Otter Mound Preserve

3rd DRAFT

Land Management Plan

Managed by:

Conservation Collier Program
Collier County
December 2007 – December 2017 (10 yr plan)

Prepared by:
Collier County Facilities Management Department

December 2007

Otter Mound Preserve
Land Management Plan Executive Summary

Lead Agency: Collier County Board of County Commissioners, Conservation Collier Program

Properties included in this Plan: four parcels – Folio #21840000029, 21840000045, 21840000061, and 25830400004

Acreage: 2.46 acres

Management Responsibilities: Collier County Conservation Collier Program has oversight responsibility with day to day responsibilities shared by the City of Marco Island under an Inter-local Agreement attached as Appendix 1.

Designated Land Use: Conservation and natural resource-based recreation

Unique Features: Mature, tropical hardwood hammock

Archaeological/Historical: Calusa shell mound, historic whelk shell terracing, and historic outhouse

Management Goals:

- **Goal 1:** Maintain the property in its natural condition prior to modern development.
- **Goal 2:** Eliminate or reduce human impacts to indigenous plant and animal life.
- **Goal 3**: Maintain the trail to provide a safe and pleasant visitor experience.
- **Goal 4**: Protect Archaeological, Historical and Cultural Resources.
- **Goal 5**: Facilitate uses of the site for educational purposes.
- **Goal 6**: Provide a plan for security and disaster preparedness

Acquisition Needs: None

Surplus Lands: None

Public Involvement: Public meeting(s) to be held fall 2007 with residents from surrounding homes, the City of Marco Island, the Marco Island Historical Society, the Southwest Florida Archaeological Society, and the Archaeological and Historical Conservancy, Inc.

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1.0 Introduction

Otter Mound Preserve is a 2.46-acre urban preserve located in southwestern Collier County in a residential area of Marco Island. The entire preserve site is a Calusa shell mound (c. 700 A.D.-1200 A.D.) that contains artifacts of both archaeological and historical significance. Access to the preserve is from Osceola Court and Addison Court - with public parking available within the Addison Court right of way.

The Conservation Collier Program acquired the bulk of the preserve in July 2004 and the southwestern-most "Karen" property in June 2007. The Karen property has been incorporated into the existing preserve; therefore, this plan applies to both properties, and both properties are collectively referred to as the Otter Mound Preserve. Largely comprised of native, tropical hardwood hammock species, the preserve also contains examples of non-native, historical vegetation. The Conservation Collier Program manages this parcel under authority granted by the Conservation Collier Ordinance 2002-63 (available from www.municode.com) with assistance from the City of Marco Island under an Interlocal Agreement signed February 28, 2006 (Appendix 1).

Conservation, restoration, and passive public use are the designated uses of the property. Management activities allowed are those necessary to preserve and/or restore this environmentally and historically endangered land for the benefit of present and future generations. Public use of this site must be consistent with these goals.

An initial site assessment of the preserve was conducted on September 22, 2003 and the northernmost section was purchased by the Conservation Collier Program on July 12, 2004. Previously known as the "Gionet Otter Mound" property for the former owners – Ernest and Gladys Otter and Michael, Mary, and Gary Gionet – it was renamed Otter Mound Preserve in May 2005. On June 18, 2007, the southernmost part of the preserve was purchased from Harvey and Lisa Karen. Initial preserve activities are identified in Table 1 below.

Table 1: Acquisition History and Status for Otter Mound Preserve

Year	Benchmark
2003	Gionet property initially assessed
2004	Gionet Otter Mound property purchased
2004	Interim Management Plan developed
2005	Gionet Otter Mound property renamed to Otter Mound Preserve
2005	Initial exotic plant and debris removed
2006	Exotics maintenance started (contracted)
2006	Inter-local Agreement with City of Marco Island developed
2006	Trails created from Hurricane Wilma debris and post and rope fence installed
2006	Over 200 native species planted
2006	Karen property initially assessed
2007	Bench, garbage cans, plant identification signs, three interpretive signs, entrance sign, sidewalk, and three parking spaces installed (all contracted except plant ID signs)
2007	Preserve opened to the public in March
2007	0.68 acre Karen parcel purchased
2007	Final management plan completed

1.1 Purpose of the Project and Scope of Plan

The purpose and scope of this management plan is to provide management direction for Otter Mound Preserve by identifying the goals and objectives necessary to eliminate or minimize any threats to the resources and integrity of the preserve. This text is a working document that establishes the foundation for the ten-year plan by identifying the appropriate management techniques necessary to preserve and/or restore the resource. This plan will balance resource restoration and protection with passive public recreational and educational use while looking at restoration needs, listed species protection, archaeological/historical feature protection, and invasive exotic plant and species maintenance. This plan is divided into sections that incorporate an introduction; descriptions of the natural and cultural resources; projected uses of the property; and management issues, goals, and objectives.

This management plan will be submitted to the Conservation Collier Land Acquisition Advisory Committee (CCLAAC) and the Collier County Board of County Commissioners (BCC) for their approvals. When approved, this plan will replace the Interim Management Plans prepared by Conservation Collier staff in September 2004 (Gionet section) and July 2007 (Karen section).

1.2 Location

Otter Mound Preserve is located at 1831 Addison Court within the City of Marco Island, in Collier County, Florida. Lying in the middle of the semi-circle formed by East, West and South Inlet Drive, the preserve is bound on the north by Addison Court and on the southwest by Ocseola Court. The site location is shown in Figure 1. The legal description is attached as Appendix 2.

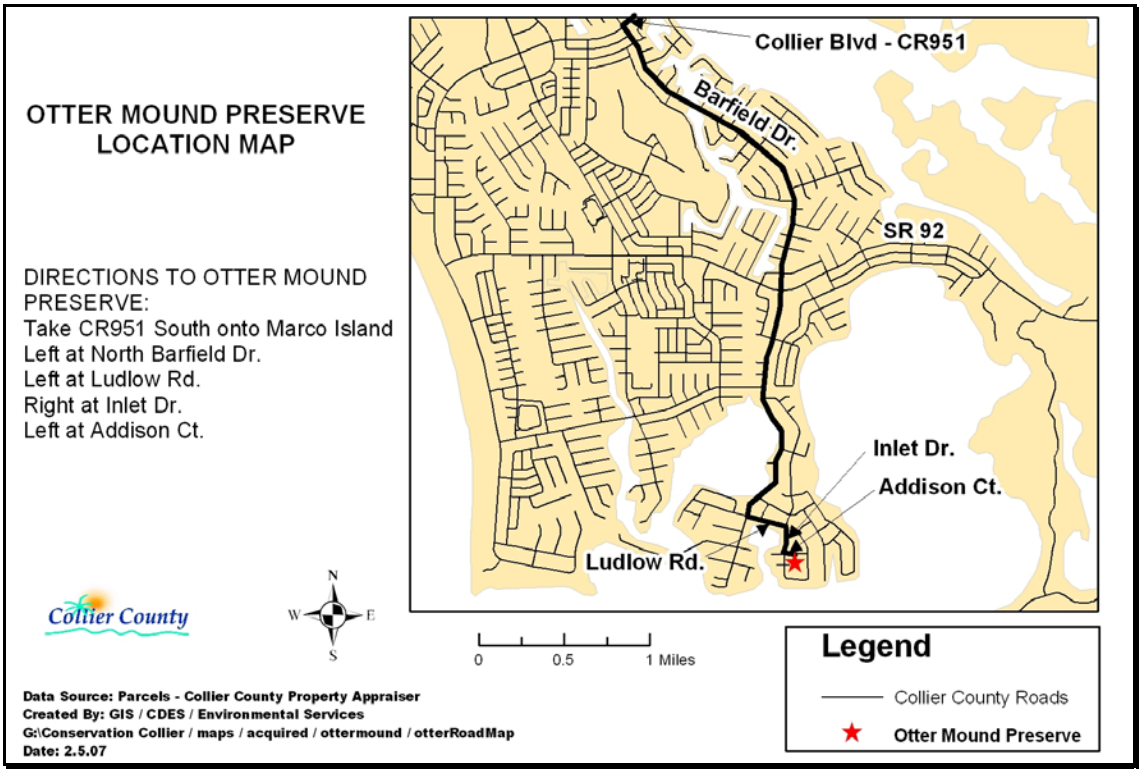


Figure 1: Otter Mound Preserve Location

Figure 2: Otter Mound Preserve 2007 Aerial View

1.3 Regional Significance of Otter Mound Preserve

Despite having 867,000, or 64%, of County lands protected by conservation status, Collier County has lost, and is losing, many of its rare and unique habitats. The Conservation Collier Ordinance 2002-63 (available from www.municode.com) identifies these specific habitats and gives preference to them in acquisition evaluations. These habitats include, in order of preference: tropical hardwood hammock, xeric oak scrub, coastal strand, native beach, riverine oak, high marsh (saline), and tidal freshwater marsh. Otter Mound Preserve was purchased because it contains tropical hardwood hammock habitat. In addition, the preserve contains the following features that make it an important archaeological and historical site: undisturbed Calusa shell mounds, a historic pioneer structure (outhouse), and historic man-made shell terracing that runs along the northern and western sections of the property. The location of the preserve in the urban area provides an opportunity for citizens, visitors, and school-age children to view this habitat type without traveling far.

The preserve serves as an important stopover site for a variety of migratory bird species, and it is home to the Florida tree snail *(Liguus fasciatus)* – a Florida Fish and Wildlife Conservation Commission (FFWCC) Species of Special Concern. In addition, Otter Mound Preserve contains seven state listed plant species: Curacao bush *(Cordia globosa)*, giant wild pine *(Tillandsia utriculata)*, Florida thatch palm *(Thrinax radiata)*, Satin leaf *(Chrysophyllum oliviforme)*, Red stopper *(Eugenia rhombea)*, Lignum vitae *(Guaiacum sanctum)*, and barbed-wire cactus *(Acanthocereus tetragonus)*. The protection and management of these listed species and their habitat is critical to their long-term existence in Collier County and in Florida.

1.4 Nearby Public Lands and Designated Water Resources

The closest preserve to Otter Mound is Rookery Bay National Estuarine Research Reserve (RBNERR), a 110,000-acre preserve surrounding Marco Island. Other preserves, in order of increasing distance, are identified in Table 2 below.

Table 2: Public lands and designated water resources located near Otter Mound Preserve

Preserve	Distance (miles)	Direction	Type
Rookery Bay NERR	0.15	S	National
Ten Thousand Islands National Wildlife Refuge	3.0	E	National
Collier Seminole State Park	5.0	N and E	State
Picayune Strand State Forest	9.0	NE	State
Fakahatchee Strand Preserve State Park	11.5	NE	State
Everglades National Park	12.5	S and E	National
Gordon River Greenway Preserve	18.0	N	County
Big Cypres National Preserve	20.0	E	National

Figure 3: Natural Areas and Designated SFWMD Conservation Easements Existing in Collier County

1.5 Management Authority

Lands acquired by Conservation Collier are titled to "COLLIER COUNTY, a political subdivision of the State of Florida, by and through its Conservation Collier Program." Under the Conservation Collier Ordinance, the Collier County Conservation Collier Program holds management authority for all Conservation Collier Program lands. The City of Marco Island assists with specific management tasks for Otter Mound Preserve, as identified in the Interlocal Agreement (Appendix 1).

1.6 Public Involvement

Neighborhood involvement will be sought through direct mailing notice for public meetings to residents within the surrounding area, owners of properties that border the preserve, and organizations with an interest in the preserve (City of Marco Island, Marco Island Historical Society, Southwest Florida Archaeological Society, Archaeological and Historical Conservancy, Inc.). Any major changes or management activities that are likely to be intrusive or in some way affect neighboring properties will be reviewed with these contacts prior to conducting the activity. Staff will also seek volunteers through these contacts (Appendix 3).

2.0 Natural and Cultural Resources

2.1 Physiography

2.1.1 Topography and Geomorphology

A review of a United States Geologicial Survey (U.S.G.S.) 7.5 Minute Series map of the Marco Island area and on-site investigation reveals that a slight mounding exists on the preserve. The elevation is generally between 10 and 15 feet National Geodetic Vertical Datum (NGVD) for most of the site (Lucas & White 2004). Portions of at least six linear depressions ("canals") and six ridges are present in the southwestern portion of the preserve. The middle of the preserve is elevated, relatively flat ground. The eastern side of the preserve contains a complex of elevated knolls and lower zones resembling the central parts of most large shell mounds found in the region. Four deep, historic borrow pits also exist within the eastern section of the preserve (Figures 4 and 5). Fill from these pits was most likely used to create Caxambas Village roadways.

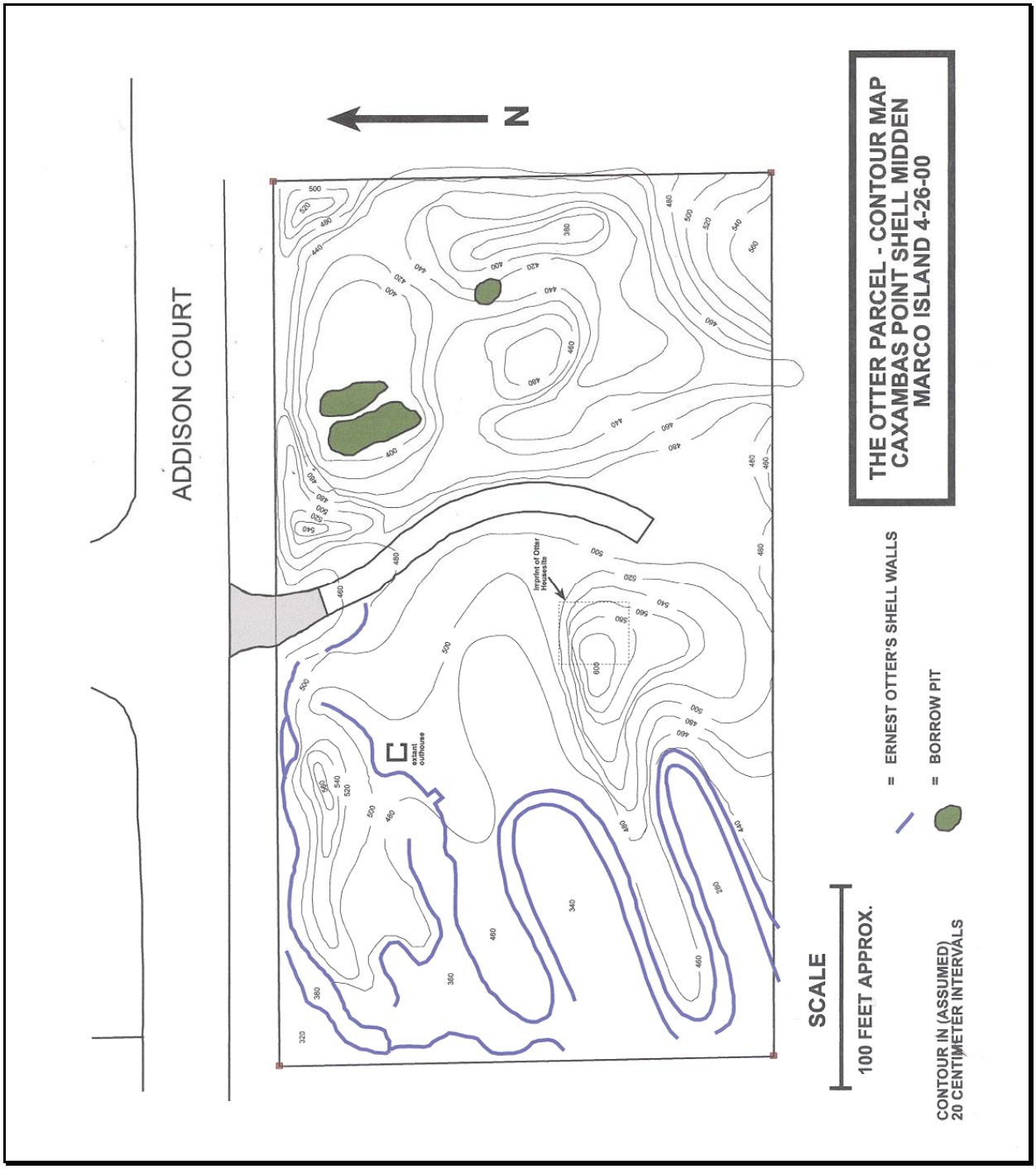
2.1.2 Geology

The geology of the area is characterized by aboriginal shell deposits adjoining and intergrading with surrounding mangrove peat deposits. The peat deposits in turn intergrade and interlayer with marine marls, coastal sand deposits, and naturally occurring shell bar formations that are deposited and altered by sea level fluctuation, storm surge activity, and other coastal energetics. At even greater depths the Holocene deposits give way to elements of the Pleistocene Caloosahatchee formation and various Wisconsian sand terrace features. These marine marls or calcified "muds" contain lenses and deposits of clay intermixed with varying percentages of sand (Beriault & Carr 2000).

2.1.3 Soils

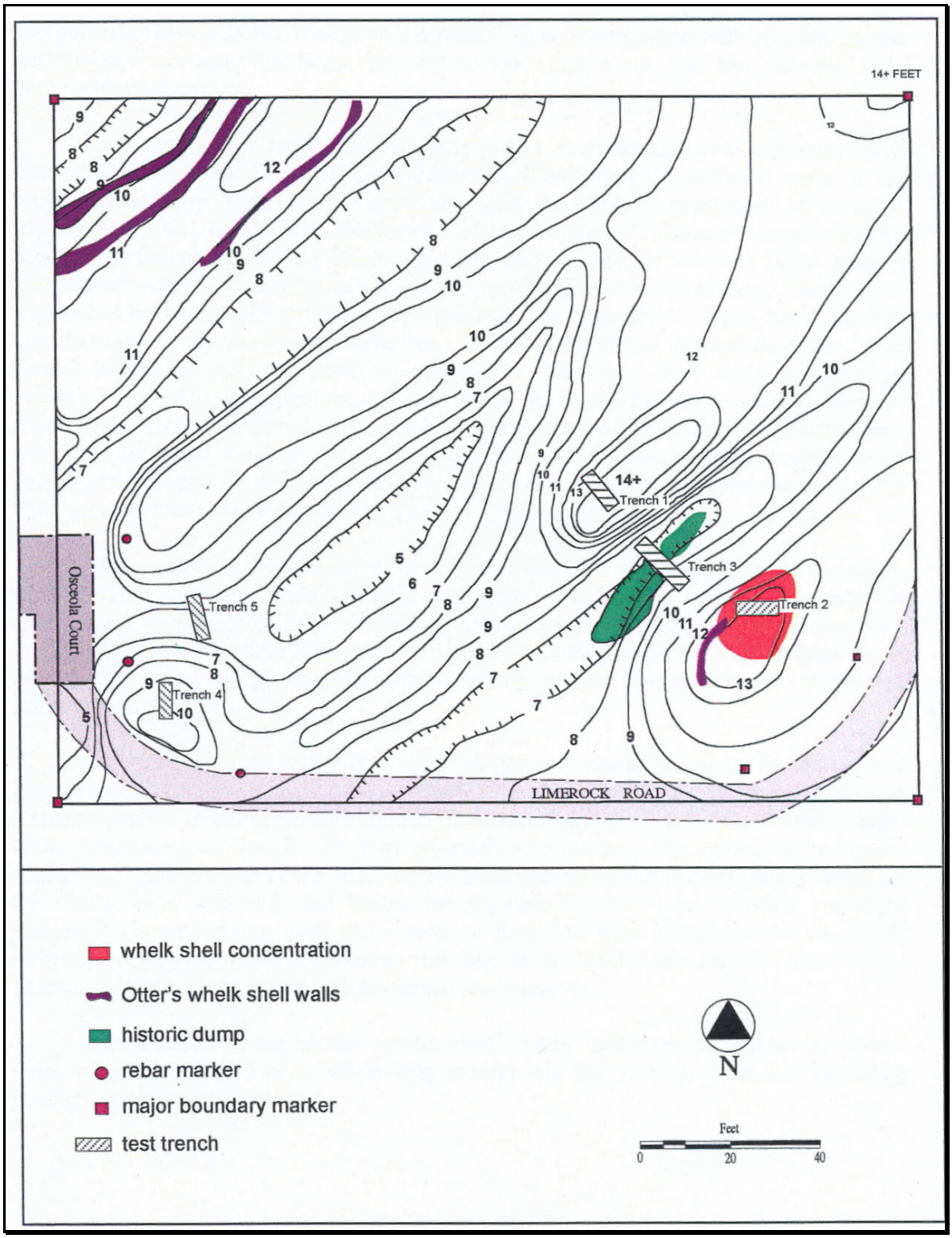
Soils data is based on the Soil Survey of Collier County, Florida (USDA/NRCS 1990, rev. 1998). Mapped soils on the preserve show the entire area to be urban land – aquents complex, organic substratum. This soil consists of urban land soil materials that have been dug from different areas in the county and have been spread over organic muck soils for coastal urban development (Lucas & White 2004).

Otter Mound Preserve lies on a slight topographic high that is associated with a Calusa shell mound. Shell mound soils are composed of shells and shell fragments with an organic component derived from forest litter. The soil generally is circum-neutral to slightly alkaline (pH = 7-8) and contains 1-20% organic materials. The loose collection of shells allows water to drain extremely rapidly. The calcareous substrate and coastal location of shell mounds often permit tropical or subtropical species of plants to grow much further north than their normal range on other substrates permits [Florida Natual Areas Inventory (FNAI) & Florida Department of Natural Resources (FDNR) 1990]. Figure 6 shows the substrate profile of one 3-meter trench dug by the Archaeological and Historical Conservancy, Inc. at Otter Mound Preserve.



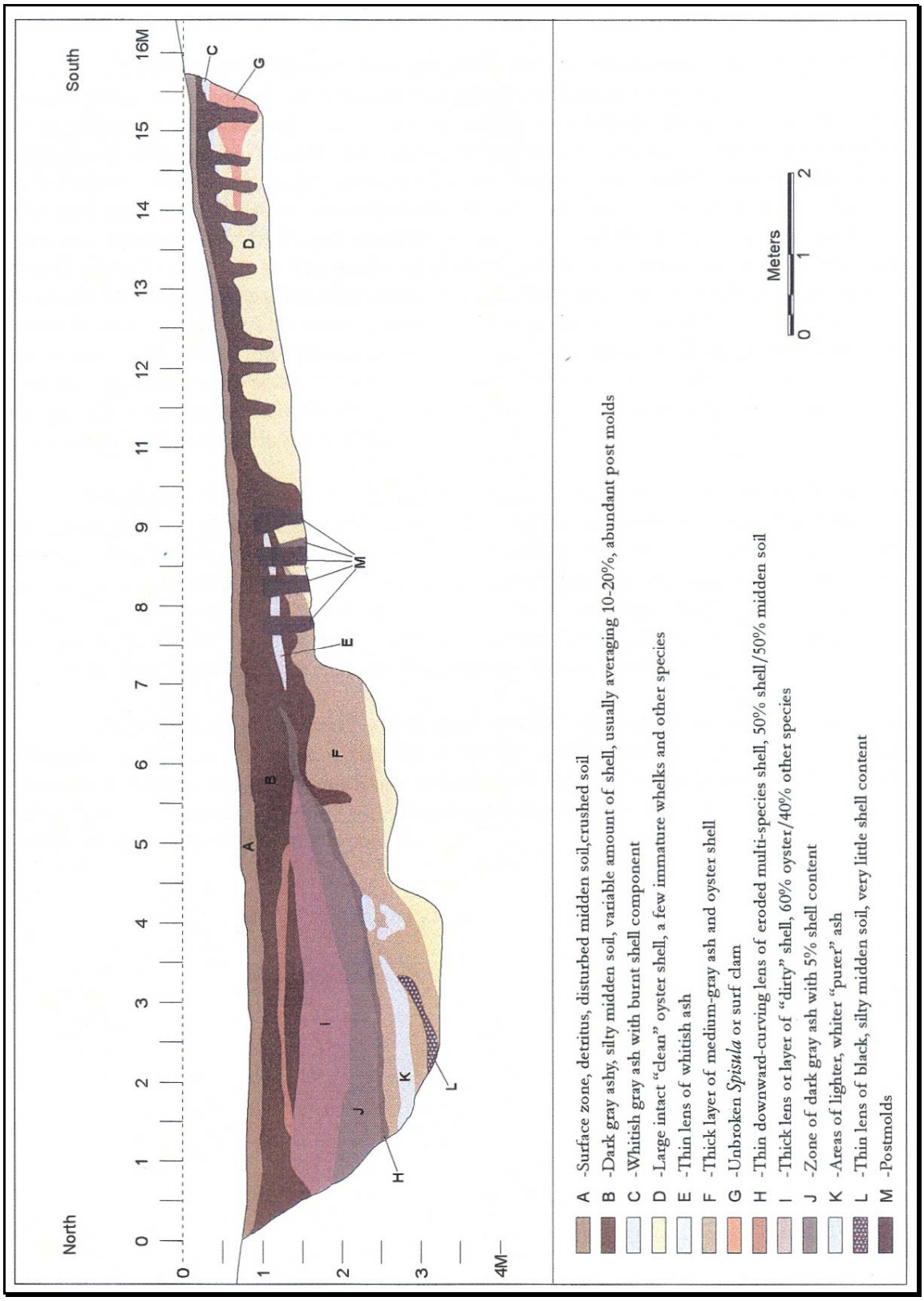
Map provided by John Berialt, Archaeological and Historical Conservancy, Inc.

Figure 4: Otter Mound Preserve North Contour Map



Map provided by John Berialt, Archaeological and Historical Conservancy, Inc.

Figure 5: Otter Mound Preserve South Contour Map



Map provided by John Berialt, Archaeological and Historical Conservancy, Inc.

Figure 6: Otter Mound Preserve Substrate Profile

2.1.4 Hydrology/Water Management

Surface water drains quickly through the Otter Mound Preserve soil/substrate. Water does not pool in any area of the site, even after heavy rain events. Water management does not appear to be an issue at the site.

2.2 Climate

Otter Mound Preserve is located in an area of Florida that is overlapped by a humid subtropical climate and a tropical savanna climate in which temperatures are moderated by winds from the Gulf of Mexico and the Atlantic Ocean. A tropical savanna climate is characterized by sharply delineated wet and dry seasons and average monthly temperatures greater than 64º Fahrenheit. Monthly rainfalls may exceed 10 inches during the wet season. Humid subtropical climates are characterized by less extreme rainfall fluctuations between wet and dry seasons and average monthly temperatures less than 64º Fahrenheit in some months.

The average annual temperature for the coastal portion of Collier County is approximately 75º Fahrenheit. The warmest months are usually July and August. The humidity is high during these months, but frequent afternoon thunderstorms prevent excessively high temperatures.

Two-thirds of the annual rainfall occurs in the wet season, which is from May to October. Thunderstorms are frequent during the wet season, occurring on average every two out of three days between June and September. Rainfall records for the area indicate that there is no significant variation in the annual rainfall throughout much of the county; however, large variations often occur within a single year. The hurricane season extends from June through November, with peak activity occurring in September and October when ocean temperatures are warmest (URS 2007).

2.3 Natural Communities

Table 3: Summary of Natural Communities

FNAI Natural Community Type	# Acres	% of Area	Global Rank	State Rank	Comments
Shell Mound	2.46	100%	G2	S2	3 gopher tortoise burrows located, 0 live gopher tortoise seen Florida tree snail population present

2.3.1 Shell Mound

Otter Mound Preserve consists entirely of Shell Mound, as defined by FNAI & FDNR (1990). This natural community type, synonymous with tropical hardwood hammock, is largely a result of the activities of the Calusa, instead of natural physical factors. Shell Mound is generally characterized as an elevated mound of mollusk shells and aboriginal garbage on which a hardwood, closed-canopy forest develops. Their coastal, usually insular, location generally protects Shell Mounds from fire, but subjects them to marine influences, including high winds, hurricanes, salt spray, high insolation, and storm surge. Typical shell mound plants include: gumbo-limbo*(Bursera simaruba)*, cabbage palm *(Sabal palmetto)*, mastic *(Sideroxylon foetidissimum)*, red cedar *(Juniperus virginiana)*, hackberry *(Celtis occidentalis)*, live oak

(Quercus virginiana), Florida privet *(Forestiera segregata)*, coral bean *(Erythrina herbacea)*, marlberry *(Ardisia escallonioides)*, saffron plum *(Sideroxylon celastrinum)*, coontie *(Zamia pumila)*, and others. The species vegetation composition on Otter Mound Preserve varies slightly. While no red cedar, saffron plum, or coontie are present, species such as soapberry *(Sapindus saponaria)*, strangler fig *(Ficus aurea)*, Jamaican dogwood *(Piscidia piscipula)*, and yellow elder *(Tecoma stans)* are common. The previous use of the preserve as an early 1900's home-site also led to the introduction of many non-native species such as: mango *(Mangifera indica)*, royal poinciana *(Delonix regia)*, guava *(Psidium guajava)*, oyster plant *(Tradescantia spathacea)*, air potato *(Dioscorea bulbifera)*, coral vine *(Antigonon leptopus)*, and others. Aerial photographs from 1952 show that much of the present day preserve was wooded, while surrounding parcels were almost completely cleared. More recent development in the 1960s further affected the surrounding lands (Figure 7).

1952 Aerial Courtesty of USGS

2006 Aerial Courtesy of Collier County Property Appraiser

Figure 7: Historic Aerials

2.3.2 Existing Habitat Conditions 2007

In June 2005 a large amount of mature Brazilian pepper *(Schinus terebinthifolius)* was removed from the northern section of the preserve, significantly reducing the canopy cover. Subsequently, in October 2005, Hurricane Wilma passed through Marco Island. The combined effect of invasive exotic removal and Hurricane Wilma damage resulted in 0% canopy coverage in some sections of the preserve. During June and July of 2006, 331 native plants (85 trees, 87 shrubs, and 159 groundcovers) were planted within the barest areas of the preserve (Figure 9). A planting list is attached as Appendix 5.

Irrigation supplement gel was planted with each plant to aid in establishment because no irrigation was available at the preserve. The gel, consisting of 95% water and 5% cellulose, was planted with the root ball of each plant and provided supplemental irrigation for approximately 30 days.

All the soil material within each plant hole was sifted and surveyed for artifacts by members of the Southwest Florida Archeological Society. All artifacts that were found are housed at the Collier County Museum in Naples. Because of the archaeological nature of the site, only plants in 3-gallon pots or smaller were planted. As a result, canopy coverage in the northern section of the preserve has been slow to recover, despite a high planting survival rate (Figure 8).

Photo by Melissa Hennig.

Figure 8: Sparse vegetation within planting area one year after planting – July 18, 2007.

Figure 9: Otter Mound Preserve 2006 Summer Planting

2.4 Plant and Animal Species

The 2.46-acre Otter Mound Preserve tropical hardwood hammock provides food and cover for resident and migratory species of animals that typically use such habitat.

One hundred and twenty-seven (127) plant species have been recorded at Otter Mound (Appendix 6). Data were collected by botanist James N. Burch, PhD. in January, February, and July 2007. Of these 127 species, 93 (73.2%) are native to the site and 34 (26.8%) are exotic.

Occurrences of fauna at the preserve are based on direct visual and aural observations by Collier County personnel during site visits, evidence of activity such as spoor, scat, or burrows, and available site information. Mammal species known to occur or individuals and/or evidence of activity directly observed within the preserve include the Virginia opossum (*Didelphis virginiana*), nine-banded armadillo (*Dasypus novemcinctus*), raccoon (*Procyon lotor*), and eastern gray squirrel (*Sciurus carolinensis*).

Bird observations by Collier County staff are included in Table 4. Fifty-seven different species of birds have been observed to date.

Table 4: Otter Mound Preserve Bird Observations

Scientific Name	Common name
Accipiter cooperii	Cooper's Hawk
Accipiter striatus	Sharp-shinned Hawk
Archilochus colubris	Ruby-throated Hummingbird
Buteo lineatus	Red-shouldered Hawk
Cardinalis cardinalis	Northern Cardinal
Cathartes aura	Turkey Vulture
Catharus ustulatus	Swainson's Thrush
Coccyzus americanus	Yellow-billed Cuckoo
Columbina passerina	Common Ground-Dove
Contopus virens	Eastern Wood-Pewee
Coragyps atratus	Black Vulture
Corvus brachyrhynchos	American Crow
Corvus ossifragus	Fish Crow
Cyanocitta cristata	Blue Jay
Dendroica caerulescens	Black-throated Blue Warbler
Dendroica castanea	Bay-breasted Warbler
Dendroica discolor	Prairie Warbler
Dendroica fusca	Blackburnian Warbler
Dendroica magnolia	Magnolia Warbler
Dendroica palmarum	Palm Warbler
Dendroica pensylvanica	Chestnut-sided Warbler
Dendroica petechia	Yellow Warbler
Dendroica striata	Blackpoll Warbler
Dryocopus pileatus	Piliated Woodpecker
Dumetella carolinensis	Gray Catbird
Empidonax minimus	Least Flycatcher
Eudocimus albus	White Ibis
Fregata magnificens	Magnificent Frigatebird

Scientific Name	Common name
Geothlypis trichas	Common Yellowthroat
Hirundo rustica	Barn Swallow
Hylocichla mustelina	Wood Thrush
Lanius ludovicianus	Loggerhead Shrike
Melanerpes carolinus	Red-bellied Woodpecker
Mimus polyglottos	Northern Mockingbird
Mniotilta varia	Black-and-white Warbler
Myiarchus crinitus	Great Crested Flycatcher
Parula americana	Northern Parula
Passerina caerulea	Blue Grosbeak
Passerina cyanea	Indigo Bunting
Pelecanus occidentalis	Brown Pelican
Piranga olivacea	Scarlet Tanager
Piranga rubra	Summer Tanager
Polioptila caerulea	Blue-gray Gnatcatcher
Quiscalus major	Boat-tailed Grackle
Quiscalus quiscula	Common Grackle
Seiurus aurocapilla	Ovenbird
Setophaga ruticilla	American Redstart
Streptopelia decaocto	Eurasian Collared-Dove
Sturnus vulgaris	European Starling
Toxostoma rufum	Brown Thrasher
Tyrannus tyrannus	Eastern Kingbird
Vermivora chrysoptera	Golden-winged Warbler
Vermivora peregrina	Tennessee Warbler
Vireo flavifrons	Yellow-throated Vireo
Vireo griseus	White-eyed Vireo
Vireo olivaceus	Red-eyed Vireo
Zenaida macroura	Mourning Dove

The Breeding Bird Atlas documents breeding distributions of all bird species in Florida between 1986 and 1991 (FFWCC 2003). It lists 62 bird species that have been recorded as confirmed, probable, or possible breeding in the vicinity of Otter Mound Preserve (in the Marco Island USGS quadrangle). These species are listed in Appendix 7.

Reptile and amphibian species observed at the preserve include brown anole (*Anolis sagrei*), green anole (*Anolis carolinensis*), southern black racer (*Coluber constrictor priapus*), ring neck snake (*Diadophis punctatus*), and greenhouse frog (*Eleutherodactylus planirostris*). Neighbors have also reported observing coral snakes (*Micrurus fulvius*) near the property.

Invertebrates observed at the preserve include cloudless sulphur butterfly (*Phoebis sennae*), eastern tiger swallowtail butterfly *(Papilio glaucus)*, whip scorpion (*Mastigoproctus giganteus*), Florida tree snail (*Liguus fasciatus*), and various wasp species.

Other wildlife species that have not been recorded undoubtedly occur at Otter Mound Preserve. During migration periods, transient bird species utilize this area for short periods of time. The developed character of the adjacent properties may inhibit transient use by many mammal, reptile, and amphibian species, thus possibly limiting the utilization of the preserve to resident individuals or inhibiting the dispersal of many species to and from the preserve.

2.5 Listed Species

2.5.1 Listed Plant Species

There are 7 plant species at Otter Mound that are listed by the Florida Department of Agriculture and Consumer Services, 5 as Endangered and 2 as Threatened. FNAI lists 1 species as Critically Imperiled in Florida, and 2 species as Imperiled in Florida. There are no species listed as Endangered or Threatened by the U.S. Fish and Wildlife Service (Table 5).

Table 5: Rare Plant Species at Otter Mound Preserve

Scientific Name	Common Names	State	FNAI
Acanthocereus tetragonus	Barbed-wire cactus	T	
Chrysophyllum oliviforme	Satin leaf	T	
Cordia globosa	Curacao bush	E	
Eugenia rhombea	Red stopper	E	S1
Guaiacum sanctum	Lignum vitae	E	G2, S2
Thrinax radiata	Florida thatch palm	E	S2
Tillandsia fasciculata	Stiff-leaved wild pine	E	

E: Endangered, T: Threatened, C: Commercially Exploited, S1: Critically Imperiled in FL, S2: Imperiled in FL, G2: Imperiled Globally

Barbed-wire Cactus *(Acanthocereus tetragonus)*

This cactus is endemic to peninsular Florida where it has been reported from 6 southern counties (Wunderlin & Hansen 2006). This plant is present within the eastern portion of Otter Mound Preserve, located off the trail.

Barbed-wire Cactus *(Acanthocereus tetragonus)*
Photo by Shirley Denton

Satin leaf *(Chrysophyllum oliviforme)*
Photo by Shirley Denton

Satin Leaf (*Chrysophyllum oliviforme)*
This medium to large sized tree is endemic to peninsular Florida where it has been reported from 10 counties (Wunderlin & Hansen 2006). Sixteen satin leaf trees were planted in June 2006. No other satin leaf trees were known to exist at Otter Mound prior to these plantings.

Curacao bush *(Cordia globosa)*
This rare understory shrub is endemic to peninsular Florida where it has been reported from 3 counties (Wunderlin & Hansen 2006). . Two curacao bushes were planted in June 2006. It is unknown whether any curacao bushes existed at Otter Mound Preserve prior to these plantings.

Curacao bush (*Codia globosa*)
Photo by T. Ann Williams

Red Stopper (*Eugenia rhombea*)
Photo by T. Ann Williams

Red Stopper *(Eugenia rhombea)*
This very rare understory shrub is endemic to peninsular Florida where it has been reported from 2 counties (Wunderlin & Hansen 2006).). Two red stoppers were planted in June 2006. No other red stoppers were known to exist at Otter Mound prior to these plantings.

Lignum vitae *(Guaiacum sanctum)*
Photo by Walter Hodge

Lignum vitae *(Guaiacum sanctum)*
This very rare small tree is endemic to South Florida and the Florida Keys where (Wunderlin & Hansen 2006). One Lignum vitae was planted at the entrance of the preserve in July 2007. No other Lignum vitaes were known to exist at Otter Mound prior to this planting.

Florida Thatch Palm *(Thrinax radiata)*
This small palm is endemic to South Florida and the Florida Keys where it has been reported from 3 counties (Wunderlin & Hansen 2006). One palm is present near the entrance of the preserve.

Florida Thatch Palm (Thrinax radiata)
Photo by T. Ann Williams

Stiff-leaved Wild Pine *(Tillandsia fasciculata)*
Photo by Shirley Denton

Stiff-leaved Wild Pine *(Tillandsia fasciculata)*
This air plant is abundant throughout South Florida. Several are present within Otter Mound Preserve.

Additional rare plant species may be found at Otter Mound Preserve following further field surveys. Confirmation of rare plant identifications will be made by a qualified botanist.

2.5.2 Listed Wildlife Species

Listed wildlife species observed onsite include the Florida tree snail *(Liguus fasciatus)* and brown pelican *(Pelecanus occidentalis).* Although, no live gopher tortoises (*Gopherus polyphemus*) have been observed on site, three gopher tortoise burrows have been located. One crushed, dead gopher tortoise was observed near the center of the preserve in July 2005. A map has been prepared by staff showing locations of existing gopher tortoise burrows; however, it is not appended to this plan to protect the burrows from disturbance.

A brief description of observed species and their status is included in the following paragraphs.

Florida Tree Snail *(Liguus fasciatus)*

This large land mollusk - a species of Special Concern in Florida – is generally found on smooth-barked trees in native hammocks. The color patterns of the Florida tree snail are extremely variable. At this time, there are 58 named color forms in south Florida and the Florida Keys (Davidson 1965; Jones 1979), with others in Cuba.

The yearly life cycle of the *Liguus* begins in the spring with the first warm rains. Eggs hatch and adult snails "wake" up from their aestivation (hibernation). The snails grow, mate, and lay eggs from spring thru fall, mid to end of May through November. Aestivation usually begins around the first cool weather in October or November. These events can be triggered or stopped by localized weather conditions (Power 2005).

Brown Pelican *(Pelecanus occidentalis)*

This bird – a species of Special Concern in Florida - is a permanent resident of the coastal marine environment from central North America southward to northern South America. Brown Pelicans are found in shallow warm coastal marine and estuarine waters, particularly on sheltered bays (Shields 2002). These birds occasionally use Otter Mound Preserve as a resting area.

Brown Pelican *(Pelecanus occidentalis)*
Photo by Michael Costello

Within Otter Mound Preserve, FNAI has no documented occurrence of any listed wildlife species (Appendix 4). However, the FNAI database report indicates that 20 listed species have the potential to occur at the preserve based on their known or predicted range. At least 13 of these 20 species could utilize the tropical hammock community at the preserve (Table 6).

Table 6: Rare wildlife species with the potential to occur at Otter Mound Preserve

Scientific Name	Common Names	Federal	State	FNAI
Haliaeetus leucocephalus	Bald eagle	T, PDL	T	G5, S3
Ardea herodias occidentalis	Great white heron			G5T2, S2
Athene cunicularia floridana	Florida burrowing owl		SSC	G4T3, S3
Dendroica discolor paludicola	Florida prairie warbler			G5T3, S3
Drymarchon couperi	Eastern indigo snake	T	T	G3, S3
Eumops floridanus	Florida bonneted bat		E	G1, S1
Gopherus polyphemus	Gopher tortoise		SSC	G3, S3
Mustela frenata peninsulae	Florida long-tailed weasel			G5T3, S3
Patagioenas leucocephala	White-crowned pigeon		T	G3, S3
Rallus longirostris scottii	Florida clapper rail			G5T3?, S3?
Rostrhamus sociabilis plumbeus	Snail kite	E	E	G4G5T3Q, S2
Sceloporus woodi	Florida scrub lizard			G3, S3
Ursus americanus floridanus	Florida black bear		T	G5T2, S2

E: Endangered, T: Threatened, PDL: Currently Threatened but proposed for de-listing, S1: Critically Imperiled in FL, S2: Imperiled in FL, S3: Very Rare in FL or Restricted in its FL range, G1: Critically Imperiled Globally, G2: Imperiled Globally, G3: Very Rare Globally or Restricted in its range, G4: Apparently Secure Globally, G5: Demonstrably Secure Globally, G#T#: Rank Globally and Rank of Taxonomic Subgroup, ?: Tentative Rank, Q: Questionable Subspecies, G#G#: Range of Rank

2.6 Invasive Non-native and Problem Species

Thirty introduced plant species have been found at Otter Mound, making up 28.3% of the plant species recorded there. Of these, 10 are considered Category I - Invasive and 7 are considered Category II - Potentially Invasive by the Florida Exotic Pest Plant Council (FLEPPC) (FLEPPC Plant List Committee 2007)(see Table 7).

The most problematic invasive plant species at Otter Mound are Brazilian pepper (*Schinus terebinthifolius*), air-potato (*Dioscorea bulbifera*), and bowstring hemp (*Sansevieria hyacinthoides*). Large amounts of Brazilian pepper were removed from the western section of the preserve in June 2005. Air potato and bowstring hemp are present throughout the preserve and are being maintained. Most of the other species in Table 7 are not yet problematic or only slightly problematic on the site.

Under certain conditions, especially following soil disturbance or drainage, some native plant species can become invasive. There are no native plants species at Otter Mound Preserve that are currently a management problem on the site.

Table 7: Invasive Non-native Species known to Occur at Otter Mound Preserve

Scientific Name	Common Name	EPPC Cat. (2005 list)	County Listed?	Degree Of Infestation
Antigonon leptopus	Coral vine	II		Heavy
Bauhinia sp.	Orchid tree	I		Light
Blechum pyramidatum	Browne's blechum	II		Light
Catharanthus roseus	Madagascar periwinkle			Light
Crinum asiaticum	Poisonbulb			Light
Cupaniopsis anacardioides	Carrotwood	I	Yes - remove	Light
Delonix regia	Royal poinciana			Medium
Dioscorea bulbifera	Air-potato	I	Yes - remove	Heavy
Eugenia uniflora	Surinam cherry	I		Medium
Kalanchoe pinnata	Walking plant	II		Medium
Lantana camara	Lantana	I		Light
Lucaena leucocephala	Leadtree	II		Medium
Melia azedarach	Chinaberry	II	Yes – prohibited to plant	Light
Momordica charantia	Bitter gourd			Heavy
Psidium guajava	Guava	I		Medium
Rhoeo discolor	Oyster plant	I		Medium
Rhynchelytrum repens	Natal grass	I		Medium
Sanseverina hyacinthoides	Bowstring hemp	II		Heavy
Schinus terebinthifolius	Brazilian pepper	I	Yes - remove	Light
Syzygium cumini	Java plum	I	Yes - remove	Light
Tecoma stans	Yellow elder			Medium
Wedelia trilobata	Wedelia	II	Yes –restricted near preserves	Light

2.7 Archaeological, Historical and Cultural Resources

Otter Mound Preserve is a small part of the Caxambas Point archaeological site (8CR107), which was once a 70-80 acre complex of shell features constructed by the Calusa. The site appears to have been constructed and occupied from approximately 750 A.D.-1200 A.D., and the substrate of the ancient mound appears to be relatively undisturbed.

Historic Outhouse
Photo by Doug Suitor

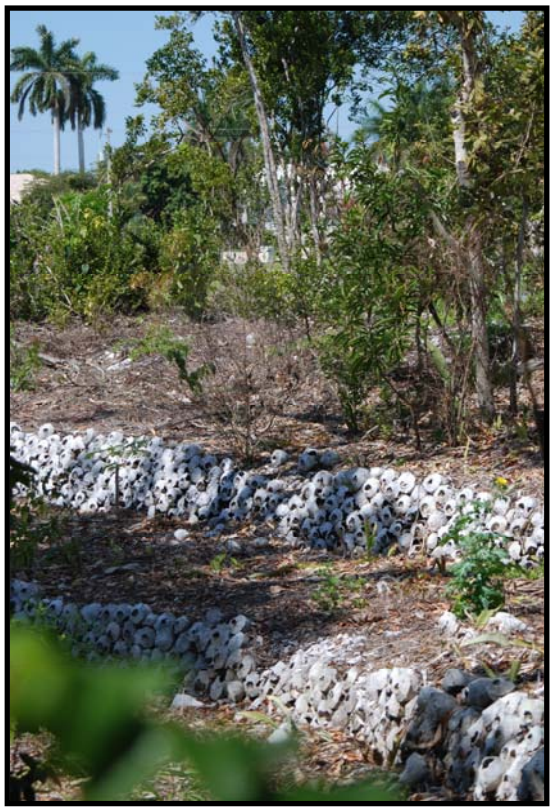
The preserve was also once part of Caxambas Village. In the early 1900's Caxambas Village was a thriving community which grew with the Marco Island clamming industry. Jim and Tommie Barfield, influential citizens in the history of Marco Island, once owned the property that is present day Otter Mound. They sold it to Charles Griner and his wife in 1919. Prior to 1950, Ernest and Gladys Otter, would vacation in Caxambas Village, spending the winters at the Griner's home. Eventually Mrs. Griner sold the property to the Otters after her husband's death in 1950. By all accounts, the whelk shell terracing throughout the preserve was

constructed by Mr. Otter sometime in the 1940s, 50s and 60s. It has been reported that Mr. Otter used ancient Calusa whelks (*Busycon* sp.) that he found buried in and around his property to construct the shell terracing. (Beriault & Carr 2000)

A house built in 1923 once stood near the center of the preserve. The home, which was occupied by the Otters until 1977, burned down in 1978. The only structure left within the preserve is a historic out-house located approximately 75-feet north of the old home-site.

2.8 Scenic Resources

The primary scenic resources of this preserve are the whelk shell terracing and the mature hardwood trees. Additionally, the natural buffer created by the vegetation in the preserve allows visitors to experience the feeling of being alone in nature in an urbanized area.



Otter Mound Preserve Whelk Shell Terracing
Photos by Melissa Hennig

3.0 Use of the Property

3.1 Previous Use and Development

The preserve was a homesite dating back to the early 1900s. Previous owners had cleared and farmed much of the land, planting mango, guava, avocado, and Surinam cherry trees that are still present on the property. A home built in the 1920s occupied the site until it burned down in 1978. An old outhouse is the only structure left in the preserve. Nearly all the surrounding land immediately outside the preserve boundaries has been developed with single family homes.

3.2 Current Public Use and Land Uses

The preserve is currently open to the public for use of a walking trail. Three large interpretive signs that present the history of the preserve have been installed along the trail. Small plant identification signs have also been placed within the preserve. These signs are intended to educate visitors and school-age children about the preserve.

Planned Public Uses and Assessment of Impacts

Easements, Concessions, and Leases – There are two easements associated with Otter Mound Preserve. The first easement, as described in Collier County Subdivision Plat Book 39 pages 96 and 97 (Figure 10) and approved by Marco Island City Council on October 7, 2002 as Resolution 02-31, is a 4,051 square foot historical preservation easement along the northwestern boundary of the preserve encompassing a portion of the man-made shell wall and the land surrounding it (Figure 11).

A PRESERVATION EASEMENT OVER A PORTION OF LOT 1 IN FAVOR OF DECLARANT, A HOME OWNER'S ASSOCIATION, THE MARCO ISLAND HISTORICAL SOCIETY, INC., A FLORIDA NON-PROFIT CORPORATION AND THE CITY OF MARCO ISLAND FOR ITS GOVERNMENTAL EMPLOYEES AND ITS SPECIFICALLY DESIGNATED REPRESENTATION, FOR INGRESS, EGRESS AND PRESERVATION AND STUDY OF THE ARCHAEOLOGICAL SHELL WALL AS DEPICTED ON THE PLAT OF LOT 1, ADDISON ESTATES. THE OWNER OF LOT 1 SHALL NOT INTERFERE WITH THIS ARCHAEOLOGICAL ACCESS NOR DIG, CONSTRUCT, PLANT, OR OTHERWISE, DISTURB THE SHELL WALL. THE CONTENTS OF THE SHELL WALL SHALL BE OWNED BY THE HOME OWNER'S ASSOCIATION FOR THE BENEFIT OF THE HISTORICAL SOCIETY OF MARCO ISLAND, INC. AND THE CITY OF MARCO ISLAND. THE HISTORICAL SOCIETY OF MARCO ISLAND, INC. AND THE CITY OF MARCO ISLAND SHALL HAVE THE RIGHT, BUT NOT THE OBLIGATION TO ENFORCE THE PROVISIONS OF THIS PARAGRAPH BY ANY LEGAL OR EQUITABLE REMEDY. IN THE EVENT IT IS NECESSARY TO RESORT TO LITIGATION, TO ENFORCE THEIR RIGHTS AS SET FORTH HEREIN THEN THE PREVAILING PARTY IN ANY LITIGATION SHALL BE ENTITLED TO RECOVER REASONABLE ATTORNEY'S FEES AND COURT COSTS IN CONNECTION THEREWITH.

Figure 10: Shell Wall Preservation Easement Description

In accordance with this easement, the Preserve Manager will advise the City of Marco and the Historical Society of Marco Island of plans prior to doing any work within the boundary of the preservation easement. No Declarations for an Addison Estates Home Owner's Association have been established or recorded in the Collier County public records.

Because the entire property is now under preservation status through Conservation Collier acquisition, this preservation easement may no longer be necessary. The Preserve Manager will coordinate with the City of Marco Island and the Marco Island Historical Society to decide whether to rescind this preservation easement.

The second easement, a 20 foot wide ingress/egress easement exists through the southwestern boundary of the preserve which allows the neighboring property owners access to their home (Figure 12). The easement is solely for the purposes of ingress/egress and is described in the deed of the adjacent property owners (Figure 13). The full deed is attached as Appendix 8. The access road associated with the ingress/egress easement is currently unpaved; however, the easement does not prohibit future paving. Conservation Collier staff will work with the present and future adjacent property owners to encourage them to maintain the easement using only pervious materials.

Landscaping – Large, dense native species will be planted along the western property line, and perhaps along the eastern property line, to screen the neighboring houses from the preserve. All planting will be coordinated with a qualified archaeologist.

Trail Network – There are trails totaling approximately 1,000 feet in length, 375 feet of which are accessible by wheelchair, for public access to the parcel.

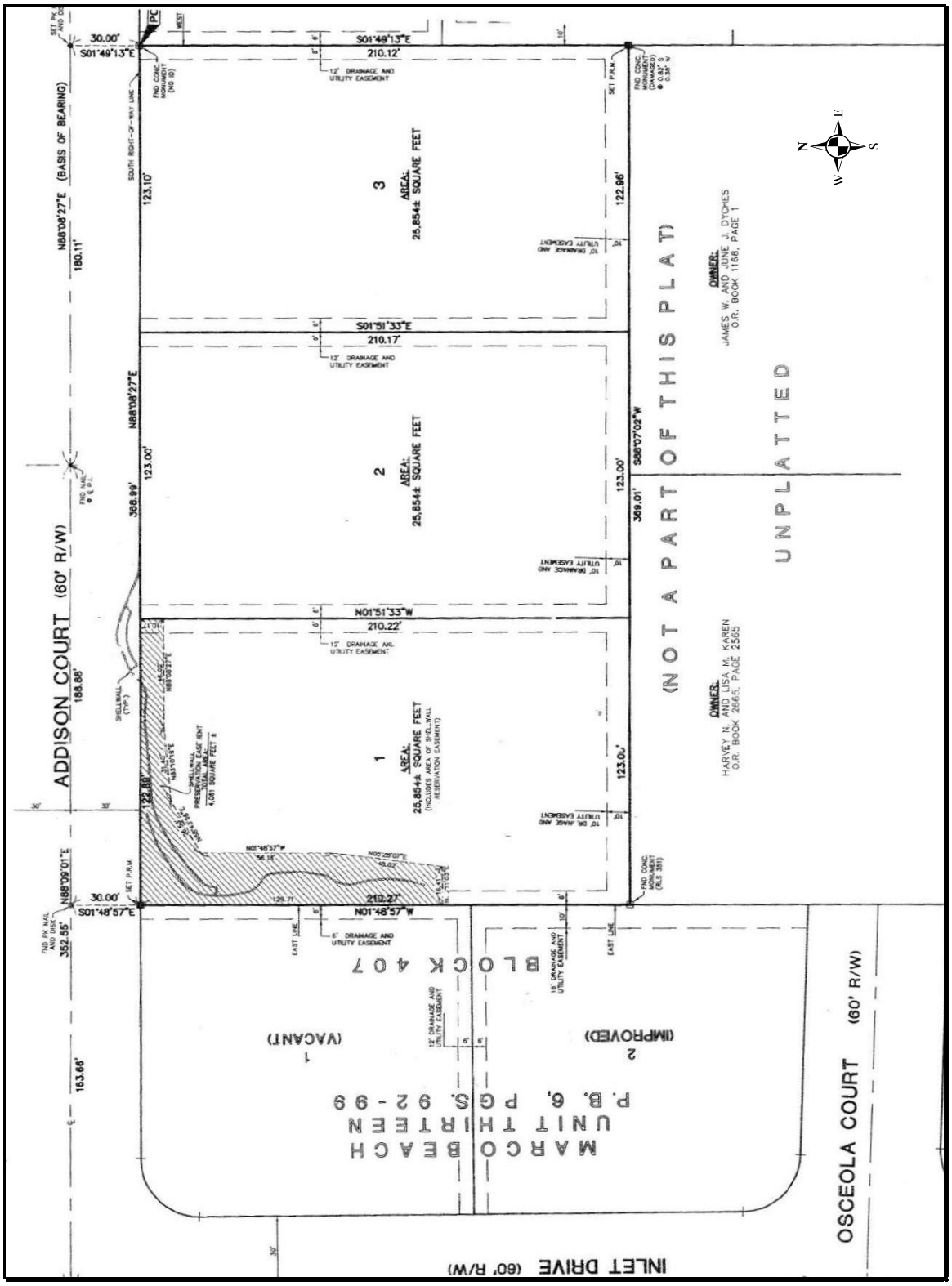


Figure 11: Shell Wall Preservation Easement Map

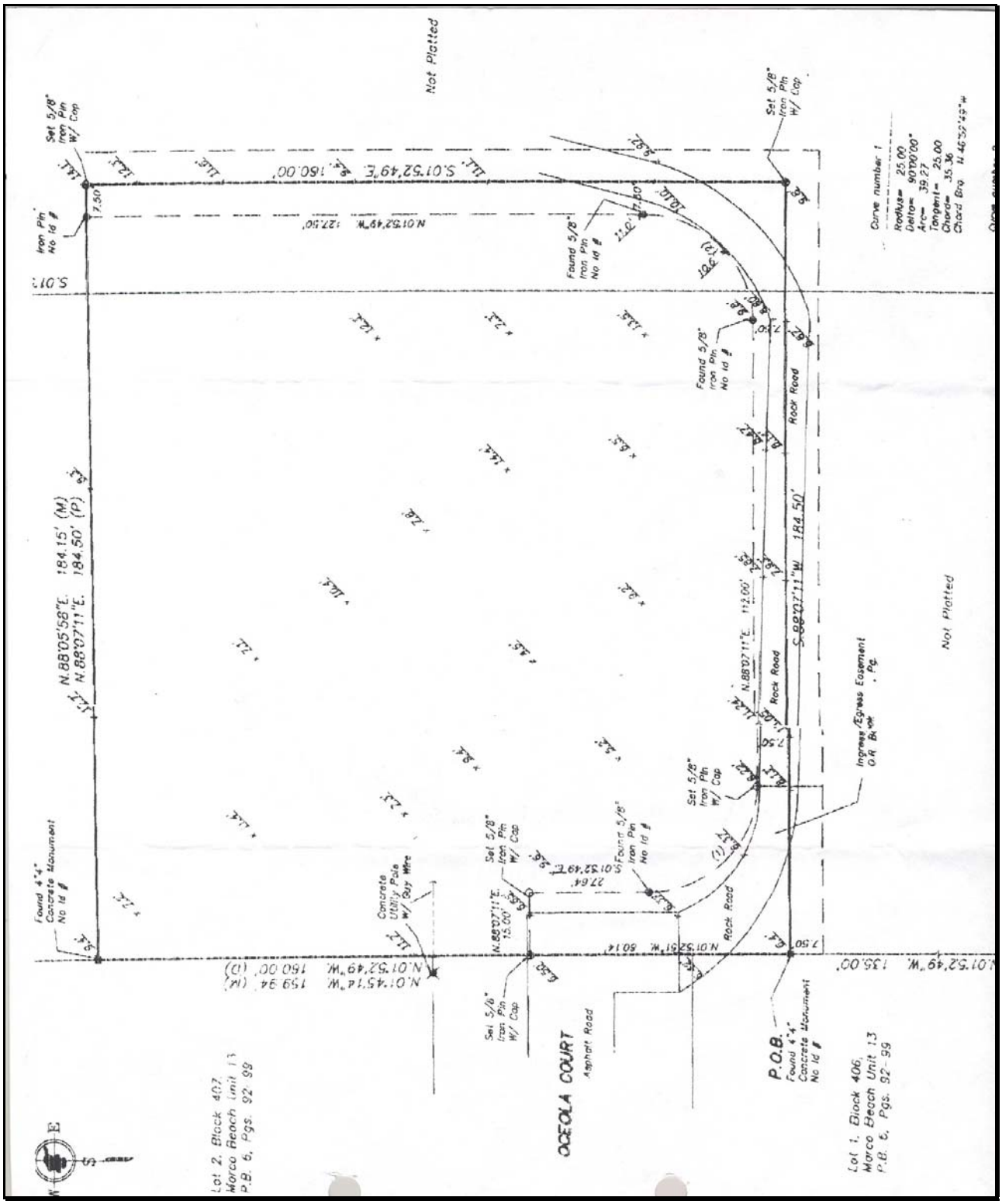
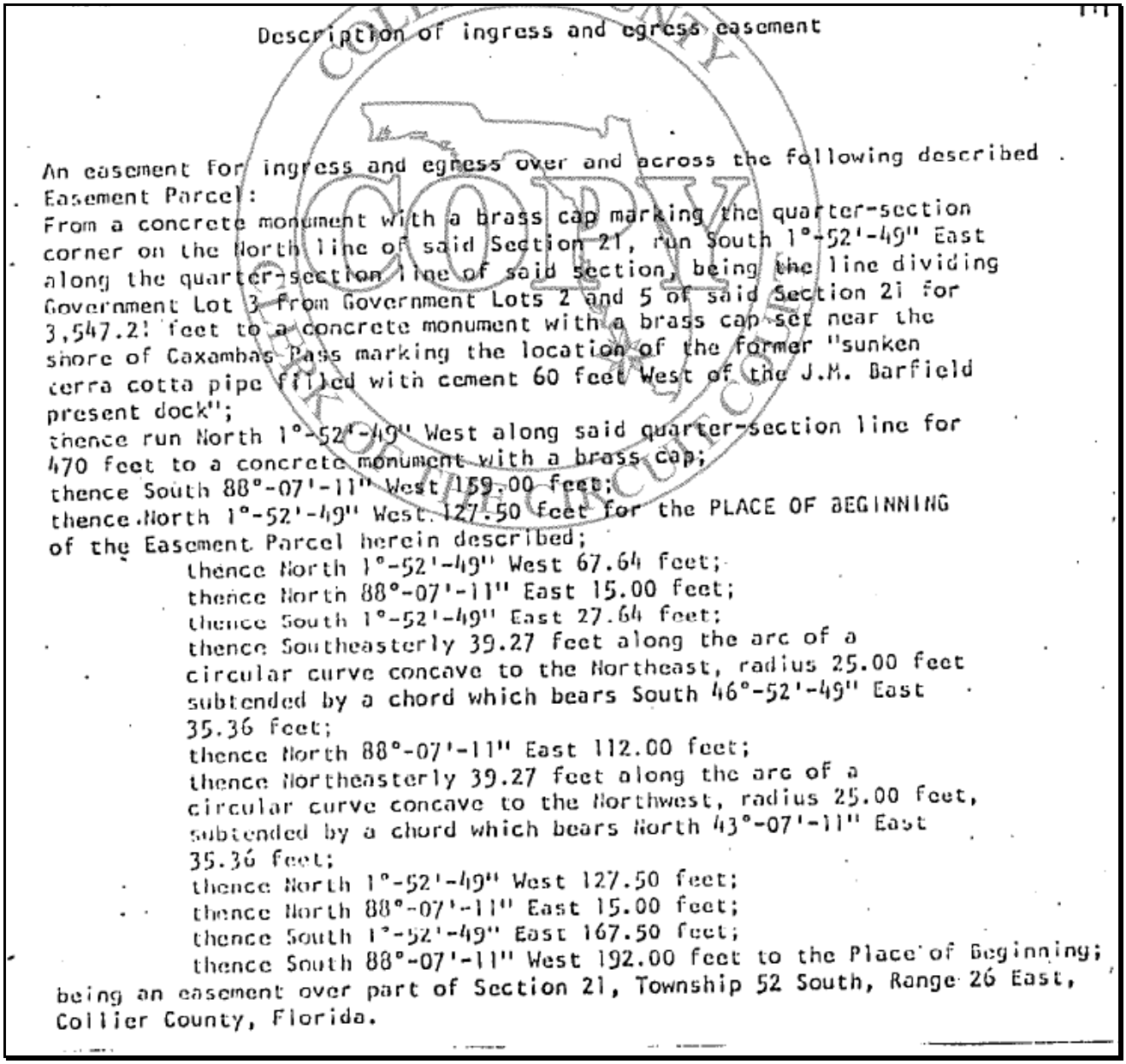


Figure 12: Ingress/Egress Easement Map



Description of ingress and egress easement

An easement for ingress and egress over and across the following described Easement Parcel:
From a concrete monument with a brass cap marking the quarter-section corner on the North line of said Section 21, run South 1°-52'-49" East along the quarter-section line of said section, being the line dividing Government Lot 3 from Government Lots 2 and 5 of said Section 21 for 3,547.21 feet to a concrete monument with a brass cap set near the shore of Caxambas Pass marking the location of the former "sunken terra cotta pipe filled with cement 60 feet West of the J.M. Barfield present dock";
thence run North 1°-52'-49" West along said quarter-section line for 470 feet to a concrete monument with a brass cap;
thence South 88°-07'-11" West 159.00 feet;
thence North 1°-52'-49" West 127.50 feet for the PLACE OF BEGINNING of the Easement Parcel herein described;
thence North 1°-52'-49" West 67.64 feet;
thence North 88°-07'-11" East 15.00 feet;
thence South 1°-52'-49" East 27.64 feet;
thence Southeasterly 39.27 feet along the arc of a circular curve concave to the Northeast, radius 25.00 feet subtended by a chord which bears South 46°-52'-49" East 35.36 feet;
thence North 88°-07'-11" East 112.00 feet;
thence Northeasterly 39.27 feet along the arc of a circular curve concave to the Northwest, radius 25.00 feet, subtended by a chord which bears North 43°-07'-11" East 35.36 feet;
thence North 1°-52'-49" West 127.50 feet;
thence North 88°-07'-11" East 15.00 feet;
thence South 1°-52'-49" East 167.50 feet;
thence South 88°-07'-11" West 192.00 feet to the Place of Beginning;
being an easement over part of Section 21, Township 52 South, Range 26 East, Collier County, Florida.

Figure 13: Ingress/Egress Easement Description

3.3 Adjacent Land Uses

Single-family residential developed lots surround the preserve on all sides. A paved road, Addison Court, runs along the entire north edge of the preserve, and a shell hash road extension of Osceola Court, runs through the southwestern edge of the preserve within the ingress/egress easement.

3.4 Prospective Land Acquisitions

Jim and June Dyches nominated their property to Conservation Collier in August 2007 for consideration in Conservation Collier Acquisition Cycle 5. The property is adjacent to Otter Mound Preserve along the southeastern border, and contains a single family home.

4.0 Management Issues, Goals and Objectives

4.1 Program Framework and Goals

The Conservation Collier Program considers properties of high natural resource value throughout Collier County for acquisition from willing and voluntary participants. Properties must support at least two of the following qualities to qualify for further consideration: rare habitat, aquifer recharge, flood control, water quality protection, and listed species habitat. The Collier County Board of County Commissioners (BCC) appointed a Land Acquisition Advisory Committee to consider any selected or nominated properties that an owner has indicated a willingness to sell. The committee recommends property purchases for final approval by the BCC.

This property will be managed only for protection/restoration of natural and historical/archaeological resources and for passive, outdoor public recreation that will be compatible with the protection/restoration of the site and surrounding lands.

4.1.1 Management Activities to Protect/Restore the Resource

"Each property purchased by Conservation Collier shall have its own management plan. The ordinance requires that an 'Interim' Management Plan be developed within 60 days of purchase and that a 'Final' management plan be developed within two years. After that, property management plans must be updated every five years. Interim plans shall be concerned with basic items such as removal of invasive exotics and trash, establishing site security, developing management partnerships, and planning for public access. All management plans originate in the Lands Evaluation and Management subcommittee and must be approved by both the Conservation Collier Land Acquisition Advisory Committee (CCLAAC) and the Board of County Commissioners."

4.1.2 Manager

The Site Manager for Otter Mound Preserve will be a designated Collier County Environmental Specialist.

4.1.3 Preserve Rules and Regulations

No dumping, use of unauthorized vehicles, or removal or destruction of natural or historical/archaeological resources will be permitted within the preserve. The goal is to allow limited non-destructive public access to native plant communities and animal species. Currently, the preserve rules are those identified in Collier County Ordinance 76-48 (available from www.municode.com), as amended. An ordinance specifically for "Preserves" is in the process of being drafted and is expected to be completed and presented to the Board of County Commissioners for approval during 2007.

4.2 Desired Future Conditions

This section includes a description of the proposed future conditions for the site's natural areas. Management techniques to achieve these conditions are outlined in section 4.4.

After managers complete recommended management actions, Otter Mound Preserve will consist of tropical hardwood hammock habitat that has a similar structure and composition to that which existed prior to modern settlement in the late 1800s. With the exception of the trail, the site will be heavily vegetated with appropriate mature native vegetation that will provide suitable cover for a variety of wildlife species. The main canopy will be comprised of gumbo limbo, soapberry, and mastic. Mid-story will consist of a variety of natives including stoppers, black-bead, marlberry, wild coffee, and firebush. Groundcover will be native and will include rouge plant, scorpion tail, and blue porterweed.

Some non-natives will remain in the preserve, depending upon their historical significance and relative invasiveness. Historic non-native, invasive plants will be limited to contained management areas along the trail and removed from all other areas of the preserve.

4.3 Major Accomplishments During Previous Years

Table 9: Major Management Accomplishments during previous years

Accomplishment	Year(s)
Initial removal of invasive exotic vegetation	2005
Hurricane Wilma debris clean-up	2006
Development of management agreement with City of Marco Island	2006
Native plant planting days (over 300 plants planted)	2006
US Fish and Wildlife Service grant for invasive exotic plant maintenance	2006
Development of 1,000-foot trail with a representative sidewalk portion built to be accessible to wheelchairs	2006-2007
Florida Humanities Council grant for historic interpretive signs and post/rope fence	2006-2007
Formal ceremony to open preserve for passive public use	2007

4.4 Goals and Objectives for 10 year period

A set of goals and objectives for Otter Mound Preserve were developed in conjunction with the drafting of this Management Plan. The goals and objectives in this plan are tailored specifically for Otter Mound Preserve based on the purposes for which the lands were acquired, the condition of the resources present, and the management issues for the property. On-site managers should be familiar with this entire Management Plan. Goals and objectives from the interim management plan for the Otter Mound Preserve were reviewed to determine whether they should be included in this plan. The goals and objectives presented here reflect programmatic goals and

ideas of Conservation Collier personnel in charge of managing and protecting the area. These goals shall not be modified, but specific application of management techniques may take into consideration input by user groups and other stakeholders from outside the program, accommodating user needs and desires where practicable and where overarching management goals are not violated.

Management issues are discussed below in separate sections. Within each section, approaches for dealing with these issues are described. The ability to implement the specific goals and objectives identified in this plan is dependent upon the availability of funding resources. The following goals have been identified for Otter Mound Preserve:

Goal 1: Maintain the property in its natural condition prior to modern development.
Goal 2: Eliminate or reduce human impacts to indigenous plant and animal life.
Goal 3: Maintain the trail to provide a safe and pleasant visitor experience.
Goal 4: Protect Archaeological, Historical and Cultural Resources.
Goal 5: Facilitate uses of the site for educational purposes.
Goal 6: Provide a plan for security and disaster preparedness

GOAL 1: *MAINTAIN THE PROPERTY IN ITS NATURAL CONDITION PRIOR TO MODERN DEVELOPMENT*

Action Item 1.1 Remove populations of exotic plants to restore natural habitats.
Because of the severity of the infestation, the invasive exotic vegetation within Otter Mound Preserve will be treated in phases to avoid non-target damage to sensitive and recruiting native plant species. The densest and most invasive species will be treated first (Phase 1). Once the extent of these "Phase 1" species is evaluated and deemed to be at a manageable level, treatment of "Phase 2" species will begin. Next, "Phase 3" species will be eradicated and, finally, "Phase 4". In addition, some examples of invasive exotic plant species that are deemed to be historic may be left along the trail, visible to visitors (Table 10).

Table 10: Otter Mound Preserve Invasive Exotic Plant Species Control Plan

Scientific Name	Common Name	Phase	Historic	Recommended Control
Antigonon leptopus	coral vine	1	X	Vines should be carefully foliar sprayed with glyphosate or cut and the root end sprayed with glyphosate if they are growing over the top of native vegetation.
Broussonetia papyrifera	paper mulberry	1		Large trees should be cut, stumps treated with triclopyr, and trees removed from site or chipped on site and added to the mulched trail. Small trees and re-growth should be cut, the stumps treated with triclopyr, and the debris should remain on site if it is not extensive. Basal treatment may be used; however, it is not recommended near sensitive natives or native seedlings.

Dioscorea alata	air-potato	1		The vines should be cut and the root end sprayed with triclopyr if they are growing over the top of native vegetation. If caught early in the spring, the emerging vines can be sprayed with triclopyr foliar mix or glyphosate. Potatoes should be collected in winter if possible.
Momordica charantia	bitter gourd	1		Same as *Antigonon leptopus*
Sansevieria hyacinthoides	bowstring hemp	1	X	The cuticle should be cut with a machete before herbicide is applied. Glyphosate and triclopyr have been used and have been moderately successful for control. If control becomes increasingly problematic, manual removal may be employed if coordinated with an archaeologist.
Schinus terebinthifolius	Brazilian pepper	1		Same as *Broussonetia papyrifera*.
Cupaniopsis anacardioides	carrotwood	2		Same as *Broussonetia papyrifera*.
Melia azedarach	chinaberry	2		Same as *Broussonetia papyrifera*.
Sphagneticola trilobata	wedelia	2		The leaves should be foliar sprayed with glyphosate.
Syzygium cumini	java plum	2		Same as *Broussonetia papyrifera*.
Kalanchoe pinnata	walking plant	3		Same as *Sphagneticola trilobata*. Care should be taken not to disturb the walking plant. Any section that breaks from this plant and falls to the ground will produce roots.
Rhynchelytrum repens	natal grass	3		Same as *Sphagneticola trilobata*.
Bauhinia variegata	orchid tree	4		Same as *Broussonetia papyrifera*.
Eugenia uniflora	Surinam cherry	4	X	Same as *Broussonetia papyrifera*.
Lantana camara	Lantana	4		Same as *Broussonetia papyrifera*.
Leucaena leucocephala	leadtree	4		Same as *Broussonetia papyrifera*.
Tradescantia spathacea	oyster plant	4	X	Same as *Sansevieria hyacinthoides.*

If it appears that any other non-native species within the preserve, specifically royal poinciana or yellow elder, are showing invasive tendencies, that species will be controlled.

Because of the sensitivity of the native trees within the preserve, Imazapyr (i.e. Arsenal herbicide) or any other herbicide that demonstrates high soil persistence and is readily absorbed from the soil by plant roots will not be used at Otter Mound Preserve.

Action Item 1.2 Manage the property for the benefit of native and listed wildlife species.

Management actions to protect native bird species:

- Avoid off target damage to native plants and animals, especially rare species, during invasive exotic plant treatments.
- Prohibit domestic animals from being brought onto the preserve lands.

A population of Florida tree snails exists at the preserve. Historically, the major causes of Liguus colony mortality have been habitat destruction and commercial exploitation of their shells. Pesticide spraying for mosquito control may also affect their survival (Emmel & Cotter 1995).

Management actions to protect Florida tree snails:

- Protect and restore existing hammock vegetation.
- Protect against collection – a sign will be posted along the trail proclaiming all plants and animals in the preserve are protected.
- Reduce pesticide effects through increased tree canopy. Reducing mosquito pesticide applications within the preserve is not a tangible goal because the preserve is located in a dense residential area. However, an increased canopy and mid-story cover should reduce some effects of the pesticide by physically blocking the amount of pesticide entering the preserve via aerial spraying.

Three gopher tortoise burrows have been located in the preserve and one deceased tortoise was observed on the property in July 2005. It is unknown whether this individual tortoise was re-located to the site by a human or naturally recruited to the site on its own.

Because of growing developmental pressures and the limited availability of natural areas, Conservation Collier and City of Marco Island staff contacted FFWCC staff to evaluate whether Otter Mound Preserve would serve as an adequate gopher tortoise relocation site. FFWCC staff have expressed that they would be extremely reluctant to deem a heavily vegetated tropical hardwood hammock as an acceptable gopher tortoise relocation site (Appendix 9).

Action Item 1.3 Restore native vegetation as appropriate and necessary.

- Monitor native plant recruitment and re-growth in areas of invasive exotic removal and/or hurricane damage. *Plant appropriate native vegetation to restore tree canopy coverage to 85% - 95% and understory density to 50% - 75%.

  *All plantings should be done during rainy season in accordance with the Action Items set forth to attain *Goal 4: Protect Archaeological, Historical and Cultural Resources.* Supplemental irrigation may also be necessary with plantings.

Action Item 1.4 Monitor need for and success of management.

- Conduct periodic wildlife surveys - While some wildlife data has been collected, additional baseline data should be collected, especially on invertebrates, small mammals, reptiles, and amphibians. The Preserve Manager may contract this work out or enlist the assistance of local educators to coordinate student research projects. Wildlife sampling should take place at regular intervals (2-4 years) to detect long-term trends.

- A complete plant inventory was completed for the preserve in 2007. A new plant inventory by a qualified botanist should be performed every 2-3 years to detect long-term trends.

- Install permanent photo points – Five photo points have been established at random locations on the property. Photo point locations are marked with small white plastic signs and rebar, and their positions have been recorded with a GPS. All photo points will be taken annually at a standard height and angle of view.

GOAL 2: *ELIMINATE OR REDUCE HUMAN IMPACTS TO INDIGENOUS PLANT AND ANIMAL LIFE AND ON HISTORICAL/ARCHAEOLOGICAL RESOURCES.*

Action Item 2.1 Maintain bollards at north trail entrance to prevent unauthorized vehicle access.

Action Item 2.2 Identify locations of rare native plant species.

Action Item 2.3 Enforce regulations prohibiting trash and landscape debris dumping in or near the preserve.

Action Item 2.4 Encourage visitors to stay on trail with signs and fencing.

Action Item 2.5 Identify actual and potential locations of resident animal life and take steps such as locating visitor amenities away from animal nesting sites.

Action Item 2.6 Avoid non-target damage to native plants and animals, especially rare species, during invasive exotic plant treatments.

Action Item 2.7 Note and research all site development occurring adjacent to Otter Mound Preserve to determine that the proper site development permits have been obtained and that the site development complies with the permits.

All existing local, state, and federal regulations should be strictly followed and enforced during any site development adjacent to the preserve. It shall be the responsibility of the developer to establish erosion control measures and vegetation protection measures (i.e., protective fencing or barriers). If any site developer working in areas adjacent to the preserve does not take the necessary control measures, construction shall be immediately halted until control measures are put into place and mitigation and/or remediation will be the sole responsibility of the developer.

GOAL 3: *MAINTAIN THE TRAIL TO PROVIDE A SAFE AND PLEASANT VISITOR EXPERIENCE.*

Action Item 3.1 Keep trail area open and free of weedy species, debris, and litter.

Action Item 3.2 Inspect trail monthly for tripping hazards and fix immediately.

Action Item 3.3 Inspect trail monthly for overhead hazards such as broken or hanging tree limbs and fix immediately.

Action Item 3.4 Monitor hornets near trail.

A population of ground-nesting hornets was observed near the trail. If this population begins to pose a problem to visitors, it should be removed.

Action Item 3.5 Keep signs, benches, and post/rope fence in good repair.

Action Item 3.6* Empty garbage cans regularly.
At least once a week – more if necessary.

Action Item 3.7* Mow Addison Court right of way regularly.
At least once every two weeks in rainy season; as needed during dry season.

**Action Items 3.6 and 3.7 will be the responsibility of the City of Marco Island per Interlocal Agreement - Appendix 1*

Action Item 3.7 Keep adjacent trail vegetation lush.
The view from the trail should be focused on blocking out the urban environment.

Action Item 3.8 Remove vines and weedy vegetation from shell terracing that is in view of the public.
Follow guidelines of Action Item 4.7 below.

GOAL 4: *PROTECT ARCHAEOLOGICAL, HISTORICAL AND CULTURAL RESOURCES.*

The Archaeological and Historical Conservancy, Inc. included management recommendations in their phase 1 archaeological survey and assessment of the preserve in April 2000. Their recommendations for management of the site stipulated that "efforts should be made to minimize impacts to [the parcel's shell mound] features and the historic shell walls created by Ernest Otter that are found on the north and west sides of the parcel." Also, "the Otter shell walls that terrace the northern and western periphery of the parcel are historically significant and should be avoided during development" (Beriault & Carr 2000). The County will follow these recommendations, as detailed in the Action Items below, and shall cooperate fully with any other direction from the Florida Division of Historical Resources on the protection and management of archaeological and historical resources, per provisions of the Land Development Code Section 2.2.25.

The management of the resources present on Otter Mound Preserve will comply with the provisions of Chapter 267, Florida Statutes, specifically Sections 267.061 2 (a) and (b). The collection of artifacts or the disturbance of the archaeological and historic sites within the preserve shall be prohibited unless prior authorization has been obtained from the Collier County Board of County Commissioners and the Department of State, Division of Historical Resources.

Action Item 4.1 Limit visitor use of the preserve to designated trail areas.
Signage that states, "FRAGILE Please do not walk on shell walls and terracing" and post and rope fencing have been placed along the trail in the most sensitive areas of the preserve to encourage visitors to stay on the trail.

Action Item 4.2 Maintain the mulched trail at a minimum depth of 3".
A layer of new mulch should be spread on the entire trail at least once a year and spread on thin areas as necessary throughout the year.

Action Item 4.3 Replace the mulched trail with a shell hash trail in phases.
As the budget allows, phase out the mulched trail, and replace it in sections with a 3“ layer of shell hash.

Action Item 4.4 Prohibit bicycle use within the preserve.
Bicycle riding is listed on the prohibited activities sign, and a bicycle rack is located at the entrance of the preserve to encourage visitors to park their bikes.

Action Item 4.5 Prohibit managers and contractors from walking within 6 feet of the edge of the shell terrace walls unless absolutely necessary.
These areas are extremely fragile and subject to erosion.

Action Item 4.6 Prohibit planting near the edge of the shell terracing walls.
Plant groundcovers and shrubs a minimum of 6’ from the edge of the walls. Plant trees a minimum of 10’ from the walls. All planting must be coordinated with a qualified archaeologist.

Action Item 4.7 Prohibit mechanical removal of vegetation using machinery.
Invasive exotic vegetation will be cut and stump sprayed with herbicide or foliar sprayed with herbicide. No plants or trees will be pulled out by the roots unless coordinated with a qualified archaeologist.

If native or invasive exotic debris is to be removed from site, large limbs will not be dragged across the floor of the preserve. Large limbs will be cut into manageable sections and carried so as not to disturb the surface substrate.

Action Item 4.8 Allow only minimal, careful weed/vine control along the shell walls.
Foliar spray vines and weeds. Once dead, carefully cut and/or brush dried vegetation away from walls. Live or dead plants will not be pulled out of shells.

Action Item 4.9 Maintain/restore historic outhouse structure.
Staff, in conjunction with a qualified historical architect, will assess and determine how best to restore and maintain the outhouse. Recommendations from the historical architect will be used to guide a qualified contractor (County staff, contractor, or volunteer) to make repairs and maintain the outhouse to the reasonable extent that management funds allow. A sign stating, “HISTORIC STRUCTURE do not disturb” is displayed in front of the outhouse, which is located near the trail behind the post and rope fence.

Reasonable recommendations made by partners for protection/maintenance of the outhouse will also be considered and coordinated with the historical architect.

Action Item 4.10 Maintain/restore historic shell wall terracing.
Vegetation is fundamental in erosion control (Glowacki et al. 2000). Native groundcover, such as scorpiontail, rouge plant, and blue porterweed, will be encouraged to grow along the tops and edges of the shell wall terracing to guard against erosion If native groundcover is lacking in an area, seeds will be dispersed. Planting should be avoided unless absolutely necessary.

A minimum of six monitoring stations, based on substrate type and proximity to the trail, will be set up along the shell wall. Photo points will be established and the height and width of the wall sections will be measured twice a year. The Preserve Manager will coordinate with a qualified archaeologist to develop a shell wall maintenance and restoration plan. Once complete, this maintenance and restoration plan will be incorporated into a revised edition of the Otter Mound Preserve Final Management Plan. The Preserve Manager will follow the recommendations set forth in the shell wall maintenance and restoration plan to the reasonable extent that management funds allow.

Action Item 4.11 Discourage vandalism.

Maintain the preserve and encourage frequent site visits from partners (Marco Island Historical Society, Southwest Florida Archaeological Society, City of Marco, Archaeological and Conservancy, Inc., neighbors). Sites that appear cared for, well maintained, clearly interpreted, and frequently visited, are seldom vandalized (Glowacki et al. 2000).

GOAL 5: *FACILITATE USES OF THE SITE FOR EDUCATIONAL PURPOSES.*

Action Items 5.1 Maintain interpretive signage and plant signage to educate preserve visitors.

One copy of each of the three large interpretive historic signs and nine replacement plexiglass sign covers were purchased with the original large interpretive historic signs in anticipation of damage and wear.

The small, white UV resistant signs throughout the preserve may also need to be replaced periodically due to discoloration and wear.

Action Item 5.2 Provide Preserve brochures in rainproof box on site.

By December 2008, a brochure outlining the native ecosystem and wildlife present at the preserve will be created by County staff and kept in a rainproof box near the preserve entrance. The box will be inspected monthly by the Preserve Manager and refilled as necessary.

Action Item 5.3 Encourage historical presentations and gatherings.

Coordinate events with the Marco Island Historical Society and/or The Southwest Florida Archaeological Society. Volunteers from these organizations may provide trail tours for interested parties or for classes of school children upon teacher request.

GOAL 6: *PROVIDE A PLAN FOR SECURITY AND DISASTER PREPAREDNESS*

Action Item 6.1 Maintain an official presence at the preserve.

City of Marco Island Parks and Recreation staff will visit the preserve a minimum of once a week. City of Marco Island Police will perform routine patrols in the area.

Action Item 6.2 Discourage visitation to the park at night.

A Lee County Electric Company (LCEC) streetlight was installed at the NE corner of Addison and Leo Courts. A sign designating park hours as dawn to dusk has been installed at the entrance of the preserve.

Action Item 6.3 Enforce regulations prohibiting trash and landscape debris dumping in or near the preserve.

Action Item 6.4 Survey trees along the trail and the perimeter of the property annually for damage

Staff will employ the services of a certified arborist to determine diseased, weak, or damaged trees/limbs that should be removed prior to hurricane season. This activity is intended to reduce the risk of visitor injury and debris damage to neighboring homes in the event of a storm.

Action Item 6.5 Visit preserve within 48 hours after a storm event to assess damage.

Staff will take photos of damage and fill out appropriate Collier County Risk Management Department forms. If damage is extensive, the preserve will be closed until public safety hazards are cleared.

Action Item 6.6 Promptly clear storm debris from preserve.

If necessary, a Collier County emergency debris removal contractor will be contracted as soon as possible after the storm to schedule clean-up. First priority will be the shell walls and the historic outhouse. Damage to the shell walls and outhouse will be documented with photos prior to the start of any clean-up. All debris on top of the shell walls and outhouse will be lifted and carried away by hand, not pulled or dragged. Any large debris on the shell walls or outhouse will be cut into pieces that are small enough to be lifted and carried away by hand or, if the debris cannot be cut into pieces, it will be lifted and carried away by several people working together. Root systems of uprooted trees along the shell walls will not be removed. They will be left in the position in which they fell, and any attached limbs will be cut, lifted, and carried away. Trails will be cleared next. Other downed trees and limbs that do not appear to be a public safety hazard will be cleared at the discretion of the Preserve Manager. As much hurricane debris as possible will be chipped and retained on-site – to be used as mulch for the trail. Debris removal will be carried out in accordance with Goal 4: Protect Archaeological, Historical and Cultural Resources.

Action Item 6.7 Promptly secure cultural resources after a storm event.

Once storm debris has been cleared, damage to the shell walls and outhouse will be documented with photos prior to the start of any repairs. Damage to the shell walls will be initially repaired to the extent possible by the Preserve Manager and staff. Large whelk shells that may have become dislodged will either be gently pushed back into place or gathered and placed near the damaged area. Loosened shell substrate will be gathered and patted back into place. Extensive damage that cannot be repaired by the Preserve Manager and staff will be cordoned off and covered with a tarp until a qualified archaeologist can be contacted. If sections of the outhouse have been blown off, these sections will be gathered and placed inside the outhouse until they can be repaired. All repairs to the shell walls and outhouse will be documented with photos.

4.5 Public Use Facilities

Public Access / Parking / Handicap Facilities/ Restrooms

There is one public entrance to the preserve, at the north end of the property along Addison Court. A parking area consisting of three parking spaces - one of which is Americans with Disabilities Act (ADA) compliant - exists at the entrance. Both a 375-foot ADA compliant

sidewalk trail within the Addison Court right of way and a 625-foot mulched trail through the preserve connect to the parking area. Because of the sensitivity and slope of the shell mound, it was not feasible to provide an ADA compliant trail for the entire length of the planned trail.

No restrooms exist at the preserve.

4.6 Operational Plan for Otter Mound Preserve

4.6.1 Maintenance

Monthly site visits will be made by County staff to inspect/control littering within and around the preserve, monitor exotic plant re-growth, maintain the trail in a safe and aesthetically pleasing way, refill brochure boxes, inspect signs and equipment (bench and trash cans) and review general site security.

The Preserve Manager will keep a management log to record observations from the site visit, any contacts made or issues raised. Projects such as exotic removal, debris removal, and plantings will be carried out in accordance with Action Items listed in Section 4.4 Goals and Objectives for 10 year period.

4.6.2 Estimated Annual Costs and Funding Sources

Preliminary budget estimates for the Otter Mound Preserve include cost breakdowns associated with resource restoration and management. The funding source identified for the restoration and management activities is the Conservation Collier Program Management Trust Fund. Alternative funding sources, such as mitigation and grant funds, will be sought to supplement existing funding. Table 11 shows the activities planned for the next ten years and the initial and annual cost estimate of each activity. Private organizations may also provide funding for specific projects.

Table 11: Management Activities Timeline and Cost												
Activity	**'08**	**'09**	**'10**	**'11**	**'12**	**'13**	**'14**	**'15**	**'16**	**'17**	**'18**	**Total**
Resource Management												
Exotic species control	$15,000	$10,000	$8,000	$5,000	$5,000	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	**$61,000**
Cultural resource management	$ 1,200	$ 1,200	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	**$ 6,900**
Debris removal	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500	**$ 5,500**
Planting Projects	$ 500	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	**$ 1,500**
Subtotal	***$17,200***	***$11,800***	***$9,100***	***$6,100***	***$6,100***	***$4,100***	***$4,100***	***$4,100***	***$4,100***	***$4,100***	***$4,100***	**$74,900**
Visitors services/ Recreation												
Parking and sidewalk	0	0	$1,000	0	0	$1,000	0	0	$1,000	0	$1,000	**$ 4,000**
Equipment (bench, trash cans)	0	0	0	$3,000	0	0	0	0	$3,000	0	0	**$ 6,000**
Trail maintenance	$ 700	$ 700	$ 700	$ 700	$ 700	$ 700	$ 700	$ 700	$ 700	$ 700	$ 700	**$ 7,700**
Signs	$ 500	0	$ 500	0	0	$ 500	0	0	$ 500	0	0	**$ 2,000**
Brochures	0	$ 500	$ 500	0	$ 500	0	$ 500	0	$ 500	0	$ 500	**$ 3,000**
Addison Court streetlight	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	**$ 1,650**
Subtotal	***$ 1,350***	***$ 1,350***	***$2,850***	***$3,850***	***$1,350***	***$2,350***	***$1,350***	***$ 850***	***$5,850***	***$ 850***	***$2,350***	**$24,350**
Total	**$18,550**	**$13,150**	**$11,950**	**$9,950**	**$7,450**	**$6,450**	**$5,450**	**$4,950**	**$9,950**	**$4,950**	**$6,450**	**$99,250**

4.6.3. Potential for Contracting Restoration and Management Activities by Private Vendors

Table 12: Potential Contracting for Activities			
Activity	**Approved**	**Conditional**	**Rejected**
Trail maintenance	X		
Storm debris removal	X		
Post and rope fence installation and maintenance			X
Wildlife inventory and monitoring		X	
Native plant restoration		X	
Archaeological / historical monitoring	X		
Reduce exotic species	X		
Education facilities, programs, and literature development and printing		X	
Education signs development and installation	X		
Law enforcement and patrol	X		

4.7 Partnerships and Regional Coordination

4.7.1 Interdepartmental Partnerships and Agreements

Collier County has an Interlocal Agreement with the City of Marco Island for certain aspects of management within the preserve (Appendix 1).

Collier County has entered into a management agreement with the US Fish and Wildlife Service Partnership for Fish and Wildlife Program. The Service provided funding for exotic removal within Otter Mound Preserve through a Cooperative Agreement. Under the agreement, Otter Mound Preserve must remain as habitat for wildlife for a minimum of 10 years (Appendix 10).

4.7.2 Cooperating Agencies and Organizations

The preserve is managed in accordance with all applicable Florida Statutes and administrative rules. Agencies having a major or direct role in the management of the preserve are discussed in relevant portions of this plan. The Florida Fish and Wildlife Conservation Commission (FFWCC) may aid Conservation Collier with wildlife management programs, including the development and management of Watchable Wildlife programs. In addition to the involvement of the Marco Island Historical Society, Southwest Florida Archaeological Society, Naples Chapter of the Florida Native Plant Society, Florida Humanities Council, Calusa Garden Club, Boy Scouts, and City of Marco Island, other potential partnerships may include, but may not be limited to: surrounding residential and commercial property owner associations, the Conservancy of Southwest Florida, The Audubon Society, Florida Wildlife Federation, Collier County Schools, Collier County Sheriff's Office, Florida Division of Forestry, Florida Department of Environmental Protection, South Florida Water Management District, Big Cypress Basin, and other County Departments, as some goals and purposes will be similar.

5.0 Literature Cited

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Wunderlin, R.P., and B.F. Hansen. 2006. Atlas of Florida vascular plants. [S.M. Landry and K.N. Campbell (application development), Floirda Center for Community Design and Research]. Institute for Systematic Botany, University of South Florida, Tampa. Available from http.//www.plantatlas.usf.edu/.

Appendix 1: Interlocal Agreement between Collier County and the City of Marco Island

3838405 OR: 4036 PG: 3238 RBC FEE 27.00
RECORDED in the OFFICIAL RECORDS of COLLIER COUNTY, FL
05/12/2006 at 03:36PM DWIGHT B. BROCK, CLERK
Retn: CLERK TO THE BOARD 4TH FLOOR
INTEROFFICE
EXT 7240

INTERLOCAL AGREEMENT
OTTER MOUND PRESERVE

THIS INTERLOCAL AGREEMENT ("Agreement") is made and entered into this 28th day of February, 2006, by and between Collier County, a political subdivision of the State of Florida ("County"), and the City of Marco Island, a municipal corporation ("City").

RECITALS:

WHEREAS, Collier County Ordinance No. 02-63, authorizes the County to enter into a written mutual agreement for management arrangements and responsibilities with municipalities, for the management and maintenance of land; and

WHEREAS, the Otter Mound Preserve ("Preserve") is located within the City on Addison Court and owned by the County; and

WHEREAS, the Preserve contains historical and archaeological artifacts; and

WHEREAS, the Preserve will be open to the public and managed only for the conservation, protection and enhancement of natural and historical resources; and

WHEREAS, public outdoor recreation allowed on the Preserve will be compatible with the conservation, protection and enhancement of the Preserve and its surrounding lands; and

WHEREAS, Preserve management duties shall be the shared responsibility of the County and the City.

NOW, THEREFORE, THE PARTIES HEREBY AGREE AS FOLLOWS:

Section 1. Obligations of the Parties

A. The City's Obligations:

1. The City shall be responsible for maintaining the right of way adjacent to the Preserve. Maintenance shall include, but not be limited to, mowing the grass within the right of way as deemed necessary by City Code Enforcement personnel. Maintenance of the right of way shall not include vegetation trimming around or restoration of the historic shell wall terracing. The City shall not use any sort of weed whacking or mowing device within one foot of the historic shell wall terracing.

2. The City shall provide routine Police patrols of the Preserve.

3. The City shall remove trash from the trash receptacles installed by the County on a periodic basis and when necessary.

4. The City will provide assistance and cooperation to the County when applying for future grants.

5. The City will monitor and make recommendations as needed for Wildlife Habitat Enhancement.

B. The County's Obligations:

1. The County shall be responsible for maintaining the historic shell wall terracing. Maintenance shall include, but not be limited to, vegetation trimming and vegetation removal.

2. The County will create a parking area to allow for the parking of three vehicles.

3. The County shall ensure the removal of invasive exotic vegetation from the Preserve as defined in the County Land Development Code. The County shall also ensure that the Preserve remains free of invasive exotic vegetation in perpetuity.

4. The County will maintain the Preserve in a manner that will allow for public use of the site.

5. The County will install a temporary "Collier County Conservation Land" sign.

6. The County will install a permanent "Collier County Conservation Land" sign.

7. The County will install trash receptacles.

Section 2.

1. Written notice between the parties, if and when appropriate, shall be given to the parties at the following addresses or such other person or place as each party shall designate by similar notice.

As to Collier County:	Alexandra Sulecki (or current Coordinator) Conservation Collier Program 2800 N. Horseshoe Drive Naples, FL 34014
As to Marco Island:	A. William Moss City Manager, City of Marco Island 50 Bald Eagle Dr. Marco Island, FL 34145

2. Each party agrees that it shall be solely responsible for its employees, contractors or agents with regard to the rights, duties, and obligations created hereby. However, nothing herein shall constitute a waiver by either party of its sovereign immunity and other limitations of liability, if any, set forth in Section 768.28, Florida Statutes. There are no third party beneficiaries to this Interlocal Agreement.

3. This Agreement shall be recorded by the County in the Official Records of Collier County, Florida, within fourteen (14) days after the County enters into this Agreement. The County shall incur all costs of recording this Agreement. A copy of the recorded document will be provided to the City within fifteen (15) days of recordation.

4. This Agreement shall be for an initial term of twenty-four (24) months. This initial term shall be automatically renewed for additional one (1) years terms and terminate five years after the effective date. The Agreement may be extended beyond five years by written acknowledgement of both parties.

OR: 4036 PG: 3239

The parties further agree that this Agreement may be terminated, in writing, with 45 days advance notice.

IN WITNESS WHEREOF, the parties hereto have executed this Interlocal Agreement the day and year first above written. This agreement becomes effective on the day that it is executed by all parties.

ATTEST:
DWIGHT E. BROCK, Clerk

By: _____
Attest as to Chairman's signature only

BOARD OF COUNTY
COMMISSIONERS,
COLLIER COUNTY, FLORIDA.

By: _____
FRANK HALAS, Chairman

Approved as to form
and legal sufficiency:

_____
Michael W. Pettit
Chief Assistant County Attorney

ATTEST:
LAURA LITZAN, City Clerk

By: _____

Approved as to form
and legal sufficiency:

_____
Richard Yovanovich
Marco Island City Attorney

CITY OF MARCO ISLAND

By: _____

A. WILLIAM MOSS, City Manager

*** OR: 4036 PG: 3240 ***

Appendix 2: Legal Description

PROPERTY TAX IDENTIFICATION NUMBER: 25830400004

LEGAL DESCRIPTION:

A PARCEL OF LAND IN SECTION 21, TOWNSHIP 52 SOUTH, RANGE 26 EAST, COLLIER COUNTY FLORIDA BEING DESCRIBED AS FOLLOWS:

FROM A CONCRETE MONUMENT WITH A BRASS CAP MARKING THE QUARTER SECTION-CORNER ON NORTH LINE OF SAID SECTION 21, RUN SOUTH 1°-52'-49" EAST ALONG THE QUARTER-SECTION LINE OF SAID SECTION, BEING THE LINE DIVIDING GOVERNMENT LOT 2 FROM GOVERNMENT LOTS 2 AND 5 OF SAID SECTION 21 FOR 3,547.21 FEET TO A CONCRETE MONUMENT WITH A BRASS CAP SET NEAR THE SHORE OF CAXAMBAS PASS MARKING THE LOCATION OF THE FORMER "SUNKEN TERRA COTTA PIPE FILLED WITH CEMENT 60 FEET WEST OF THE J.M. BARFIELD PRESENT DOCK;" THENCE RUN NORTH 1°- 52'-49" WEST ALONG SAID QUARTER-SECTION LINE FOR 470 FEET TO A CONCRETE MONUMENT WITH A BRASS CAP; THENCE SOUTH 88°-07'–11" WEST 159.00 FEET; THENCE NORTH 1°-52'-49" WEST 135.00 FEET FOR THE PLACE OF BEGINNING OF THE PARCEL HEREIN DESCRIBED:

THENCE NORTH 1°-52'-49" WEST 160.00 FEET;
THENCE NORTH 88°-07'–11" EAST 184.50 FEET;
THENCE SOUTH 1°-52'-49" EAST 160.00 FEET;
THENCE SOUTH 88°-07'–11" WEST 184.50 FEET TO THE PLACE OF BEGINNING, BEING PART OF SECTION 21, TOWNSHIP 52 SOUTH, RANGE 26 EAST, COLLIER COUNTY, FLORIDA.

TAX IDENTIFICATION NUMBER: 21840000029, 21840000045 & 21840000061

LEGAL DESCRIPTION:

ADDISON ESTATES, LOT 1, 2, & 3, AS RECORDED IN PLAT BOOK 39, PAGE 96-97 IN THE OFFICIAL PUBLIC RECORDS OF COLLIER COUNTY, FLORIDA.

AND AS FURTHER DESCRIBED AS:

BEGINNING AT THE SOUTHWEST CORNER OF LOT 20, BLOCK 7, JAMES M. BARFIELD'S SUBDIVISION OF LOTS 2, 3, AND 5, IN SECTION 21, TOWNSHIP 52 SOUTH, RANGE 26 EAST; THENCE SOUTH 46° 30" WEST 1400 FEET TO THE SOUTHEAST CORNER OF J. L. COLLIER'S LOT; THENCE NORTH 295 FEET TO POINT OF BEGINNING OF THE LAND HEREIN DESCRIBED; THENCE NORTH 210 FEET; THENCE WEST 369 FEET; THENCE SOUTH 210 FEET TO J. L. COLLIER'S NORTH WEST CORNER; THENCE EAST 369 FEET TO POINT OF BEGINNING, ALL IN THE PUBLIC RECORDS OF COLLIER COUNTY, FLORIDA.

Appendix 3: Otter Mound Preserve Final Management Plan Public Involvement Contact List

Marco Island Historical Society
Lee Lindberg
980 Cape Marco Dr. # 1707
Marco Island, FL 34145
239-394-8723
lindbergdee@yahoo.com

Bill and Betsy Perdichizzi
1200 Butterfly Ct.
Marco Island, FL 34145
239-394-6917
betsyperd@naples.net

City of Marco Island
www.cityofmarcoisland.com

Bill Moss – City Manager
50 Bald Eagle Drive
Marco Island, FL 34145
Phone: 239-389-5005
Fax: 239-389-4359
bmoss@cityofmarcoisland.com

Dana Souza – Parks and Recreation Director
1361 Andalusia Terrace
Marco Island, FL 34145
Phone: 239-389-5000
Fax: 239-389-4359
dsouza@cityofmarcoisland.com

Nancy Richie – Environmental Specialist
50 Bald Eagle Drive
Marco Island, FL 34145
Phone: 239-389-5003
Fax: 239-393-0266

nrichie@cityofmarcoisland.com

Southwest Florida Archaeological Society
Jack Thompson
4775 Aston Gardens Way, Apt. 311
Naples, FL 34109
239-597-2269
jwtdlt@aol.com

Archaeological and Historical Conservancy, Inc.
Robert Carr
Davie Professional Plaza
4800 Davie Road, Suite 107
Davie, FL 33314
(954) 792-9776
archlgcl@bellsouth.net

John Beriault – Local Archaeologist
PO Box 9074
Naples, FL 34101
239-641-4919
JGBeriault@aol.com

Native Plant Society
Jan Long
184 Hickory Rd
Naples, FL 34108
239-597-2729
jelong@naples.net

Neighbors
Jim and June Dyches
P.O. Box 1213
Marco Island, FL 34146
239-394-5604

Tom and Kathy Bogan
1016 E. Inlet Dr.
Marco Island, FL 34145
Bogan 1016@aol.com
239-253-7226

Mr. and Mrs. Albino Martinez
975 Leo Ct.
Marco Island, FL 34145
389-4831

Raymond & Patricia Yodlow
1851 Addison Ct.
Marco Island, FL 34145
239-642-7716
Marconext@aol.com

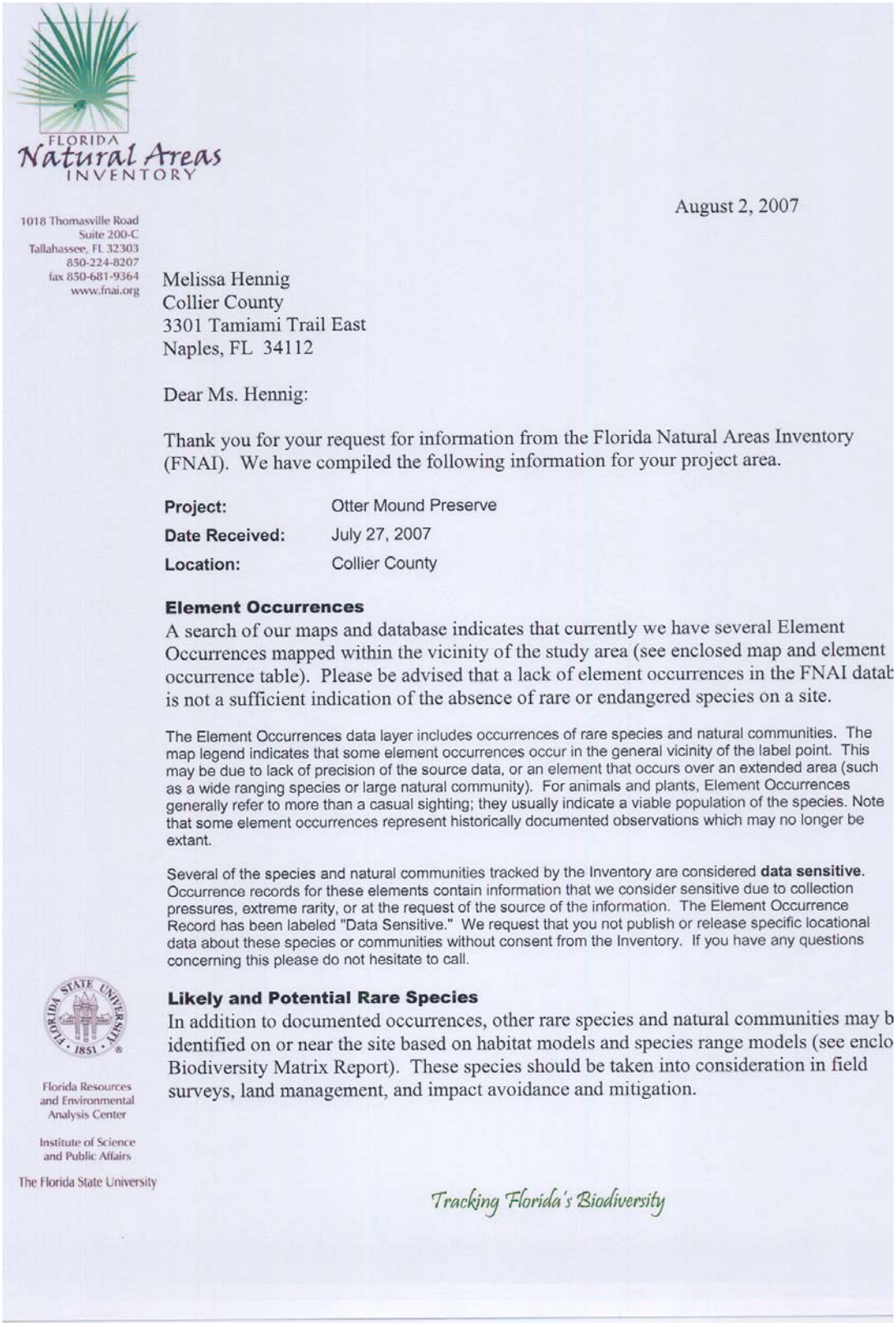
Neighbors Cont'd

Heidi Becker
1026 Inlet Dr.
Marco Island, FL 34145

Sessions Family Partners LTD
Mailing Address: 11660 German Church Rd.
Burr Ridge, IL 60527
Site Address: 1821 Osceola Ct.
Marco Island, FL 34145

William and Joan Davenport
Mailing Address: 92 Birch Pkwy.
Sparta, NJ 07871
Site Address: 1011 Inlet Dr.
Marco Island, FL 34145

Appendix 4: Florida Natural Areas Inventory (FNAI) Managed Area Tracking Record and Element Occurrence Summary; FNAI Ranking System Explanation



FLORIDA Natural Areas INVENTORY

1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
850-224-8207
fax 850-681-9364
www.fnai.org

August 2, 2007

Melissa Hennig
Collier County
3301 Tamiami Trail East
Naples, FL 34112

Dear Ms. Hennig:

Thank you for your request for information from the Florida Natural Areas Inventory (FNAI). We have compiled the following information for your project area.

Project: Otter Mound Preserve
Date Received: July 27, 2007
Location: Collier County

Element Occurrences

A search of our maps and database indicates that currently we have several Element Occurrences mapped within the vicinity of the study area (see enclosed map and element occurrence table). Please be advised that a lack of element occurrences in the FNAI datab is not a sufficient indication of the absence of rare or endangered species on a site.

The Element Occurrences data layer includes occurrences of rare species and natural communities. The map legend indicates that some element occurrences occur in the general vicinity of the label point. This may be due to lack of precision of the source data, or an element that occurs over an extended area (such as a wide ranging species or large natural community). For animals and plants, Element Occurrences generally refer to more than a casual sighting; they usually indicate a viable population of the species. Note that some element occurrences represent historically documented observations which may no longer be extant.

Several of the species and natural communities tracked by the Inventory are considered **data sensitive**. Occurrence records for these elements contain information that we consider sensitive due to collection pressures, extreme rarity, or at the request of the source of the information. The Element Occurrence Record has been labeled "Data Sensitive." We request that you not publish or release specific locational data about these species or communities without consent from the Inventory. If you have any questions concerning this please do not hesitate to call.

Likely and Potential Rare Species

In addition to documented occurrences, other rare species and natural communities may b identified on or near the site based on habitat models and species range models (see enclo Biodiversity Matrix Report). These species should be taken into consideration in field surveys, land management, and impact avoidance and mitigation.

Florida Resources and Environmental Analysis Center
Institute of Science and Public Affairs
The Florida State University

Tracking Florida's Biodiversity

FNAI habitat models indicate areas, which based on landcover type, offer suitable habitat for one or more rare species that is known to occur in the vicinity. Habitat models have been developed for approximately 300 of the most rare species tracked by the Inventory, including all federally listed species.

FNAI species range models indicate areas that are within the known or predicted range of a species, based on climate variables, soils, vegetation, and/or slope. Species range models have been developed for approximately 340 species, including all federally listed species.

The FNAI Biodiversity Matrix Geodatabase compiles Documented, Likely, and Potential species and natural communities for each square mile Matrix Unit statewide.

Managed Areas

Portions of the site appear to be located within the Otter Mound Preserve, managed by Collier County.

The Managed Areas data layer shows public and privately managed conservation lands throughout the state. Federal, state, local, and privately managed conservation lands are included.

The Inventory always recommends that professionals familiar with Florida's flora and fauna should conduct a site-specific survey to determine the current presence or absence of rare, threatened, or endangered species.

Please visit www.fnai.org/trackinglist.cfm for county or statewide element occurrence distributions and links to more element information.

The database maintained by the Florida Natural Areas Inventory is the single most comprehensive source of information available on the locations of rare species and other significant ecological resources. However, the data are not always based on comprehensive or site-specific field surveys. Therefore, this information should not be regarded as a final statement on the biological resources of the site being considered, nor should it be substituted for on-site surveys. Inventory data are designed for the purposes of conservation planning and scientific research, and are not intended for use as the primary criteria for regulatory decisions.

Information provided by this database may not be published without prior written notification to the Florida Natural Areas Inventory, and the Inventory must be credited as an information source in these publications. FNAI data may not be resold for profit.

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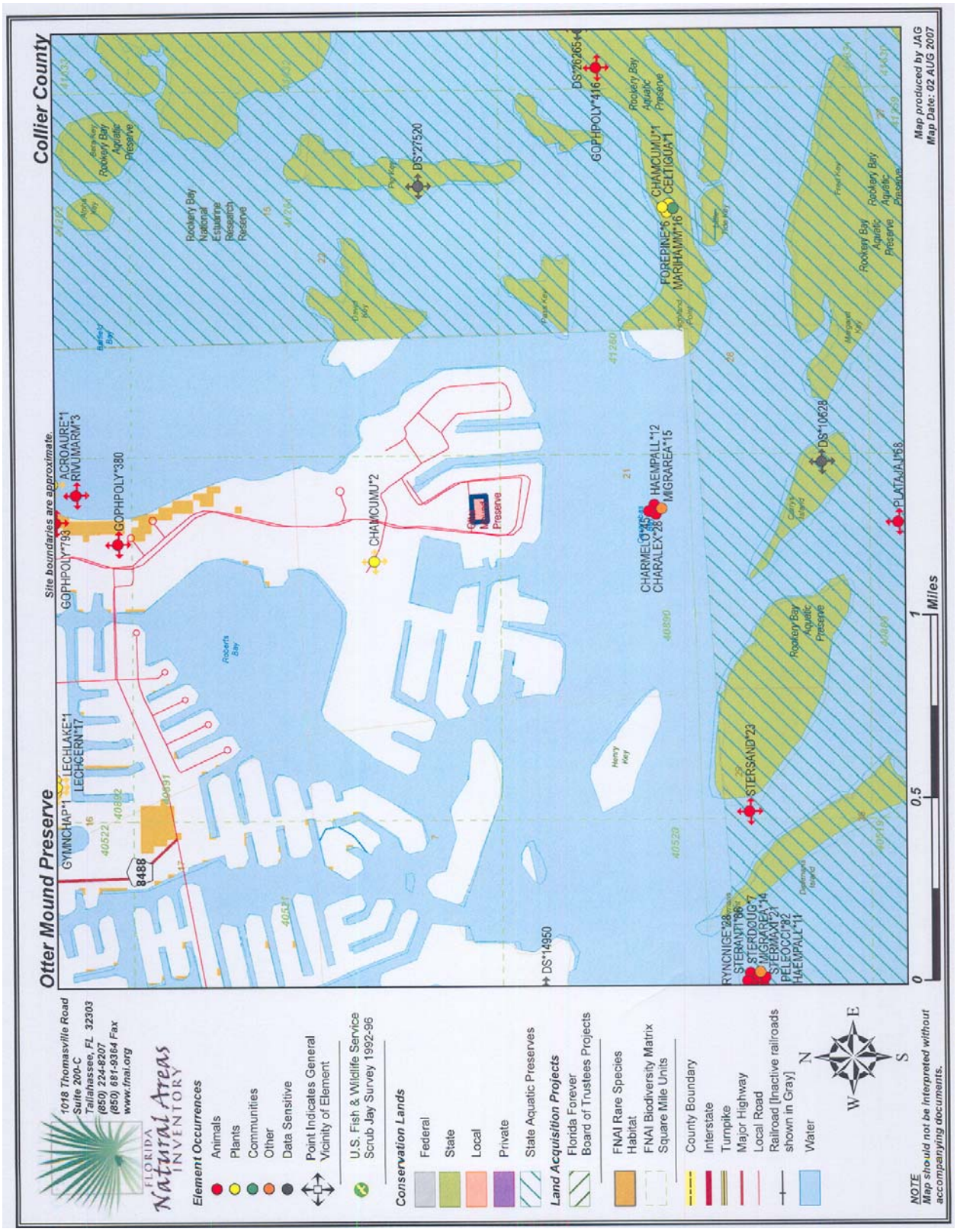
Sincerely,

Jason A. Griffin

Jason A. Griffin
Data Services Coordinator

encl

Tracking Florida's Biodiversity


Collier County
Otter Mound Preserve
Site boundaries are approximate.
Map produced by JAG
Map Date: 02 AUG 2007
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Miles
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Element Occurrences
Animals
Plants
Communities
Other
Data Sensitive
Point Indicates General Vicinity of Element
U.S. Fish & Wildlife Service Scrub Jay Survey 1992-96
Conservation Lands
Federal
State
Local
Private
State Aquatic Preserves
Land Acquisition Projects
Florida Forever
Board of Trustees Projects
FNAI Rare Species Habitat
FNAI Biodiversity Matrix Square Mile Units
County Boundary
Interstate
Turnpike
Major Highway
Local Road
Railroad [Inactive railroads shown in Gray]
Water
N
S
E
W
NOTE
Map should not be interpreted without accompanying documents.
GYMNCHAP*1
LECHLAKE*1
LECHCERN*17
ACROAURE*1
RIVUMARM*3
GOPHPOLY*380
GOPHPOLY*738
CHAMCUMU*2
DS*14950
DS*27520
DS*26265
GOPHPOLY*416
CHAMCUMU*1
CELTIGUA*1
FOREPINE*6
MARHAMM*16
HAEMPALL*12
MGRAREA*15
CHARMELO*28
CHARALEX*28
DS*10628
PLATAJAU*68
STERSAND*23
RYNCNIGE*28
STERANTI*96
STERDOUG*7
MGRAREA*14
STERMAXI*21
PELEOCC*82
HAEMPALL*11
Rookery Bay National Estuarine Research Reserve
Rookery Bay Aquatic Preserve
Roberts Bay
Henry Key
Panther Island
8488

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ELEMENT OCCURRENCES DOCUMENTED ON OR NEAR PROJECT SITE

Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
LECHCERN*17	Lechea cernua	Nodding Pinweed	G3	S3	N	LT	1969-12-30	WHITE SAND, OAK SCRUB WITH PINE OVERHEAD NEAR SCHOOLHOUSE TO COASTAL STRAND, CERATIOLA-QUERCUS SCRUB TO SCRUB-SPARSE VEGETATION.	1969-12-30: STERILE; 1967-08-07: FLOWERING; 1964-11- 24: PAST FRUITING WITH BASAL SHOOT; 1959-12-27: STERILE WITH NEW SHOOTS; 1959-09-06: FRUITING/FLOWERING.
GYMNCHAP*1	Gymnopogon chapmanianus	Chapman's Skeletongrass	G3	S3	N	N	1967-10-22	PARTLY CLEARED MARGIN OF PINUS-CERATIOLA SCRUB, WHITE SAND, SOIL VERY DRY.	1967-10-22: PLANTS ABUNDANT. 1964-09-27: WITH POLYGONELLA AND CHRYSOPSIS.
LECHLAKE*1	Lechea lakelae	Lakela's Pinweed	GH	SH	N	LE	1968-07-30	COASTAL STRAND, PINUS ELLIOTTII ASSOCIATION; MOIST LEVEL GRASY AREA, HIGHER BEACH OF RECENTLY MADE LAKE W/ PINES OVERHEAD; WITH INDIGOFERA, POLYGONELLA IN CERATIOLA-QUERCUS SCRUB.	FRUITING: 1968-07-30, 1967-08-07, 1964-09-27.
MIGRAREA*15	Migratory Bird Concentration Area		GNR	SNR	N	N	1992	TIDAL AREA.	CONCENTRATED SHOREBIRD FEEDING AREA; GOOD FOR AMERICAN OYSTERCATCHERS. OTHER SPECIES THAT USE SITE INCLUDE BLACK-BELLIED PLOVER, SNOWY PLOVER, WILSONS PLOVER, SEMIPALMATED PLOVER, PIPING PLOVER, AMERICAN AVOCET, GREATER YELLOWLEGS, LESSER YELLOWLEGS, WIL
DS*10628	Data Sensitive Element	Data Sensitive	G3	S2	N	N	1999	Data Sensitive	Data Sensitive
HAEMPALL*12	Haematopus palliatus	American Oystercatcher	G5	S2	N	LS	1992	TIDAL AREA.	FEEDING AREA. GOOD SITE FOR SPECIES.
CHARMELO*45	Charadrius melodus	Piping Plover	G3	S2	LT	LT	1992	TIDAL AREA.	FEEDING AREA.
CHARALEX*28	Charadrius alexandrinus	Snowy Plover	G4	S1	N	LT	1992	TIDAL AREA.	FEEDING AREA.
MARIHAMM*16	Maritime hammock		G3	S2	N	N	1999	"HIGH SAND & SHELL RIDGE", WAS PINEAPPLE PLANTATION. REMAINS OF OLD HOUSES STILL PRESENT F87JOH03.	1999: Update to last obs date was based on interpretation of aerial photography (previous value was 1987-05-06) (U05FNA02FLUS). PLANT LIST IN U77AVE02, BUT NO INDIC. WHICH PLANTS AREIN WHICH NC. F87JOH03: CANOPY (25') OF REDBAY (PERSEA BORBONIA) STRANGLE

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DS*27520	Data Sensitive Element	Data Sensitive	G3	S2	N	N	1999	Data Sensitive	Data Sensitive
RIVUMARM*3	Rivulus marmoratus	Mangrove Rivulus	G3	S3	C	LS	1987-01-05	No general description given	1987: Dogwood: 24 individuals, average of 1.04 fish per trap; 1987: April Court: 171 individuals caught, average of 7.43 individuals per trap; 1986: Dogwood: 26 individuals, average of 1.18 fish per trap; 1986: April Court: 17
CHAMCUMU*2	Chamaesyce cumulicola	Sand-dune Spurge	G2	S2	N	LE	1967-07-01	HIGH SANDY RIDGES/DUNES WITH EITHER LIVE OAK/PERSEA OR SCRUB.	1967-07-01: FLOWERING/FRUITING; 1965-11-13: FLOWERING/FRUITING; 1965-05-01: FLOWERING/FRUITING; 1965-03-19: LOCALLY COMMON WITH LIVE OAK/PERSEA; 1964-10-26: PROSTRATE, FREQUENT IN OLD STABILIZED SAND DUNES, FLOWERING/FRUITING.
GOPHPOLY*793	Gopherus polyphemus	Gopher Tortoise	G3	S3	N	LS	1987-07-21	SCRUB. NO SANDPINES. TALL (3 M) OAKS, QUERCUS GEMINATA. BUMELIA, OPUNTIA, VITRIS, CASSIA OCCIDENTALIS, PERSEA-SIL BAY (?), SMILAX, GOPHER APPLE, ASCLEPIAS TOMENTOSA, ERYGIUM, WHITE STINKY PEA.	MINNO OBSERVED 4 LARGE BURROWS (2 OF WHICH CONTAINED TORTOISES), 1 MEDIUM BURROW AND 1 SMALL BURROW.
STERSAND*23	Sterna sandvicensis	Sandwich Tern	G5	S2	N	N	1990-05-11	Consolidated substrate	1990: M.S. Robson, GFC, observed 1 adult on 5/11 and 1 on 4/26.
DS*14950	Data Sensitive Element	Data Sensitive	G5	S3	N	LT	1966-08-31	Data Sensitive	Data Sensitive
PLATAJAJ*68	Platalea ajaja	Roseate Spoonbill	G5	S2	N	LS	1989-07-27	exposed tidal flat	1989-07-27: M.S. Robson, GFC, observed 3 adults on exposed tidal flat with many other birds.
GOPHPOLY*380	Gopherus polyphemus	Gopher Tortoise	G3	S3	N	LS	1990-02-19	Low density urban development	1990-02-19: M.S. Robson, GFC, observation. A number of tortoises was reported.
GOPHPOLY*416	Gopherus polyphemus	Gopher Tortoise	G3	S3	N	LS	1988-04-25	60% OF ISLAND SURVEYED-BURROWS FOUND IN DISTURBED SECOND GROWTH, LOW OAK SCRUB, AND INTERMEDIATE SLOPE COMMUNITIES.	106 ACTIVE AND 84 INACTIVE BURROWS FOUND; "A RELOCATION PLAN AS PER THE PUD, FOR TORTOISES IN THE PATH OF INFRASTRUCTURE AND BUILDINGS WILL BE DEVELOPED AND IMPLEMENTED"; P. 18.

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Florida Natural Areas Inventory

ELEMENT OCCURRENCES DOCUMENTED ON OR NEAR *PROJECT SITE*

Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
ACROAURE*1	Acrostichum aureum	Golden Leather Fern	G5	S3	N	LT	1965-10-22	1965-10-22: saline soil at edge of buttonwood swamp (S65WARUFFLUS).	1965-10-22: frequent at site; specimen with fertile fronds (S65WARUFFLUS).
DS*26265	Data Sensitive Element	Data Sensitive	G5	S3	N	LE	1977-03-06	Data Sensitive	Data Sensitive
CELTIGUA*1	Celtis iguanaea	Iguana Hackberry	G5	S1	N	LE	1970-09-03	2000-10-03: DEVELOPED RESIDENTIAL AREA (PNDCOI01FLUS). 1970: MARITIME HAMMOCK; HIGH SAND AND SHELL RIDGE (PNDBER01FLUS).	2000-10-03: NO PLANTS OBSERVED; AREA HAS BEEN CONVERTED TO A GATED COMMUNITY (PNDCOI01FLUS). 1970-09-03: PLANTS STERILE (PNDBER01FLUS).
CHAMCUMU*1	Chamaesyce cumulicola	Sand-dune Spurge	G2	S2	N	LE	1970-09-03	MARITIME HAMMOCK; HIGH SAND AND SHELL RIDGE	OCCURRENCE AT SITE
FOREPINE*6	Forestiera segregata var. pinetorum	Florida Pinewood Privet	G4T2	S2	N	N	1970-09-03	MARITIME HAMMOCK; HIGH SAND AND SHELL RIDGE	OCCURRENCE AT SITE
RYNCNIGE*28	Rynchops niger	Black Skimmer	G5	S3	N	LS	1992	TIDAL AREA.	FEEDING SITE AUGUST-MAY.
STERANTI*86	Sterna antillarum	Least Tern	G4	S3	N	LT	1992	TIDAL AREA.	FEEDING SITE AUGUST-MAY.
STERMAXI*21	Sterna maxima	Royal Tern	G5	S3	N	N	1992	TIDAL AREA.	FEEDING SITE AUGUST-MAY.
STERDOUG*7	Sterna dougallii	Roseate Tern	G4	S1	LT	LT	1992	TIDAL AREA.	FEEDING SITE AUGUST-MAY.
PELEOCCI*82	Pelecanus occidentalis	Brown Pelican	G4	S3	N	LS	1992	TIDAL AREA.	FEEDING SITE AUGUST-MAY.
MIGRAREA*14	Migratory Bird Concentration Area		GNR	SNR	N	N	1992	TIDAL AREA.	FEEDING SITE. UP TO 10,000 BIRDS SEEN IN WINTER (AUG.-MAY). SPECIES INCLUDE SANDERLING, SHORT-BILLED DOWITCHER, WESTERN SANDPIPER, RED KNOT, AMERICAN OYSTERCATCHER, BLACK-BELLIED PLOVER, SEMIPALMATED PLOVER, DUNLIN, RUDDY TURNSTONE, MARBLED GODWIT, WILLE
HAEMPALL*11	Haematopus palliatus	American Oystercatcher	G5	S2	N	LS	1992	TIDAL AREA.	FEEDING SITE AUGUST-MAY.

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FLORIDA Natural Areas INVENTORY

Florida Natural Areas Inventory

Biodiversity Matrix Report

Matrix Unit ID: 40891

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
Likely					
Acrostichum aureum	Golden Leather Fern	G5	S3	N	LT
Chamaesyce cumulicola	Sand-dune Spurge	G2	S2	N	LE
Gopherus polyphemus	Gopher Tortoise	G3	S3	N	LS
Gopherus polyphemus	Gopher Tortoise	G3	S3	N	LS
Haliaeetus leucocephalus	Bald Eagle	G5	S3	LT,PDL	LT
Rivulus marmoratus	Mangrove Rivulus	G3	S3	C	LS
Potential from any/all selected units					
Acipenser oxyrinchus desotoi	Gulf Sturgeon	G3T2	S2	LT	LS
Ardea herodias occidentalis	Great White Heron	G5T2	S2	N	N
Athene cunicularia floridana	Florida Burrowing Owl	G4T3	S3	N	LS
Charadrius melodus	Piping Plover	G3	S2	LT	LT
Crocodylus acutus	American Crocodile	G2	S2	LT	LE
Dendroica discolor paludicola	Florida Prairie Warbler	G5T3	S3	N	N
Drymarchon couperi	Eastern Indigo Snake	G3	S3	LT	LT
Eragrostis pectinacea var. tracyi	Sanibel Lovegrass	G5T1	S1	N	LE
Eretmochelys imbricata	Hawksbill	G3	S1	LE	LE
Eumops floridanus	Florida bonneted bat	G1	S1	N	LE
Forestiera segregata var. pinetorum	Florida Pinewood Privet	G4T2	S2	N	N
Gymnopogon chapmanianus	Chapman's Skeletongrass	G3	S3	N	N
Lechea cernua	Nodding Pinweed	G3	S3	N	LT
Linum carteri var. smallii	Carter's Large-flowered Flax	G2T2	S2	N	LE
Mustela frenata peninsulae	Florida Long-tailed Weasel	G5T3	S3	N	N
Nemastylis floridana	Celestial Lily	G2	S2	N	LE
Patagioenas leucocephala	White-crowned Pigeon	G3	S3	N	LT
Polyrrhiza lindenii	Ghost Orchid	G2G4	S2	N	LE
Pteroglossaspis ecristata	Giant Orchid	G2G3	S2	N	LT
Rallus longirostris scottii	Florida Clapper Rail	G5T3?	S3?	N	N
Rostrhamus sociabilis plumbeus	Snail Kite	G4G5T3C	S2	LE	LE
Roystonea elata	Florida Royal Palm	G2G3	S2	N	LE
Sceloporus woodi	Florida Scrub Lizard	G3	S3	N	N
Sterna dougallii	Roseate Tern	G4	S1	LT	LT
Trichechus manatus	Manatee	G2	S2	LE	LE
Ursus americanus floridanus	Florida Black Bear	G5T2	S2	N	LT*

Definitions: *Documented - Rare species and natural communities documented on or near this site.*
Documented-Historic - Rare species and natural communities documented, but not observed/reported within the last twenty years.
Likely - Rare species and natural communities likely to occur on this site based on suitable habitat and/or known occurrences in the vicinity.
Potential - This site lies within the known or predicted range of the species listed.

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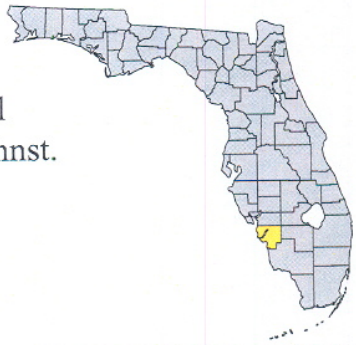
SPINY HACKBERRY



Celtis pallida Torr.
Synonyms: *Momisia pallida* (Torr.) Planch. ex Small
Celtis spinosa Spreng. var. *pallida* (Torr.) M. C. Johnst.
Family: Ulmaceae (elm)
FNAI Ranks: G4/S1
Legal Status: US–none FL–Endangered
Wetland Status: US–UPL FL–UPL

Dick Workman

Field Description: Shrub to 9 feet tall with pale, spreading branches. **Leaves** usually less than 1 inch long, alternate, simple, oval, somewhat fleshy, upper surfaces rough, leaf tips rounded, leaf margins entire to shallowly toothed; leaf nodes armed with straight, stout **spines** up to 1 inch long. **Flowers** white, inconspicuous, in small clusters in the angle of leaf and stems. **Fruit** small, round, yellow or orange.

Similar and Related Rare Species (drawing, bottom): Iguana hackberry

Spiny hackberry *Celtis pallid*

Habitat: Both species grow on shell mounds and middens in tropical coastal hammocks.

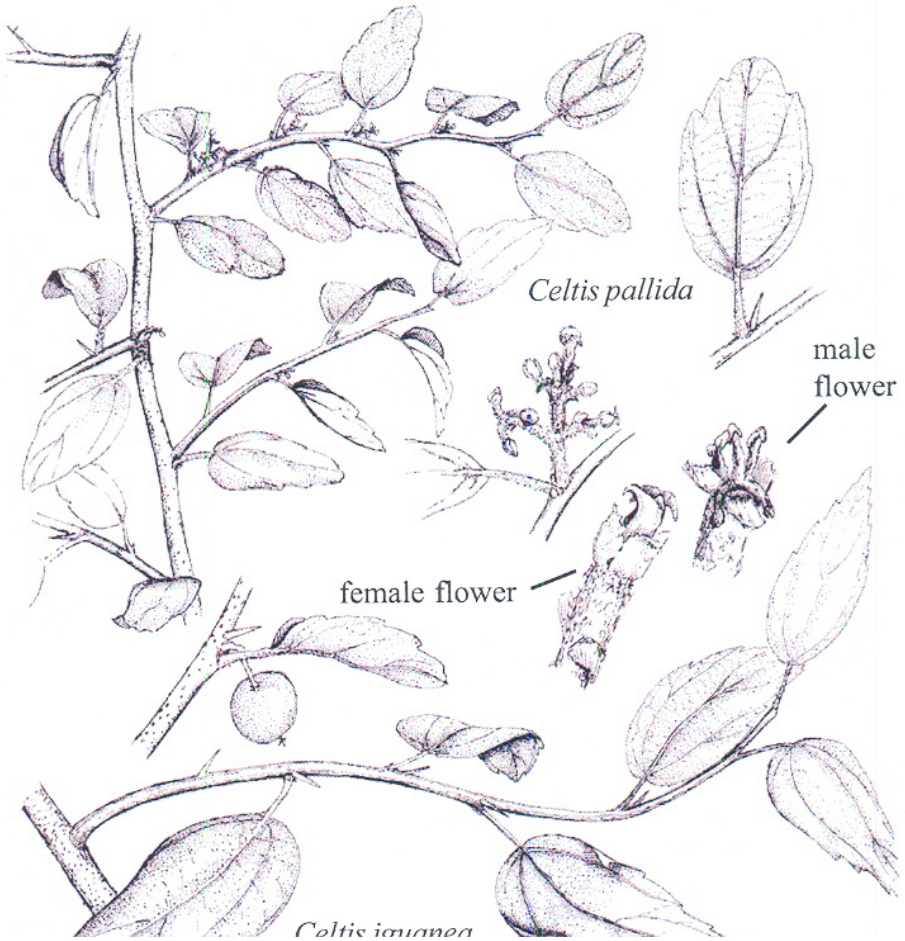
Best Survey Season: Both species flower in summer and fruit in fall; leaves and spines are distinctive all year.

Range-wide Distribution: Spiny hackberry: FL, TX, NM, AZ, northern Mexico. Iguana hackberry: Collier and Lee counties, FL; West Indies, Central and South America.

Conservation Status: Development and shell mining for fill have destroyed most of these species' habitat. Both species are known from only 3 preserves in SW FL.

Protection & Management: Monitor known populations. Protect shell mounds from mining and development.

References: Coile 2000, Correll and Correll 1982, D'arcy 1987, IRC 1999, Nelson 1996, Ward 1979, Wunderlin 1982, Wunderlin 1998, Wunderlin and Hansen 2000a.



GOPHER TORTOISE
Gopherus polyphemus

Order: Testudines
Family: Testudinidae
FNAI Ranks: G3/S3
U.S. Status: None in Florida; Threatened in Louisiana, Mississippi, and western Alabama
FL Status: Species of Special Concern

Florida prohibits take, possession, sale, or purchase of tortoises or their parts except by permit.

© Dan Hipes

juvenile
© Dan Hipes

Description: A medium-sized turtle (to 10 in. = 254 mm) fully adapted for life on land. Upper shell brown and relatively flat above; lower shell yellowish, without hinge, and projecting forward, especially in male; skin brown to dark gray. Forelimbs greatly expanded for digging; hind limbs reduced, stumpy, lacking any form of webbing between toes. Lower shell of male somewhat concave. Young: scales of carapace often with yellow centers, skin yellowish to tan; approximately 2 in. (51 mm) shell length at hatching.

GOPHER TORTOISE *Gopherus polyphemus*

203 mm), less stout feet, moveable hinge on lower shell, and often but not always by black and yellow upper shell. Tortoise burrows, which are useful in determining species' presence, typically have lower, flatter profile than more rounded burrows of armadillos; this reflects differences in cross-sectional shapes of the two animals.

Habitat: Typically found in dry upland habitats, including sandhills, scrub, xeric oak hammock, and dry pine flatwoods; also commonly uses disturbed habitats such as pastures, oldfields, and road shoulders. Tortoises excavate deep burrows for refuge from predators, weather, and fire; more than 300 other species of animals have been recorded sharing these burrows.

Seasonal Occurrence: Above-ground activity is greatly reduced during cold weather, with tortoises in northern Florida remaining below ground for months. Nonetheless, burrows are relatively conspicuous year-round.

Florida Distribution: State-wide except absent from the Everglades and Keys.

Range-wide Distribution: Lower Southeastern Coastal Plain, extending from southern South Carolina southward through lower Georgia and Florida and westward through southern Alabama, Mississippi, and extreme southeastern Louisiana.

Conservation Status: Despite its widespread occurrence throughout Florida, there is considerable concern about the declining abundance of this species. Much of its native habitat has been lost to agriculture, citriculture, forestry, mining, and urban and residential development. Although protected populations occur on many state, federal, and private conservation lands, recent development of a severe respiratory disease threatens even those.

Protection and Management: Manage large, undivided tracts of upland habitat to maintain native vegetative conditions; this generally requires periodic prescribed fire beneath trees to reduce brush and favor growth of grasses and forbs. Avoid building roads and houses in xeric uplands. Because of risk of introducing tortoises infected with respiratory disease to uncontaminated populations, tortoises should not be relocated except

Appendix 5: Otter Mound Preserve June/July 2006 Planting List

85 Trees
5 Strangler Fig
10 Fiddlewood
16 Satinleaf
2 Jamaican Dogwood
6 Wild Tamarind
5 Sea Grape
2 Mastic
7 black bead
4 paradise tree
10 soapberry
7 sweet acacia
8 wild lime
3 gumbo limbo

87 Shrubs
9 White indigoberry
9 Snowberry
2 Curacao bush
11 Coral Bean
10 Firebush
15 Florida privet
9 Spanish stopper
9 Simpson's stopper
3 limber caper
3 Jamaican capers
2 Hogplum
2 red stopper
3 walter's vibernum

159 ground cover
50 Blue porterweed
13 Corky-stem Passion Vine
50Wild Coffee
21 Rouge plant
25 Scorpiontail

Appendix 6: 2007 Otter Mound Plant List

Plant inventory taken by James N. Burch, PhD. in January, February, and July 2007

Scientific Name	Common name
Acacia farnesiana	acacia
**Acalypha wilkesiana*	copperleaf
Acanthocereus tetragonus	dildoe cactus
Agave decipiens	false sisal
**Aloe vera*	aloe
Alternanthera ramosissima	chaff flower
Ambrosia artemesiifolia	ragweed
**Amaranthus blitum*	amaranth
Ampelopsis arborea	pepper vine
**Antigonon leptopus*	coral vine
Argemone mexicana	Mexican poppy
Ardisia escallonioides	marl berry
Asclepias curassavica	milkweed
**Bauhinia sp.*	Orchid tree
Bidens alba	beggar ticks
**Blechum pyramidatum*	Browne's blechum
Boerhavia diffusa	spiderling
Bursea simaruba	gumbo limbo
Capparis cyanophallophora	Jamaica caper
Capparis flexuosa	flexible caper
Capraria biflora	goatweed
**Capsicum frutescens*	Tabasco pepper
Cardiospermum microcarpum	balloon vine
**Carica papaya*	papaya
**Catharanthus roseus*	Madagascar periwinkle
Cenchrus echinatus	sandspur
Chamaesyce hirta	spurge
Chamaesyce hypericifolia	spurge
Chiococca alba	snow berry
Chrysophyllum oliviforme	satin leaf
Citharexylum fruticosum	fiddlewood
**Citrus aurantifolia*	key lime
Coccoloba uvifera	sea grape
**Cocos nucifera*	coconut
Commelina diffusa	day flower
Conyza canadensis	dwarf horseweed
Cordia globosa	Curacao bush
**Crinum asiaticum*	poisonbulb
**Cupaniopsis anacardioides*	carrotwood
Cyperus ligularis	sedge
Cyperus sp.	sedge
**Dactyloctenium aegyptium*	Egypt grass
**Delonix regia*	royal poinciana
Dichanthelium commutatum	grass
**Dioscorea bulbifera*	air-potato
Erythrina herbacea	coral bean

Scientific Name	Common name
Eugenia axillaris	white stopper
Eugenia foetida	Spanish stopper
**Eugenia uniflora*	Surinam cherry
Euphorbia tirucali	pencil tree
Ficus aurea	strangler fig
Forsetiera segregata	Florida privet
Galactea regularis	milk pea
Galactea volubilis	milk pea
Hamelia patens	fire bush
Helianthus debilis	beach sunflower
Heliotropium angiospermum	scorpion tail
Herissantia crispa	bladdermallow
Hymenocallis latifolia	spider lilly
Ipomoea indica	morning glory
Ipomoea trichocarpa	morning glory
**Kalanchoe pinnata*	walking plant
**Lantana camara*	lantana
Lantana involucrata	lantana
Lepidium virginicum	pepperweed
**Lucaena leucocephala*	leadtree
Lysiloma latisiliquum	wild tamarind
**Mangifera indica*	mango
Mastichodendron foetidissimum	mastic
Melanthera nivea	melanthera
**Melia azedarach*	Chinaberry
Melothria pendula	creeping cucumber
Mentzelia floridana	poor boy's patches
**Momordica charantia*	bitter gourd
Morinda royoc	white mulberry
Morus rubra	red mulberry
**Musa paradisica*	banana
Myrcianthes fragrans	naked wood
Oxalis corniculata	sorrel
Parietaria floridana	pellitory
Parthenocissus quinquefolia	Virginia creeper
Passiflora suberosa	passion vine
Pedilanthus tithymaloides	devil's backbone
**Persea Americana*	avocado
Petiveria alliacea	garlic weed
Phlebodium aureum	serpent fern
Physalis angulata	ground cherry
Physalis arenicola	ground cherry
Phytolacca americana	pokeweed
Piscidia piscipula	Jamaica dogwood
Pisonia aculeata	cat claw
Pithecellobium guadalupense	black bead

Scientific Name	Common name
Pithecellobium unguis-cati	cat claw
Poinsettia cyathophora	wild poinsettia
Poinsettia sp.	poinsettia
Portulaca oleracea	purslane
**Psidium guajava*	guava
Psychotria nervosa	wild coffee
Quercus virginiana	live oak
Randia aculeata	indigo berry
**Rhoeo discolor*	oyster plant
**Rhynchelytrum repens*	Natal grass
Rivina humilis	blood berry
Sabal palmetto	sabal palm
Salvia coccinea	tropical sage
**Sanseverina hyacinthoides*	bowstring hemp
Sapindus saponaria	soap berry
**Schinus terebinthifolius*	Brazilian pepper
Senna obtusifolia	sicklepod
Setaria magna	foxtail grass

Scientific Name	Common name
Sida acuta	Indian mallow
Simaruba glauca	paradise tree
Sonchus oleraceus	sow thistle
Spigelia anthelmia	West Indian pinkroot
Sporobolus virgicus	smut grass
Stachytarpheta jamaicense	blue porter weed
**Tecoma stans*	yellow elder
**Syngonium podophyllum*	syngonium
**Syzygium cumini*	Java plum
?Thrinax radiata	thatch palm
Tillandsia fasciculata	air plant
Tillandsia usneoides	Spanish moss
Verbesina virginica	frostweed
Vitis rotundifolia	muscadine grape
Waltheria indica	sleepy morning
**Wedelia trilobata*	wedelia
Zanthoxylum fagara	wild lime

* depicts non-native species

Appendix 7: Breeding bird species recorded in the Marco Island Quadrangle in the vicinity of Otter Mound Preserve

Common Name	**Scientific Name**	**Common Name**	**Scientific Name**
Pied-billed Grebe	*Podilymbus podiceps*	Mangrove Cuckoo	*Coccyzus minor*
Brown Pelican	*Pelecanus occidentalis*	Great Horned Owl	*Bubo virginianus*
Double-crested Cormorant	*Phalacrocorax auritus*	Burrowing Owl	*Athene cunicularia*
Anhinga	*Anhinga anhinga*	Common Nighthawk	*Chordeiles minor*
Great Egret	*Ardea alba*	Chimney Swift	*Chaetura pelagica*
Snowy Egret	*Egretta thula*	Red-bellied Woodpecker	*Melanerpes carolinus*
Little Blue Heron	*Egretta caerulea*	Downy Woodpecker	*Picoides pubescens*
Tricolored Heron	*Egretta tricolor*	Northern Flicker	*Colaptes auratus*
Reddish Egret	*Egretta rufescens*	Pileated Woodpecker	*Dryocopus pileatus*
Cattle Egret	*Bubulcus ibis*	Great Crested Flycatcher	*Myiarchus crinitus*
Green Heron	*Butorides striatus*	Eastern Kingbird	*Tyrannus tyrannus*
Black-crowned Night-Heron	*Nycticorax nycticorax*	Gray Kingbird	*Tyrannus dominicensis*
Glossy Ibis	*Plegadis falcinellus*	White-eyed Vireo	*Vireo griseus*
Black Vulture	*Coragyps atratus*	Black-whiskered Vireo	*Vireo altiloquus*
Osprey	*Pandion haliaetus*	Blue Jay	*Cyanocitta cristata*
Swallow-tailed Kite	*Elanoides forficatus*	American Crow	*Corvus brachyrhynchos*
Bald Eagle	*Haliaeetus leucocephalus*	Fish Crow	*Corvus ossifragus*
Red-shouldered Hawk	*Buteo lineatus*	Purple Martin	*Progne subis*
Short-tailed Hawk	*Buteo brachyurus*	Carolina Wren	*Thryothorus ludovicianus*
American Kestrel	*Falco sparverius*	Northern Mockingbird	*Mimus polyglottos*
Northern Bobwhite	*Colinus virginianus*	Brown Thrasher	*Toxostoma rufum*
Common Moorhen	*Gallinula chloropus*	European Starling	*Sturnus vulgaris*
Snowy Plover	*Charadrius alexandrinus*	Yellow Warbler	*Dendroica petechia*
Wilson's Plover	*Charadrius wilsonia*	Prairie Warbler	*Dendroica discolor*
Killdeer	*Charadrius vociferus*	Eastern Towhee	*Pipilo erythrophthalmus*
Willet	*Catoptrophorus semipalmatus*	Northern Cardinal	*Cardinalis cardinalis*
Least Tern	*Sternula antillarum*	Red-winged Blackbird	*Agelaius phoeniceus*
Black Skimmer	*Rynchops niger*	Common Grackle	*Quiscalus quiscula*
Mourning Dove	*Zenaida macroura*	Boat-tailed Grackle	*Quiscalus major*
Common Ground Dove	*Columbina passerina*	Brown-headed Cowbird	*Molothrus ater*
Yellow-billed Cuckoo	*Coccyzus americanus*	House Sparrow	*Passer domesticus*

Source: Florida Fish and Wildlife Conservation Commission 2003 - Florida Breeding Bird Atlas, www.wildflorida.org/bba

Appendix 8: Adjacent property owners' deed describing ingress/egress easement

00971976 1985 DEC -6 PM 3:39 001168 000001
COLLIER COUNTY RECORDED OR BOOK PAGE

REC 9.00
DOC .50
INT

WARRANTY DEED

THIS INDENTURE, made this 9 day of October, 1985, between JAMES WILSON DYCHES, joined by his wife, JUNE JOLLEY DYCHES, of the County of Collier, State of Florida, hereinafter called "Grantor"; and JAMES WILSON DYCHES and JUNE JOLLEY DYCHES, husband and wife, as an estate by the entireties, whose Post Office address is P.O. Box 1213, Marco Island, Florida 33937, hereinafter called "Grantee";

WITNESSETH, that the Grantor, for and in consideration of the sum of Ten Dollars and other valuable consideration to it paid by the Grantee, the receipt of which is hereby acknowledged, does hereby grant, bargain, sell and convey unto the said Grantee the following described real estate, situated in Collier County, Florida, to wit:

PARCEL D as described in the attachment hereto identified as Exhibit D.

ACTUAL CONSIDERATION IS LESS THAN $100.00.

As part of the consideration of this conveyance, Grantee herein assumes and agrees to pay the balance due on mortgage to Naples Federal Savings and Loan Association recorded in OR Book 789, Page 1550, Public Records of Collier County, Florida.

The Grantor hereby covenants with the Grantee that said real estate is free of all encumbrances, that lawful seisin of and good right to convey said real estate are vested in the Grantor, and that the Grantor hereby fully warrants the title to said land and will defend the same against the lawful claims of all persons whomsoever, except applicable zoning regulations; easements, restrictions and reservations of record; terms and provisions of aforementioned mortgage; and taxes for the year 1985 and thereafter, which Grantee herein assumes and agrees to pay.

Signed, sealed and delivered
in the presence of:

James Wilson Dyches (SEAL)
James Wilson Dyches

June Jolley Dyches (SEAL)
June Jolley Dyches

WHEN RECORDED RETURN TO
JAMES E. WILLIS
LAWYER

STATE OF FLORIDA
COUNTY OF COLLIER

The foregoing instrument was acknowledged before me this 9 day of October, 1985, by JAMES WILSON DYCHES, joined by his wife, JUNE JOLLEY DYCHES.

(NOTARY SEAL HERE)

NOTARY PUBLIC
My commission expires:
NOTARY PUBLIC STATE OF FLORIDA
MY COMMISSION EXPIRES SEPT 29 1986
BONDED THRU GENERAL INSURANCE UND

THIS INSTRUMENT PREPARED BY: James E. Willis, Esquire, Willis & Jones, 531 Third Street South, Naples, Florida 33940
WITHOUT BENEFIT OF TITLE EXAMINATION
7bbD3

Received $ .50
Documentary Stamp Tax
Collier County, Florida
William J. Reagan, Clerk
by D.C.

Parcel D

A parcel of land in Section 21, Township 52 South, Range 26 East, Collier County, Florida being described as follows:
From a concrete monument with a brass cap marking the quarter-section corner on the north line of said Section 21, run South 1°-52'-49" East along the quarter-section line of said section, being the line dividing Government Lot 3 from Government Lots 2 and 5 of said Section 21 for 3,547.21 feet to a concrete monument with a brass cap set near the shore of Caxambas Pass marking the location of the former "sunken terra cotta pipe filled with cement 60 feet west of the J.M. Barfield present dock;" thence run North 1°-52'-49" West along said quarter-section line for 470 feet to a concrete monument with a brass cap; thence run North 88°-07'-11" East for 210 feet to a concrete monument with a brass cap marking the northeast corner of Block 15 of J.M. Barfield's Subdivision and the PLACE OF BEGINNING of the Parcel herein described;
thence South 88°-07'-11" West 184.50 feet;
thence North 1°-52'-49" West 295.00 feet;
thence North 88°-07'-11" East 184.50 feet to a concrete monument with a brass cap marking the Northeast corner of the Lot sometimes referred to as the J.L. Collier's Lot;
thence South 1°-52'-49" East 295.00 feet to the Place of Beginning;
being a part of Section 21, Township 52 South, Range 26 East, Collier County, Florida;
containing 1.25 Acres more or less.

OR BOOK 00116 PAGE 000002

Description of ingress and egress easement

An easement for ingress and egress over and across the following described Easement Parcel:
From a concrete monument with a brass cap marking the quarter-section corner on the North line of said Section 21, run South 1°-52'-49" East along the quarter-section line of said section, being the line dividing Government Lot 3 from Government Lots 2 and 5 of said Section 21 for 3,547.21 feet to a concrete monument with a brass cap set near the shore of Caxambas Pass marking the location of the former "sunken cerra cotta pipe filled with cement 60 feet West of the J.M. Barfield present dock";
thence run North 1°-52'-49" West along said quarter-section line for 470 feet to a concrete monument with a brass cap;
thence South 88°-07'-11" West 159.00 feet;
thence North 1°-52'-49" West 127.50 feet for the PLACE OF BEGINNING of the Easement Parcel herein described;
thence North 1°-52'-49" West 67.64 feet;
thence North 88°-07'-11" East 15.00 feet;
thence South 1°-52'-49" East 27.64 feet;
thence Southeasterly 39.27 feet along the arc of a circular curve concave to the Northeast, radius 25.00 feet subtended by a chord which bears South 46°-52'-49" East 35.36 feet;
thence North 88°-07'-11" East 112.00 feet;
thence Northeasterly 39.27 feet along the arc of a circular curve concave to the Northwest, radius 25.00 feet, subtended by a chord which bears North 43°-07'-11" East 35.36 feet;
thence North 1°-52'-49" West 127.50 feet;
thence North 88°-07'-11" East 15.00 feet;
thence South 1°-52'-49" East 167.50 feet;
thence South 88°-07'-11" West 192.00 feet to the Place of Beginning;
being an easement over part of Section 21, Township 52 South, Range 26 East, Collier County, Florida.

JAMES E. WILLIS LAWYER

RECORDER'S MEMO: Legibility of writing, Typing or Printing unsatisfactory in this document when received.

Recorded and Verified in Official Records of COLLIER COUNTY, FLA. Clerk of Circuit Court

Appendix 9: FFWCC and Collier County Staff Correspondence Regarding Possible Gopher Tortoise Relocation at Otter Mound Preserve

HennigMelissa

From: Zambrano, Ricardo [Ricardo.Zambrano@MyFWC.com]
Sent: Thursday, April 12, 2007 11:46 AM
To: HennigMelissa
Cc: sulecki_a
Subject: RE: Possible gopher tortoise relocation

Melissa,

Our Tallahassee office reviews all offsite gopher tortoise relocation applications. If they have any concerns or want a second opinion they send it my way.

I seriously doubt they would approve a hardwood hammock as a recipient site. I would not. Dense canopies tend to shade out the ground vegetation tortoises eat. If the site is not approved the application will only be delayed until a suitable recipient site is found. In my opinion, the consultants would be wasting their time.

Ricardo

From: HennigMelissa [mailto:MelissaHennig@colliergov.net]
Sent: Thursday, April 12, 2007 11:38 AM
To: Zambrano, Ricardo
Cc: sulecki_a
Subject: RE: Possible gopher tortoise relocation

Thanks Ricardo,
The site is a hardwood hammock, so it is quite dense with vegetation. We wouldn't want to mechanically clear, because we're trying to restore/create habitat for migratory birds. We've been asked by a consultant if we have anywhere we might be able to put 2 tortoises. This was just any idea. I know they would hardley be a "viable" population, but it would be somewhere for them the go to live out the rest of their days if the consultants can't find another place for them.

Do you think we should go ahead and tell them to try to submit the relocation paperwork for this site?

Thanks,
Melissa

From: Zambrano, Ricardo [mailto:Ricardo.Zambrano@MyFWC.com]
Sent: Thursday, April 12, 2007 11:31 AM
To: HennigMelissa
Subject: RE: Possible gopher tortoise relocation

Melissa,

A relocation site has to have suitable gopher tortoise habitat and it has to be protected basically in perpetuity. There are no fees or paperwork involved. The usual process is that a site is submitted to us as the recipient site for an off-site relocation. Our staff then approves or denies the recipient site based on the habitat type, soils, tortoise carrying capacity, and proposed habitat management.

This site from the aerials looks a bit dense for gopher tortoise habitat. The site would probably require some mechanical clearing. Also, it is a bit small for most relocations.

Please let me know if you have more questions.

Ricardo Zambrano
Regional Nongame Biologist
Florida Fish and Wildlife Conservation Commission
8535 Northlake Boulevard
West Palm Beach, FL 33412
(561) 625-5122/ fax: (561) 625-5129
ricardo.zambrano@myfwc.com

Visit us at *MyFWC.com*

From: HennigMelissa [mailto:MelissaHennig@colliergov.net]
Sent: Tuesday, April 10, 2007 11:21 AM
To: Zambrano, Ricardo
Subject: Possible gopher tortoise relocation

Hi Ricardo,
We have a possible gopher tortoise relocation site on Marco Island. It's a 1.78 acre shell mound tropical hardwood hammock preserve - we're looking to acquire an additional .68 acres soon. I've found 3 very abandoned looking burrows on the site, but no tortoises. I'll attach a map of the preserve.

What is the procedure to become a relocation site? Is there paperwork or a fee involved?

Thanks,
Melissa
<<OtterMoundAerial.jpg>>
Melissa Hennig
Environmental Specialist - Conservation Collier Program
Collier County Facilities Department
3301 Tamiami Trail E.
Naples, FL 34112
phone: 239-213-2957
fax: 239-793-3795
e-mail: melissahennig@colliergov.net

Appendix 10: USFWS and Collier County Cooperative Agreement No. 401815J021

AGREEMENT NO: 401815J021
CHARGE CODE 41545-1121-04HR 1Y (FY 05)
Amount $10,000.00
DUNS NO: 076997790
FAADS: 12-47625-Naples-021-Collier-34104-14-07/01/05-06/30/15-To facilitate habitat restoration and improvement primarily for federal trust resources on wetlands-01

COOPERATIVE AGREEMENT

Between

U.S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

RECEIVED
OCT 0 1 2005

And

COLLIER COUNTY BOARD OF COUNTY COMMISSIONERS

And

BUREAU OF INVASIVE PLANT MANAGEMENT
STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

I. COOPERATIVE AGREEMENT RECIPIENT:

Collier County Board of County Commissioners
Collier County Environmental Services Department
2800 North Horseshoe Drive
Naples, FL 34104

Bureau of Invasive Plant Management
Department of Environmental Protection
3915 Commonwealth Blvd, MS 710
Tallahassee, Florida 32399-3000

RECEIVED
05 OCT 20 PM 3:01
U.S. FWS

Recipient Class: County Government
Catalog of Federal Domestic Assistance Number: 15.631

II. AUTHORITY:

This agreement between the U.S. Department of the Interior, Fish and Wildlife Service (hereinafter referred to as the "Service") and Collier County Board of County Commissioners (hereinafter referred to as "Collier County") and the Bureau of Invasive Plant Management, State of Florida Department of Environmental Protection (BIPM) is

hereby entered into pursuant to the authority contained in Section 1 of the Fish and Wildlife Coordination Act (16 U.S.C. 661) and the Fish and Wildlife Act of 1956 (16 U.S.C. 742a-742j).

III. PURPOSE:

This Cooperative Agreement is being implemented in order to facilitate habitat restoration and improvement primarily for Federal trust resources on wetlands, floodplains, riparian areas, and uplands. Projects will be undertaken in cooperation between the Service, Collier County and BIPM in the location, planning, and implementation of specific practices on lands purchased through the Conservation Collier Program, in Collier County, Florida. This agreement provides funding from the Service to Collier County for carrying out projects and activities as identified in the Scope of Work (Article V).

IV. BACKGROUND:

The Service, Collier County and BIPM have responsibilities and goals for conserving natural resources:

a) The Service has primary responsibilities related to Federal trust species and their habitats, such as endangered and threatened species, migratory birds, anadromous fish, and wetlands.
b) The Conservation Collier Program is a taxpayer-funded initiative to acquire, protect restore and manage environmentally sensitive lands within Collier County for the benefit of present and future generations. Goals of the program include: protection of biological values including unique and endangered native plant communities, wetland and listed species habitat; protection of water quality and resources; enhancement and protection of current conservation lands through function as a buffer, ecological link or habitat corridor; and enhancement of flood protection. Properties will be managed to maintain their ecological values, and provide natural resource based recreation and educational opportunities.
c) The BIPM incorporates ecosystem management concepts involving "place-based management" that brings together regionally diverse interests to develop flexible, innovative strategies to address local upland invasive plant management issues in Florida. All three organizations share mutual interest and concern for the protection and conservation of all fish and wildlife resources.

The Service has implemented the Partners for Fish and Wildlife (Partners) Program. This Program directs the Service to work cooperatively with state natural resources agencies, counties and municipalities, non-profit organization and others in carrying out the objectives of the Program. Specifically, the Service can provide funding assistance through the Partners Program. For this agreement, funding is subject to appropriation of project funds by Congress, and shall be for the purposes of carrying out habitat

restoration and improvement activities on County lands, with primary benefits directed towards Federal trust resources.

V. SCOPE OF WORK:

For the period hereinafter set forth, BIPM will continue assisting managers of public conservation lands with treatment and eradication of invasive exotic plants. For the period hereinafter set forth, Collier County and the Service will furnish the necessary personnel, materials, services, and facilities needed to implement habitat restoration and improvement activities on Conservation Collier lands in Collier County, Florida as specified below.

A. The Service, Collier County and BIPM mutually agree:

1. That each and every provision of this agreement is subject to the laws of the United States and the State of Florida.

2. To cooperate in providing recognition for each party of this agreement. Such recognition may include the display or mention of the names and logos of each agency in publicity of cooperative projects, publications, project documents, and any signs placed on project sites.

3. That each party will assign an official representative to coordinate and carry out the provision of this agreement.

4. That activities covered within this agreement shall not be construed as obligating the Service or Collier County to expend, or as involving the United States, Collier County or BIPM in any contract or other obligation for future payment of money, other than as specifically stated in Article VII of this agreement; or in excess of appropriations authorized by law and administratively allocated for this agreement.

5. That subject to the availability of funds, to commence activities under this agreement in Federal Fiscal Year 2005.

6. That this agreement in no way restricts the Service, Collier County or BIPM from participating with other public and private agencies, organizations, and individuals in similar activities; or from accepting contributions and gifts specifically for the protection, restoration, enhancement, and management of environmental resources.

B. Specifically, the Service will:

1. Provide funds (as specified in Article VII) to Collier County to plan and implement specific habitat restoration and enhancement projects on Conservation Collier property mutually approved by the Service, and Collier County. Project funding

criteria and definitions are attached (Attachment A).

2. Assign a Service Project Officer to coordinate all activities under this agreement.

3. Assist, as needed, in the identification and selection of sites and practices to be implemented, according to the project selection criteria provided in Attachment A.

4. Provide other reasonable technical assistance as requested by Collier County.

C. Specifically, Collier County will:

1. Plan and implement habitat restoration and improvement projects on Conservation Collier properties. Project proposals will be submitted to Service Project Officer for review and approval (Attachment B – Project data sheet).

2. Schedule and participate in a site visit with the Service before and during the project. Coordinate the projects with the Service Project Officer.

3. Secure qualified contractors and permits to implement the required practices.

4. Monitor activities funded under this agreement and provide site-specific data to the Service. This shall include the maintenance of complete and accurate records of actual and necessary costs of carrying out specific projects under this agreement. Collier County will retain such records for a period of three (3) years during which time these records shall be made available upon request to the Service for review and audit.

5. Provide to the Service Project Officer those reporting and delivery projects specifically identified in Article XII of this agreement.

6. Collier County will maintain the improvements to the wildlife habitat on the property for a minimum of 10 years.

D. Specifically, the BIPM will:

1. Provide Collier County information on projects funded through the BIPM including project costs, acres treated, species treated and treatment dates.

VI. PERIOD OF PERFORMANCE:

The period of performance of this agreement is from July 1, 2005 through June 30, 2015.

VII. AWARD AMOUNT:

A. TOTAL (NOT-TO-EXCEED) AWARD AMOUNT: $250,000
B. TOTAL AMOUNT FUNDED TO DATE: $10,000
C. FUNDING INCREMENTS: The Recipient is advised that the Service's obligation to provide funding for funding increments included in this agreement is contingent upon (i) satisfactory performance and (ii) the availability of funds. Accordingly, no legal liability on the part of the Service exists unless or until funds are made available to the Recipient and notice of such availability is confirmed in writing to the Recipient.

VIII. APPROPRIATION DATA:

APPROPRIATION: 41545-1121-04HR 1Y $10,000 (FY05)

IX. PAYMENT PROVISIONS:

A. Upon acceptance of the terms and conditions of this agreement, the Recipient may submit requests for payment using Standard Form 270, Request for Advance or Reimbursement, no more frequently than monthly. (Standard Form 271 must be used if agreement is for construction.) The Debt Collection Improvement Act of 1996 (P.L. 104-134) requires that all federal payments made by an agency after July 26, 1996, must be made by electronic funds transfer unless the recipient certifies that they do not have an account at a financial institution or authorized payment agent.

B. The original and one copy of each payment request (SF 270) shall be submitted to the Service Project Officer identified in Article XI.A. of this agreement. Upon approval, the Service Project Officer shall forward the payment request and one copy to the Budget and Finance Office for processing.

C. Should the Recipient be unable to complete the provisions of this agreement, all monies provided by the Service which prove to be cancelable obligations or unallowable costs in accordance with OMB Circular A-87 ("Cost Principles for State and Local Governments")or the approved budget, shall be refunded to the Service.

D. This agreement is intended to support a particular project for a specific period of time. Any portion of funds advanced to the Recipient that are not expended at the completion of the period of performance of this agreement shall be returned to the Service, along with any interest earned on that amount.

E. All work that is contracted out by Collier County shall be paid by Collier County, according to their contracting procedures.

X. ADMINISTRATIVE OFFICER:

The Administrative Officer for this agreement is:

Lewis Boggan
U.S. Fish and Wildlife Service
1875 Century Boulevard, #310
Atlanta, GA 30345
Phone: (404) 679-7231
Fax: (404) 679-4057
E-mail: lewis_boggan @fws.gov

XI. PROJECT OFFICERS:

A. U.S. Fish and Wildlife Service

Kathy O'Reilly-Doyle
Private Lands Biologist
Partners for Fish and Wildlife Program
3860 Tollgate Blvd, Suite 300
Naples, FL 34114
(239)353-8442 ext 232
(239)353-8640 (fax)
e-mail: Kathy_O'Reilly-Doyle@fws.gov

B. Collier County Environmental Services Department

Alexandra J. Sulecki, Coordinator
Conservation Collier Program
Collier County Environmental Services Department
2800 North Horseshoe Drive
Naples, FL 34104
(239)213-2961
(239)213-2960 (fax)
e-mail: AlexandraSulecki@Colliergov.net

C. Bureau of Invasive Plant Management

Greg Jubinsky
Bureau of Invasive Plant Management
Department of Environmental Protection State of Florida
3915 Commonwealth Blvd, MS 710
Tallahassee, FL 32399-3000
(850)487-2600

XII. REPORTING/DELIVERY REQUIREMENTS:

A. Within 30 days following the completion of an individual habitat restoration or improvement project under this agreement, Collier County's Project Officer will provide the Service Project Officer with an overview summary report, including any recommendations for additional studies or information needed to further support habitat restoration or improvement associated with the subject project. Also, Collier County shall document the before and after project habitat condition by taking print or digital photographs necessary to adequately depict site conditions. A copy of such photographic materials shall be provided to the Service Project Officer.

B. Final Financial Status Report: Within 90 days after completion of this award, the Recipient shall submit to the Service Administrative Officer a final Financial Status Report (Standard Form 269

XIII. TERMS AND CONDITIONS:

The Department of the Interior regulations governing assistance agreements with state, local, or Indian tribe governments at subparts A-E of 43 CFR Part 12, Administrative and Audit Requirements and Cost Principles for Assistance Programs, (plus relevant circulars of the Office of Management and Budget as referenced in these regulations), are applicable to this agreement and are incorporated by reference with the same force and effect as if they were given in full text. Upon request, the Service's Division of Contracting and General Services will make the full text of these regulations available.

XIV SPECIAL PROVISIONS:

A. The liability of the Service will be governed by the Federal Tort Claims Act (28 U.S.C. 2671 et sea.). The extent of the liability of the State will be governed by the laws of the state of Florida.

B. Modifications or renewals may be proposed at any time during the period of performance by either party and shall become effective upon approval of both parties.

C. This agreement may be terminated upon 30 days notification by either party and by mutual consent of both parties.

D. Recipient will comply with sections 2 through 4 of the Act of March 3, 1933 (41 U.S.C. 10a-10c, popularly known as "Buy American Act").

E. Recipients of grants/cooperative agreements and/or sub-awards are encouraged

to adopt and enforce on-the-job seat belt use and policies and programs for their employees when operating company-owned, rented, or personally-owned vehicles. These measures include, but are not limited to, conducting education, awareness, and other appropriate programs for their employees about the importance of wearing seat belts and the consequences of not wearing them.

IN WITNESS WHEREOF, the parties hereto have caused this Grant Cooperative Agreement to be executed as of the date therein written.

U.S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

BY: Anita Wenda

TITLE: Anita Wenda Supervisory Contracting Officer

DATE: 10/27/05

BUREAU OF INVASIVE PLANT MGMT.
FLORIDA DEPARTMENT OF
ENVIRONMENTAL CONSERVATION

BY: per attached page

TITLE: _____

DATE: _____

ATTEST:

DWIGHT E. BROCK, Clerk

By: Anne Jennings P.C. /
Deputy Clerk
Attest as to Chairman's signature only.

BOARD OF COUNTY COMMISSIONERS,
COLLIER COUNTY, FLORIDA

By: Fred W. Coyle
Fred W. Coyle, Chairman

Approved at to form
And legal sufficiency:

Tom Palmer
Tom Palmer
Assistant County Attorney

ATTACHMENT A

PARTNERS FOR FISH AND WILDLIFE
U. S. Fish and Wildlife Service

PROJECT CRITERIA

- Priority emphasis on Federal trust resources: e.g., migratory birds, endangered and threatened species, wetlands, floodplains and riparian areas.
- Program emphasizes habitat restoration (i.e., hydrology and vegetation), and to a lesser extent habitat improvement and creation (see attached definitions).
- At least 50 percent of the total project cost must be covered with in-kind services and/or non-Service funds.

DEFINITIONS

HABITAT RESTORATION
Rehabilitation of degraded or lost habitat.

WETLAND RESTORATION
1. Reestablishment, as nearly as practical, of the original (what probably existed prior to degradation) wetland community, including hydrology and native hydrophytic vegetation, and
2. Establishment of a wetland community, including hydrology and native hydrophytic vegetation, different from what probably existed prior to degradation, but at least partially replacing original habitat functions and values.

ASSOCIATED HABITAT RESTORATION
1. Reestablishment, as nearly as practical, of the original (what existed prior to the degradation) ecological community, including native vegetation, and
2. Establishment of an ecological community, including native vegetation, that is different from what probably existed prior to degradation, but at least partially replacing original habitat functions and values.

HABITAT IMPROVEMENT
Alteration of existing habitat to increase specific fish and wildlife functions and values. Improvement actions may provide new capabilities, new management options, new structures, revegetation, or other actions to influence one or several functions and values. Improvement differs from restoration in that it does not necessarily seek to reestablish or establish whole ecological communities, and does not necessarily seek to replace original functions and values.

Attachment B

PARTNERS FOR FISH AND WILDLIFE
PRIVATE LANDS PROJECT DATA SHEET

PROJECT NAME: Conservation Collier Land Habitat Restoration Project

DATE: September 30, 2004

CONTACT: Melissa Hennig
Environmental Specialist
Collier County Environmental Services Department
2800 North Horseshoe Drive
Naples, FL 34104
Phone: (239) 213-2957
Fax: (239) 213-2960
E-mail: MelissaHennig@colliergov.net

LANDOWNER / COOPERATOR(S):
Collier County Board of County Commissioners
3301 East Tamiami Trail
Naples, FL 34112
Phone: (239) 732-2505
Fax: (239) 213-2960

The Conservation Collier Program is a taxpayer-funded initiative that was approved by voters in November 2002. It is a program to acquire, protect, restore and manage environmentally sensitive lands within Collier County. Currently four properties have been acquired through the program and several more properties are being considered for purchase. If received, Partners program funds would be used to restore current as well as future properties. Because the America's Business Park parcel will be the first property to be restored through possible funds from the Partners for Fish and Wildlife Program, it will be the focus of this data sheet.

PROJECT LOCATION (State, County, Township, Range, Section, Ecosystem, with map): The Railhead Scrub Preserve property is located east of Old US 41 and south of Railhead Industrial Park in Section 10 Township 48 Range 25 within the northwest corner of Collier County, Florida. The 80.34 - acre site contains primarily xeric oak scrub. Palmetto prairie, pine flatwoods, hardwood conifer mixed, cypress-pine-cabbage palm, intermittent pond and freshwater marsh plant communities also exist on the property. See Maps 1 and 2.

Relationship to nearest National Wildlife Refuge, State Management Area, National Forest, Wetland Reserve Program Easement, Other Easement or otherwise protected area:

Collier County Barefoot Beach Preserve is located approximately 2.5 miles southwest of the Railhead Scrub Preserve, while Corkscrew Regional Ecosystem Watershed lands are approximately 3.5 miles northeast of the Railhead Scrub Preserve. Both of these protected areas are separated from the preserve by roads and developed property. Two small private conservation areas belonging to North Collier Industrial Park and Railhead Industrial Park are adjacent to the preserve to the west and north respectively. See Map 1.

DESCRIPTION AND PURPOSE OF PROJECT:
Funds, if received, will be used to remove invasive exotic vegetation from the Railhead Scrub Preserve property. Although the entire parcel will be treated, it is approximated that at least 10 acres of the preserve are infested with exotic vegetation to a significant degree (80% or more exotic plant density). Invasive exotic plant species observed include melaleuca (*Melaleuca quinquenervia)*, Brazilian pepper (*Schinus terebinthifolius)*, downy rosemyrtle (*Rhodomyrtus tomentosa)*, shoebutton ardisia (*Ardesia elliptica)*, earleaf acacia (*Acacia auriculiformis)* and guava (*Psidium guajava)*.

A contractor will be hired to remove invasive exotic plants from the preserve. The contractor will be responsible for the control of any target trees, shrubs, and seedlings and the application of any herbicides within the designated project location. All aspects of the control of listed FLEPPC Category I and II invasive species within the preserve, including any equipment, labor, supply, and herbicide needs, will be the responsibility of the contractor. The contractor will take precautions to avoid harming any native vegetation or wildlife.

The vegetation will be cut at or below grade, treated with an appropriate herbicide per label rates and stacked on site, or, if possible, light equipment will be used to remove the debris once the vegetation has been cut and treated. The use of equipment will depend on site-specific conditions.

Future monitoring and re-treatment of the invasive exotic plant population within the preserve will be performed by Collier County Staff or qualified contractors.

EXPECTED BENEFITS TO FEDERAL TRUST SPECIES (specify and briefly describe for all endangered, threatened, and candidate species, migratory birds, etc.):
Gopher tortoises (*gopherus polyphemus*) inhabit the Railhead Scrub Preserve property. Ninety-six "active", forty "inactive" and eighteen "abandoned" burrows were located during a July 2003 survey by Collier Environmental Consultants, Inc. Although no eastern indigo snakes (*Drymarcher corais*) have been directly observed on site, it is highly likely that this federally threatened species is present on the property. Removing exotic vegetation and allowing native vegetation to grow in its place will create more habitat for the gopher tortoise and subsequently more habitat for the eastern indigo snake.

WETLAND RESTORATION

Hydrology Acres: 10 **#**
Sites N/A

 # Water-Control
Structures N/A
Revegetation Acres: 0 **#**
Sites N/A

*Hydrology and revegetation acreage may overlap so that sum exceeds total site acreage

Briefly Describe Type and Benefits:
Invasive exotic vegetation, primarily melaleuca, will be removed from hydric pine flatwoods and cypress-pine-cabbage palm plant communities on site.

RIPARIAN RESTORATION

Miles Restored/Protected: 0
Briefly Describe Type and Benefits:

IN-STREAM RESTORATION

# of contiguous reaches: 0
Briefly Describe Type and Benefits:

UPLAND RESTORATION

Acres: 70.34
Briefly Describe Type and Benefits:
Invasive exotic vegetation will be removed from pine flatwoods, xeric oak scrub, palmetto prairie and hardwood conifer mixed plant communities on site.

HABITAT IMPROVEMENT

Acres: 80.34
Briefly Describe Type and Benefits:
Invasive exotic vegetation removal from wetland and upland areas will both remove the direct threat to infested habitat communities and remove the indirect threat of a large seed source. Native plants will replace invasive exotic vegetation, thus increasing habitat for native wildlife species.

AGREEMENT NO.: 401815J021
CHARGE CODE: 41545-1121-04HR W3 FY06
AMOUNT: $3,500.00
DUNS: 076997790

MODIFICATION NO.: 1

To

GRANT AGREEMENT

Between

U. S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

And

COLLIER COUNTY GOVERNMENT

The purpose of this modification is to add additional funding in the amount of $3,500.00 to this agreement, thus increasing this agreement from $10,000.00 to $13,500.00

1. Article V, SCOPE OF WORK, is revised to add:

   E. The project area has been expanded to include a second site, the Otter Mound Preserve. (see attachments)

2. Article VII, AWARD AMOUNT, is revised to read:

   B. TOTAL AMOUNT FUNDED TO DATE: $13,500.00

3. Article VIII, APPROPRIATION DATA:

   APPROPRIATION: 41545-1121-04HR W3 $3,500.00 FY06

Approved as to form and legal sufficiency
Tom Palmer 8-15-06
Tom Palmer
Assistant County Attorney

All other terms and conditions of this agreement remain unchanged.

U. S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

BY: _____
Chief, Contracting and General Services

TITLE: _____

DATE: 8/1/2006

ATTEST:
DWIGHT E. BROCK, Clerk

By: _____
Deputy Clerk

Attest as to Chairman's signature only

BOARD OF COUNTY COMMISSIONERS,
COLLIER COUNTY, FLORIDA.

By: _____
FRANK HALAS, Chairman

9/12/06

Attachment C

PARTNERS FOR FISH AND WILDLIFE
PRIVATE LANDS PROJECT DATA SHEET

PROJECT NAME: Otter Mound Preserve Native Planting – Modification of Cooperative Agreement No: 401815J021

DATE: September 30, 2005

CONTACT: Melissa Hennig
Environmental Specialist
Collier County Environmental Services Department
2800 North Horseshoe Drive
Naples, FL 34104
Phone: (239) 213-2957
Fax: (239) 213-2960
E-mail: MelissaHennig@colliergov.net

LANDOWNER / COOPERATOR(S):
Collier County Government
3301 East Tamiami Trail
Naples, FL 34112
Phone: (239) 732-2505
Fax: (239) 213-2960

PROJECT LOCATION (State, County, Township, Range, Section, Ecosystem, with map):
Otter Mound is located within Section 21 Township 52 Range 26. It is south of Addison Court, east of West Inlet Drive and west of East Inlet Drive on the southeastern tip of Marco Island in Collier County, Florida. See Map 1. The 1.77-acre site contains predominantly native tropical hardwood hammock plant species. Initial clearing of FLEPPC Category I invasive exotic plant species was completed in June 2005 leaving large areas of the site devoid of native vegetation

Relationship to nearest National Wildlife Refuge, State Management Area, National Forest, Wetland Reserve Program Easement, Other Easement or otherwise protected area:
Otter Mound Preserve is approximately 780 feet north of Rookery Bay National Estuarine Research Reserve and 3 miles west of Ten Thousand Islands National Wildlife Reserve.

DESCRIPTION AND PURPOSE OF PROJECT:
Funds, if received, will be used to restore approximately one acre of tropical hardwood hammock habitat. Native plants will be planted, invasive exotic species will be managed with herbicides by a licensed contractor at least every six months, and plant identification signs will be installed along a maintained trail. Plants will be purchased from a local native nursery or non-profit group and planted on a day during the rainy season. Collier County staff, City of Marco Island staff, members of the Naples Chapter of the Florida Native Plant Society, members of the Calusa

Garden Club and other volunteers solicited through newspaper/radio announcements and library/school/scouting/4-H flyers will participate in the planting day. If volunteers and staff do not plant all plants on this day, staff will plant the remaining plants.

An archaeologist with the Archaeological and Historical Conservancy, Inc. will be contracted by Collier County to oversee the planting and document any artifacts uncovered during the disturbance of the shell midden substrate.

EXPECTED BENEFITS TO FEDERAL TRUST SPECIES (specify and briefly describe for all endangered, threatened, and candidate species, migratory birds, etc.):
The following list of migratory bird species have been observed at Otter Mound Preserve by Environmental Services staff:

Magnificent Frigatebird *(Fregata magnificens)*, Turkey Vulture *(Cathartes aura)*, Sharp-shinned Hawk *(Accipiter striatus)*, *Cooper's Hawk *(Accipiter cooperii)*, *Red-shouldered Hawk *(Buteo lineatus)*, *Mourning Dove *(Zenaida macroura)*, Ruby-throated Hummingbird *(Archilochus colubris)*, Eastern Wood-Pewee *(Contopus virens)*, Gray Kingbird *(Tyrannus dominicensis)*, White-eyed Vireo *(Vireo griseus)*, Yellow-throated Vireo *(Vireo flavifrons)*, Red-eyed Vireo *(Vireo olivaceus)*, Blue-gray Gnatcatcher *(Polioptila caerulea)*, Gray Catbird *(Dumetella carolinensis)*, *Northern Mockingbird *(Mimus polyglottos)*, Brown Thrasher *(Toxostoma rufum)*, Golden-winged Warbler *(Vermivora chrysoptera)*, Tennessee Warbler *(Vermivora peregrina)*, Northern Parula *(Parula americana)*, Chestnut-sided Warbler *(Dendroica pensylvanica)*, Magnolia Warbler *(Dendroica magnolia)*, Black-throated Blue Warbler *(Dendroica caerulescens)*, Blackburnian Warbler *(Dendroica fusca)*, Prairie Warbler *(Dendroica discolor)*, Palm Warbler *(Dendroica palmarum)*, Bay-breasted Warbler *(Dendroica castanea)*, American Redstart *(Setophaga ruticilla)*, Ovenbird *(Seiurus aurocapilla)*, Common Yellowthroat *(Geothlypis trichas)*, Scarlet Tanager *(Piranga olivacea)*.

* Breed in Collier County

Native plants will provide cover and food for migratory birds traveling through the area and/or residing year round. Although small, the property is utilized by many different species because of its location.

WETLAND RESTORATION

Hydrology Acres: 0 **# Sites** N/A
 # Water-Control Structures N/A
Revegetation Acres: 0 **# Sites** N/A
*Hydrology and revegetation acreage may overlap so that sum exceeds total site acreage
Briefly Describe Type and Benefits:

RIPARIAN RESTORATION

Miles Restored/Protected: 0
Briefly Describe Type and Benefits:

IN-STREAM RESTORATION

# of contiguous reaches: 0
Briefly Describe Type and Benefits:

UPLAND RESTORATION

Acres: 1
Briefly Describe Type and Benefits:
Native planting and invasive exotic plant control within tropical hardwood hammock

HABITAT IMPROVEMENT

Acres: 1
Briefly Describe Type and Benefits:
The tropical hardwood hammock habitat that will be restored through the native planting and invasive exotic maintenance will address a long-term conservation need facing Collier County. Hardwood hammock has been recognized as priority habitat for preservation within the Collier County Growth Management Plan Conservation and Coastal Management Element (Policy 6.1.1(4)c.). Migratory birds and other wildlife species utilize Otter Mound Preserve. As the planted native vegetation matures, more habitat will be available for these animals. This is significant, because much of the tropical hardwood hammock habitat in Collier County has been cleared for development.

HABITAT MONITORING, EDUCATION OUTREACH, OTHER

Briefly Describe Activity (s) and Estimated Cost per Activity:
The Otter Mound Preserve will be re-treated for exotics annually in perpetuity at a cost of approximately $1,000 per year. A small parking area that will accommodate three vehicles and an ADA compliant sidewalk will be constructed within the Addison Court right of way along the northern property line of the preserve at a cost that is yet to be

determined. Once public access is established, three educational signs will be installed along the trail system. These signs will cost approximately $1,300 each.

COST ESTIMATES

Total Project Cost: $7,900

Service Costs:

Materials: 370 plants [20 trees ($50ea), 150 shrubs ($10 ea), 200 ground cover ($5 ea)] = $3,500
Labor $
Other (specify) $

Landowner Costs:

Materials: plant ID signs - 30 x $8.67 = $260
Labor $
Other (specify) Contractor Services:
Exotic treatments 2 x $2,000 = $4,000
Archaeologist 4 hrs. x $35/hr. = $ 140
$ 4,140

Total Landowner Costs: **$4,400**

Other Cooperators (with contributions):

Materials $
Labor $
Other (specify) $

INDICATE HOW RESTORATION WORK WILL BE PERFORMED (check one or more)

_____ Service Personnel
__X__ Reimbursement to landowner
_____ Outside Contract

Please return completed form to:
Private Lands Biologist
U.S. Fish and Wildlife Service
Florida Panther National Wildlife Refuge
3860 Tollgate Blvd., Suite 300
Naples, FL 34114