



OAK CREEK PRESERVE LAND STEWARDSHIP PLAN



Approved by the Lee County Board of County Commissioners: January 7th 2014

Oak Creek Preserve Land Stewardship Plan

Oak Creek Preserve (OCP) is located at the south end of Matheson Avenue in downtown Bonita Springs, Township 47E, Range 26S, Section 35 (Attachment A, Location Map). The preserve is approximately 3.93+/- in size and was purchased by the Lee County Conservation 20/20 program on November 17, 2009, for \$400,000. The parcel is comprised of three properties, is irregularly shaped, and includes land on both sides of Oak Creek (Attachment B, Aerial Map). OCP is adjacent to commercial property to the south and residential property on all remaining sides. Oak Creek is a tributary of the Imperial River and meanders in a southeast direction about one mile from the Imperial River, ending in a pond on the east side of Livingston Road. The creek averages about 1-2 feet deep and ranges from 10-25 feet wide, (in the preserve area). The banks of the creek rise fairly steeply on the north and south sides, to 10-12 feet above the creek bottom. According to local historians, such as E. P. Nutting, Oak Creek was once the Imperial River's major tributary, and many pioneer families settled along its banks. Just a few decades ago, boats traveled up Oak Creek. The Florida Department of Environmental Protection designated Oak Creek as an Outstanding Florida Waterway in recognition of its importance as a tributary to the health of Estero Bay.

Minutes of the Conservation Lands Acquisition and Stewardship Advisory Committee (CLASAC) on June 12, 2008, indicate that there was concern for maintenance and that the preserve would be used for an active park. Councilwomen Simons and Martin spoke before this committee and presented a Memorandum of Understanding (MOU), committing the city of Bonita Springs to remove the exotic vegetation and maintain the property. During the meeting it was stated that Conservation 20/20 does not buy property for active parks, indicating the preserve could only be used for passive uses. This mini stewardship plan is predicated on these conditions along with standard preserve area management guidelines.

The preserve is not fenced or barricaded in any way. Public access to the preserve is from the south end of Matheson Road. All of the adjacent property owners have access to the preserve. Park signage stating the preserve name, activities and rules are posted at the end of Matheson Avenue.



Plant Communities

The preserve is forested with bald cypress (*Taxodium distichum*), live oak, laurel oak (*Quercus laurifolia*), and mango trees (*Mangifera indica*) in and immediately adjacent to the creek. The Department of Transportation's Florida Land Use Covers and Forms Classification System

(FLUCFCS) code delineates this community as, 630 Wetland Forest Mixed. In this community neither hardwoods nor conifers achieve a 66% dominance of the tree canopy (Attachment C, FLUCFCS Map). Beginning about 20 feet from the banks at a slightly higher elevation, there are sabal palms (*Sabal palmetto*), slash pines (*Pinus elliottii* var. *densa*) and live oaks (*Quercus virginiana*). Since this area is also a mix and neither hardwoods nor conifers achieve a 66% dominance, this community is classified as, 434 Hardwood Conifer Mixed. Ground cover and midstory vegetation are virtually non-existent since the exotic plants were recently removed. The large number of sabal palms in certain areas will shed dead palm fronds and severely reduce any groundcover and midstory vegetation in those areas. The exotic removal program did leave a fair amount of duff (dried vegetation), on the ground along with dead sabal palm fronds, pine needles and dying air potato and grape vines. There are many mango trees (*Mangiferi indica*), that have naturally germinated and are growing wild on the creek bank. This is typical along the creek and river banks in Bonita Springs. Common birds, mammals and reptiles that take refuge in a southern urban forest, such as, mocking birds (*Mimus polyglottos*), red shouldered hawks (*Buteo lineatus*), raccoons (*Procyon lotor*), opossums (*Didelphis virginiana*), black racers (*Coluber constrictor*), are present here.

Listed Species

Currently, a single gopher tortoise (*Gopherus polyphemus*) resides on the property. Gopher tortoises are a state threatened species and warrant special protections. The area around the gopher tortoise burrow will be managed for tortoise habitat by allowing the grasses and weeds to grow and discouraging vegetation that will shade them such as, sabal palm starts and prohibited exotic plants, which can be controlled by herbicides. The trail will steer clear of the burrow and foraging area to minimize disturbance to the gopher tortoise. Other listed species are expected to utilize the site, especially birds. The protective covenants of the park will also help listed species such as gopher tortoises, indigo snakes, and epiphytes to live and use the site in relative safety. A plant list from the nearby Pine Lake Preserve is attached and will be revised to specify the plants found on this site, including any listed plant species. A list of wildlife inhabiting the site will also be created from observations by park personnel and the city Environmental Specialist.

Soils

About 75% of the site is composed of Cocoa Fine Sand (MUSYM 55 & MUID 71055) and the remaining 25% is Felda Fine Sand (MUSYM 12 & MUID 71012) (Attachment D, Soils). Cocoa Fine Sand is an upland soil and Felda Fine Sand is considered a hydric or wetland soil. Since this is an urban area the lands have been severely drained and the entire area except for the creek bottom are now functioning as uplands.

Archaeological

Two thirds of the preserve lies within Archeological Sensitivity Level 2, (those areas containing known archaeological sites that have not been assessed for significance but are likely to conform to the criteria for local designation, or areas where there is a high likelihood that unrecorded sites of potential significance are present) (Attachment E, Archaeological Sensitivity

Area Map). This area which lies on both sides of Oak Creek, does not have any known archeological sites according to The Florida Master Site file.

Hydrology

The preserve lies within the SFWMD's Imperial River subbasin. Rainfall that falls in the preserve area generally flows into Oak Creek, then into the Imperial River and out to Estero Bay and into the Gulf of Mexico. The urban areas surrounding the preserve collect water and send it to the swales alongside the roadways and then into Oak Creek or the Imperial River. The banks of the creek are approximately 20 feet wide on each side. The banks then slope down ten to twelve feet to the creek bottom. The preserve area collects water in high water events and drains the water into Oak Creek.

Comprehensive Plan & Zoning Designations

The Future Land Use designation of the subject property is Medium Density Residential and General Commercial (Attachment F, Future Land Use Map). The current zoning is Two-Family Conservation (TFC-2) and Commercial (C-1A) (Attachment G, Existing Zoning). A rezoning to a the Environmentally Critical (EC) District is proposed, which permits the type of uses allowed within the preserve and is consistent with Resolution No. 08-60 and the Land Stewardship Plan.

Mulched walking trails and a narrow bridge over Oak Creek are planned for the preserve. Interpretive signs may also be added alongside the trail. These uses and protections will be listed in the rezone document.

Maintenance & Management

The preserve will be managed by the City of Bonita Springs Parks & Recreation Department according to the guidelines below. This land stewardship plan combines appropriate sections of the Fire Department's Wildland Fire Hazard Mitigation Plan, the city's Preserve Management Plan, and the guidelines of the Lee County's Land Stewardship Plan that are applicable to this site. These plans have been evaluated and combined to create this stewardship plan. Inspections and Maintenance Reports will be performed three times a year (every four months) to verify compliance with this plan. These inspections shall be submitted to the Lee County Conservation 20/20 Conservation Manager. Additionally, the City of Bonita Springs Code Enforcement Department shall enforce all city codes on the property.

- All category 1 and category 2 exotic plants as defined by the Florida Exotic Pest Plan Council will be maintained annually at a level of 5% or less.
- With the lack of fire, the site is overpopulated with sabal palms. New sabal palm starts shall be controlled with herbicide or removed, to allow other native plants to populate the preserve. If the areas under the sabal palms accumulate dead sabal palm fronds and prevent understory vegetation from germinating and growing, selective removal of sabal palms may be permitted.
- The creek banks appear to be naturalized and functional. Future restoration of the creek, creek bank and adjacent areas is optional and may be performed, if funding is available.

Restoration would be recommended if degradation such as siltation in the creek, stream bank erosion, and/or lack of native plant recruitment occurs.

- The prior exotic plant removal undertaking removed almost all of the exotic ground cover and midstory vegetation, so, plantings of appropriate native south Florida plants such as wild coffee (*Psychotria nervosa*) , ferns (*Thelypteris* or *Woodwardia*) , myrsine (*Myrsine Guianensis*), marlberry (*Ardisia escallonioides*) , stoppers (*Eugenia* & *Myrcianthes*, may be performed to reestablish the understory and midstory vegetation, if funding is available.
- Revegetation may also occur after a natural or man made disaster.
- An initial raking of all the duff accumulated on the ground shall be performed.
- Fallen branches and palm fronds shall be removed annually if they do not deteriorate rapidly to reduce the fire hazard and allow understory vegetation to germinate and grow.
- Natural or man-made debris that may accumulate in the creek shall be removed periodically to allow the creek to flow.
- Garbage and trash shall be removed regularly.
- Exotic animals such as pythons, monitor lizards and hogs shall be removed. Feral animals such as cats and dogs shall not be allowed to live and hunt in this urban preserve and shall also be removed.

Prohibited Uses and Activities

Oak Creek Preserve is a Conservation 20/20 preserve, and more restrictive than a park, domestic pets are not allowed in this preserve. Camping, campfires, hunting, alcohol, and vehicles are also not allowed in the preserve.

Allowable Uses and Activities

Hiking, wildlife viewing and photography are allowed in the preserve. Hiking trails, interpretive signage and a bridge are proposed for people to access the site, if funding becomes available.

Timetable

Minor maintenance activities will be performed daily as described above in the Maintenance and Management section.

Reporting

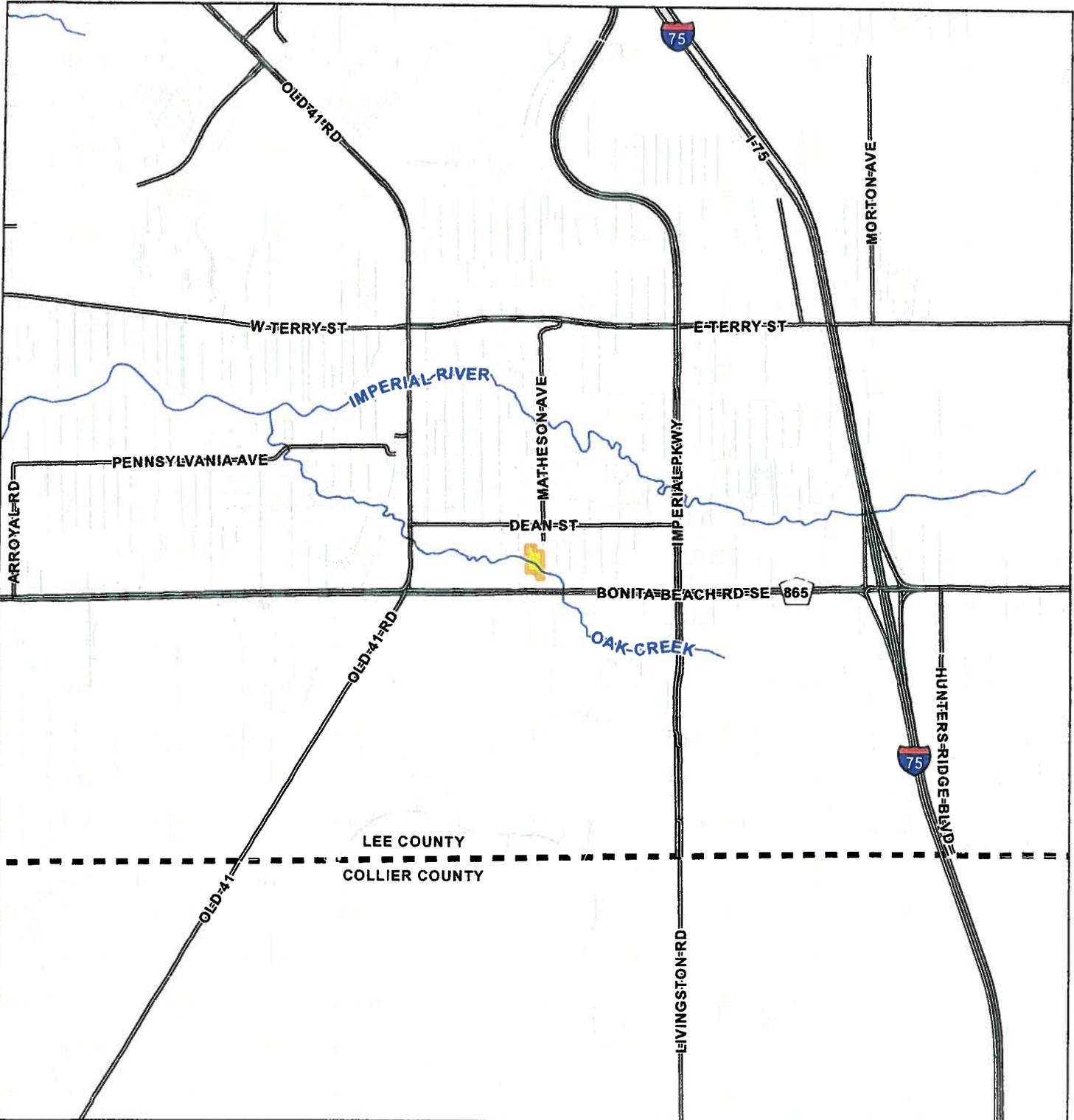
Inspections and Maintenance Reports will be done every 4 months (3 X a year) on a form provided by Lee County Division of Parks and Recreation.

Attachments

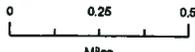
- Attachment A: Location Map
- Attachment B: Aerial Map
- Attachment C: FLUCFCS Map
- Attachment D: Soils Map
- Attachment E: Archaeological Sensitivity Area Map
- Attachment F: Future Land Use Map (FLUM)
- Attachment G: Existing Zoning Map

Appendices

1. City Memorandum of Understanding (MOU) dated June 5, 2008
2. City Resolution No. 08-60 Support for Lee County Conservation Program dated June 6, 2008
3. Conservation Lands Acquisition and Stewardship Advisory Committee Meeting Minutes dated June 12, 2008
4. Bonita Springs and Lee County Interlocal Agreement dated October 6, 2009



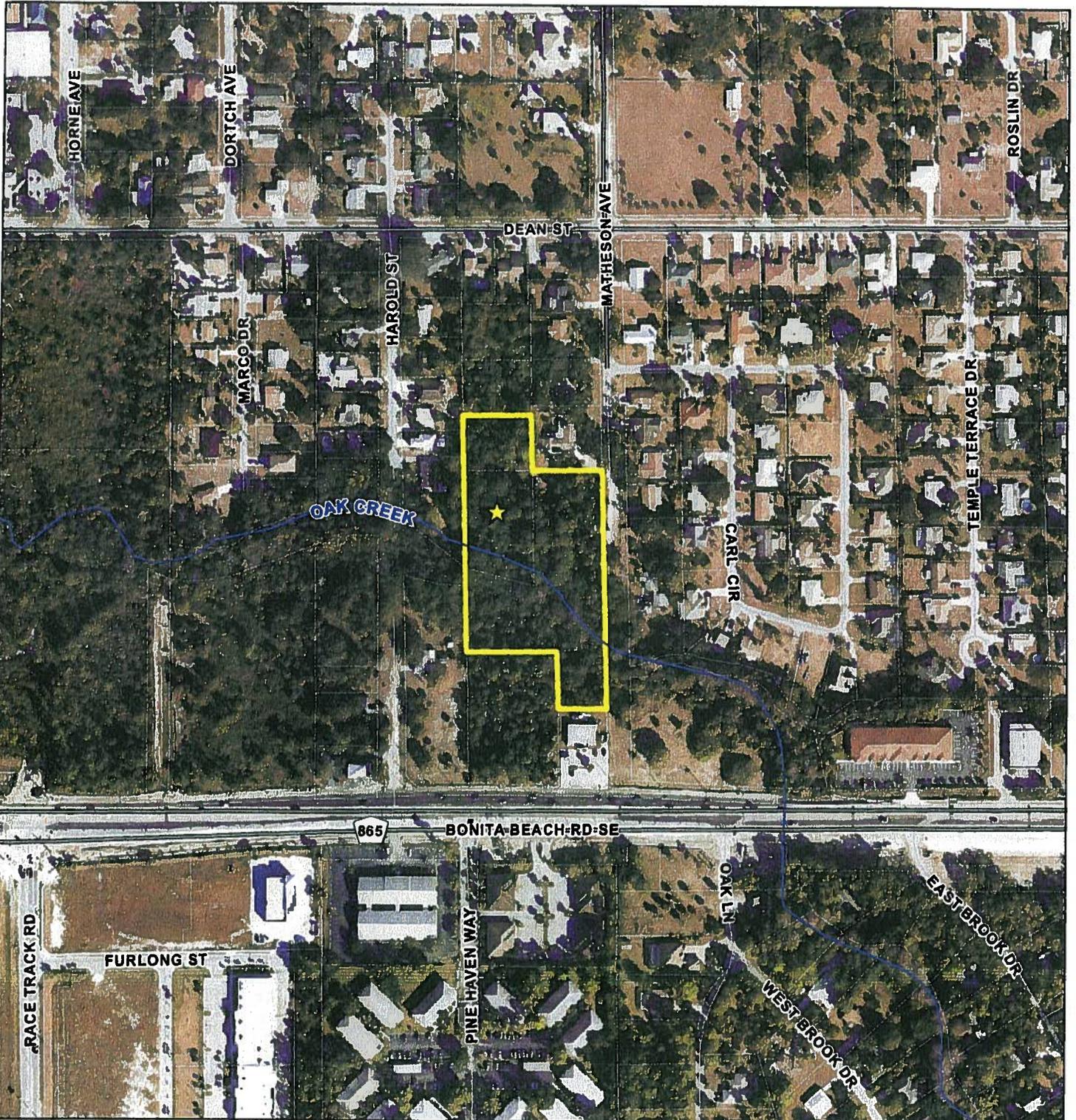
LEGEND
 Oak Creek Preserve

 NORTH
 0 0.25 0.5 Miles


Attachment A
Location Map

Oak Creek Preserve
 Land Stewardship Plan

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LEGEND

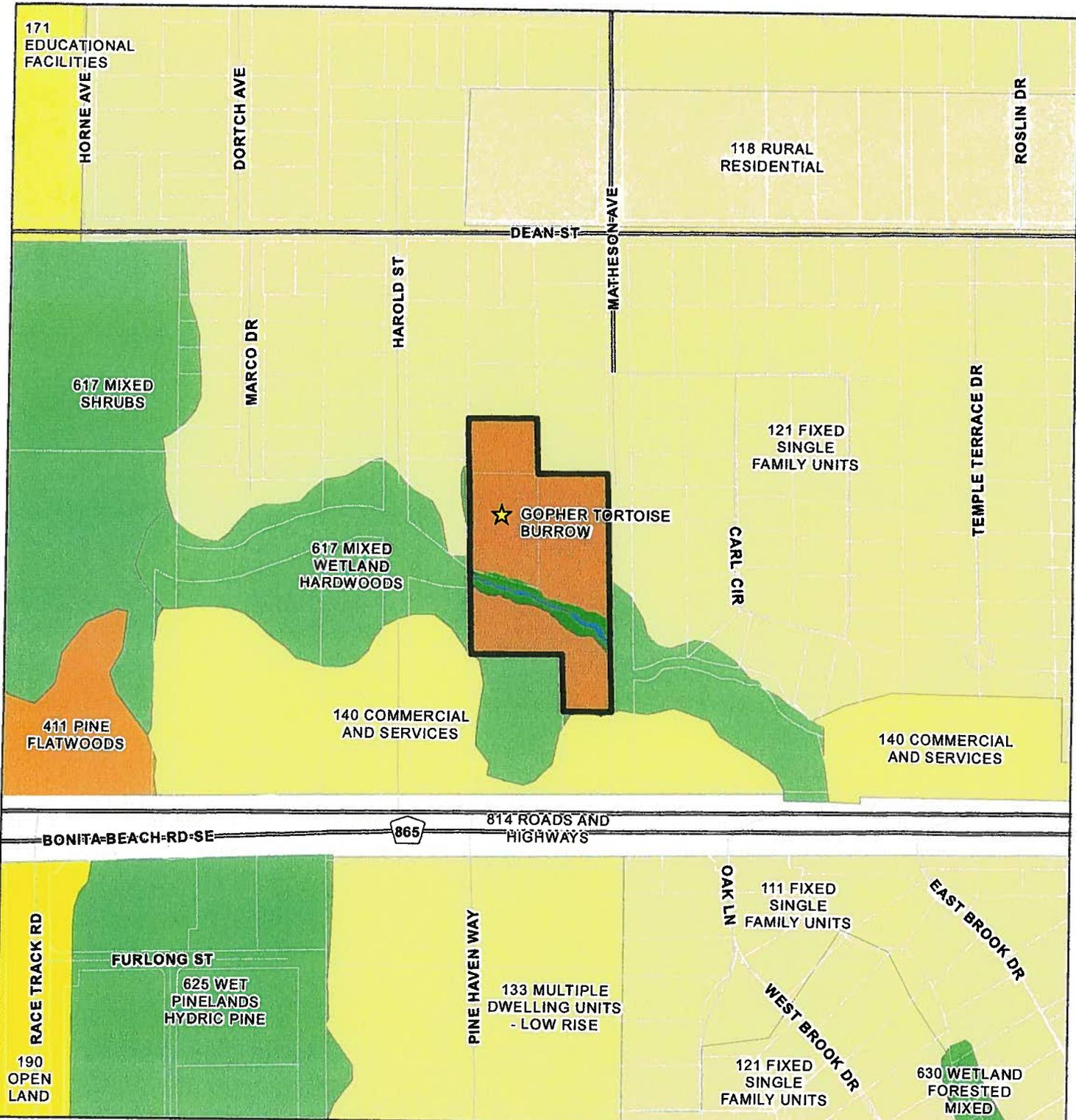
-  Gopher Tortoise Burrow
-  Oak Creek Preserve Property Line



Attachment B
Aerial Photography 2012

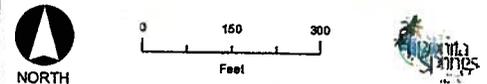
Oak Creek Preserve
 Land Stewardship Plan

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LEGEND

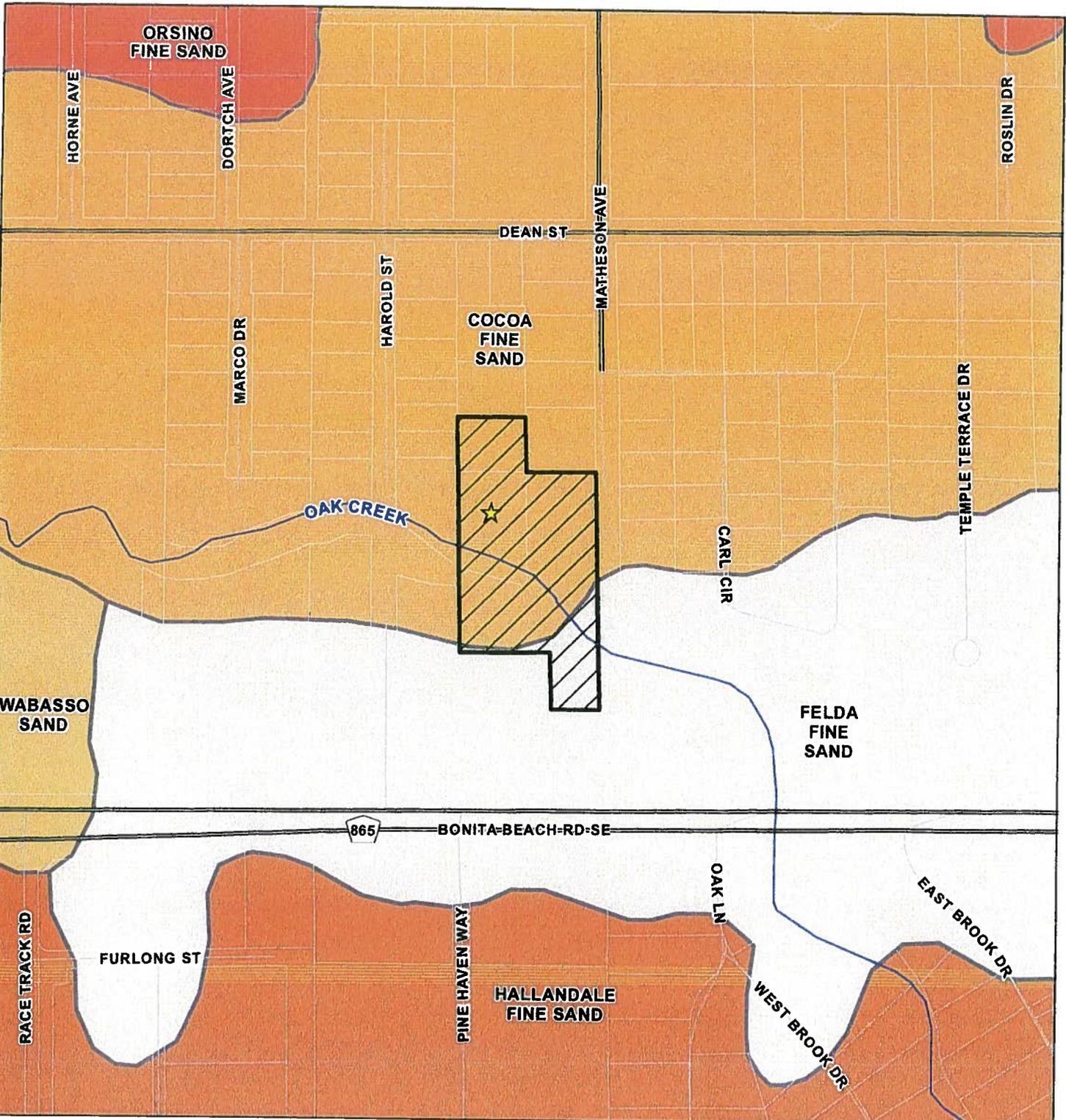
Oak Creek Preserve	COMMERCIAL AND SERVICES
Property Line	EDUCATIONAL FACILITIES
Field Verified FLUCCS	OPEN LAND
Hardwood Conifer Mixed	Upland Forests
Streams and Waterways	PINE FLATWOODS
Wetland Forested Mixed	Wetlands
SFWMD FLUCCS 2008	MIXED WETLAND HARDWOODS
Urban and Built Up	MIXED SHRUBS
RURAL RESIDENTIAL	WET PINELANDS HYDRIC PINE
FIXED SINGLE FAMILY UNITS	WETLAND FORESTED MIXED
MULTIPLE DWELLING UNITS - LOW RISE	Transportation, Communication and Utilities
	ROADS AND HIGHWAYS



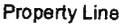
Attachment C
Florida Land Cover Classification System

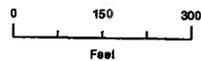
Oak Creek Preserve
Land Stewardship Plan

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LEGEND

-  Gopher Tortoise Burrow
-  Oak Creek Preserve
-  Property Line
- 2012 NRCS Soil Survey
-  COCOA FINE SAND
-  FELDA FINE SAND
-  HALLANDALE FINE SAND
-  ORSINO FINE SAND
-  WABASSO SAND

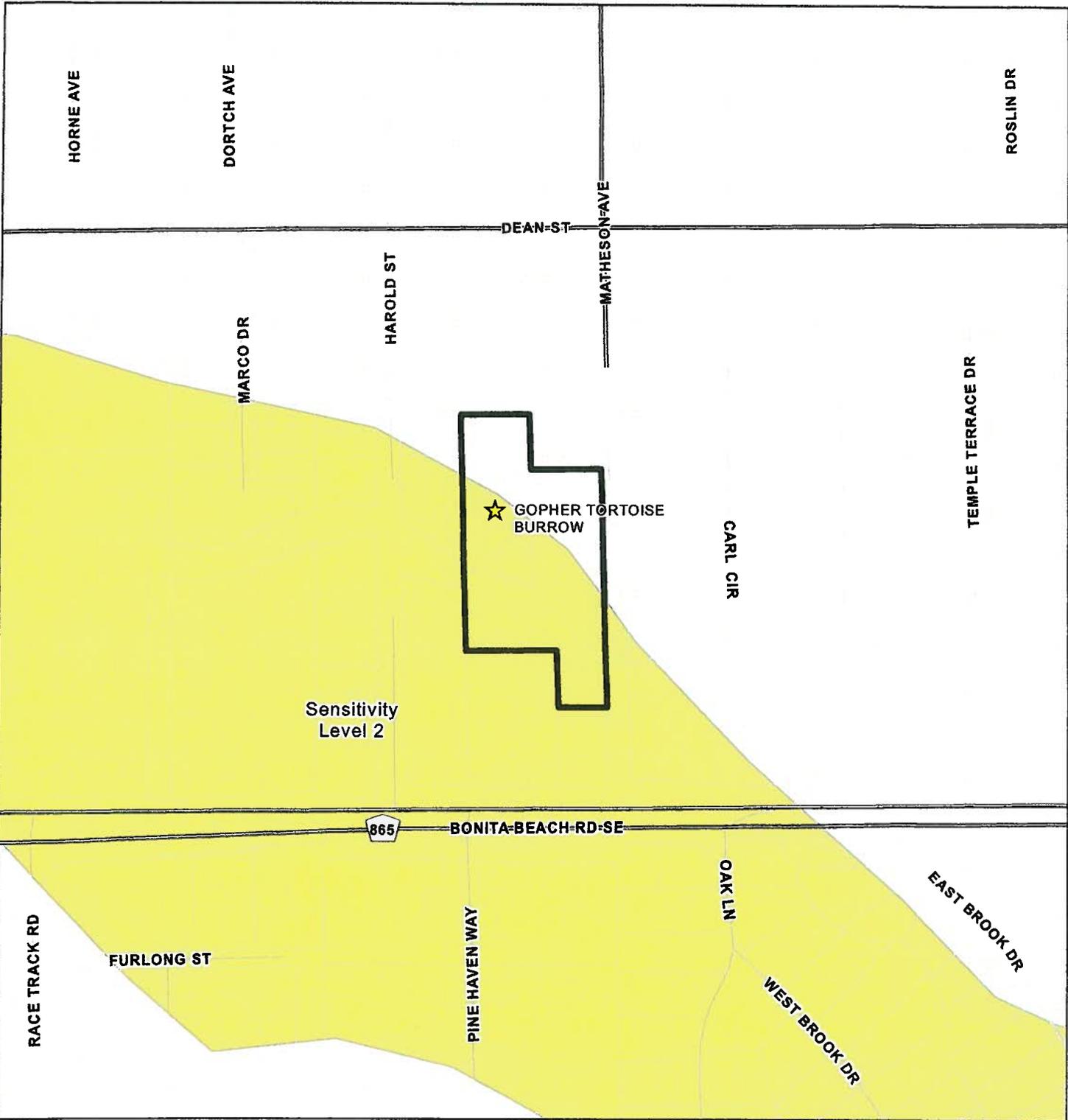


Attachment D

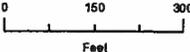
2012 NRCS Soil Survey

Oak Creek Preserve
Land Stewardship Plan

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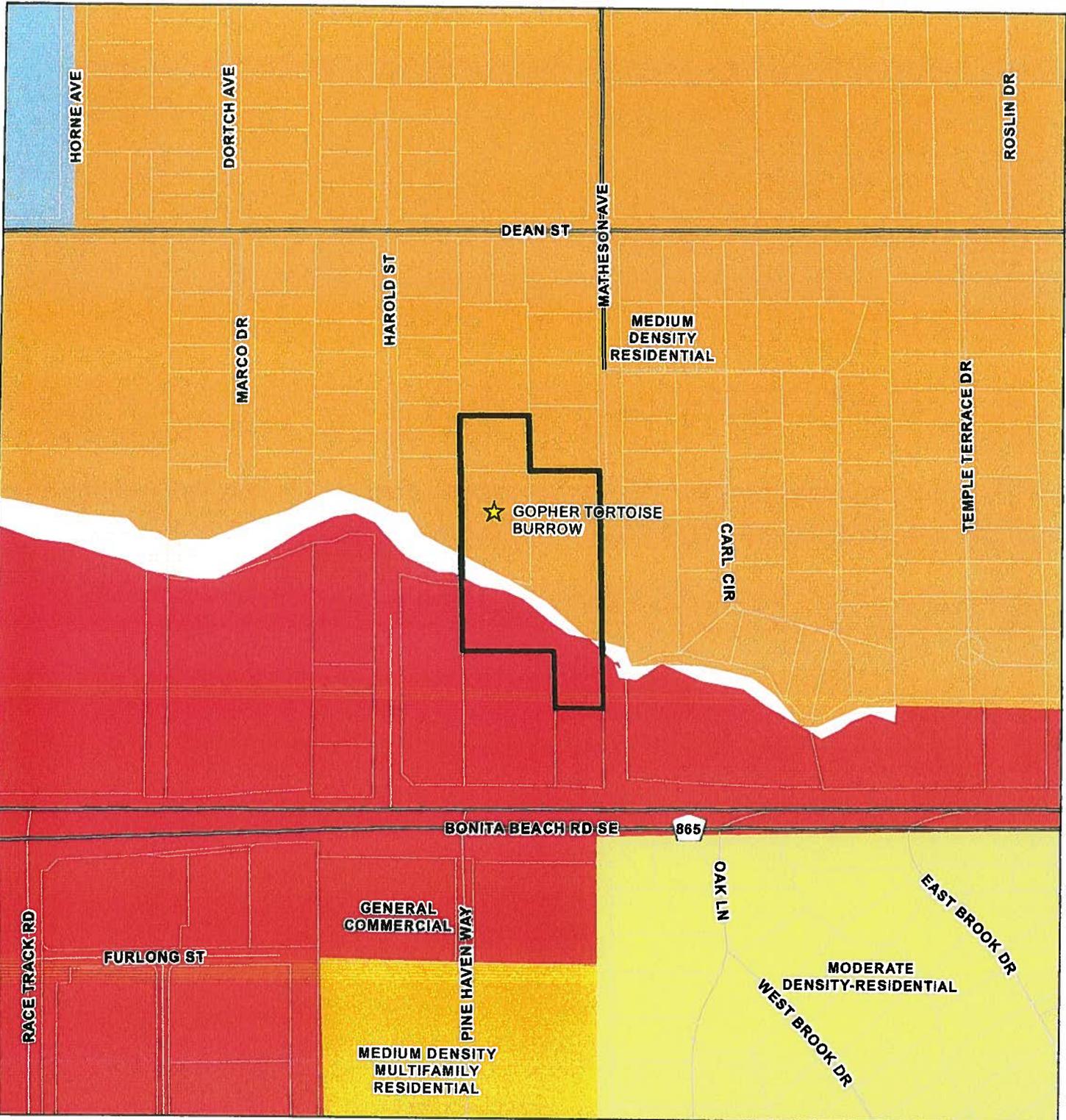
- LEGEND**
-  Oak Creek Preserve
 - Archaeological Sensitivity**
 -  Sensitivity Level 1
 -  Sensitivity Level 2
 -  Previously Surveyed
 - Property Line

 NORTH
 0 150 300 Feet

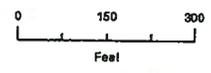

Attachment E
Lee County
Archaeological Sensitivity Map

Oak Creek Preserve
 Land Stewardship Plan

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- LEGEND**
-  Oak Creek Preserve
 - Future Land Use 2019**
 -  General Commercial
 -  Med. Den. MF Res
 -  Med. Den. Res.
 -  Mod. Den. Res
 -  Public/Semi-Public
 - Property Line

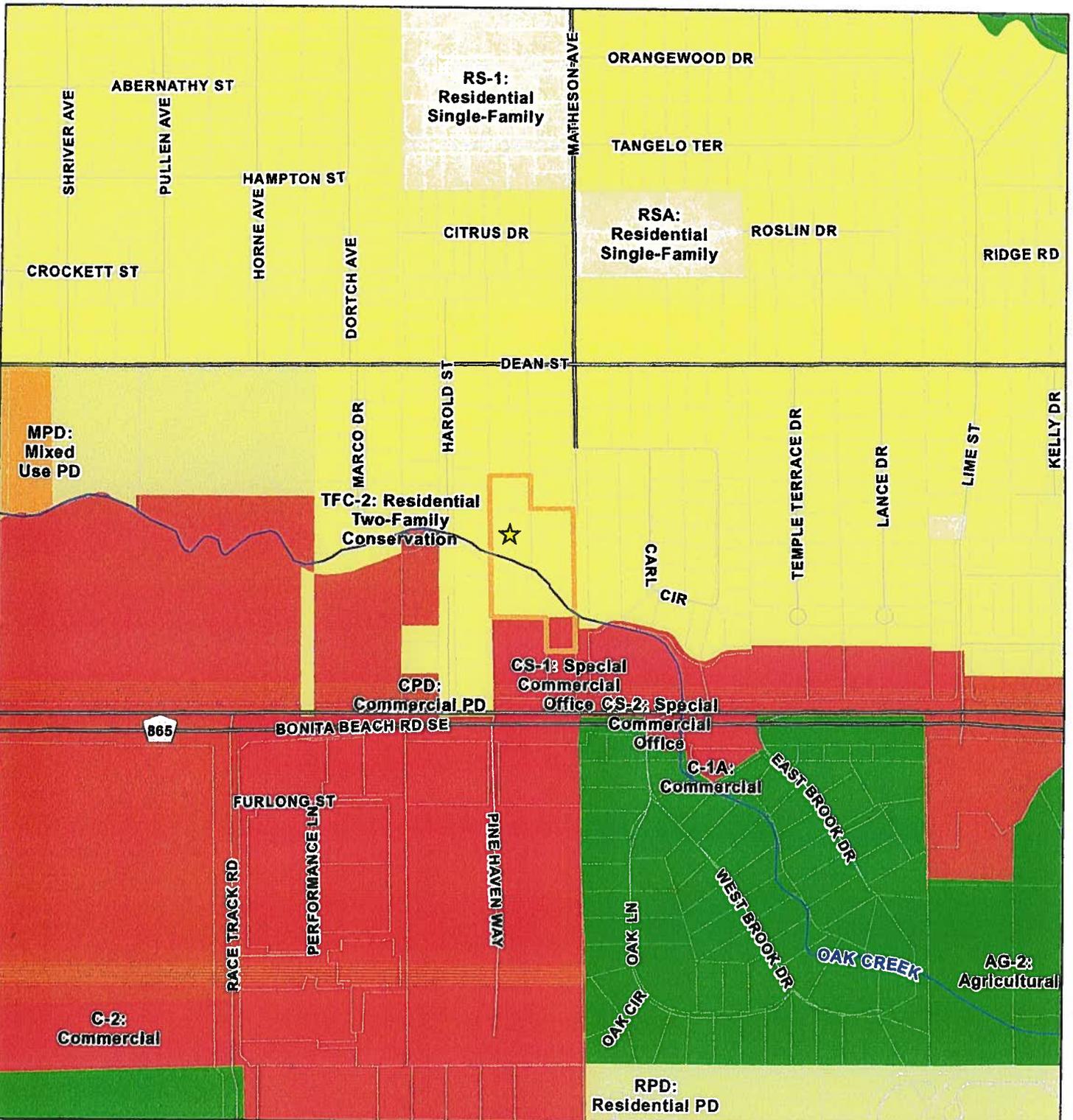


Attachment F

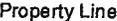
Future Land Use 2019

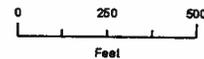
Oak Creek Preserve
Land Stewardship Plan

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LEGEND

-  Gopher Tortoise Burrow
-  Oak Creek Preserve
-  Property Line
- Zoning**
-  RSA: Residential Single-Family
-  RS-1: Residential Single-Family
-  TFC-2: Residential Two-Family Conservation
-  RPD: Residential PD
-  MPD: Mixed Use PD
-  C-1A: Commercial
-  C-2: Commercial
-  CS-1: Special Commercial Office
-  CS-2: Special Commercial Office
-  CPD: Commercial PD
-  AG-2: Agricultural



Attachment G
Existing Zoning

Oak Creek Preserve
Land Stewardship Plan

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Appendix A: Plant Sightings at Pine Lake Preserve

Common and Scientific names for this list were obtained from Wunderlin & Hansen, 2003

Scientific Name	Common Name	Native/Exotic
Family: Blechnaceae (midsorus fern)		
<i>Blechnum serrulatum</i>	swamp fern	native
Family: Dennstaedtiaceae (cuplet fern)		
<i>Pteridium aquilinum</i> var. ?	bracken fern	native
Family: Dryopteridaceae (wood fern)		
<i>Nephrolepis cordifolia</i>	tuberous sword fern	native
Family: Polypodiaceae (polypody)		
<i>Phlebodium aureum</i>	golden polypody	native
Family: Cupressaceae (cedar)		
<i>Taxodium ascendens</i>	pond cypress	native
<i>Taxodium distichum</i>	bald cypress	native
Family: Pinaceae (Pine)		
<i>Pinus elliottii</i>	slash pine	native
Family: Arecaceae (palm)		
<i>Sabal palmetto</i>	cabbage palm	native
<i>Serenoa repens</i>	saw palmetto	native
Family: Bromeliaceae (pineapple)		
<i>Tillandsia fasciculata</i>	cardinal airplant	native
<i>Tillandsia recurvata</i>	ballmoss	native
<i>Tillandsia usneoides</i>	Spanish moss	native
Family: Commelinaceae (spiderwort)		
<i>Tradescantia zebrina</i>	wandering-jew	exotic
Family: Hypoxidaceae (yellow stargrass)		
<i>Hypoxis juncea</i>	fringed yellow stargrass	native
Family: Orchidaceae (orchid)		
<i>Encyclia tampensis</i>	butterfly orchid	native
Family: Poaceae (grass)		
<i>Cenchrus spinifex</i>	coastal sandbur	native
<i>Setaria parviflora</i>	yellow bristlegrass	native
Family: Smilacaceae (smilax)		
<i>Smilax auriculata</i>	earleaf greenbrier	native
<i>Smilax bona-nox</i>	saw greenbrier	native
<i>Smilax laurifolia</i>	laurel greenbrier	native
Family: Xyridaceae (yelloweyed grass)		
<i>Xyris</i> spp.	yellow-eyed grass	native
Family: Anacardiaceae (cashew)		
<i>Rhus copallinum</i>	winged sumac	native
<i>Schinus terebinthifolius</i>	Brazilian pepper	exotic
<i>Toxicodendron radicans</i>	eastern poison ivy	native
Family: Annonaceae (custard-apple)		
<i>Annona glabra</i>	pond apple	native
Family: Aquifoliaceae (holly)		
<i>Ilex cassine</i> var. <i>cassine</i>	dahoon	native
<i>Ilex glabra</i>	galiberry	native
Family: Asteraceae (aster)		
<i>Coreopsis leavenworthii</i>	leavenworth's tickseed	native
<i>Pluchea rosea</i>	rosy camphorweed	native

Appendix A: Plant Sightings at Pine Lake Preserve (continued)

Scientific Name	Common Name	Native/Exotic
Family: Asteraceae (aster)		
<i>Pterocaulon pycnostachyum</i>	blackroot	native
<i>Mikania scandens</i>	climbing hempvine	native
Family: Boraginaceae (borage)		
<i>Heliotropium polyphyllum</i>	pineland heliotrope	native
Family: Cactaceae (cactus)		
<i>Opuntia spp.</i>	prickly-pear cactus	native
Family: Casuarinaceae (sheoak)		
<i>Casuarina equisetifolia</i>	Australian-pine	exotic
Family: Chrysobalanaceae (coco plum)		
<i>Chrysobalanus icaco</i>	coco plum	native
<i>Licania michauxii</i>	gopher apple	native
Family: Convolvulaceae (morning-glory)		
<i>Ipomoea sagittata</i>	saltmarsh morning-glory	native
Family: Cucurbitaceae (gourd)		
<i>Momordica charantia</i>	balsam pear	exotic
Family: Ericaceae (heath)		
<i>Lyonia lucida</i>	fetterbush	native
<i>Vaccinium myrsinites</i>	shiny blueberry	native
Family: Fabaceae (pea)		
<i>Abrus precatorius</i>	rosary pea	exotic
<i>Acacia auriculiformis</i>	earleaf acacia	exotic
<i>Senna alata</i>	candlestick plant	exotic
<i>Senna obtusifolia</i>	coffeeweed	exotic
<i>Leucaena leucocephala</i>	lead tree	exotic
Family: Fagaceae (beech)		
<i>Quercus virginiana</i>	live oak	native
<i>Quercus laurifolia</i>	laurel oak	native
Family: Juglandaceae (walnut)		
<i>Carya aquatica</i>	water hickory	native
Family: Lamiaceae (mint)		
<i>Piloblephis rigida</i>	pennyroyal	native
Family: Lauraceae (laurel)		
<i>Persea palustris</i>	swamp bay	native
Family: Malvaceae (mallow)		
<i>Melochia corchorifolia</i>	chocolateweed	exotic
<i>Urena lobata</i>	Caesarweed	exotic
Family: Moraceae (mulberry)		
<i>Ficus aurea</i>	strangler fig	native
Family: Myricaceae (bayberry)		
<i>Myrica cerifera</i>	wax myrtle	native
Family: Myrsinaceae (myrsine)		
<i>Rapanea punctata</i>	myrsine	native
Family: Myrtaceae (myrtle)		
<i>Melaleuca quinquenervia</i>	punktree	exotic
<i>Rhodomyrtus tomentosa</i>	downy rose myrtle	exotic
<i>Syzygium cumini</i>	Java plum	exotic

Appendix A: Plant Sightings at Pine Lake Preserve (continued)

Scientific Name	Common Name	Native/Exotic
Family: Olacaceae (olax)		
<i>Ximenia americana</i>	hog plum	native
Family: Onagraceae (eveningprimrose)		
<i>Ludwigia maritima</i>	seaside primrosewillow	native
Family: Phytolaccaceae (pokeweed)		
<i>Phytolacca americana</i>	American pokeweed	native
Family: Poaceae		
<i>Aristida stricta</i>	wiregrass	native
Family: Rubiaceae (madder)		
<i>Cephalanthus occidentalis</i>	common buttonbush	native
<i>Chiococca alba</i>	snowberry	native
<i>Spermacoce verticillata</i>	whitehead broom	exotic
Family: Sapotaceae (sapodilla)		
<i>Sideroxylon celastrinum</i>	saffron plum	native
<i>Sideroxylon reclinatum</i>	Florida bully	native
Family: Sterculiaceae		
<i>Melochia corchorifolia</i>	chocolate weed	exotic
Family: Verbenaceae (vervain)		
<i>Callicarpa americana</i>	American beautyberry	native
<i>Phyla nodiflora</i>	turkey tangle fogfruit	native
Family: Vitaceae (grape)		
<i>Vitis rotundifolia</i>	muscadine	native