

SUNNYLAND AND NINE MILE RUN

Sections 7, 17, and 18, Township 44 South, Range 26 East
Lee County, Florida

Gopher Tortoise Management Plan

August 2021

Prepared for:

**Banks Engineering, Inc.
10511 Six Mile Cypress Pkwy
Fort Myers, FL 33966**

Prepared by:

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(239) 334-3680**

INTRODUCTION

The project is located within the Florida Gulf Coast University (FGCU) Buckingham Campus that is located in Sections 7, 17, and 18, Township 44 South, Range 26 East, Lee County, Florida. The FGCU Buckingham Campus is surrounded to the north, south, east, and west by single family homes and county owned conservation lands.

The proposed project consists of replacing two existing non-functional weirs with two weirs with gates, cleaning and reshaping 12,300± linear feet of existing canal, and reconstructing two canal crossings (Figure 1). Water quality will be improved by restoring control of the water management system by replacement of the non-functional existing weirs and re-sloping the banks. This will result in increasing runoff residence time within the canal. The work will not increase drainage capacity beyond the original as-built capacity.

SITE CONDITIONS

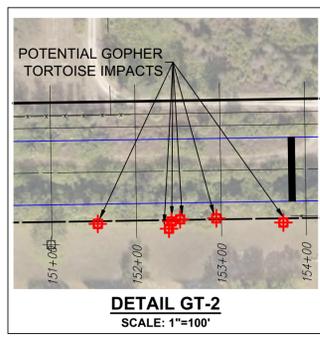
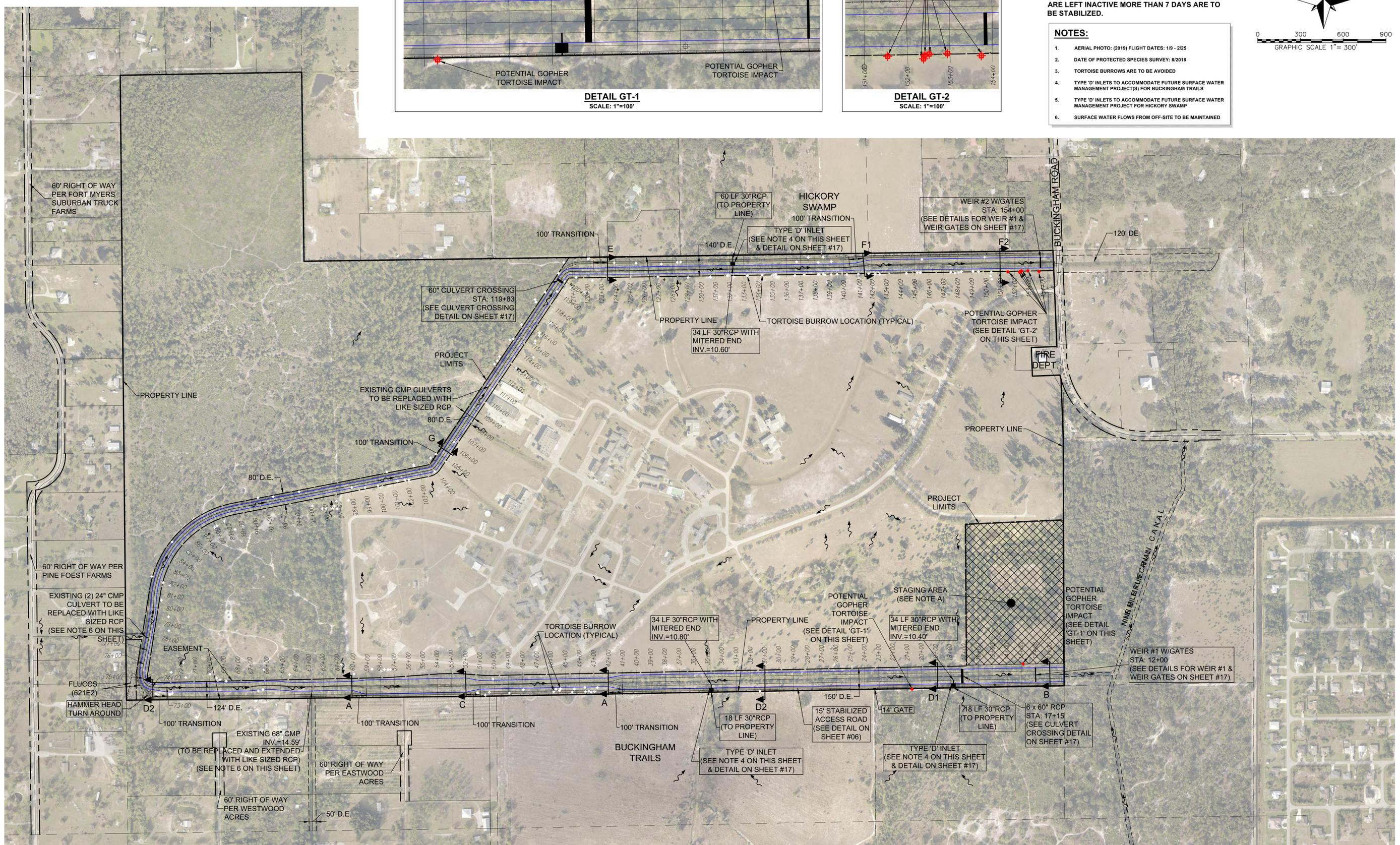
The project area consists of an 80 to 160± feet wide existing drainage easement located around the north, west and south perimeter of the 500± acre FGCU Buckingham Campus.

The majority of the drainage easement consists of the existing canal and previously disturbed lands. The banks of the canal are vegetated by Brazilian pepper (*Schinus terebinthifolius*), willow (*Salix caroliniana*), primrose willow (*Ludwigia peruviana*), and saltbush (*Baccharis halimifolia*) with maidencane (*Panicum hemitomon*), dotted smartweed (*Polygonum punctatum*), leather fern (*Acrostichum* sp.), scattered cattail (*Typha* sp.), pickerel weed (*Pontederia cordata*), and duckweed (*Lemna* sp.). The previously disturbed portions of the property are vegetated by Bahia grass (*Paspalum notatum*), St. Augustine grass (*Stenotaphrum secundatum*), pusley (*Richardia* sp.), grape vine (*Vitis* sp.), ragweed (*Rhus copallinum*), winged sumac (*Rhus copallinum*), Brazilian pepper, and scattered saw palmetto (*Serenoa repens*). The remainder of the project area consists of native habitats vegetated by slash pine (*Pinus elliottii*), and live oak (*Quercus virginiana*), cabbage palm (*Sabal palmetto*), laurel oak (*Quercus laurifolia*), saw palmetto, grape vine, and varying densities of Brazilian pepper.

Existing at grade dirt trails are present in the vicinity of the canal along portions of the canal alignment.

SURVEY METHOD

The survey of the staging area and easement plus a 25 to 50± feet offset was conducted for potentially occupied gopher tortoises using meandering linear pedestrian belt transects. The gopher tortoise burrow survey was conducted during the mid-morning hours of July 11, 18, 26, and 27, 2018. Additional areas were surveyed on April 15, 2021.

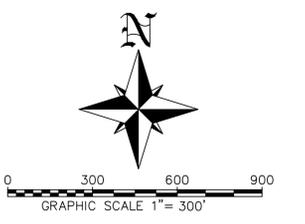


FLUCCS DESCRIPTION:
621E2 CYPRESS INVADDED BY EXOTICS (26% TO 50%)

NOTE A:
STOCKPILES OF EXCESS FILL MATERIAL THAT ARE LEFT INACTIVE MORE THAN 7 DAYS ARE TO BE STABILIZED.

NOTES:

1. AERIAL PHOTO: (2019) FLIGHT DATES: 1/9 - 2/25
2. DATE OF PROTECTED SPECIES SURVEY: 8/2018
3. TORTOISE BURROWS ARE TO BE AVOIDED
4. TYPE 'D' INLETS TO ACCOMMODATE FUTURE SURFACE WATER MANAGEMENT PROJECT(S) FOR BUCKINGHAM TRAILS
5. TYPE 'D' INLETS TO ACCOMMODATE FUTURE SURFACE WATER MANAGEMENT PROJECT FOR HICKORY SWAMP
6. SURFACE WATER FLOWS FROM OFF-SITE TO BE MAINTAINED



PREPARED FOR:
LEE COUNTY NATURAL RESOURCES
LEE BOARD OF COUNTY COMMISSIONERS

1500 MONROE ST.
FORT MYERS, FL 33901
PHONE: (239) 533-8109

NO.	DATE	REVISION DESCRIPTION	BY
2	4/09/2021	REVISED PER SFWD COMMENTS	SDJ
1	12/14/2020	REVISED PER SFWD COMMENTS	SDJ

BANKS & S
ENGINEERING

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FORT MYERS, FLORIDA 33966
(239) 939-5490 FAX: (239) 939-2523

ENGINEERING LICENSE # EB 6469
SURVEY LICENSE # LB 6690

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MASTER ENGINEERING PLAN									
SUNNILAND / NINE MILE RUN DRAINAGE IMPROVEMENT PROJECT									
LEE COUNTY, FLORIDA									
DATE	PROJECT	DRAWING	DESIGN	DRAWN	CHECKED	SCALE	SHEET		
5/14/2019	8234	_AER	KWK	SDJ	KWK	AS NOTED	05		

SURVEY RESULTS

A total of 172 potentially occupied gopher tortoise burrows were found within the surveyed area. The 1" = 100' scale aerial Gopher Tortoise Burrow map (Figure 2) depicts the approximate locations of the potentially occupied gopher tortoise burrows identified during the survey. These burrows were marked with pink and black striped flagging and the locations recorded with a handheld GPS unit (estimated accuracy of 10± feet). Additional potentially occupied gopher tortoise burrows were observed outside of the survey boundary within the FGCU Buckingham Campus.

PROPOSED PROJECT

The project will consist of two phases. The initial phase will consist of the implementation of the proposed improvements and the use of the staging area. The second phase will consist of regular maintenance activities. Each is described below.

Implementation Phase

The implementation phase will consist of three components.

Weir and Canal Crossing Installation

The two existing weirs will be removed and replaced with two weirs with gates and two existing canal crossings will be reconstructed. Standard construction equipment such as front end loaders, track hoes, dump trucks, etc. will be used to remove the existing material and build the new structures.

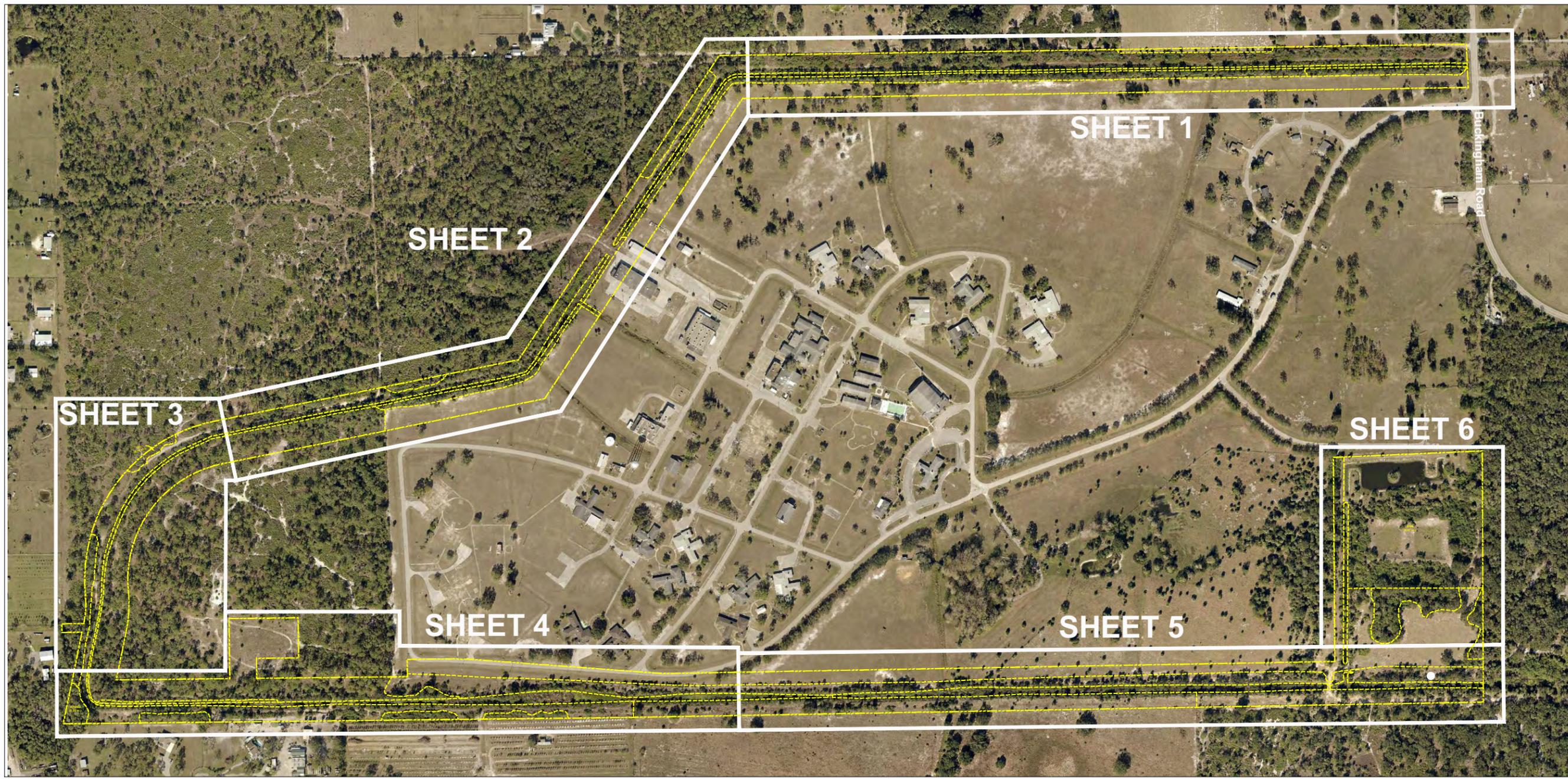
In order to prevent the unauthorized taking of gopher tortoise or their burrows, the following actions will be taken.

- The work area and a 25 feet wide off-set will be surveyed for potentially occupied gopher tortoise burrows by an Authorized Gopher Tortoise Agent prior to the initiation of construction activities. The access alignments to be used by mechanized equipment will also be surveyed. All such burrows will be flagged in the field and located with a handheld GPS unit. The configuration of the work areas and alignment of the access paths will be evaluated to determine if all ground disturbing activities that could potentially impact a burrow can be avoided (i.e. are greater than 25± feet of a burrow entrance).
- In the event that potentially occupied gopher tortoise burrow(s) cannot be avoided (i.e. ground disturbance within 25± feet of a burrow entrance), the County shall obtain the appropriate Florida Fish and Wildlife Conservation Commission (FWC) gopher tortoise relocation permit.



0 250 500
SCALE FEET

SECTIONS: 7, 17, and 18
TOWNSHIP: 44 S
RANGE: 26 E



Note:
Project boundary provided by Banks Engineering, Inc.

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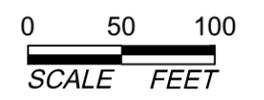
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FLUCCS	Description	Acreage
170	Institutional	20.23 ac.
211	Improved Pastures	4.60 ac.
321	Palmetto Prairies	0.18 ac.
411E	Pine Flatwoods Invaded by Exotics (5-9%)	9.85 ac.
422	Brazilian Pepper	1.45 ac.
438E	Mixed Hardwoods Invaded by Exotics (5-9%)	4.87 ac.
438E2	Mixed Hardwoods Invaded by Exotics (26-50%)	0.61 ac.
510D	Ditches	7.07 ac.
621DE2	Drained Cypress Invaded by Exotics (26-50%)	0.32 ac.
740	Disturbed Land	26.24 ac.
743	Spoil Areas	0.22 ac.
834A	Abandoned Sewage Treatment Areas	8.97 ac.
Total		84.61 ac.

- Potentially Occupied Gopher Tortoise Burrow (typ.)(172)
- Abandoned Gopher Tortoise Burrow (5)
- Tree with Cavity (1)

SECTIONS: 7, 17, and 18
TOWNSHIP: 44 S
RANGE: 26 E



Notes:
 1. Project boundary provided by Banks Engineering, Inc.
 2. Mapping based on photointerpretation of 2018 aerial photography and ground truthing in July 2018 and April 2021.
 3. Delineation of jurisdictional wetlands is preliminary and subject to field review/approval by applicable regulatory agencies.
 4. FLUCCS legend includes overall site acreages.

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Figure 2 Gopher Tortoise Survey Map - Sheet 1

Sunnyland and Nine Mile Run





FLUCCS	Description	Acreage
170	Institutional	20.23 ac.
211	Improved Pastures	4.60 ac.
321	Palmetto Prairies	0.18 ac.
411E	Pine Flatwoods Invaded by Exotics (5-9%)	9.85 ac.
422	Brazilian Pepper	1.45 ac.
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SECTIONS: 7, 17, and 18
 TOWNSHIP: 44 S
 RANGE: 26 E

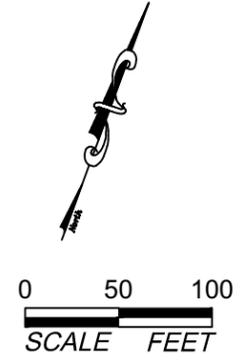


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Figure 2 Gopher Tortoise Survey Map - Sheet 2

Sunnyland and Nine Mile Run



SECTIONS: 7, 17, and 18
 TOWNSHIP: 44 S
 RANGE: 26 E

FLUCCS	Description	Acreage
170	Institutional	20.23 ac.
211	Improved Pastures	4.60 ac.
321	Palmetto Prairies	0.18 ac.
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-  Potentially Occupied Gopher Tortoise Burrow (typ.)(172)
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-  Tree with Cavity (1)

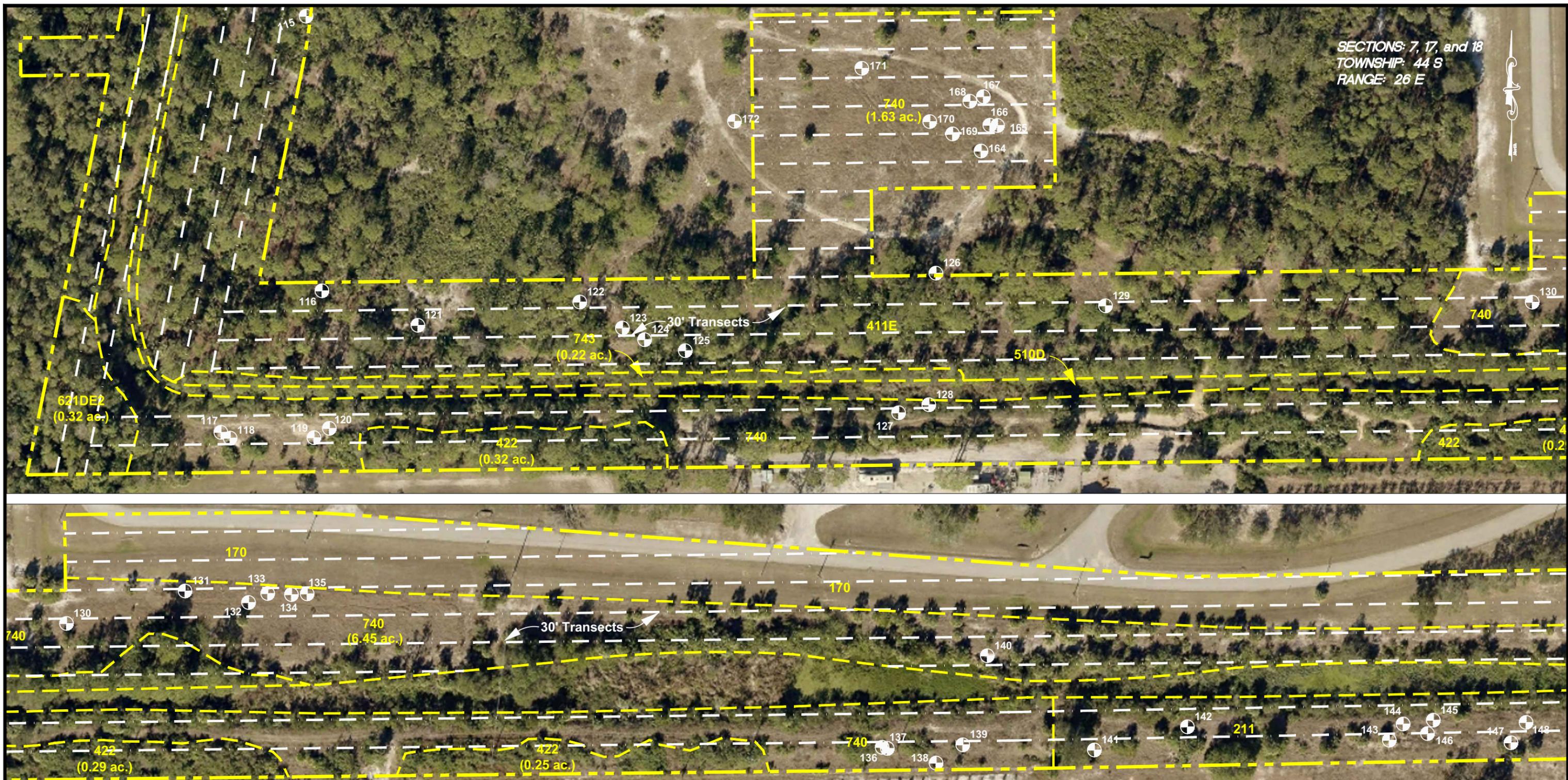
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 4. FLUCCS legend includes overall site acreages.

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Figure 2 Gopher Tortoise Survey Map - Sheet 3

Sunnyland and Nine Mile Run





SECTIONS: 7, 17, and 18
TOWNSHIP: 44 S
RANGE: 26 E

- Notes:
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FLUCCS	Description	Acreage	FLUCCS	Description	Acreage
170	Institutional	20.23 ac.	438E2	Mixed Hardwoods Invaded by Exotics (26-50%)	0.61 ac.
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321	Palmetto Prairies	0.18 ac.	621DE2	Drained Cypress Invaded by Exotics (26-50%)	0.32 ac.
411E	Pine Flatwoods Invaded by Exotics (5-9%)	9.85 ac.	740	Disturbed Land	26.24 ac.
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438E	Mixed Hardwoods Invaded by Exotics (5-9%)	4.87 ac.	834A	Abandoned Sewage Treatment Areas	8.97 ac.
			Total		84.61 ac.

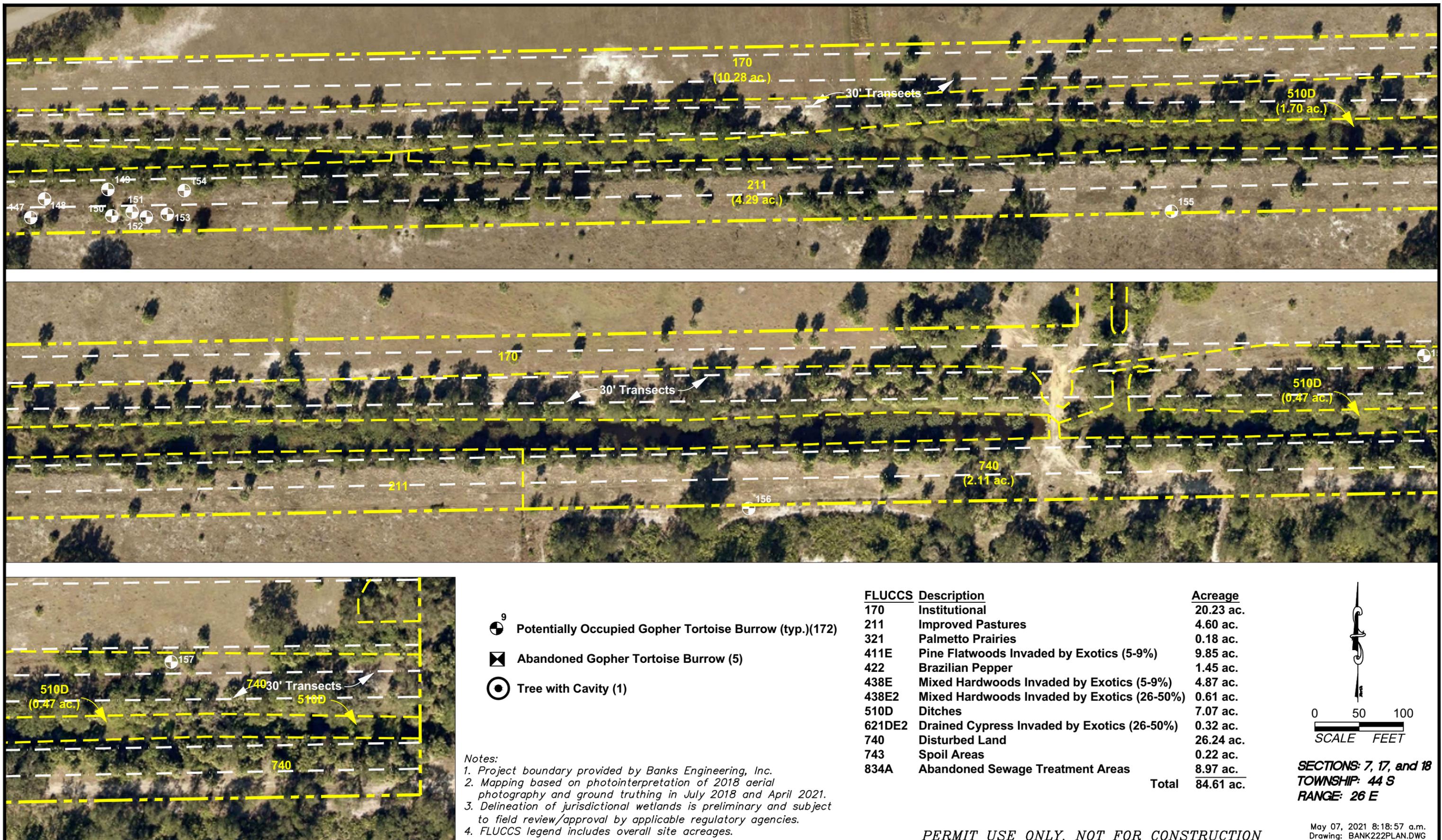
Potentially Occupied Gopher Tortoise Burrow (typ.) (172)
 Abandoned Gopher Tortoise Burrow (5)
 Tree with Cavity (1)

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Figure 2 Gopher Tortoise Survey Map - Sheet 4

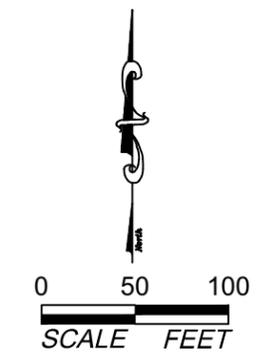
Sunnyland and Nine Mile Run



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834A	Abandoned Sewage Treatment Areas	8.97 ac.
	Total	84.61 ac.



SECTIONS: 7, 17, and 18
TOWNSHIP: 44 S
RANGE: 26 E

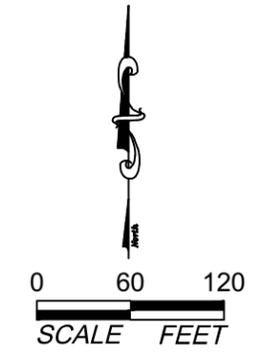
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Figure 2 Gopher Tortoise Survey Map - Sheet 5

Sunnyland and Nine Mile Run





SECTIONS: 7, 17, and 18
 TOWNSHIP: 44 S
 RANGE: 26 E

FLUCCS	Description	Acreage
170	Institutional	20.23 ac.
211	Improved Pastures	4.60 ac.
321	Palmetto Prairies	0.18 ac.
411E	Pine Flatwoods Invaded by Exotics (5-9%)	9.85 ac.
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 4. FLUCCS legend includes overall site acreages.

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Figure 2 Gopher Tortoise Survey Map - Sheet 6

Sunnyland and Nine Mile Run



- Prior to construction, the limits of all the work areas will be silt fenced. The silt fence will be buried to prevent gopher tortoise from entering the construction area and will be maintained until all construction activities are completed.
- All contractors will be advised of the presence of gopher tortoises in the area and that gopher tortoises are a state protected species. They will be instructed to keep all mechanized equipment away from gopher tortoises and potentially occupied gopher tortoise burrows.

Reshaping Canal Banks

The portion of the canal located in the southeastern portion of the project will be recontoured to provide enhanced water quality treatment. Standard construction equipment such as front end loaders, track hoes, dump trucks, etc. will be used to recontour the canal banks and to remove the resulting vegetative debris and spoil material. A maintenance road consisting of compacted limerock base covered with sod will also be constructed to facilitate future maintenance activities.

In order to prevent the unauthorized taking of gopher tortoise or their burrows, the following actions will be taken.

- The work area and a 25 feet wide off-set will be surveyed for potentially occupied gopher tortoise burrows by an Authorized Gopher Tortoise Agent prior to the initiation of construction activities. The access alignments to be used by mechanized equipment will also be surveyed. All such burrows will be flagged in the field and located with a handheld GPS unit. The configuration of the work areas and alignment of the access paths will be evaluated to determine if all ground disturbing activities that could potentially impact a burrow can be avoided (i.e. are greater than 25± feet of a burrow entrance).
- In the event that potentially occupied gopher tortoise burrow(s) cannot be avoided (i.e. ground disturbance within 25± feet of a burrow entrance), the County shall obtain the appropriate FWC gopher tortoise relocation permit.
- Prior to construction the limits of all the work areas will be silt fenced to prevent gopher tortoise from entering the construction area. The silt fencing will be buried and maintained until all construction activities are completed.
- All contractors will be advised of the presence of gopher tortoises in the area and that gopher tortoises are a state protected species. They will be instructed to keep all mechanized equipment away from gopher tortoises and potentially occupied gopher tortoise burrows.

It is anticipated that unavoidable impacts to potentially occupied gopher tortoise burrows will occur as a result of the weir/crossing replacements and canal reshaping. Therefore, the westerly end of the canal reshaping will likely be determined by a point at which a

total of ten potentially occupied gopher tortoise burrows will be impacted. These burrows will be excavated and the captured gopher tortoises released outside of the silt fenced work areas into suitable habitat within the existing drainage easement pursuant to a FWC <10 Burrows Permit. In the event that more than ten potentially occupied gopher tortoise burrows will be impacted, a Conservation Permit will be obtained from the FWC.

Vegetation Removal from the Remaining Canal

Woody vegetation will be removed from the remainder of the canal where it is decided not to reshape the canal banks due the presence of potentially occupied gopher tortoise burrows. In accordance with FWC Gopher Tortoise Permitting Guidelines, equipment such as chain saws, mowers, tractors, etc. will be used to cut the woody vegetation and remove the resulting vegetative debris. A maintenance path will be cleared adjacent to the canal to facilitate future maintenance activities. Existing at grade trails will be used to the extent practicable.

In order to prevent the unauthorized taking of gopher tortoise or their burrows, the following actions will be taken.

- The work area and a 25 feet wide off-set will be surveyed for potentially occupied gopher tortoise burrows by an Authorized Gopher Tortoise Agent prior to the initiation of vegetation removal activities. The access alignments to be used by mechanized equipment will also be surveyed. All such burrows will be flagged in the field and located with a handheld GPS unit. The configuration of the work areas and alignment of the access paths will be evaluated to determine if all ground disturbing activities that could potentially impact a burrow can be avoided (i.e. are greater than 25± feet of a burrow entrance). In the event that potentially occupied gopher tortoise burrows cannot be avoided (i.e. ground disturbance within 25± feet of a burrow entrance), the County shall obtain the appropriate FWC gopher tortoise relocation permit.
- No ground disturbance that could collapse a potentially occupied gopher tortoise burrow shall be allowed within 25± feet of a burrow entrance. In addition, no placement of vegetative debris or spoil shall be allowed within 25± feet of a burrow entrance.
- Prior to initiating the vegetation removal and maintenance path clearing, the limits of all the work areas will be silt fenced to prevent gopher tortoise from entering the construction areas. The silt fencing will be buried and maintained until all construction activities are completed.
- All contractors will be advised on the presence of gopher tortoises in the area and instructed to keep all mechanized equipment away from gopher tortoises and potentially occupied gopher tortoise burrows.

Maintenance Phase

Once the implementation phase has been completed, the weirs, canal crossings, and the canal will be maintained via regular maintenance activities. This will consist of mowing herbaceous vegetation along the access roads and maintaining the canal and its banks free of excessive vegetative growth. In accordance with FWC Gopher Tortoise Permitting Guidelines, equipment to be used may consist of chain saws, mowers, tractors, etc.

In order to prevent the unauthorized taking of gopher tortoise or their burrows, the following actions will be taken.

- Prior to maintenance activities consisting of mowing and hand removal of vegetation, the contractor will be advised on the presence of gopher tortoises in the area. The contractor shall inspect the work area to identify and mark potentially occupied gopher tortoise burrows.
- No heavy equipment that could potentially collapse a burrow will be used within 25± feet of a burrow entrance. In the event that such equipment is necessary, the County will have a FWC Authorized Agent survey the work area for potentially occupied gopher tortoise burrows prior to the initiation of such maintenance activities. In the event that potentially occupied gopher tortoise burrows cannot be avoided (i.e. ground disturbance within 25± feet of a burrow entrance), the County shall obtain the appropriate FWC gopher tortoise relocation permit.
- For areas that will be mowed, the mower blades will be set a minimum of 18 inches above grade.
- All contractors will be advised on the presence of gopher tortoises in the area and instructed to keep all heavy equipment away from gopher tortoises and potentially occupied gopher tortoise burrows.

The implementation of this management plan, subject to modifications at the time of construction based on site specific conditions, will allow the County to implement its flood control and water quality improvement plan for this property while avoiding the unauthorized taking of gopher tortoise or their burrows pursuant to the FWC's July 2020 Gopher Tortoise Permitting Guidelines.