WILDLIFE TECHNICAL MEMORANDUM

CROSS BAR & AL BAR RANCHES

Prepared for:

Pinellas County Utilities

Prepared by:

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November 2022

CROSS BAR & AL BAR RANCHES
WILDLIFE TECHNICAL MEMORANDUM 2022

1.0 INTRODUCTION

The purpose of this report is to: document findings regarding the status of the listed focal species located on Cross Bar / Al Bar Ranches (CBAB); summarize management activities that have occurred since the 2021 Wildlife Utilization Report; and update management recommendations as needed to maximize suitable habitat for protected species. The management recommendations provided in this report have been developed based on sound ecosystem management principles. This report serves as a supplement to the Ecosystem Management Plan (EMP) and provides information to help guide future EMP updates.

2.0 BACKGROUND

The CBAB EMP was developed by Quest Ecology Inc. (Quest) with input from The Forestry Company (TFC) and 3B Cattle (3B) and submitted to Pinellas County Utilities (PCU) in August of 2019. Implementation of select habitat restoration and management activities outlined in the EMP are currently underway. Historic surveys and recent management planning have concentrated on five protected focal species: Florida scrub-jay (*Aphelocoma coerulescens*), burrowing owl (*Athene cunicularia*); southeastern American kestrel (*Falco sparverius paulus*), Florida sandhill crane (*Grus canadensis pratensis*), and gopher tortoise (*Gopherus polyphemus*). The Quest/TFC contract calls for seasonal qualitative wildlife surveys and management recommendations, with the focus on these protected species. Habitat enhancements for other non-focal species such as the wood duck have also occurred to encourage population growth and success.

The current and recent conservation actions affecting the status of the five focal species and recommendations for continued management and/or restoration activities to take place over the next year are provided below by target species and habitat.

3.0 FLORIDA SCRUB-JAY

Based on surveys conducted to date, two Florida scrub-jays (FLSJ), consisting of three adults comprising one family group is currently located within Management Units A and B of the Florida Scrub-Jay Management Area (FSJMA) (**Figure 1**). This group is currently utilizing the southern portion Unit B, and has been observed foraging throughout Unit A. This group consists of one banded individual with combination GF-SR and two unbanded individuals. The banded bird was

banded on February 4, 2020, by David Gordon, Master Bird Bander and Senior Wildlife Ecologist for Quest.

A survey throughout Units A and B was conducted in April 2022 to determine presence of breeding pairs and potential nest sites. At that time, one group consisting of two banded FLSJ were observed carrying nest material from south of the CBAB property to a clump of vegetation presumed to be the nest site. No additional nesting behavior was observed. No juveniles have been observed on site, however, three FLSJ were observed foraging in the NW area of Unit A on October 11, 2022, and one of the unbanded jays might have been a 2022 fledge.

Pursuant to EMP recommendations, reduction of the hardwood canopy throughout the FSJMA is required to achieve optimal habitat structure. Initial hardwood canopy reduction occurred within occupied habitats of Units A and B and was completed in December of 2019. Additional hardwood reduction was conducted in the Fall of 2020 and 2021. A total of 265 acres of hardwood reduction has occurred within the FSJMA to date.

No prescribed burning took place within the FSJMA in 2022. However, 326 acres of planted pine bisecting and scattered within the FSJMA was burned in 2021 in an effort to kill and reduce planted pines which were approaching heights unsuitable for FLSJ and incompatible with the restoration taking place. The burn was mostly unsuccessful in reducing or killing the planted pines and alternative methods such as mowing using hydro-ax or other appropriate forestry equipment will now be required to achieve the desired structure. This should take place as soon as possible prior to the 2023 FLSJ breeding season.

A lightning strike wildfire occurred within a portion of the Unit E hardwood reduction area on August 1, 2022, which burned approximately 43 acres (**Figure 2**).

3.1 Management Recommendations

Continued management in the form of hardwood reduction and prescribed burning is recommended to encourage increased occupation and immigration to the FSJMA. A *Partners for Fish and Wildlife Program* grant was received from the US Fish & Wildlife Service (FWS) in 2021 to assist with the habitat restoration within the FSJMA. The grant was awarded again in 2022 to assist with continued funding of these efforts. A report to summarize the intended use of these funds is attached as **Attachment A**.

Burning within the previous hardwood reduction units, including the northeastern, currently unoccupied portion of Unit B, the NE portion of Unit A, and the unburned portions of Unit E,

should take place prior to the 2023 FLSJ breeding season (Figure 3). These units were inspected in the field on October 11, 2022, to determine pre-burn treatments that may be required to protect remnant longleaf pines. Conditions varied from high duff layers under pines along the northern edge of Unit A, to accumulated fuels under LLP in the center of Unit A, to grassed areas under LLP in NW Unit B. It was determined that pre-burn fuel reduction around LLP in Units A and B should occur but is not warranted in Unit E due to the age and density of LLP, and the type of fuels present. Pre-burn treatments in Units A and B should consist of fuel reduction in the form of lighting small burns immediately around pines prior to burning the entire unit, raking around the bases of LLP where heavy duff accumulation exists, and physically reducing fuels by cutting where required. Burns in all areas should only be conducted using the correct methods, moisture conditions, and mop-up measures, including spraying out duff, to protect the remnant longleaf pines found in all units. The goal of a prescribed burn in these areas should be to maintain desirable vegetative composition and structure, while reducing the overall fuel load and preserving all remaining longleaf pine.

Hardwood reduction is recommended to continue within the areas of Units C and D depicted on Figure 3. Specific methods to be employed within each unit will be determined upon further field inspections prior to the work taking place.

Removal, via mowing or chopping, of the planted pine in the middle of the FSJMA and, specifically, immediately to the east of the restored units A and E, should occur prior to the 2023 FLSJ breeding season. This will ensure that undesirable structure will not continue to grow and deter FLSJ occupation. These recommendations are pursuant to EMP and FLSJ management guidelines, as forest edges create unsuitable shadow zones within 300 feet of otherwise suitable FLSJ habitat. In some areas, this could also result in additional suitable FLSJ habitat and gopher tortoise (GT) habitat, potentially suitable for tortoise relocations.

Trap acclimation and banding prior to the 2023 breeding season is recommended, in addition to continued monitoring of the FLSJ population, to assess the status and movement of the present family group, and to identify any immigrants or previously unknown individuals on the property. Monitoring should consist of pre-, during, and post- breeding season events to determine number and location of family groups, presence of juveniles, and response to restoration and management actions.

The FLSJ are banded using a band combination that consists of a unique color sequence consisting of 3 plastic bands, and 1 metal band with a unique number issued by the USGS Banding Lab. The band colors utilized, and their sequence, allow ecologists to identify individual scrub-jays. The

color band combinations used to date on CB/AB FLSJ are provided in **Table 1**. The following colors and their abbreviations have been used: G=Green, F=Flesh/Light Pink, R=Red, P=Purple, H = Hot Pink, A=Azure/Light Blue, B=Blue, L=Lime/Light Green, W=White, and S=Silver for the metal USGS band.

4.0 BURROWING OWL

As of August 2022, the current burrowing owl (BUOW) population on CBAB consisted of 25 individual BUOW utilizing 21 known burrows and 10 newly located burrows (**Figure 4A – NE Pasture Burrowing Owl Burrows July 2022 and Figure 4B – SW Pasture Burrowing Owl Burrows July 2022**). Of the 25 BUOW observed, several were observed as single individuals at the burrow(s), so inconclusive as to whether these burrows were occupied by pairs or single BUOW. In comparison, in 2021 a total of 14 pairs were documented, utilizing 41 known burrows.

Surveys were conducted periodically before, during and after the breeding season to determine the sitewide status, assess burrow protectors, and inspect suitable, previously unoccupied habitat. Damaged burrow protectors were repaired and replaced or moved from abandoned to new occupied burrow locations.

Harvested planted pine stands to the east of the Pasture Management Area were re-surveyed throughout the breeding season to determine if BUOW may again attempt to nest in these areas. Although no nesting pairs were observed at the time of surveys, evidence of possible use by BUOW was observed in the form of broken insect carapaces, matching those observed outside the known burrows in the northeast pastures. Historic survey data show that the harvested area east of the northeast pasture supported the highest density of BUOW prior to conversion from pasture to production pine. These areas also support highly desirable soil types for BUOW nesting. Restoration actions conducted to date to eventually convert these areas to pasture and BUOW habitat have included the use of an aerator to cut and crush vegetation and logging debris, and herbicide applications to control colonizing exotic species.

4.1 Management Recommendations

The implementation of a BUOW banding program is recommended as a tool to accurately assess changes in population size and movement, as well as the dispersal of juveniles. This will allow ecologists to better track changes in habitat utilization relative to ongoing management activities. Continued monitoring of the BUOW population is recommended to consist of pre-, during, and post-breeding season surveys. These surveys are necessary for tracking the overall population trend on CBAB.

It is recommended that Burrow Protectors (BP) remain on all active primary and satellite burrows and are added to burrows of any new pairs that may establish. BPs are often used as "scratching posts" by cattle which can result in damage and has been observed on a few. All existing BPs will be evaluated for needed repairs, which will take place prior to the 2023 breeding season.

As described above, expansion of existing BUOW habitat is underway through the conversion of several blocks of production pine back to suitable pasture habitat east of the northeast pasture (**Figure 5**). In addition to the 186 acres being converted, 150' wide buffers have been created where production pine will not be replanted so the resulting forested edge will not impede future BUOW colonization. These areas will be maintained in a compatible use, such as hay fields.

Recommended management actions include the continued treatment of exotic vegetation, and mechanical reduction utilizing the appropriate equipment such as an aerator or roller chopper. Grants from the Florida Fish and Wildlife Conservation Commission (FWC) may be available to assist with funding this conversion to suitable pasture habitats.

For the existing Pasture Management Areas, and for future pasture restoration areas, in accordance with the EMP, preparation of a prescription for pasture management is recommended to outline all scheduled agricultural and cattle operations. The prescription will allow for a better understanding of activities and schedules for pasture maintenance to all parties involved. This will help confirm that all agricultural operations continue to follow habitat management recommendations specific to BUOW and other native grassland dependent wildlife.

5.0 SOUTHEASTERN AMERICAN KESTREL

In January and February 2022, maintenance of all existing nest boxes took place. Maintenance of nest boxes consists of cleaning out old and adding new nesting material and repairing damaged nest box structures. A total of 46 nest boxes are now present on site within suitable habitat.

Periodic nest box monitoring was conducted during the breeding season, concluding that 24 of the 46 nest boxes were utilized by southeastern American kestrels (SEAK) (**Figure 6**). Additional nest boxes may have been utilized that were not documented due to limitations to the monitoring schedule. Some of the nest boxes have been utilized by non-target species including red-bellied woodpecker (*Melanerpes carolinus*), eastern screech owl (*Megascops asio*), great-crested flycatcher (*Myiarchus crinitus*) eastern bluebird (*Sialia sialis*), and fox squirrel (*Sciurus niger*). Additionally, two nest boxes were deemed 'unusable' for use by SEAK as they were colonized by bees.

5.1 Management Recommendations

As secondary cavity nesters, the limiting factor for increasing the population size of SEAK on site is typically the number of nesting opportunities. The EMP recommendation for 30 additional boxes has been met, however, as habitat restoration and management proceeds, additional suitable habitat will become available for use by SEAK, particularly within areas of hardwood reduction. We recommend a more robust monitoring program and installation of nest boxes as habitat restoration proceeds. This applies to the progress made within the FSJMA, longleaf pine restoration areas, the sandhill habitats being restored for gopher tortoises, and in the pine areas that are converted to pasture for BUOW. FWC grants may be available to assist with the funding for siting, constructing, and installing nest boxes in these areas.

A more robust monitoring program would consist of scoping nest boxes monthly from March through July to document nesting status and evaluate habitat conditions in the areas of successful nest boxes. This additional effort will aid in accurately estimating the total number of fledged juveniles and nest box utilization, to assess the true success of this program.

Maintenance of all existing nest boxes will take place prior to the beginning of the 2023 breeding season.

6.0 FLORIDA SANDHILL CRANE

In April 2020, Quest conducted an aerial survey for sandhill crane nests throughout CBAB via helicopter. This survey concluded a total of 21 nests were located in herbaceous wetlands present across CBAB. These surveys have not been repeated since that time. Breeding season 2023 surveys are recommended to take place to document any changes since the original aerial surveys were conducted. The 2020 survey will be utilized as a baseline to compare to future nesting seasons and evaluate the success of any wetland habitat management that may be conducted.

Incidental sightings during the 2022 breeding season concluded an abundance of Florida sandhill cranes still utilize CBAB, and numerous chicks and juveniles were observed on site.

6.1 Management Recommendations

To appropriately manage wetland habitats for Florida sandhill cranes and other wetland dependent avifauna, the maximum vegetation height needs to be maintained by reducing the encroachment of shrubs and trees, through mechanical reduction or prescribed fire. Wetland edges and ecotone composition are recommended to be managed using prescribed fire or herbicide treatments where necessary to control undesirable or exotic vegetation. The

frequency, timing, and site-specific locations for application events can be found in the *Baseline Wetland Monitoring Report* (June 2020). An aerial survey for nests is recommended to take place during the 2023 nesting season.

7.0 GOPHER TORTOISE

In August 2021, PCU again applied for Gopher Tortoise Habitat Management Assistance Funding from FWC. PCU was awarded funding for two GT Management Units, Unit 1C and 1D, totaling 110 acres in size (**Figure 7**). The goal of the restoration was to reduce the dense hardwood canopy and to restore native sandhill groundcover. The canopy reduction was conducted in February 2022 using the same methods used in the previous units, consisting of selectively treating hardwoods with herbicide via girdling and allowing them to stand in place. Quest's Senior Ecologist collaborated closely with crews from Altec Lakes, the chosen contractor, to identify trees to be treated, based primarily on the location of desirable remnant native groundcover present, as well as topographical conditions. Concurrent with the hardwood treatment, Altec applied herbicide to target exotic vegetation, including patches of cogon grass (*Imperata cylindrica*).

A report detailing the activities and results was submitted to FWC in June 2022 (**Attachment B**).

A survey of the areas treated in 2021 and 2022 was conducted by Quest in July and August 2022. This was for the purpose of documenting site conditions following hardwood reduction, to developing a nuisance/exotic vegetation management plan, and to assess the areas for future funding and restoration needs. The results are provided in a separate document, Gopher Tortoise Habitat Enhancement Sites Evaluation Report (November 2022). The data collected was also used to prepare funding applications for the 2023 FWC funding cycle.

Gopher tortoise burrow surveys were also conducted in August 2022 within the restoration units proposed for 2023 funding. FWC requires survey data to be no more than two years old. The results are depicted in **Figure 8**.

On December 10, 2021, FWC staff (Nicole Savona, Luis Gonzalez, Alex Haun) conducted a Pre-Application Site Visit to provide input and guidance on pursuing authorization for establishing a GT Recipient Site on Units 1A and 1D. FWC staff were primarily concerned about the "canopy cover" that was still present, although provided by dead tree limbs. They also noted some exotic vegetation, although one of these was misidentified as guineagrass, however was reevaluated and identified as a native species, switchgrass (*Panicum virgatum*). The Pre-Application Site Visit Form is attached as **Attachment C**. In subsequent correspondence with FWC, Quest expressed

concern over the findings and recommendations, including the assessment of dead branches providing canopy cover, as this is a temporary condition, and compared to previous site conditions prior to treatment, the desirable groundcover has increased exponentially. Additional research was conducted on this, and based on input from ecological restoration experts, including Dr. Frances Putz of the University of Florida Department of Biology, "the brown shade provided by the dead branches does not affect the photosynthetic properties of the understory grass and forb species on which the gopher tortoises depend." Correspondence from Dr. Putz is included in **Attachment C**.

We also expressed concern about the recommendation included in the FWC form that "at least 50% of the standing dead oaks be cut down or removed prior to the initial burn" because such activity would disturb the groundcover and the soil such that the desirable native species are negatively affected, and undesirable and non-native species would be allowed to establish. These sites were specifically chosen based on the presence of highly desirable remnant sandhill species that tend to be rare in overgrown, unmanaged areas.

In general, gopher tortoises are frequently observed throughout the upland habitats located on CBAB; the most abundant locations known to date are within the FSJMA.

7.1 Management Recommendations

PCU has submitted applications for funding assistance from FWC to continue the restoration of similar adjacent habitats within two additional management units (Units 2A and 2B), and to conduct prescribed burning in Units 1A-1D. If funding is approved, the hardwood reduction activities in 2A and 2B should begin in January 2022. Herbicide treatment of exotic groundcover that may be present in these units will also be conducted. We recommend conducting baseline qualitative monitoring of these units prior to implementing treatments to evaluate current vegetation cover and species.

Prescribed burning of Units 1A-1D is recommended for the winter of 2022-2023. This winter burn will be for the purpose of initial fuel reduction within these units. Subsequent burning should take place in March-May to encourage native groundcover recruitment. All burns must be conducted to ensure that impacts to desirable groundcover species and remaining longleaf pines can be minimized. Hand raking of duff from around all remaining LLP it to take place prior to the initial burn and will be coordinated with field crews. Existing roads and firebreaks should be utilized where they exist in the vicinity such that any new firebreaks which may be required are limited to the tree line/pasture boundary, while avoiding existing GT burrows (**Figure 7**).

The potential for obtaining Gopher Tortoise Recipient Site permits will be revisited following the prescribed burns in Units 1A-1D. FWC will ultimately require updated burrow surveys and vegetation cover and composition surveys to determine forage availability. These surveys will determine the number of tortoises per acre FWC may approve to be accepted in these areas. Financial assurances, management plans, and site protection mechanisms will also need to be addressed with FWC as part of the application process.

The highly successful restoration of native groundcover within these units may also serve as seed sources for other longleaf and sandhill restoration areas on site. Harvest of seeds for this purpose, as well as for potential sales, should be investigated further.

The above management actions follow those recommended in the EMP and will provide additional habitat for gopher tortoises by reducing canopy and encouraging establishment of ground cover vegetation.

7.0 WOOD DUCK

In July 2020, Quest provided construction methods and locations for a local Boy Scout project to install twelve (12) wood duck nest boxes across wetlands on Cross-Bar Ranch (**Figure 9**). The purpose of these is to encourage the breeding and population permanence of wood ducks (*Aix sponsa*) on the CBAB property. In August of 2022, Quest was notified of one nest box that had collapsed and was currently unusable. This box, denoted #7, was recovered and will be re-installed once repaired. The remaining nest boxes were scoped in August to determine occupancy. No wood ducks or wood duck eggs were observed utilizing the boxes at this time, however two of the nest boxes were occupied by nesting eastern screech owls (*Megascops asio*). Wood ducks have been observed in several locations across CBAB, suggesting a permanent presence in the area and potential for breeding on-site.

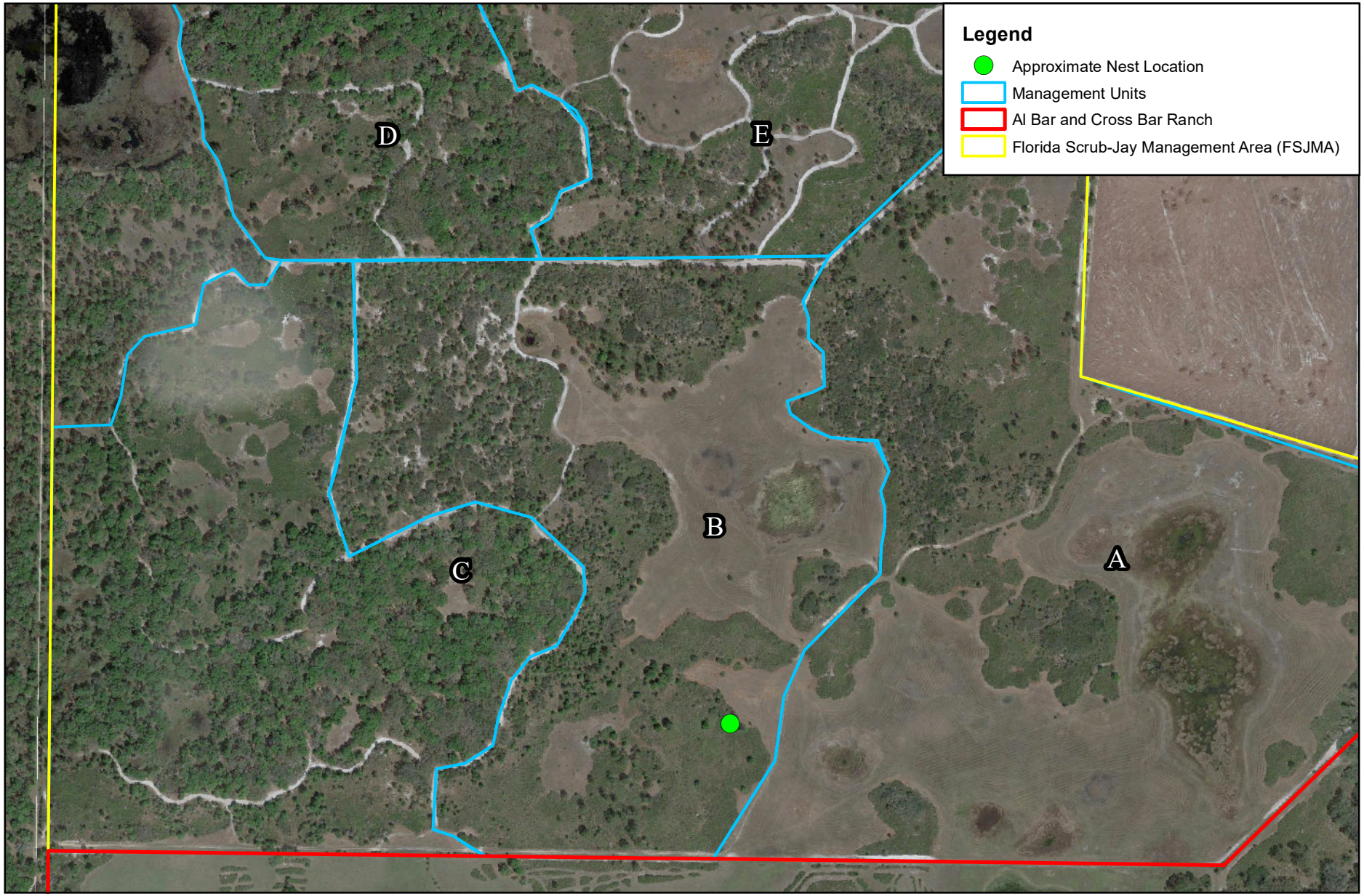
TABLE 1

Cross Bar Ranch, Pasco Co. FL - Florida Scrub-Jay (*Aphelocoma coerulescens*)
Banding combinations and Vitial Statistics

(January 25, 2021)

USFWS ID #	Band Combination	Group ID	Age	Sex	Date Banded
1713-82951	GF-SR	B	AHY	?	2/4/2020
1713-82952	PF-SH	B	SY	?	2/4/2020
1713-82953	AF-SB	A	AHY	?	2/4/2020
1713-82989	RF-SG	B	HY	?	12/10/2020
1713-82990	LF-SA	B	HY	?	12/10/2020
1713-82991	HF-SL	B	HY	?	12/10/2020
1713-82992	BF-SP	B	AHY	?	12/10/2020
1713-82996	WF-SP	B	AHY	F(hic)	1/25/2021

HY - jay hatched in year banded
AHY - jays hatch date not known when banded
SY - jay hatched the year before banded



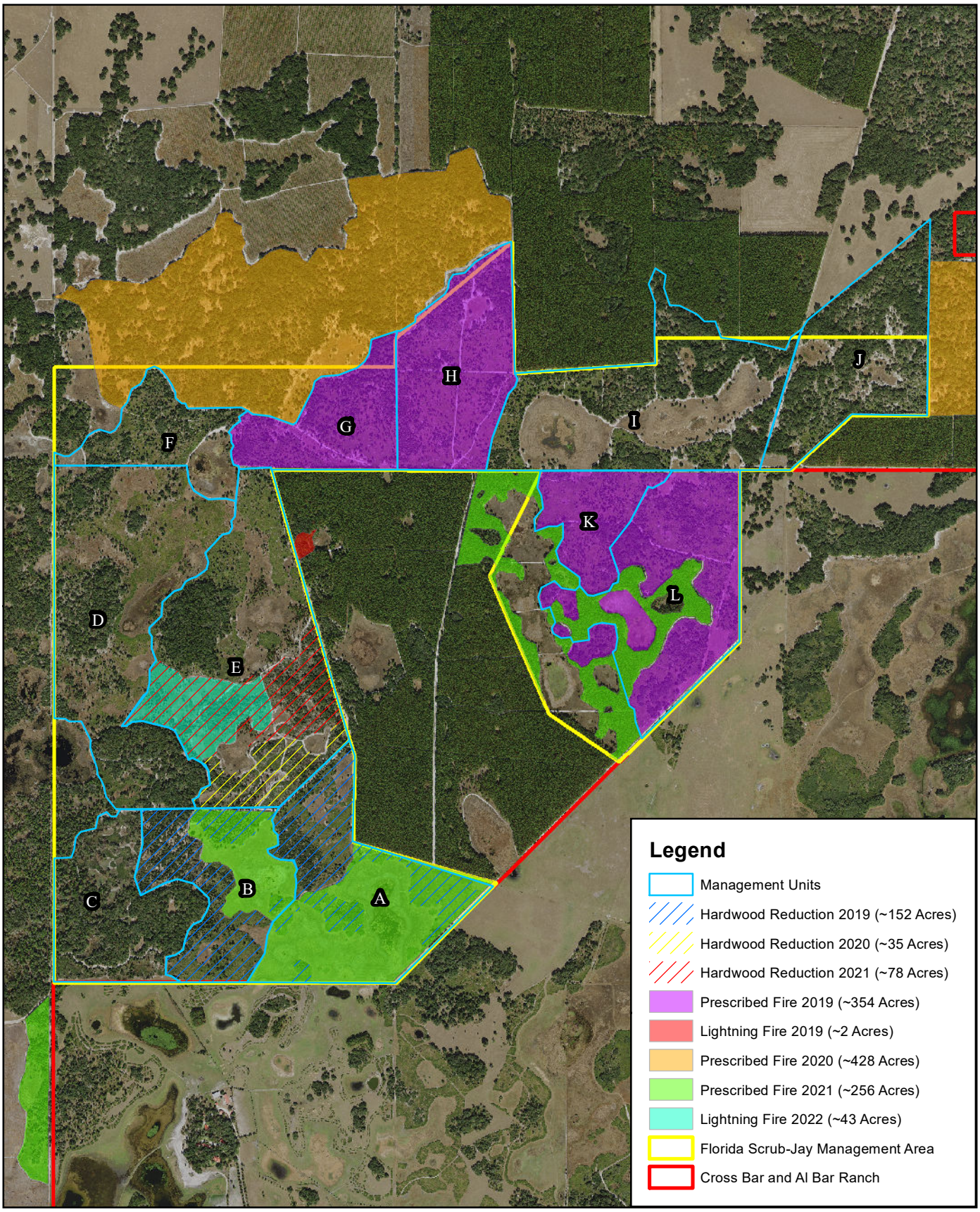
Path (E:\Mapping\Cross Bar - Al Bar Ranch\Maps\Wildlife Tech Memo 2022\Fig 1 - FLSJ Observed Nest Area.mxd) By: CK Date: 10/26/2022

QUEST ecology

Figure 1
FLSJ Observed Nesting Area, April 2022
Al Bar Ranch & Cross Bar Ranch
Pasco County, Florida

N W E S

0 500
Feet



Path (E:\Mapping\Cross Bar - Al Bar Ranch\Maps\Wildlife Tech Memo 2022\Fig 2 - FSJMA Management.mxd) By: CK Date: 10/26/2022

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Figure 2
FSJMA Management Activities
September 2019 - September 2022
Cross Bar and Al Bar Ranch
Pasco County, Florida

N W E S

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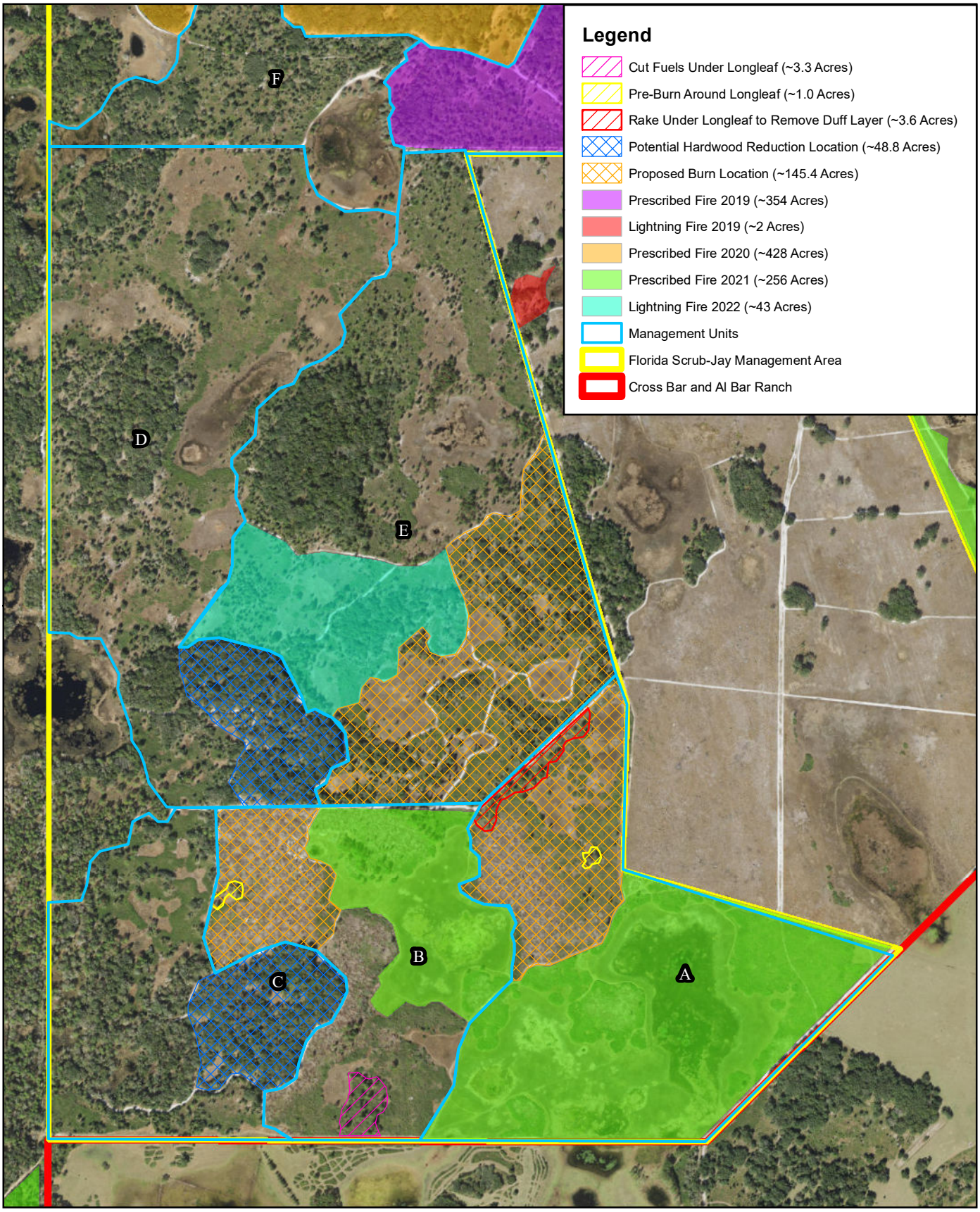
Miles



Path (E:\Mapping\Cross Bar - Al Bar Ranch\Maps\Wildlife Tech Memo 2022\Fig 3 - Proposed FSJMA Management Actovotoes.mxd) By: CK Date: 11/3/2022

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Figure 3
Proposed Management Activities 2022-2023
Cross Bar and Al Bar Ranch
Pasco County, Florida

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Feet

Path (E:\Mapping\Cross Bar - Al Bar Ranch\Maps\Wildlife Tech Memo 2022\Fig 4A - BO Burrows NE July 2022.mxd) By: CK Date: 10/31/2022

QUEST ecology

Figure 4A
NE Pasture Burrowing Owl Burrows
Updated July 2022
Cross Bar and Al Bar Ranch
Pasco County, Florida

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Feet

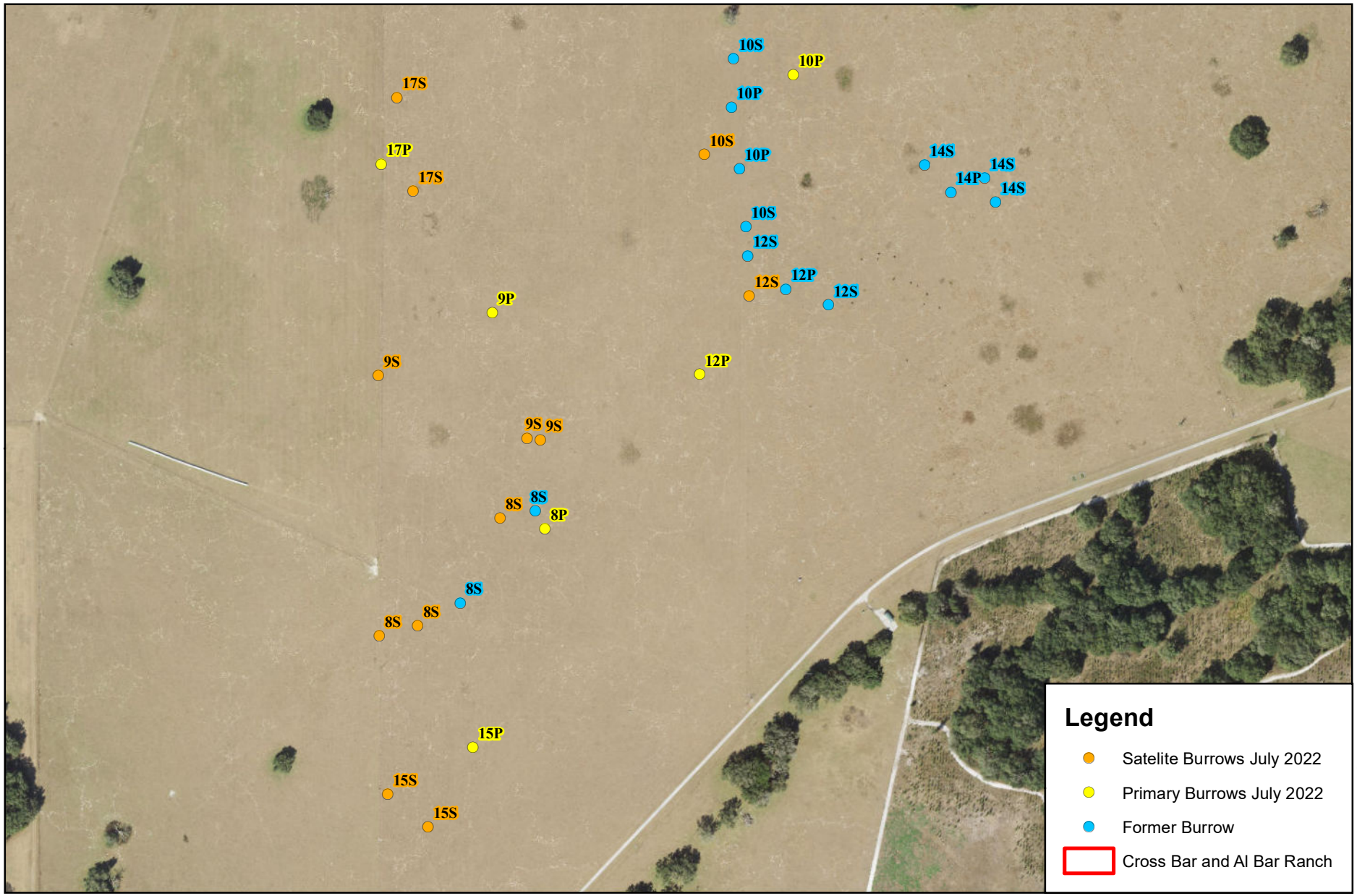

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Figure 4B - SW Pasture Burrowing Owl Burrows
Updated July 2022
Cross Bar and Al Bar Ranch
Pasco County, Florida

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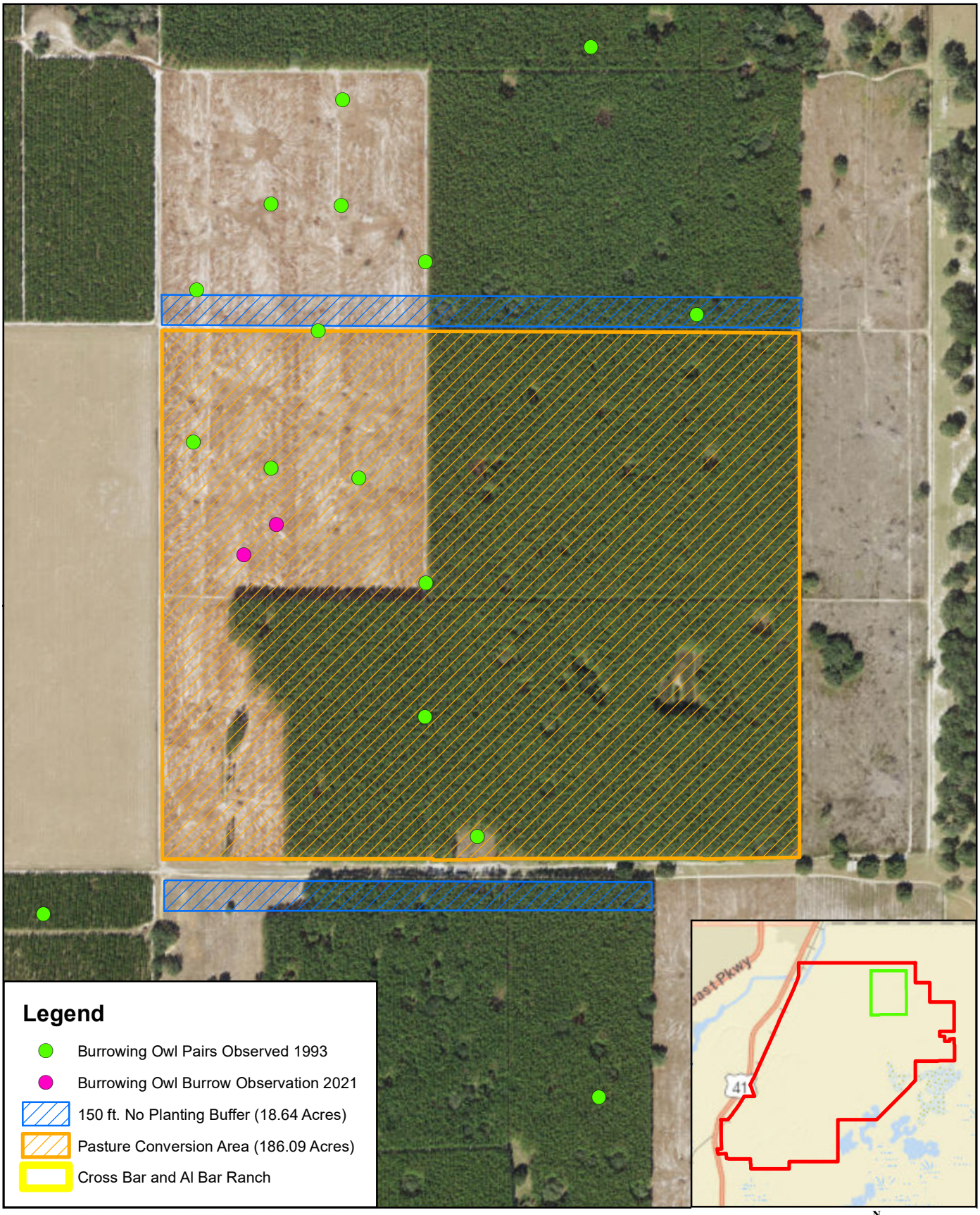
Feet



Path (E:\Mapping\Cross Bar - Al Bar Ranch\Maps\Wildlife Tech Memo 2022\Fig 5 - BUOW Pasture Habitat Conversion.mxd) By: CK Date: 11/1/2022

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Figure 5
Timber Block Conversion to BUOW Pasture Habitat
Cross Bar and Al Bar Ranch
Pasco County, Florida

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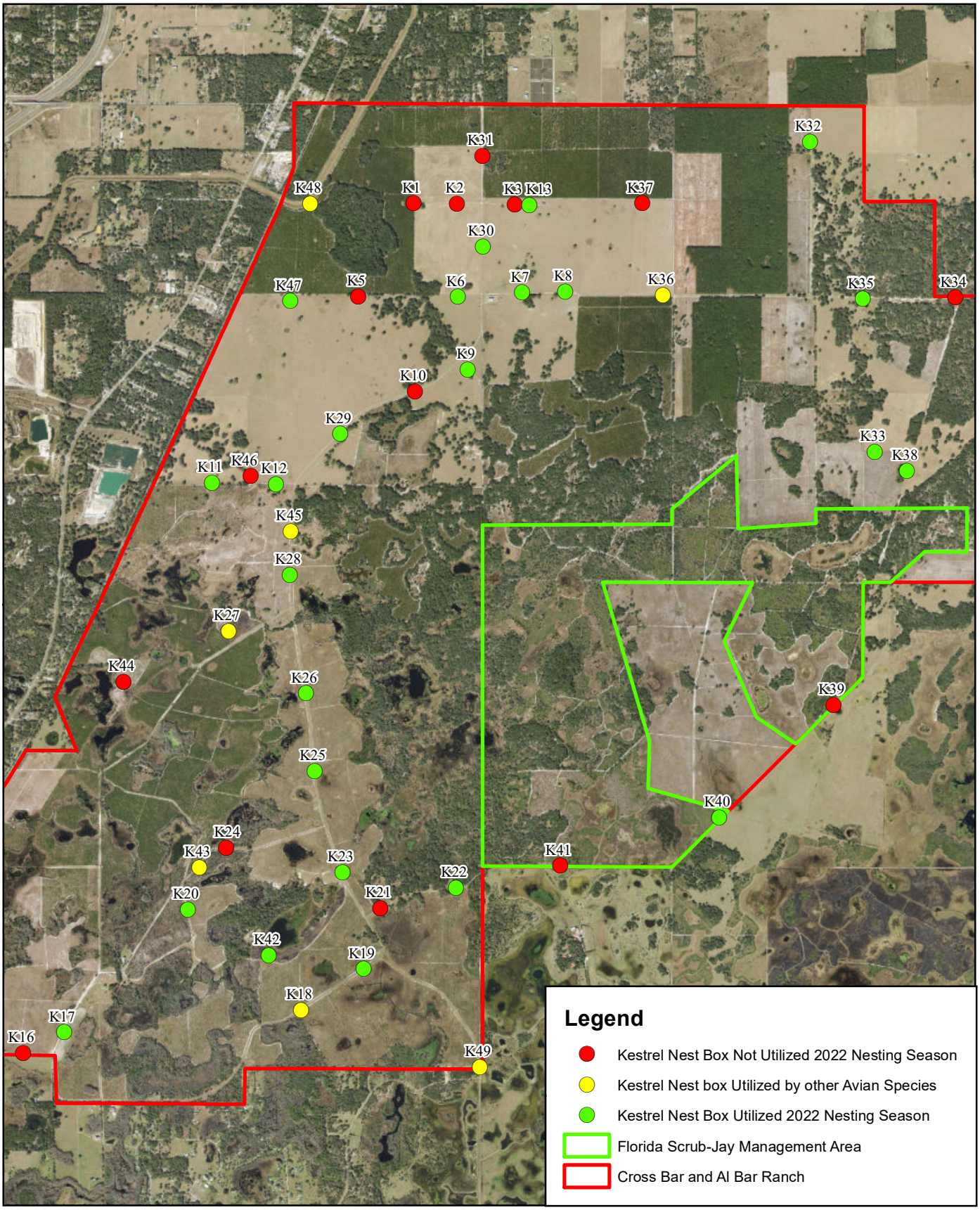

Path (E:\Mapping\Cross Bar - Al Bar Ranch\Maps\Wildlife Tech Memo 2022\FIG 6 - Kestrel Boxes June_2022.mxd) By: CK Date: 10/31/2022

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Figure 6 - Southeastern American Kestrel Nest Box Utilization
June 2022
Cross Bar and Al Bar Ranch
Pasco County, Florida

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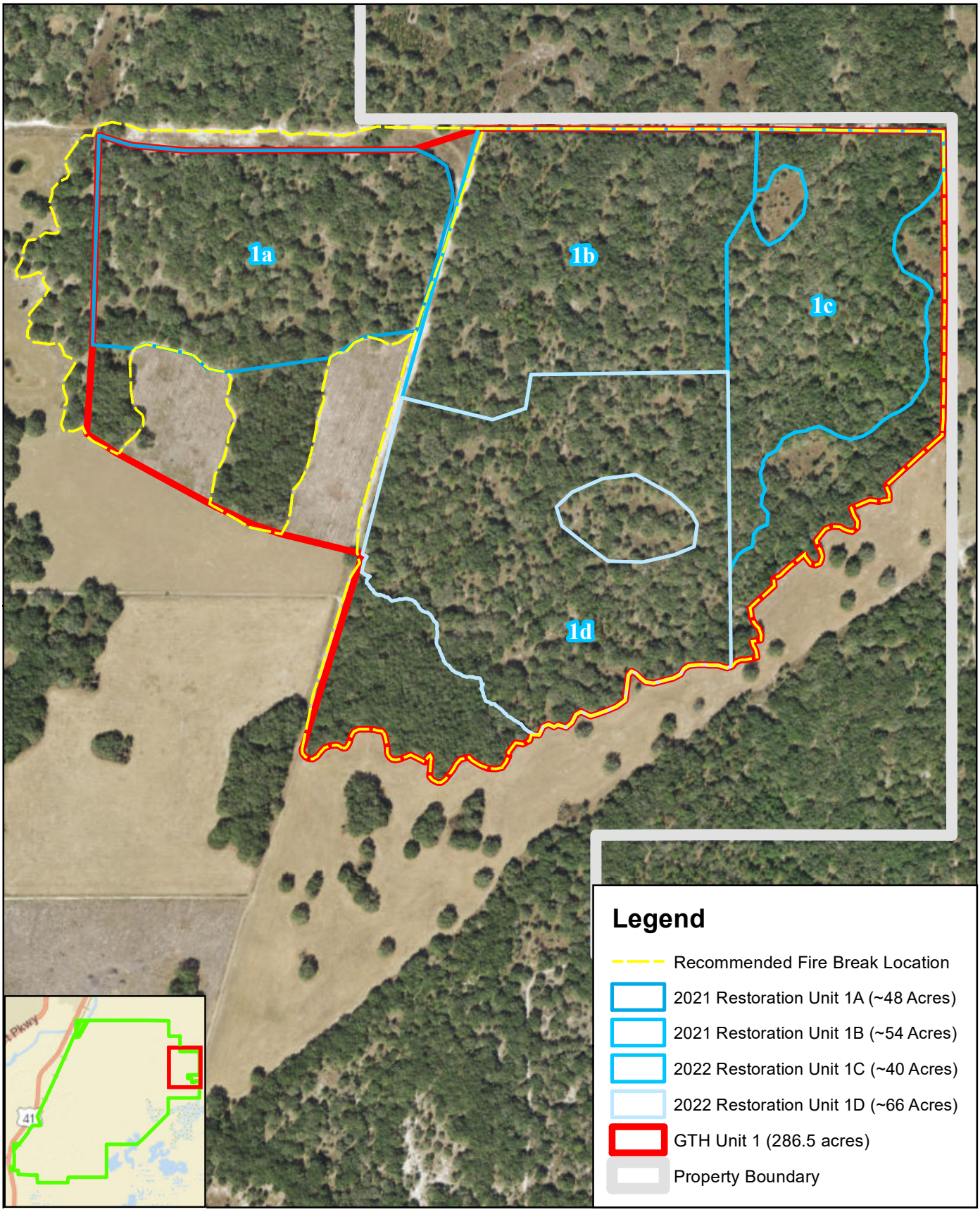
Miles



Path (E:\Mapping\Cross Bar - Al Bar Ranch\Maps\Wildlife Tech Memo 2022\Fig 7 - GT Habitat Enhancement Units.mxd) By: CK Date: 11/1/2022

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Figure 7
Gopher Tortoise Habitat Enhancement Units 1A-1D
Al Bar Ranch
Pasco County, Florida

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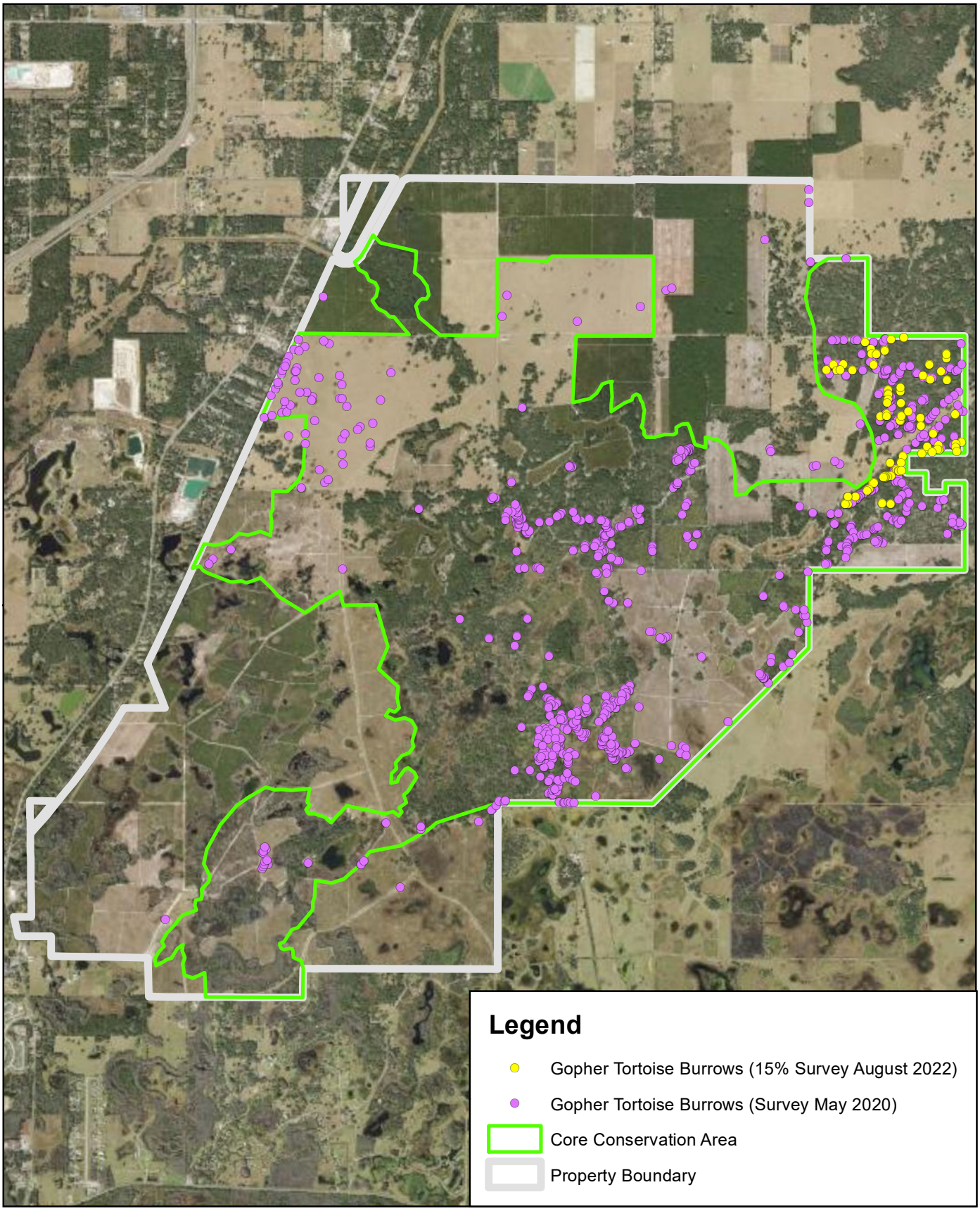
Feet



Path (E:\Mapping\Cross Bar - Al Bar Ranch\Maps\Wildlife Tech Memo 2022\Fig 8 - Gopher Tortoise Burrow Surveys 2020 and 2022.mxd) By: CK Date: 10/31/2022

QUEST ecology

Figure 8
Gopher Tortoise Burrow Surveys 2020 and 2022
Core Conservation Area
Pasco County, Florida

N W E S

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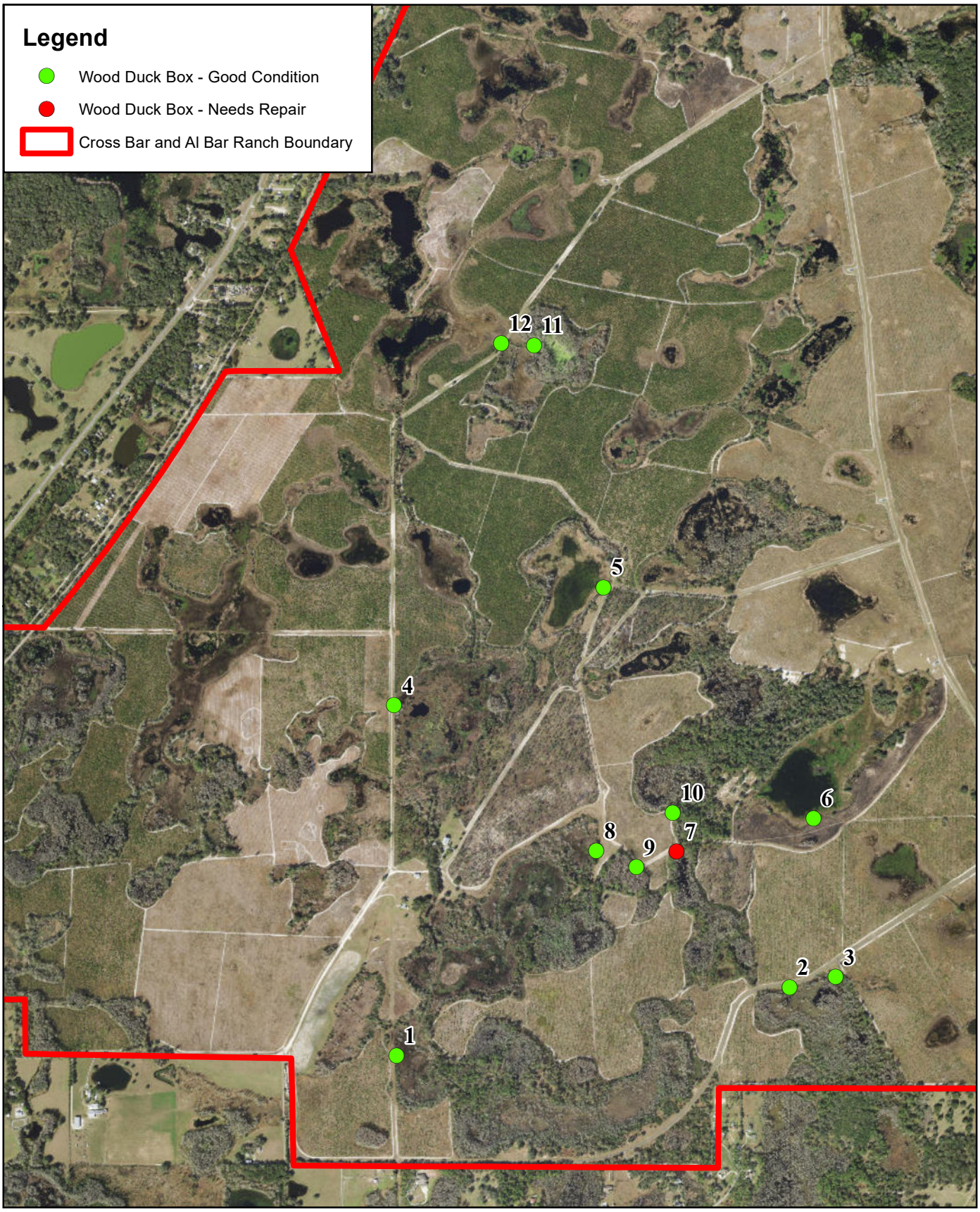
Miles



Path (E:\Mapping\Cross Bar - Al Bar Ranch\Maps\Wildlife Tech Memo 2022\Fig 9 - Wood Duck Boxes.mxd) By: CK Date: 11/1/2022

QUEST ecology

Figure 9
2022 Wood Duck Nest Boxes
Installed July 2020
Cross Bar Ranch
Pasco County, Florida

N W E S

0 2,000
Feet

ATTACHMENT A

[illegible]
[illegible]

[illegible] chainsaw crews to cut and leave in place, all hardwood trees over 10’ in [illegible]

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible] hardwoods over 10’
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	

ATTACHMENT B

FWC Gopher Tortoise Habitat Management Assistance Reports

Units 1C and 1D

Gopher Tortoise Habitat Management Assistance Report
Cross Bar Ranch

Contact information

Lead contact

David S Adams, P.G., Pinellas County Utilities
14 So. Ft. Harrison Ave., Clearwater, FL 33756
727-464-4441
Dadams@pinellascounty.org

Team members/contributors

- Quest Ecology Inc. - David Gordon (field/crew oversight)
  Vivienne Handy, PWS, President, Principal Ecologist
- Altec Lakes – Field Crew
- Pinellas County Utilities - David S Adams, P.G., Project Manager
  Stuart Dawson, Project Coordinator

Site information – Al Bar Ranch GT Unit 1C

Location

- Coordinates - Latitude: 28.401641, Longitude: -82.405671
- Parcel ID - 16-24-19-0000-00100-0000
- GIS map - See Attached Location Map

Project description

General information (from application)

- Acres of GT habitat – 53.1
- Number of burrows, date of initial survey, survey updates -Initial survey conducted May/June 2020; 16 burrows found within Unit 1C; No updates to date
- Soil type – See attached Soils Map

Management activities

Actions taken:

Restoration activities occurred in February 2022 and consisted of cutting and treating overgrown oak canopy. Methods included selecting oaks ranging from 6-60" basal diameter, or 20-80' tall, found primarily within sandhill and to a lesser degree, pine flatwood habitats (as identified by a dominance of specific ground covers). Oaks were killed in place using different girdling techniques followed immediately with an application of Garlon 4 Ultra with a carrying oil, via backpack sprayer to cuts. Dominant oak species typically targeted was sand live oak (Quercus geminata), and to a lesser degree live oak (Q. virginiana), water oak (Q. nigra), and laurel oak (Q. laurifolia).

Select oaks (about 10% canopy cover) were left within the restoration unit to maintain habitat structural diversity and to provide cover, forage, roosting, and nesting opportunities for wildlife. Turkey oak (Q. laevis) and bluejack oaks (Q. incana) that were found were not targeted. Smaller specimens of target and non-target oak species were

infrequent (less than 10% cover) and were not treated. Larger specimens of exotic trees including earleaf acacia, camphor, and mimosa were either girdled or felled and herbicide was applied to the cut.

After one month all cut and treated trees exhibited moderate to significant signs of chlorotic leaves, indicating mortality.

Challenges encountered:
Different girdling and herbicide application techniques were used (direct basal application, machete band bark removal to cambium, single line chainsaw cut to cambium, and 4-6" wide bark removal to cambium using chainsaw), with an application of Garlon 4 Ultra. Basal bark application was generally effective on trees less than 8" basal diameter, while single line chainsaw cuts followed by treatment were sufficient for trees greater than 8" basal diameter. This combination, based on tree size, was determined to be the most efficient and effective technique.

Project costs

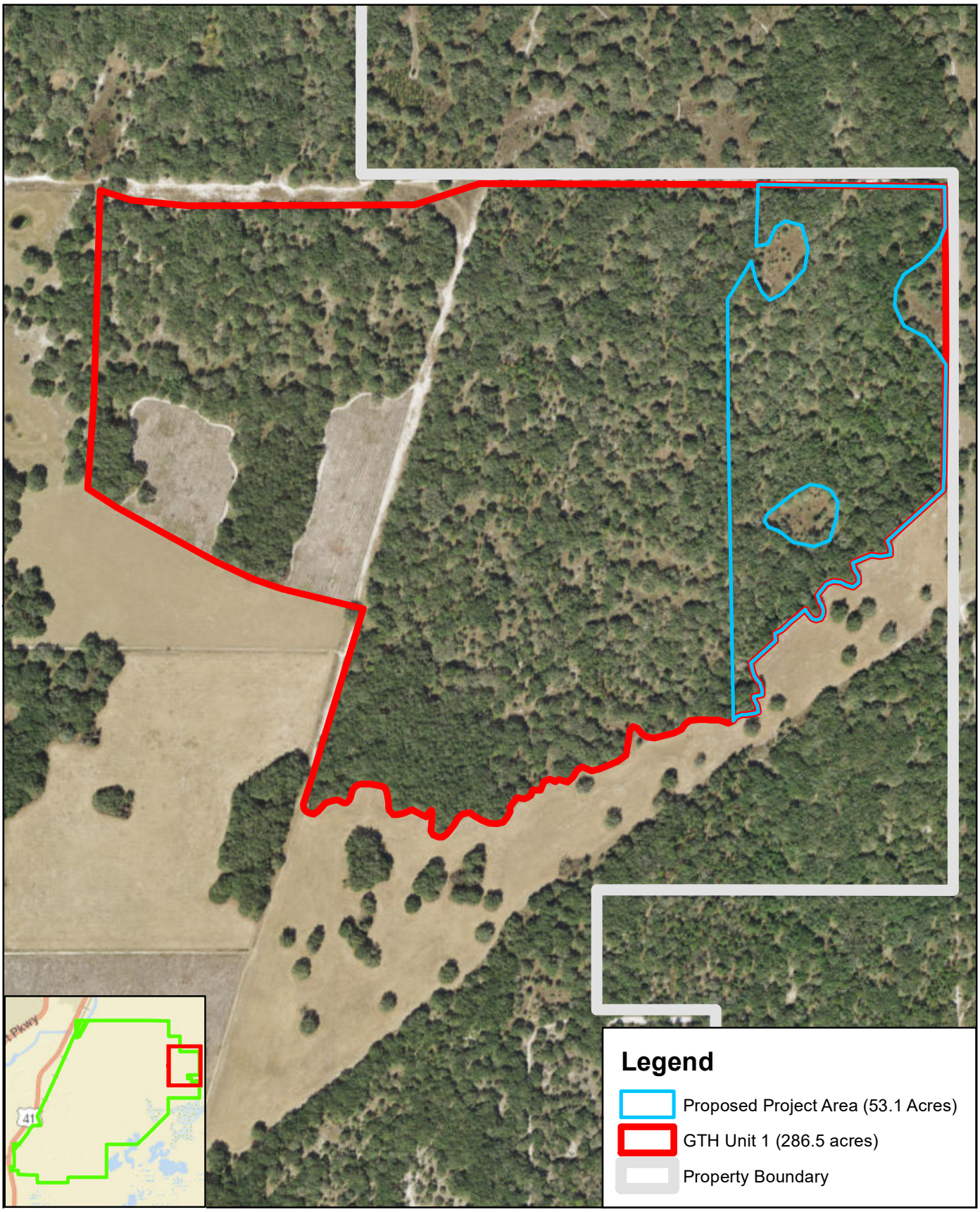
- Initial quote $14,850.00
- Actual cost $14,850.00
    - Explanation for difference in cost (if applicable) – N/A
    - Was work performed by local government staff or a contractor? – Work was performed by contractor and consultant at the direction of Pinellas County Utilities

Before and after pictures

See before and after photos below.

Unit 1C – Before Work

Unit 1C – After Work



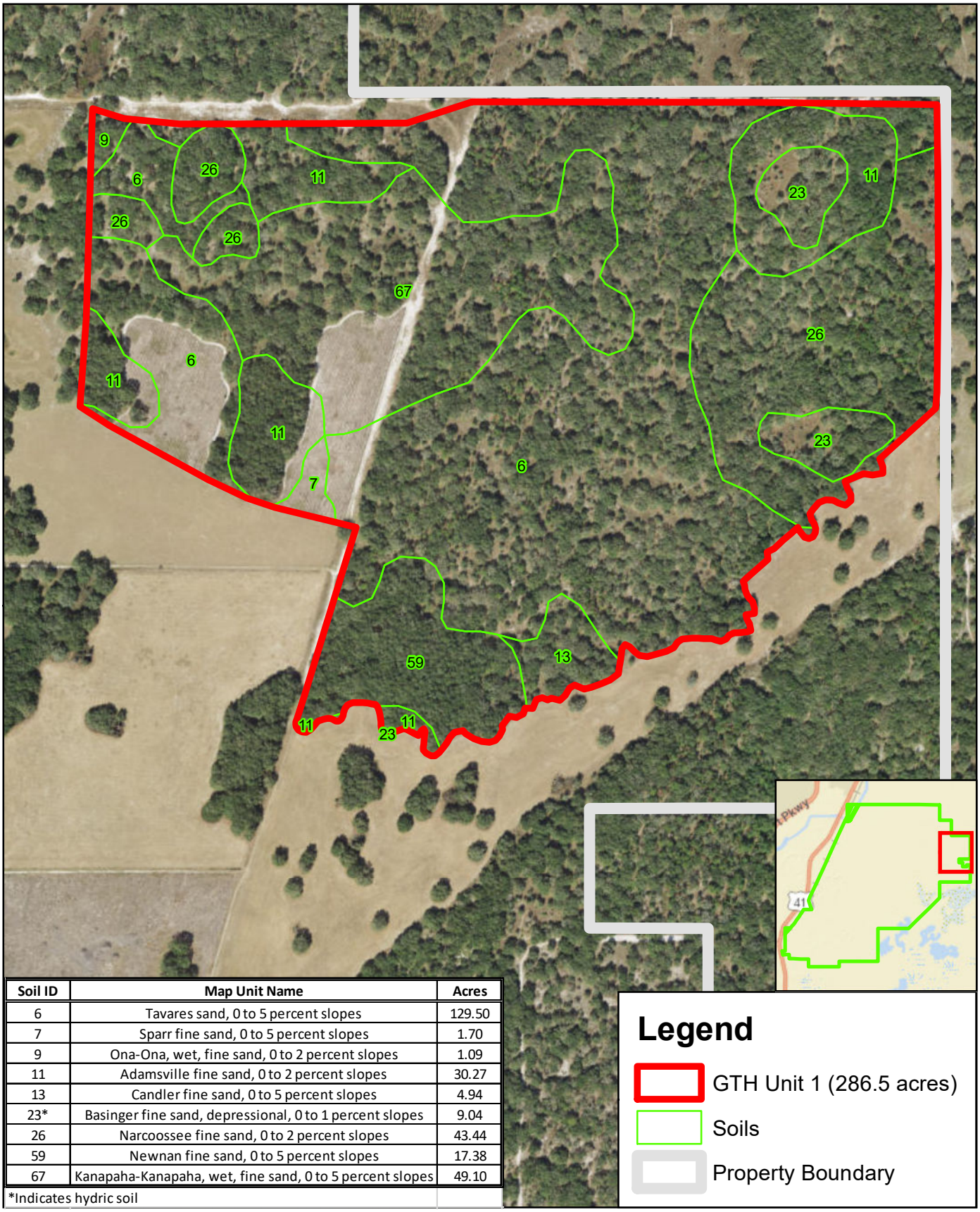
Path (E:\Mapping\Cross Bar - Al Bar Ranch\Maps\Fig 5_ GT Habitat EA 1c - Aerial.mxd) By: CK Date: 8/31/2021

QUEST ecology

Figure 5 - Aerial
Gopher Tortoise Habitat Enhancement
Gopher Tortoise Habitat Unit 1C
Pasco County, Florida

N W E S

0 1,000
Feet



Soil ID	Map Unit Name	Acres
6	Tavares sand, 0 to 5 percent slopes	129.50
7	Sparr fine sand, 0 to 5 percent slopes	1.70
9	Ona-Ona, wet, fine sand, 0 to 2 percent slopes	1.09
11	Adamsville fine sand, 0 to 2 percent slopes	30.27
13	Candler fine sand, 0 to 5 percent slopes	4.94
23*	Basinger fine sand, depressional, 0 to 1 percent slopes	9.04
26	Narcoossee fine sand, 0 to 2 percent slopes	43.44
59	Newnan fine sand, 0 to 5 percent slopes	17.38
67	Kanapaha-Kanapaha, wet, fine sand, 0 to 5 percent slopes	49.10

*Indicates hydric soil

Path (E:\Mapping\Cross Bar - Al Bar Ranch\Maps\Fig 8_GT Habitat EA 1c - Soils.mxd) By: CK Date: 8/31/2021

QUEST ecology

Figure 8 - Soils
Gopher Tortoise Habitat Enhancement
Gopher Tortoise Habitat Unit 1C
Pasco County, Florida

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Feet

Gopher Tortoise Habitat Management Assistance Report
Cross Bar Ranch

Contact information

Lead contact

David S Adams, P.G., Pinellas County Utilities
14 So. Ft. Harrison Ave., Clearwater, FL 33756
727-464-4441
Dadams@pinellascounty.org

Team members/contributors

- Quest Ecology Inc. - David Gordon (field/crew oversight)
  Vivienne Handy, PWS, President, Principal Ecologist
- Altec Lakes – Field Crew
- Pinellas County Utilities - David S Adams, P.G., Project Manager
  Stuart Dawson, Project Coordinator

Site information – Al Bar Ranch GT Unit 1D

Location

- Coordinates - Latitude: 28.398301, Longitude: -82.409918
- Parcel ID - 16-24-19-0000-00100-0000
- GIS map - See Attached Location Map

Project description

General information (from application)

- Acres of GT habitat – 53.11
- Number of burrows, date of initial survey, survey updates -Initial survey conducted May/June 2020; 25 burrows found within Unit 1D; No updates to date
- Soil type – See attached Soils Map

Management activities

Actions taken:

Restoration activities occurred in February 2022 and consisted of cutting and treating overgrown oak canopy. Methods included selecting oaks ranging from 6-60" basal diameter, or 20-80' tall, found primarily within sandhill and to a lesser degree, pine flatwood habitats (as identified by a dominance of specific ground covers). Oaks were killed in place using different girdling techniques followed immediately with an application of Garlon 4 Ultra with a carrying oil, via backpack sprayer to cuts. Dominant oak species typically targeted was sand live oak (Quercus geminata), and to a lesser degree live oak (Q. virginiana), water oak (Q. nigra), and laurel oak (Q. laurifolia).

Select oaks (about 10% canopy cover) were left within the restoration unit to maintain habitat structural diversity and to provide cover, forage, roosting, and nesting opportunities for wildlife. Turkey oak (Q. laevis) and bluejack oaks (Q. incana) that were found were not targeted. Smaller specimens of target and non-target oak species were

infrequent (less than 10% cover) and were not treated. Larger specimens of exotic trees including earleaf acacia, camphor, and mimosa were either girdled or felled and herbicide was applied to the cut.

After one month all cut and treated trees exhibited moderate to significant signs of chlorotic leaves, indicating mortality.

Challenges encountered:
Different girdling and herbicide application techniques were used (direct basal application, machete band bark removal to cambium, single line chainsaw cut to cambium, and 4-6" wide bark removal to cambium using chainsaw), with an application of Garlon 4 Ultra. Basal bark application was generally effective on trees less than 8" basal diameter, while single line chainsaw cuts followed by treatment were sufficient for trees greater than 8" basal diameter. This combination, based on tree size, was determined to be the most efficient and effective technique.

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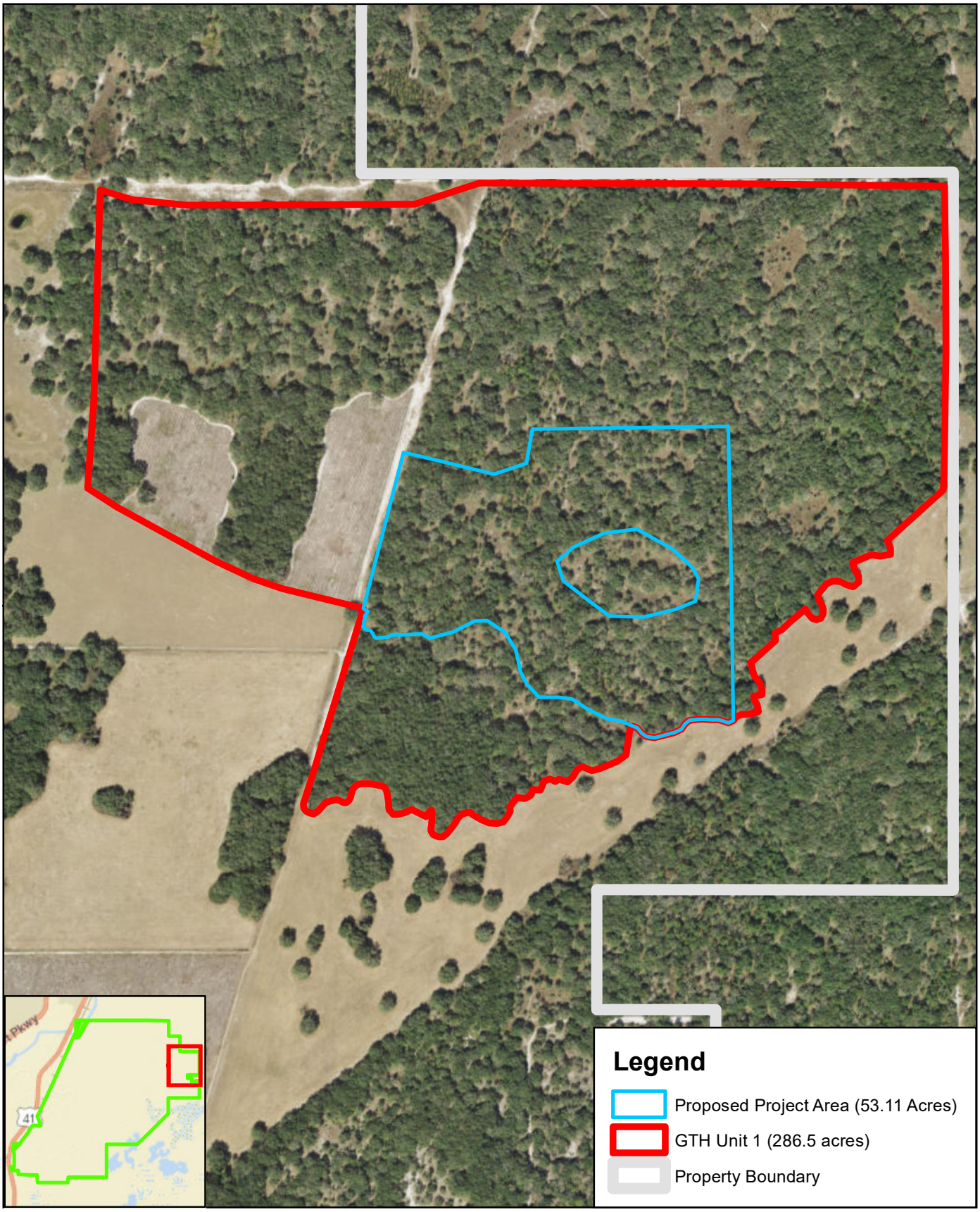

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QUEST ecology

Figure 5 - Aerial
Gopher Tortoise Habitat Enhancement
Gopher Tortoise Habitat Unit 1D
Pasco County, Florida

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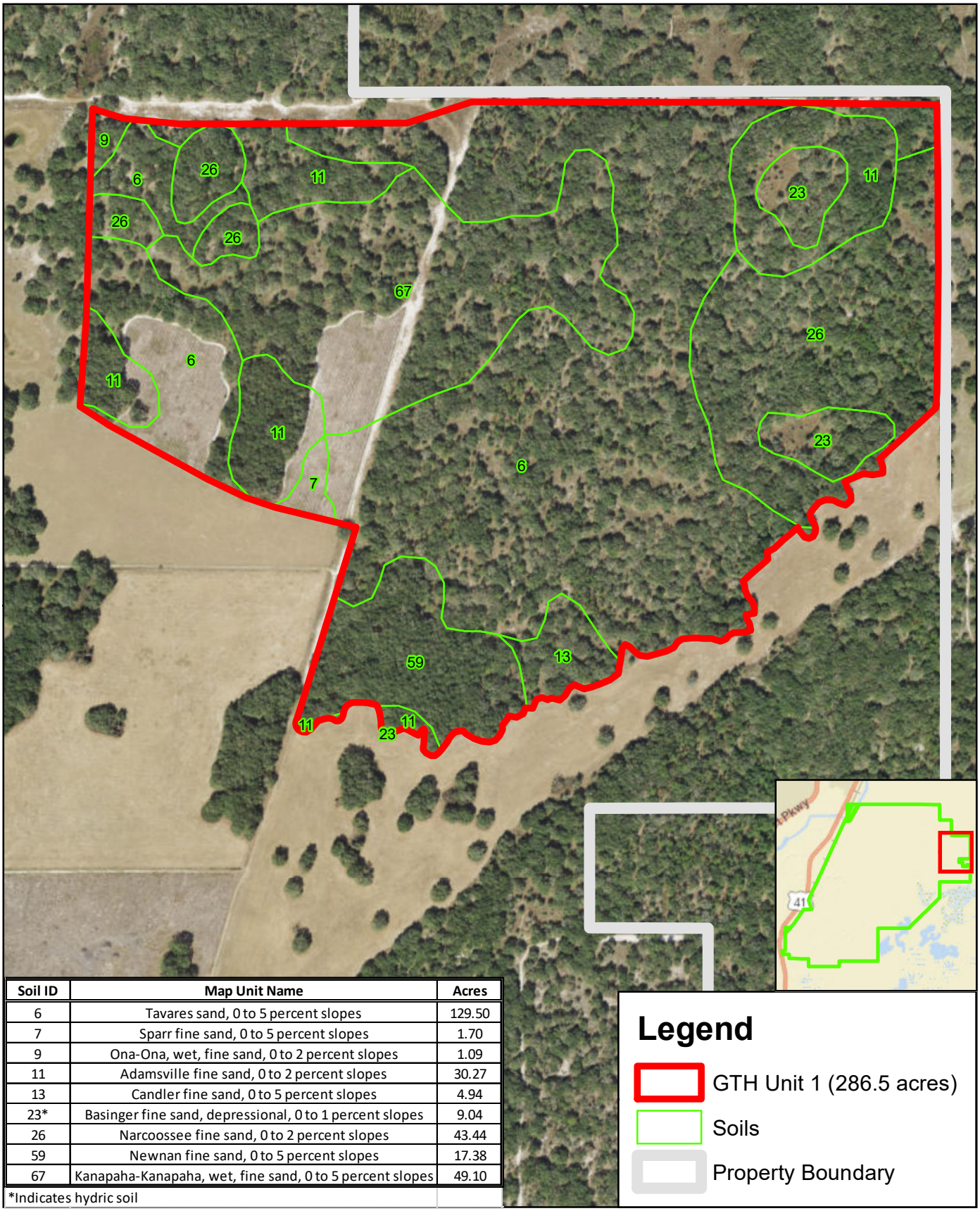

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QUEST ecology

Figure 8 - Soils
Gopher Tortoise Habitat Enhancement
Gopher Tortoise Habitat Unit 1D
Pasco County, Florida

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Feet

ATTACHMENT C

Dr. Frances Putz Letter

FWC Pre-application Site Visit Form

UF UNIVERSITY of FLORIDA

College of Liberal Arts and Sciences
Department of Biology

220 Bartram Hall
PO Box 118525
Gainesville, FL 32611-8525
352-392-1175
352-352-392-3704 Fax

19 April 2022

Vivienne Handy, PWS
President, Principal Ecologist
735 Lakeview Drive
Wimauma, FL 33598

Dear Vivienne,
Thanks for sharing the photos you sent of your gopher tortoise restoration site. The canopy looks good, the understory seems to be flourishing, and the gopher tortoises should have plenty of suitable, native sandhill forage.

I believe that the "brown shade" of the dead branches that remain is actually better for the understory than if you had cleared all the trees. My reasoning for this assertion is that maximum photosynthetic rates of most of our pine savanna species usually occur at <50% full sun (i.e., about 1000 $\mu Em^{-1}s^{-1}$). Furthermore, dead branches do not filter out the wavelengths needed for photosynthesis; leaf shade, in contrast, is depleted in photosynthetically active radiation by chlorophyll's selective absorption of red and blue light, leaving the transmitted light enriched with the green portion of the spectrum.

In summary, and to address FWC's concerns, the brown shade provided by the dead branches does not affect the photosynthetic properties of the understory grass and forb species on which the gopher tortoises depend.

Sincerely,

F.E. "Jack" Putz
Distinguished Professor

Pre-Application Site Visit Form

Site Name:	Pinellas Utilities	Date:	12/10/2021
Property Location:	Spring Hill, FL	Property Size:	62 acres
Permit Type:	Unk	Authorized Agent:	Vivienne
Visit Attendees:	Nicole Savona, Luis Gonzalez, Alex Haun, Adams, David <dadams@co.pinellas.fl.us>; Vivienne Handy <vivienne@questecology.com>; blakem <blakem@questecology.com>		

1. Provide an overall description of the present conditions within the site: Oak canopy of above 60%. Large portions of the site are covered with guineagrass.

2. Do all CLC site level habitats match what is found on the potential recipient site? YES___ NO _X_
   If not, please describe the discrepancies: The site is entirely xeric hammock, CLC code 1150.

3. Are there portions of the site that obviously don't meet the vegetation criteria [> 30% herb cover, < 60% canopy cover, < 40% improved pasture (minimum 10% shrub cover for improved pasture] at this time and would serve to be managed prior to completing vegetation surveys to determine cover percentages? YES_X_ NO___ If so, please describe those areas: The site has a dense canopy throughout.

4. Is all the land within the anticipated units contiguous? YES_X_ NO___ If not, please explain obstacle: 2 sections are contiguous

5. If there are any soils with a DWT of 12 inches, are there ditches or other augmentation features present that look to be draining the water on site? YES___ NO ___ N/A __X
   a. Are there burrows on every soil type with a DWT of 12 inches? YES___ NO ___

   List unacceptable soils: _____

6. What land management, if any, is recommended for this site prior to permitting?

Luis Gonzalez recommends that:

- The entire site needs to burn on a 2-3 year rotation. If pine tree mortality is a concern, then burns should only occur during the wet season (June-August). The initial burn should cover 100% of the proposed recipient site, followed by mosaic burns thereafter.
- Canopy tress should not exceed 40% of the proposed site regardless if they are alive or not. It would be highly beneficial if at least 50% of the standing dead oaks would be cut down or removed prior to the initial burn. There should be no more than 1 mature mast producing oak tree/acre on the site.

- Other woody vegetation/shrub plants should not be allowed to exceed 4 ft in height and to have a coverage area of more than 40%. If burning does not meet these parameters, then mechanical treatment (mowing, bushhogging, hydro ax, etc.) is suggested.
- Category 1 & 2 exotic plant species should not exceed more than 5% coverage of the proposed recipient site footprint at any time and should be monitored for ongoing treatments.

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7. Are there any high traffic areas like watering or feeding stations present that should be cut out of or moved from the permitted suitable habitat? YES ___ NO __X
   If yes, explain: _____

8. If there is livestock present, do they look to exceed one animal per 6 acres? YES ___ NO ___ N/A _X_
   a. Is foraged vegetation between the height of 4"-12"? YES ___ NO ___

9. Are there any restricted land uses in the potential recipient site area [e.g. flash grazing, pesticide use (other than herbicide use to improve habitat), row cropping, sod production, or upland pond construction]? YES ___ NO __X
   If yes, explain: _____

10. Are there any disturbance concerns on the property (e.g. hog rooting, poaching, or invasive plants)? YES _X_ NO___
    If yes, explain: guineagrass and tropical soda apple

11. Are there any deceased tortoises or tortoises with URTD symptoms (i.e. runny nose, watery eyes, swollen or sealed eyelids)? YES ___ NO _X_
    If yes, explain: _____

12. Are there any recommendations for preferred silt-fence pen locations?
    Site is not yet permittable, but the NE portion of the site looks best.

13. Are there any other potential permitting concerns or site-specific notes?
    _____