Biological
And
Environmental Site Assessment

Prepared for

Optimum RV Park

Marion County, Fl.

Prepared by
Ray and Associates
Planning and Environmental
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I. Project Description

The subject 13.4$^{+/-}$ Acre Sites are located in Marion County. The subject property is west of US-441 and north of SE 73rd Street. The subject site is identified as Section 10, Township 16, Range 22 and is further identified by the Marion County Property Appraiser as:

Parcel Number	Prime Key #	Acreage$^{+/-}$
36474-001-00	1961939	2.22
36474-000-00	911399	8.02
36475-000-00	911402	2.80
Total		13.4

(See Exhibit 1-Location Map and Exhibit 2-Site Aerial Map).

The total site area project consists of approximately 13.4$^{+/-}$ Acres. The North site is currently vacant and undeveloped, while the Central and Southern sites are partially developed for commercial and residential use.

The property owner is proposing to clear, grade and construct infrastructure in accordance with local land development regulations.

Land Use types adjacent to the project area include rural residential land, residential dwellings, commercial services, upland mixed forests, and dry prairies to the North, East, West and South of the properties. The project obtains primary access via US 441 adjacent to the east and west of the properties.

A "*Phase I Environmental Site Assessment*" may be completed by others. This report does not address CERCLA compliance or associated requirements.

Survey Methodology

Pedestrian Surveys were conducted based upon North-South Transects beginning on the north property line with an approximate Total of 9 Transects. A Pedestrian Survey was conducted on April 10th, 2023 and again on October 26th 2023.

Surveys began on the sites in the afternoon and continued to 9:00 AM. Temperature were in an acceptable range for wildlife observations. Skies were partly cloudy with scattered showers.

The approximate location of the Pedestrian Transects can be seen on Exhibit 4.

Current photos of the Site and existing use can be seen on Exhibit 3.

II. Site Description

A. SOILS

Two (2) Soil types is identified on site are per Marion County Soils Report by the NRCS:

8- Arredondo Sand, 0% to 5% slopes

Properties and qualities

- *Slope:* 0 to 5 percent
- *Depth to restrictive feature:* More than 80 inches
- *Drainage class:* Well drained
- *Runoff class:* Very low
- *Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)
- *Depth to water table:* More than 80 inches
- *Frequency of flooding:* None
- *Frequency of ponding:* None

Interpretive groups

- *Hydrologic Soil Group:* A
- *Hydric soil rating:* No

44- Kendrick Loamy Sand, 0% to 5% slopes

Properties and qualities

- *Slope:* 0 to 5 percent
- *Depth to restrictive feature:* More than 80 inches
- *Drainage class:* Well drained
- *Runoff class:* Negligible
- *Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.60 to 2.00 in/hr)
- *Depth to water table:* More than 80 inches
- *Frequency of flooding:* None
- *Frequency of ponding:* None

Interpretive groups

- *Hydrologic Soil Group:* A
- *Hydric soil rating:* No

For a detailed report and description of these soils see Exhibit 6

B. PLANT COMMUNITETIES and FLORIDA LAND USE, COVER and FORMS CLASSIFICATION

Land use types located within the proposed Project Site were identified through a review of color aerials and site investigations. The on-site land use forms were classified using the Florida Land Use, Cover and Forms Classification System (FLUCFCS) as defined by the Florida Department of Transportation (FDOT, 1999) and the Florida Land Use Cover Classification System (FLUCCS) as defined by the Florida Department of Environmental Protection (FDEP 2004-2011), see Exhibit 5 – FLUCCS Map.

General:
Site conditions are typical of those found in this region of Marion County. The site has not been cleared for more intensive agricultural development. Because of fire suppression, the subject Sand Pine stand is aging and will be likely be replaced by oak community.

The region is continuing to develop in a suburban/urban manner. There are two (2) Land Uses Cover identified on the subject site.

Based on information obtained from FDEP, field observations and aerial interpretation, the following land use classifications (FLUCFCS) best describe the vegetative communities present on-site and adjacent to the subject site:

Subject site:

1. **4340 Upland Mixed- Coniferous & Hardwood**
   This class is reserved for those forested areas in which neither upland conifers nor hardwoods achieve a 66 percent crown canopy dominance.

2. **1100: Low Density, <2 dwellings/acre**
   Residential land uses range from high-density urban housing developments to low-density rural areas characterized by a relatively small number of homes per acre. The variation extends from the multi-family apartment complexes generally located in larger urban centers to those single-family houses sometimes having lot sizes of more than one acre.

   Areas of low intensity residential land use (generally less than one dwelling unit per five acres), such as farmsteads, will be incorporated in other categories to which they relate. However, rural residential and recreational type subdivisions will be included in the Residential category since this land is almost entirely committed to residential use even though it may include forest or range types.

   In most instances the boundary will be clear when new housing developments abut clearly defined agricultural areas. Conversely, the residential boundary may be vague and difficult to discern when residential development is sporadic and occurs in smaller isolated units developed over an extended period of time in areas with mixed or less intensive land uses. A careful evaluation of density and overall relationship of these areas to the total urban complex must be made.

   Other land use categories may embrace areas that meet the Residential category requirement. Often such residential sections are an integral component of the category with which they are associated and should be included within that category. For example, in the Institutional category residential units may be found on military bases in the form of barracks, apartments, dormitories or homes and on college and university campuses in the form of apartments and dormitories in close proximity to instructional buildings.

Agricultural field operations and resort facilities commonly provide temporary lodging for their employees and these areas should be classified under Agriculture and Commercial and Services respectively.

Surrounding and Adjacent Land Use (FLUCFCS):

1. **1100: Low Density, <2 dwellings/acre**
2. **1180: Residential, rural – one unit on 2 or more acres**
3. **1200: Medium Density, 2>5 dwellings/acre**
4. **1300: High Density, 6 or more dwellings/acre**
5. **1400: Commercial & Services**
6. **2510: Horse Farms**
7. **3100: Herbaceous (Dry) Prairie**
8. **4340: Upland Mixed – Coniferous & Hardwood**

The region is experiencing consistent development for Suburban uses. The biggest threat to the development of any high-quality wildlife habitat or sustainable natural ecosystem is primarily caused by fire exclusion. Vacant or Open lands become progressively less suitable for wildlife habitat as more non-fire-resistant plants have established dominance over with time.

Trees & Shrubs

The subject has previously been developed, with Upland Mixed Forests surrounding the commercial services and residential dwellings that are present.

The groundcover and majority of the site is dominated by:

Trees & Shrubs:

Floral Cherry	*(Prunus serrulate)*
Shortleaf Pine	*(Pinus echinate)*
Loblolly Pine	*(Pinus taeda)*
Sand Pine	*(Pinus clausa)*
Live Oak	*(Quercus virginiana)*
Wax Myrtle	*(Myrica cerifera)*
Camphor	*(Cinnamomum camphora)*
Sabal Palm	*(Sabal palmetto)*
Sumac	*(Rhus)*
Paper Mulberry	*(Broussonetia papyrifera)*
Southern Magnolia	*(Magnolia grandiflora)*
Red Bay	*(Persea berbonia)*
Paw Paw	*(Asimina triloba)*

Groundcover:

Virginia Creeper	*(Parthenocissus quinquefolia)*
Poison Ivy	*(Toxicodendron radicans)*
Lantana	*(Lantana)*
Shield Fern	*(Polystichum)*

Carolina Jasmine	*(Gelsemium sempervirens)*
American Pokeweed	*(Phytolacca americana)*
Bermuda Grass	*(Cynodon sp.)*
Bahia Grass	*(Paspalum sp.)*
Rhino Grass	*(Sansevieria pearsonii)*
Cactus	*(Opuntia eburnispina)*
Broomsedge	*(Andropogon virginicus)*
Greenbrier	*(Smilax sp.)*
Grapevine	*(Vitis sp.),*
Blackberry	*(Rubus spp.)*
Dogfennel	*(Eupatorium capillifolium)*

This is not intended to be a 100% vegetative survey but rather provide a general acknowledgement of existing vegetation sufficient to provide an understanding of the existing site conditions.

In the natural condition for Florida, periodic fire is important in setting back plant succession and maintaining viable ecosystems. There was no evidence observed on site to indicate any recent periodic or prescribed fires.

US 441 forms the partial eastern border of the site, with SW 73rd Street forming the south border of site. The site are located in a developed area of Marion County surrounded by uses that are not conducive to prescribed burning activities. The absence of periodic fires has allowed the ecosystem to change and various non-fire tolerant plant species to become established. The subject site is not connected to any larger natural ecological corridor.

There are no other Land Uses associated with the subject site. The existing Land Cover is not Rare, Endangered or ecological unique to Central Florida or the Region.

C. TOPOPGRAPGY

The Topography of the subject site can be seen on Exhibit 7.

Elevation on site slopes upward from the northeastern area of the site to the southwestern. Information obtained from FDEP and Marion County indicates elevations between 67'$^{+/-}$ in the northeast area and east to an elevation of approximately 83'$^{+/-}$ in the southwestern portion of the site.

There are approximately 0.20$^{+/-}$ Acres of lands above elevation 82'.

D. WETLANDS

The subject site was evaluated for the presence of jurisdictional wetlands. General methodology detailed in Chapter 62-340 of the Florida Administrative Code and the 1987

US Army Corps of Engineers Wetland Delineation Manual was followed. Soils, Flood Planes, Vegetation and other historical information was researched and analyzed during the site investigation.

A review FDEP and the National Wetlands Inventory (NWI) together with Marion County's GIS database indicate the absence of jurisdictional wetlands on the subject site. During site investigation and field evaluation on April 10th, 2023 and October 26th 2023 no jurisdictional wetlands were observed on the subject site.

See Exhibit 8 for the general location of the jurisdictional wetlands within the region based upon NWI mapping.

E. THREANTEND and ENDANGERED SPECIES

A literature review as well as professional experience and knowledge of the region was utilized to identify federally, or state listed species most likely to be found within Marion County, Florida. The Project Site was then evaluated for the presence of those listed species identified by the United States Fish and Wildlife Service (USFWS) and/or the Florida Fish and Wildlife Conservation Commission (FWC). Site reviews were conducted by a Ray and Associates biologist on April 10th, 2023, to evaluate the property for potential presence of wildlife listed for protection.

The USFWS identifies the subject site as a Tier 5 Habitat. Tier 5 Habitats are those where we may have a measurable workload and little resource payoff. In the regulatory arena, these could be considered personnel "sinks". However, they may also present restoration opportunities to higher value habitats. These include:

- Agriculture
- Canal/Ditch
- Disturbed Transitional
- Urban/Developed

Based upon existing site conditions and observations the subject project does not propose development of any identified "higher value habitats" by the Florida Natural Area Inventory (FNAI) or Strategic Habitat Conservation Areas as identified by FDEP. The FNAI database identifies the subject site as having a Habitat Value of 6, the lowest value assigned by the Habitat Conservation Priorities by FNAI.

The observation of potential habitat for 2 species listed for protection, or their habitat, was identified on the subject site. These species and the results of regulatory analysis are found below.

Gopher Tortoise, *Gopherus polyphemus*

Potentially Occupied and Abandoned, Gopher Tortoise burrows were observed on the project site. Gopher tortoises are a threatened wildlife species by the Florida Fish and Wildlife Conservation Commission (FWC) and are protected by state law, Chapter 68A–27, Florida Administrative Code. In accordance with the requirements of Rules 68A-

25.002 and 68A-27.004 (F.A.C.), a permit for a gopher tortoise capture/relocation/release activity must be secured from FWC before initiating any relocation work. Gopher tortoises must be relocated or impacts to their burrows avoided in accordance with FWC Guidelines before any land clearing for development takes place. Property owners must obtain permits from the Florida Fish and Wildlife Conservation Commission before they can move or relocate any Gopher Tortoises.

It is recommended that 90 days prior to site development a physical survey for the Presence/Absence of Potential Occupied, or Abandoned Gopher Tortoise Borrows be completed in accordance with FWC Gopher Tortoise Guidelines. If Potentially Occupied Gopher Tortoise Burrows are identified FWC regulations governing Gopher Tortoise protection, burrow excavation, relocation and mitigation are to be complied with.

Additional protected species investigated for possible impact:

Florida Bald Eagle, Haliaeetus leucocephalus
Information and data obtained by FWC was used to locate documented bald eagle nesting territories and to view their locations in map form. (https://myfwc.com/wildlifehabitats/wildlife/bald-eagle/management/)

No Bald Eagle Nest have been previously identified or documented by FWC within 0.25 mile of the subject site. During recent site investigations and ecological surveys, no Bald Eagle Nests were observed on or near the subject sites.

No other protected animal species were observed or identified on the subject site. No Critical or Essential Habitat of a Listed Species was identified on the subject site. No evidence observed in the field indicated the presence of:

Florida Sandhill Crane	*Grus canadensis pratensis*	ST
Little Blue Heron	*Egretta caerulea*	ST
Tricolored Heron	*Egretta tricolor*	ST
Wood Stork	*Mycteria americana*	FT/ST
Everglades Snail Kite	*Rostrhamus sociabilis plumbeus*	FE
Florida mouse	*Peromyscus floridanus*	SSC
Sand Skink	*Drymarchon corais couperi*	FT
Eastern Indigo Snake	*Stilosome extenuatum*	FT
Short-tailed snake	*Pituophis melanoleucus mugitus*	ST
Florida Pine snake	*Elaphe guttata*	SSC
Red Rat snake	*Aphelocoma coerulescens*	SSC
Florida Scrub-Jay	*Athene cuniculari*	ST
Burrowing Owl	*Picoides borealis*	SSC
Red-Cockaded Woodpecker	*Falco sparverius paulus*	FE
Southeastern American Kestrel		ST

Plants

Britton's beargrass	*Nolina brittoniana*	FE
Florida bonamia	*Bonamia grandiflora*	FT
Lewton's polygala	*Polygala lewtonii*	FE
Papery whitlow-wort	*Paronychia chartacea*	FT
Pigeon Wings	*Ciltoria frangrans*	FE
Pygmy Fringe-tree	*Chionanthus pygmaeus*	FE
Scrub buckwheat	*Eriogonum longifolium var. gnaphalifolium*	FT
Scrub plum	*Prunus geniculata*	FE
Wide-leaf warea	*Warea amplexifolia*	FE

The location of Pedestrian Transects can be found on Exhibit 4.

III. Conclusions and Recommendations

US 441 borders the subject site to the east. SW 73rd Street forms the south border to the subject site. The property is surrounded by commercial & services, upland forests, herbaceous prairies, and residential dwellings.

Property Owner is proposing to develop the subject sites compatible with surrounding development patterns.

At the time of this survey Potentially Occupied Gopher Tortoise burrows were observed on the subject sites. It is recognized that Gopher tortoises are highly mobile species often abandoning burrows and reoccupying old one or establishing new burrows. It is recommended that 90 days prior to site development a Gopher Tortoise Survey, Excavation, Capture and Relocation be completed in accordance with FWC regulations. All Active and Potentially Active Gopher tortoise burrows located in areas proposed for development should be excavated and all captured Gopher Tortoises be relocated in accordance with FWC guidelines.

After a review of available information, field investigations, consultation with regulatory agencies, and analysis of the subject sites it is the conclusion of Ray and Associates that the subject sites should be approved and allow development as proposed provided there is demonstration of compliance with Federal, State and Local environmental regulations.

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Category ID=3&programID=107&ProgramCategoryID=3.

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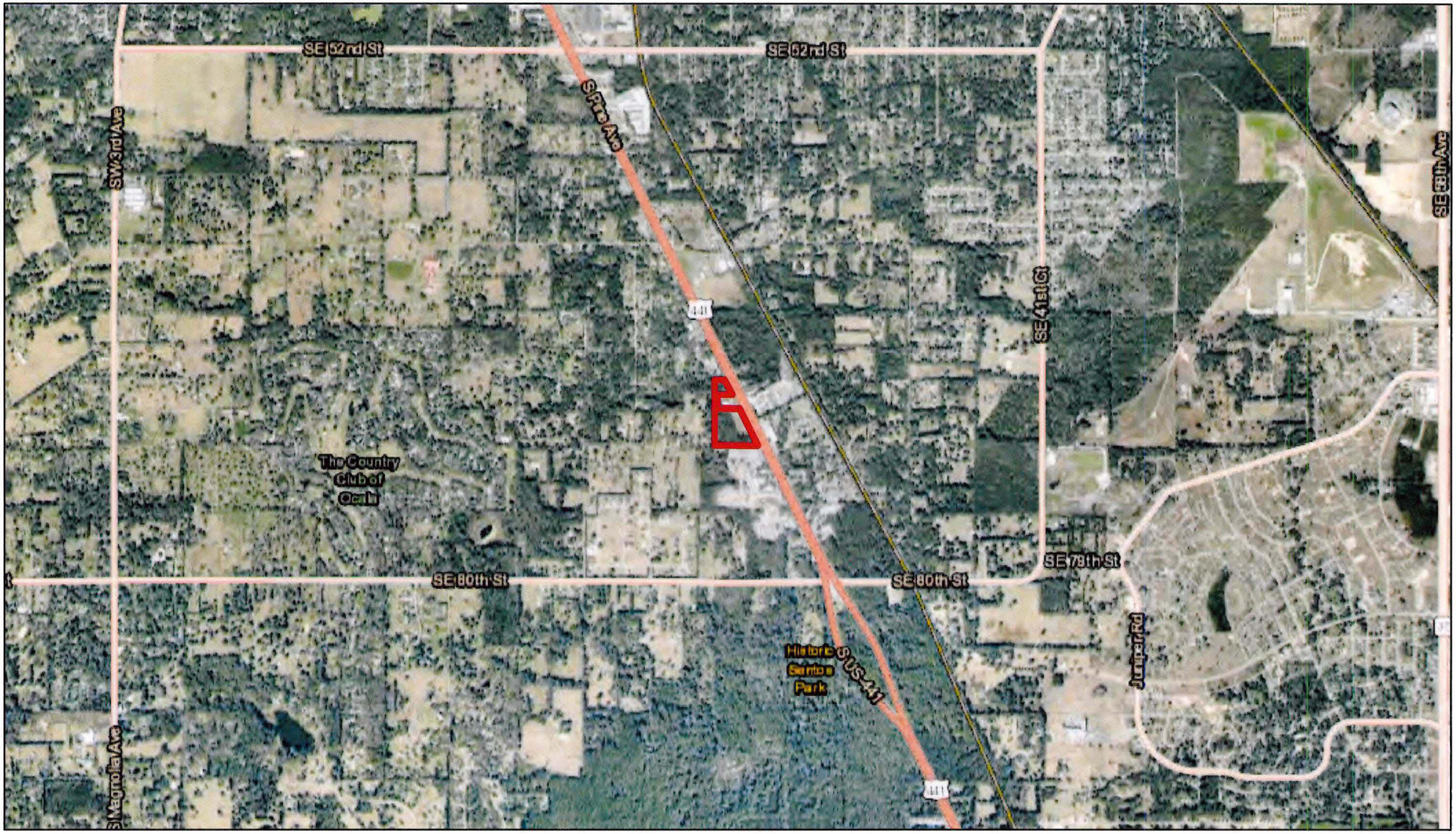
Exhibit 1: Location



October 31, 2023

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0 0.25 0.5 1 mi

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State of Florida, Maxar, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Esri, HERE

Map created by Map Direct, powered by ESRI.

Exhibit 2: Aerial

October 31, 2023

1:4,514

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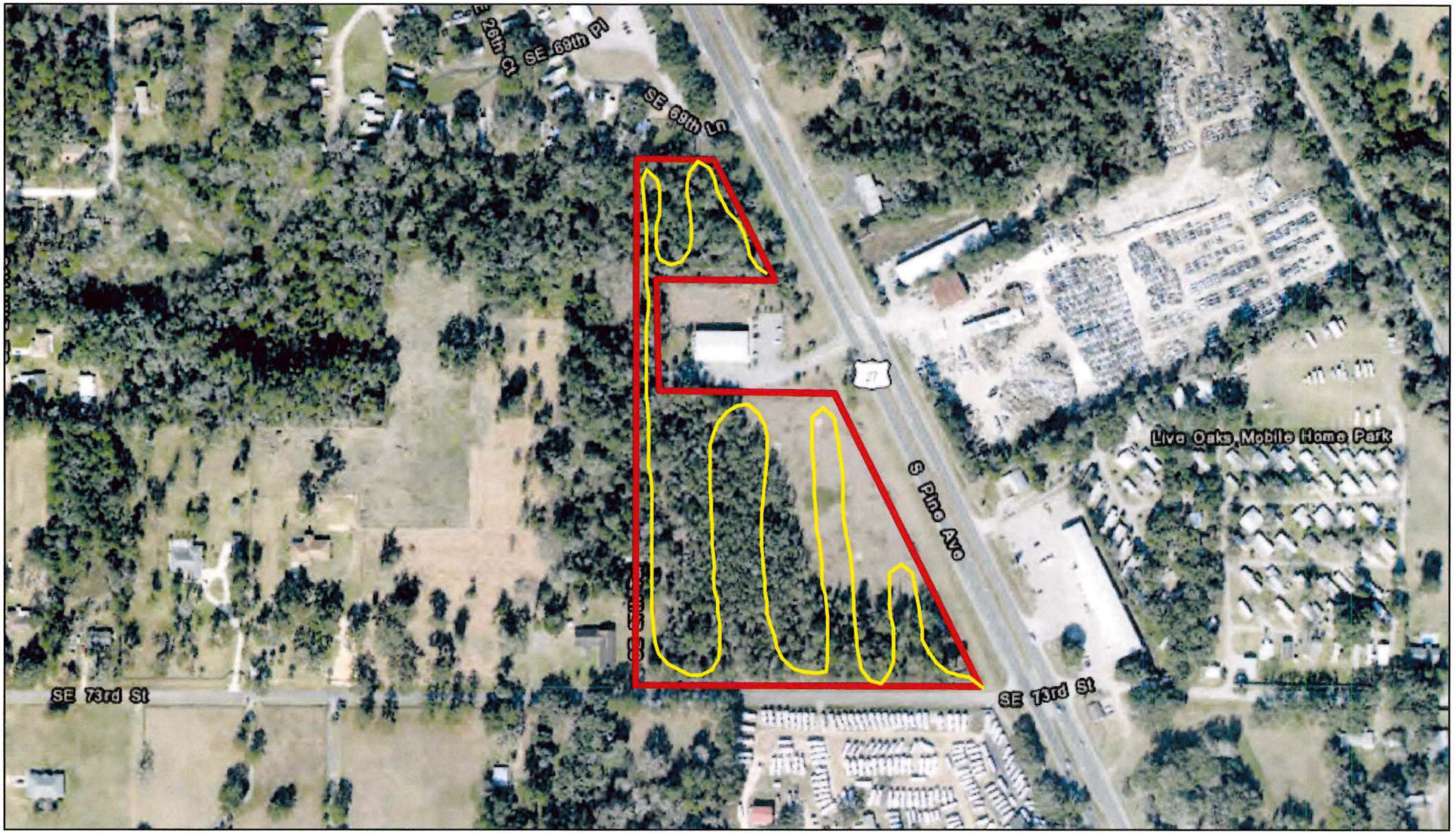
State of Florida, Maxar, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Esri, HERE, iPC

Map created by Map Direct, powered by ESRI.

Exhibit 4: Transects



October 31, 2023

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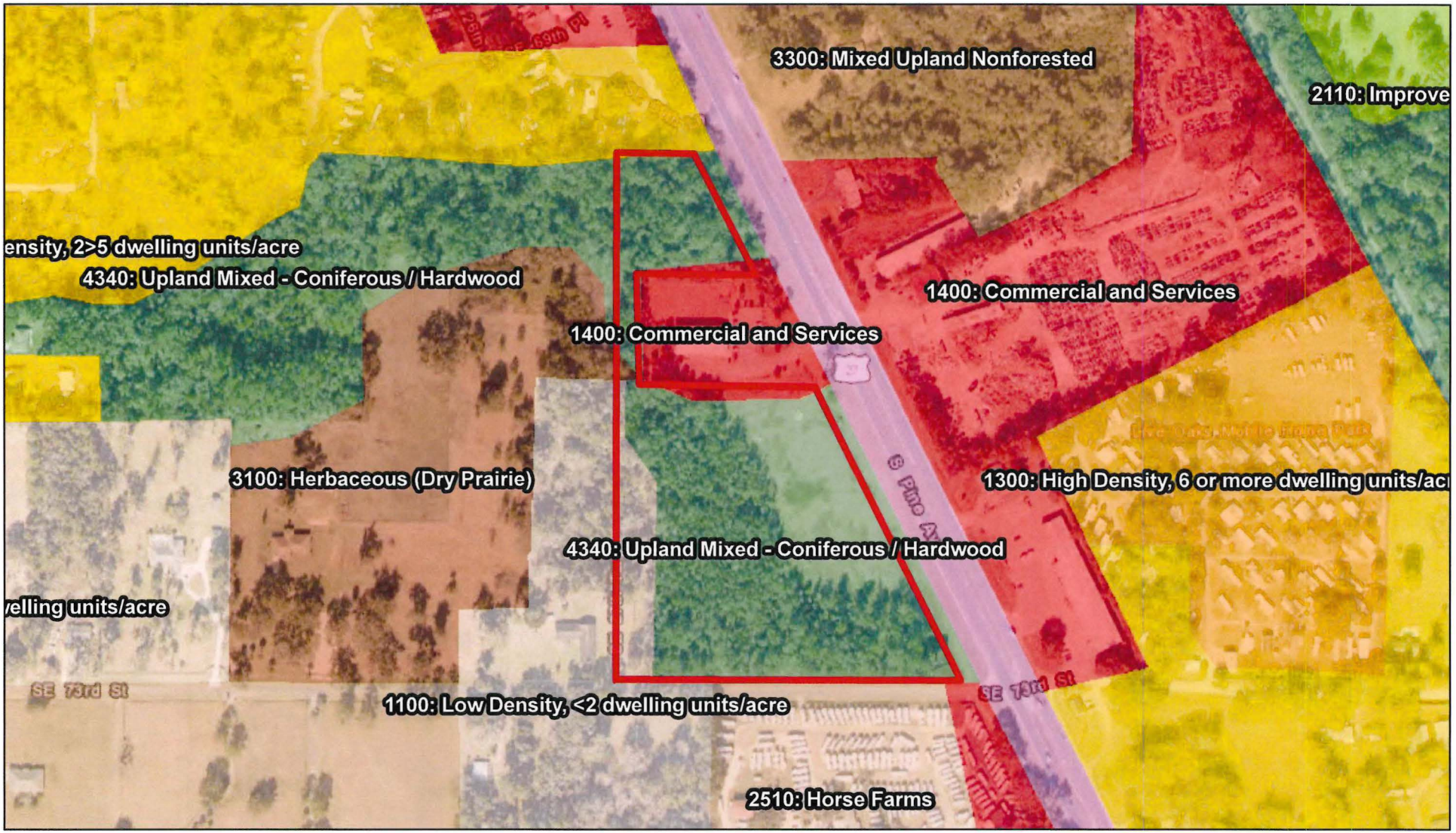
State of Florida, Maxar, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Esri, HERE, iPC

Map created by Map Direct, powered by ESRI.

Exhibit 5: FLUCFCS



October 31, 2023

Statewide Land Use Land Cover

- Residential Low Density
- Residential Medium Density
- Residential High Density
- Commercial and Services
- Cropland and Pastureland
- Specialty Farms
- Herbaceous
- Mixed Rangeland
- Upland Mixed Forests
- Transportation

1:4,514

0 0.03 0.07 0.13 mi

0 0.05 0.1 0.2 km

SRWMD, SJRWMD, SFWMD, SWFWMD, NWFWMD, State of Florida, Maxar, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Esri, HERE, iPC

Map created by Map Direct, powered by ESRI.

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Marion County Area, Florida

October 31, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map (Exhibit 6: Soil Report)

Map Scale: 1:2,330 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 30 60 120 180

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Marion County Area, Florida
Survey Area Data: Version 21, Sep 6, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 9, 2022—Feb 10, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend (Exhibit 6: Soil Report)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
9	Arredondo sand, 0 to 5 percent slopes	7.5	56.0%
44	Kendrick loamy sand, 0 to 5 percent slopes	5.9	44.0%
Totals for Area of Interest		**13.4**	**100.0%**

Map Unit Descriptions (Exhibit 6: Soil Report)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The

delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Marion County Area, Florida

9—Arredondo sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2ttlt
Elevation: 40 to 150 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 68 to 75 degrees F
Frost-free period: 276 to 306 days
Farmland classification: Not prime farmland

Map Unit Composition

Arredondo and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arredondo

Setting

Landform: Hills on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 7 inches: sand
E - 7 to 65 inches: sand
Bt1 - 65 to 70 inches: loamy sand
Bt2 - 70 to 80 inches: fine sandy loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Forage suitability group: Sandy soils on ridges and dunes of xeric uplands (G154XB111FL)
Other vegetative classification: Sandy soils on ridges and dunes of xeric uplands (G154XB111FL)

Hydric soil rating: No

Minor Components

Candler

Percent of map unit: 7 percent
Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Interfluve, side slope, tread
Down-slope shape: Convex
Across-slope shape: Convex
Other vegetative classification: Sandy soils on ridges and dunes of xeric uplands (G154XB111FL), Longleaf Pine-Turkey Oak Hills (R154XY002FL), Longleaf Pine-Turkey Oak Hills (R155XY002FL)
Hydric soil rating: No

Gainesville

Percent of map unit: 7 percent
Landform: Ridges on marine terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sandy soils on ridges and dunes of xeric uplands (G154XB111FL)
Hydric soil rating: No

Sparr

Percent of map unit: 4 percent
Landform: Knolls on marine terraces, rises on marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Interfluve, tread, rise
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Other vegetative classification: Sandy soils on rises and knolls of mesic uplands (G154XB131FL), Upland Hardwood Hammock (R154XY008FL)
Hydric soil rating: No

Rock outcrop

Percent of map unit: 1 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Forage suitability group not assigned (G154XB999FL)
Hydric soil rating: Unranked

Sinkhole

Percent of map unit: 1 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Forage suitability group not assigned (G154XB999FL)
Hydric soil rating: Unranked

44—Kendrick loamy sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2y7n2
Elevation: 30 to 300 feet
Mean annual precipitation: 44 to 56 inches
Mean annual air temperature: 68 to 75 degrees F
Frost-free period: 300 to 365 days
Farmland classification: Farmland of local importance

Map Unit Composition

Kendrick and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kendrick

Setting

Landform: Fluviomarine terraces, ridges, knolls
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits over loamy marine deposits

Typical profile

A - 0 to 7 inches: loamy sand
E - 7 to 28 inches: fine sand
Bt - 28 to 73 inches: sandy clay loam
BC - 73 to 80 inches: sandy clay loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A

Forage suitability group: Sandy over loamy soils on knolls and ridges of mesic uplands (G154XB211FL)
Other vegetative classification: Sandy over loamy soils on knolls and ridges of mesic uplands (G154XB211FL), Upland Hardwood Hammock (R154XY008FL)
Hydric soil rating: No

Minor Components

Gainesville

Percent of map unit: 5 percent
Landform: Ridges on fluviomarine terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sandy soils on ridges and dunes of xeric uplands (G154XB111FL)
Hydric soil rating: No

Lochloosa

Percent of map unit: 5 percent
Landform: Knolls on fluviomarine terraces, ridges on fluviomarine terraces
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sandy over loamy soils on rises and knolls of mesic uplands (G154XB231FL), Upland Hardwood Hammock (R154XY008FL)
Hydric soil rating: No

Arredondo

Percent of map unit: 5 percent
Landform: Ridges on fluviomarine terraces, hills on fluviomarine terraces
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Other vegetative classification: Sandy soils on ridges and dunes of xeric uplands (G154XB111FL)
Hydric soil rating: No

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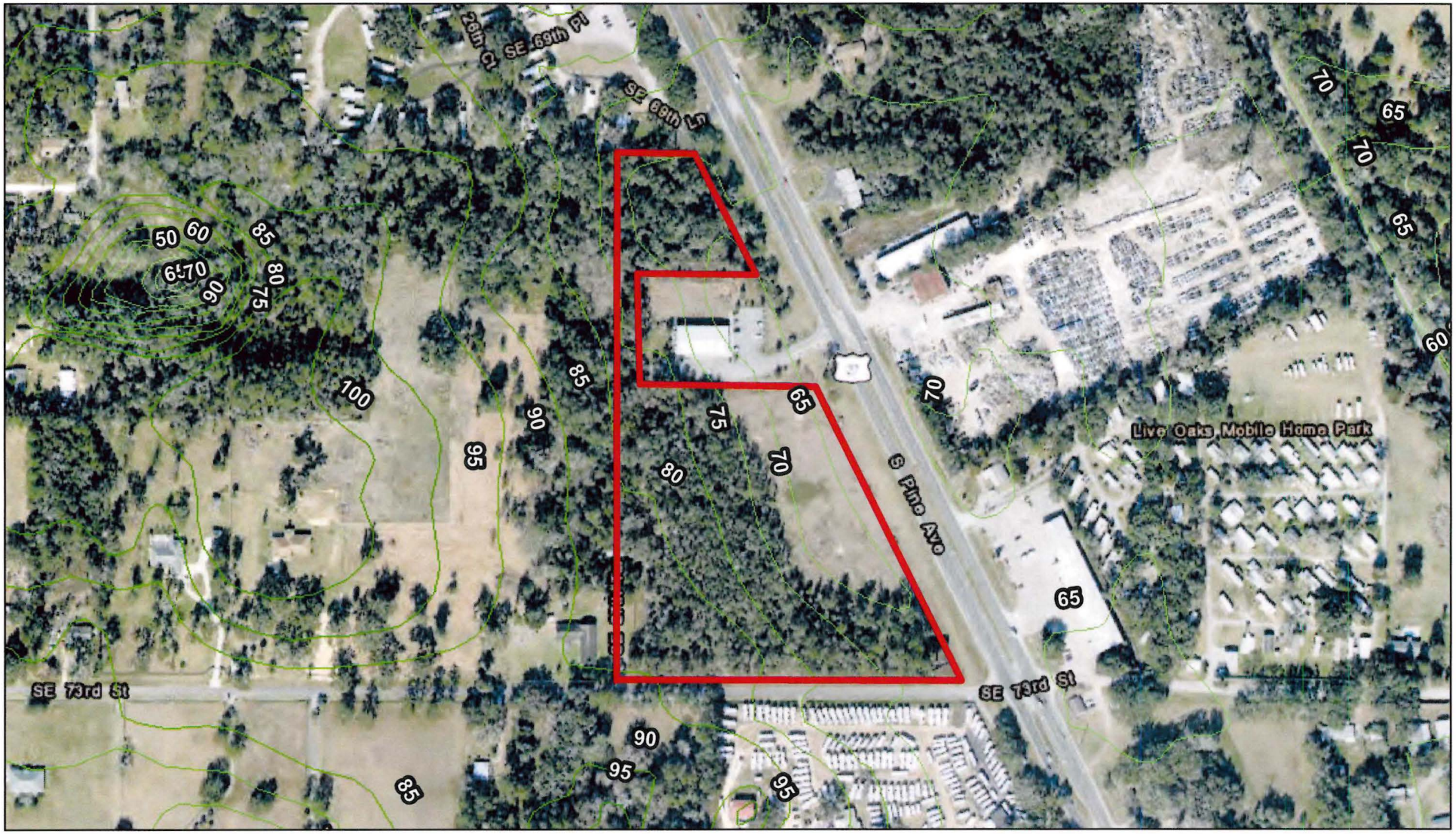
Exhibit 7: Topography



October 31, 2023

Elevation Contours and Depressions

- 40 - 50
- 50 - 60
- 60 - 70
- 70 - 80
- 80 - 90
- 90 - 100

1:4,514

0 0.03 0.07 0.13 mi

0 0.05 0.1 0.2 km

State of Florida, Maxar, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Esri, HERE, iPC, U.S. Geological Survey U.S. Geological Survey Sioux Falls, SD. QA and corrections to the data were supplied by the Florida Department of Environmental Protection's Florida

Map created by Map Direct, powered by ESRI.

Exhibit 8: Wetlands

October 31, 2023

National Wetlands Inventory (areas)

Freshwater Emergent Wetland

1:9,028

0 0.05 0.1 0.2 mi

0 0.1 0.2 0.4 km

State of Florida, Maxar, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, FDEP, Esri, HERE, iPC

Map created by Map Direct, powered by ESRI.