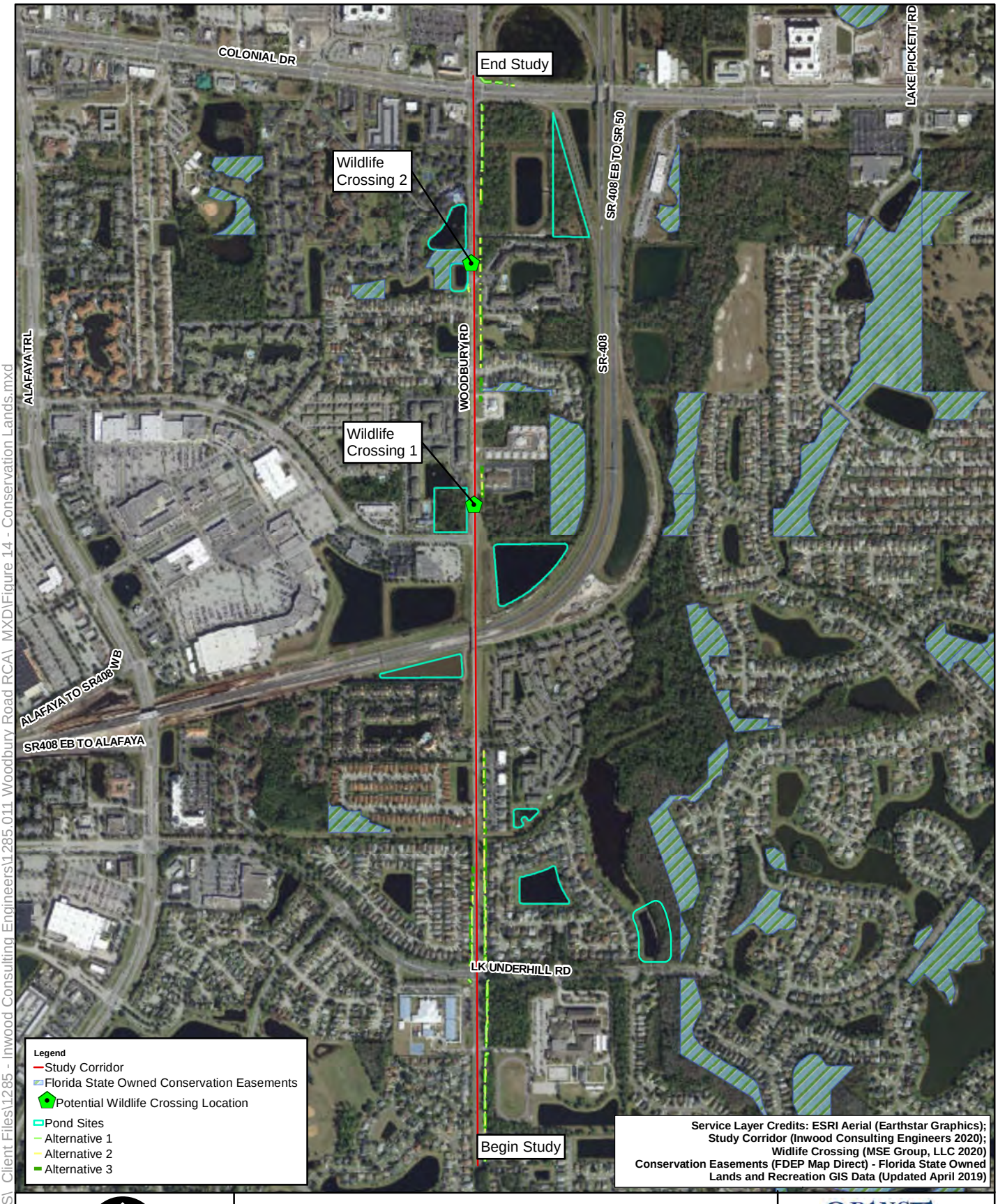
0 600 1,200 Feet

DES: LMO	APR: MLP/JC
DATE: 12/8/2020	OC: Y18-810-CH

Biodiversity Map
Woodbury Road Roadway Conceptual Analysis Study
from Lake Underhill Road to State Road 50
Orange County, Florida

ORANGE COUNTY FLORIDA

Figure 13



Document Path: T:\GIS_Client Files\1285 - Inwood Consulting Engineers\1285.011 Woodbury Road RCA_MXD\Figure 14 - Conservation Lands.mxd

0 600 1,200 Feet

DES: LMO	APR: MLP/JC
DATE: 12/8/2020	OC: Y18-810-CH

Existing Conservation Easements Map
Woodbury Road Roadway Conceptual Analysis Study
from Lake Underhill Road to State Road 50
Orange County, Florida

ORANGE COUNTY FLORIDA

Figure 14

Appendix A – Photograph Log

Photographic Log

Client Name:	Project Name:	Project Location:	MSE Project No.:
OCPW	Woodbury Road	Orange County, Florida	1285.011

Photo:	Date:	Description:
1	8.18.20	Northbound ROW of Woodbury Road at Woodbury Pines Circle, facing north. Maintained ROW, sidewalk, and undeveloped, forested area.

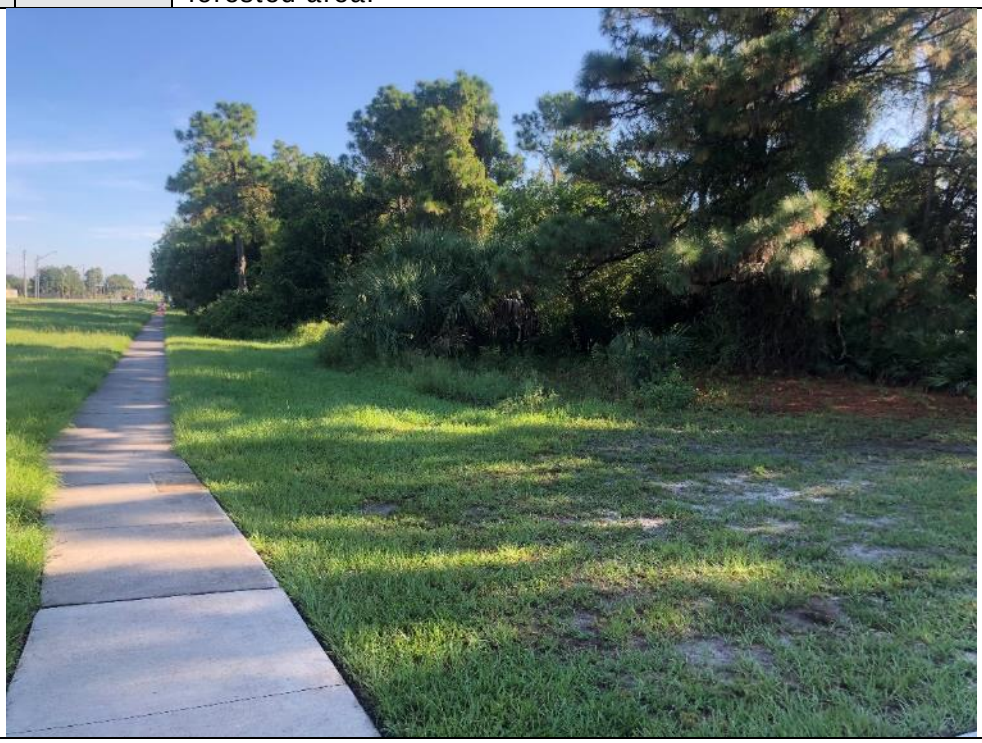


Photo:	Date:	Description:
2	8.18.20	Interior view of WL1/upland boundary, facing northeast. WL1 is located east of Woodbury Road.

Photographic Log

Client Name:	Project Name:	Project Location:	MSE Project No.:
OCPW	Woodbury Road	Orange County, Florida	1285.011

Photo:	Date:	Description:
3	8.18.20	Interior of WL1, located east of Woodbury Road, with standing water present.

Photo:	Date:	Description:
4	8.18.20	Roadside swale adjacent to northbound Woodbury Road, facing northwest.

Photographic Log

Client Name:	Project Name:	Project Location:	MSE Project No.:
OCPW	Woodbury Road	Orange County, Florida	1285.011

Photo:	Date:	Description:
5	8.18.20	WL2, located east of Woodbury Road, south of Lake Underhill Road, facing east into the system.

Photo:	Date:	Description:
6	8.18.20	Unimproved trail bisecting WL2 from west to east, facing east. WL2 is located east of Woodbury Road.

Photographic Log

Client Name:	Project Name:	Project Location:	MSE Project No.:
OCPW	Woodbury Road	Orange County, Florida	1285.011

Photo:	Date:	Description:
7	8.18.20	Interior view of WL2, facing east. WL2 is located east of Woodbury Road.

Photo:	Date:	Description:
8	8.18.20	Woodbury Road northbound ROW, facing south. Single-family residential area.

Photographic Log

Client Name:	Project Name:	Project Location:	MSE Project No.:
OCPW	Woodbury Road	Orange County, Florida	1285.011

Photo:	Date:	Description:
9	8.18.20	SW 1/box culvert under Woodbury Road, facing northwest.

Photo:	Date:	Description:
10	8.18.20	SW1, facing east, extending outside of study area.

Photographic Log

Client Name:	Project Name:	Project Location:	MSE Project No.:
OCPW	Woodbury Road	Orange County, Florida	1285.011

Photo:	Date:	Description:
11	8.18.20	SW2, roadside swale, south of SR 408, east of Woodbury Road.

Photo:	Date:	Description:
12	8.18.20	SW3, located west of Woodbury Road, facing north.

Photographic Log

Client Name:	Project Name:	Project Location:	MSE Project No.:
OCPW	Woodbury Road	Orange County, Florida	1285.011

Photo:	Date:	Description:
13	8.18.20	Pond 9B, facing southeast, north of SR 408, east of Woodbury Road.

Photo:	Date:	Description:
14	8.18.20	Woodbury Road ROW/WL3 boundary, facing north.

Photographic Log

Client Name:	Project Name:	Project Location:	MSE Project No.:
OCPW	Woodbury Road	Orange County, Florida	1285.011

Photo:	Date:	Description:
15	8.18.20	Interior view of WL3 (east of Woodbury Road), facing east.

Photo:	Date:	Description:
16	8.18.20	Interior view of WL3 (east of Woodbury Road), facing east.

Photographic Log

Client Name:	Project Name:	Project Location:	MSE Project No.:
OCPW	Woodbury Road	Orange County, Florida	1285.011

Photo:	Date:	Description:
17	8.18.20	Typical upland-cut swale located east of Woodbury Road, facing north.

Photo:	Date:	Description:
18	8.18.20	Wetland-cut ditch (SW10) located east of Woodbury Road, south of SR 50 and hydrologically connected to WL5, facing east.

Photographic Log

Client Name:	Project Name:	Project Location:	MSE Project No.:
OCPW	Woodbury Road	Orange County, Florida	1285.011

Photo:	Date:	Description:
19	8.18.20	West edge of WL5 and SW10, northbound Woodbury Road, facing north.

Photo:	Date:	Description:
20	8.18.20	Forested uplands located north of WL5, east of Woodbury Road, south of SR 50, facing south.

Photographic Log

Client Name:	Project Name:	Project Location:	MSE Project No.:
OCPW	Woodbury Road	Orange County, Florida	1285.011

Photo:	Date:	Description:
21	8.18.20	East edge of proposed Alt Pond 4B west of SR 408 southbound on ramp, south of SR 50, facing south.

Photo:	Date:	Description:
22	8.18.20	Interior view of WL6 (proposed Alt Pond 4B), located south of SR 50, west of SR 408 on-ramp, facing west.

Photographic Log

Client Name:	Project Name:	Project Location:	MSE Project No.:
OCPW	Woodbury Road	Orange County, Florida	1285.011

Photo:	Date:	Description:
23	8.18.20	Interior of WL5/Proposed Alt Pond 4B, facing north.

Photo:	Date:	Description:
24	8.18.20	Upland portion (south side) of proposed Alt Pond 4B, facing north.

Photographic Log

Client Name:	Project Name:	Project Location:	MSE Project No.:
OCPW	Woodbury Road	Orange County, Florida	1285.011

Photo:	Date:	Description:
25	8.18.20	Upland portion (south side) of proposed Alt Pond 4B, facing west.

Photo:	Date:	Description:
26	8.18.20	Existing Pond 1, located west of Woodbury Road, south of SR 50, facing southwest.

Photographic Log

Client Name:	Project Name:	Project Location:	MSE Project No.:
OCPW	Woodbury Road	Orange County, Florida	1285.011

Photo:	Date:	Description:
27	8.18.20	Maintained edge of south portion of Existing Pond 1, facing west.

Photo:	Date:	Description:
28	8.18.20	Alt Pond 3A, west of Woodbury Road, north of Waterford Lakes Parkway, facing north.

Photographic Log

Client Name:	Project Name:	Project Location:	MSE Project No.:
OCPW	Woodbury Road	Orange County, Florida	1285.011

Photo:	Date:	Description:
29	8.18.20	Interior of WL4 (Alt Pond 3A),

Photo:	Date:	Description:
30	8.18.20	Interior view of upland portion of proposed Alt Pond 3A, facing north.

Photographic Log

Client Name:	Project Name:	Project Location:	MSE Project No.:
OCPW	Woodbury Road	Orange County, Florida	1285.011

Photo:	Date:	Description:
31	8.18.20	SW3 located west of Woodbury Road, south of SR 408, facing north.

Photo:	Date:	Description:
32	8.18.20	Woodbury Road, facing south.