Environmental Resource Permit Application Narrative

Fox Creek Regional Mitigation Project

Sarasota County, Florida

Prepared for:

Public Works
Permitting, Mitigation, and Restoration
1001 Sarasota Center Boulevard
Sarasota, Florida 34240

Prepared by:

2803 Fruitville Road
Suite 130
Sarasota, Florida 34237

May 5, 2004

Contents

1.0 Introduction

The Fox Creek Regional Mitigation Project is a 140-acre parcel located in west-central Sarasota County in the Southern Coastal Watershed (**Figure 1-1**). The site was purchased in early 2004 by Sarasota County Public Works primarily for creating a regional mitigation area to offset unavoidable wetland and upland impacts from future public infrastructure projects. These projects include roadway construction and widening, stormwater retrofit, and utilities projects at a number of locations throughout the County. Due to the low lying nature of several proposed project areas, complete avoidance of wetland impacts will likely be unfeasible for many of these projects and will require mitigation.

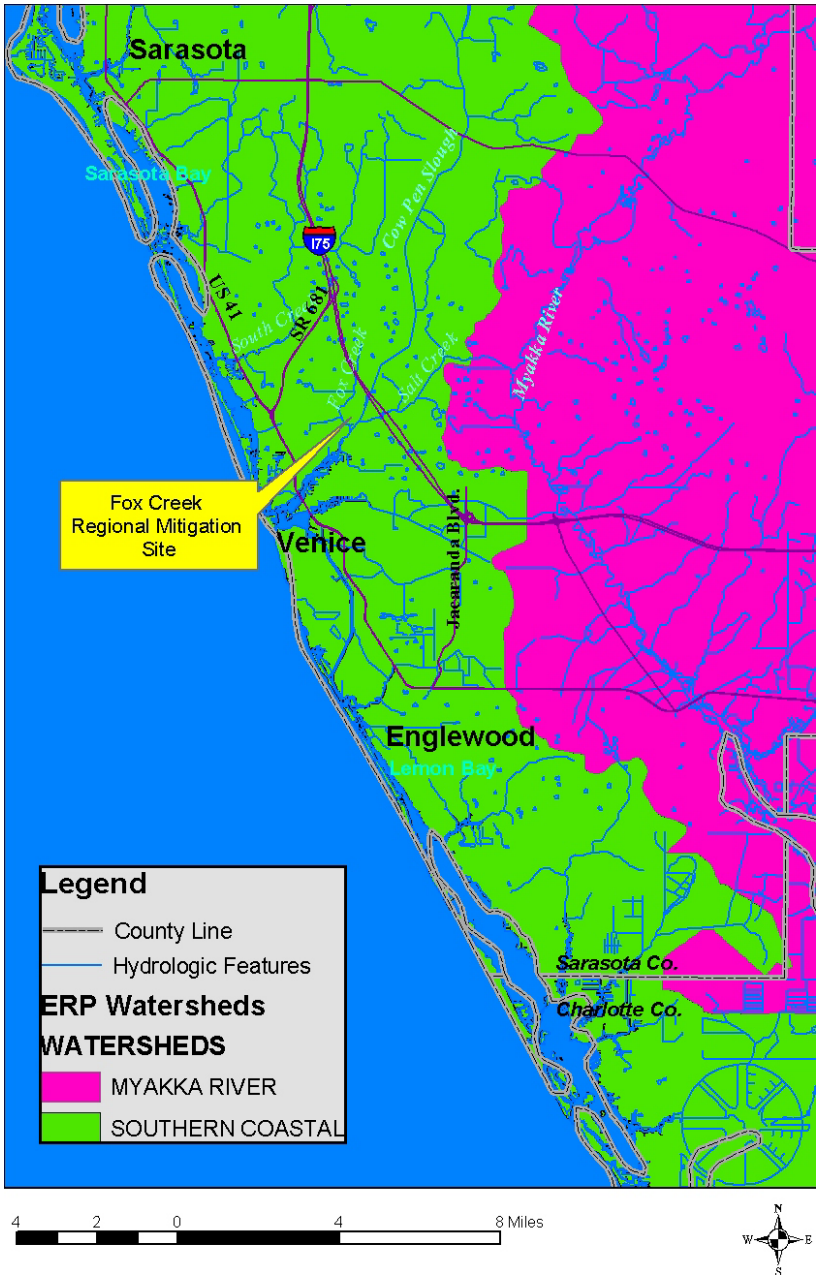

Figure 1-1. Location of Fox Creek Regional Mitigation Project, Sarasota County, Florida.

1.0 Introduction

A variety of natural systems occur within the Southern Coastal Watershed portion of Sarasota County. Wetland communities include estuaries, freshwater wetlands, coastal streams, sloughs, and forested wetlands. Sensitive upland communities include scrub, pine flatwoods, mesic hammock, and coastal hammocks. The majority of the coastal shoreline within Sarasota County has been impacted by development that has included dredge and fill activities and the clearing of native habitats. Inland, many historic isolated freshwater wetland systems have been altered by drainage features that now dewater these areas through a series of interconnected ditches or canals.

An example of this is the creation of Cow Pen Slough, which was constructed during the 1960's and 1970's to drain agricultural areas in the northeastern region of the County. As a result of the expansion of the Cow Pen Slough watershed, excess freshwater currently discharges to Dona and Roberts Bays during certain times of the year, which has likely caused declines in seagrasses, oyster bars, and possibly fisheries habitat as a result of pulses/changes in salinity during the late spring and summer.

In addition, natural uplands have been converted to agricultural (mainly rangeland and pasture) or urban (residential, commercial, and industrial) land uses. Borrow pits and stormwater ponds have been constructed in both upland and wetland habitats to provide fill material for the construction of highway interchanges, road berm material, and stormwater storage and treatment for urban development.

In an effort to provide a more sustainable approach to mitigation for future infrastructure projects, Sarasota County's Public Works (Permitting, Mitigation, and Restoration) has developed a plan for off-site mitigation in a carefully selected area of regional significance. The intent of this off-site mitigation plan is to provide mitigation in an area that has a greater ecological function and value than the typical on-site mitigation that normally occurs with linear projects - small isolated sites ("postage stamp wetland mitigation areas") that are surrounded by development and provide limited opportunity for wildlife usage.

Sarasota County Public Works has investigated many potential mitigation sites based upon a review of available lands, of previous reports regarding mitigation opportunities on existing County owned lands, and two separate GIS analyses (see **Appendices A and B**) that identified areas of greatest ecological value or lift and also actual parcels that would be suitable for mitigation. Parcels that provided regional significance with respect to wildlife habitat and connectivity to larger publicly owned preservation and conservation lands were typically ranked highest. Other factors that were considered included proximity to known future roadway projects, existing hydrology, landscape disturbance/potential for enhancement, hydric soils data, and existing habitat buffers.

As a result of this evaluation, the Fox Creek site was selected to serve as a regional mitigation site to accommodate County and other governmental agency wetland impacts occurring within the Southern Coastal Watershed. It is expected that this regional mitigation site's benefits will extend beyond direct compensation for impacts. The project site location provides an opportunity to initiate beneficial adaptive management programs geared toward large scale environmental improvements within Cow Pen Slough and the Dona and Roberts Bays'

1.0 Introduction

Watersheds which exhibit extreme, unnatural salinity fluctuations during the late spring. In addition, this site provides wildlife connectivity along Fox Creek to several existing mitigation/preservation areas to the north of I-75 which eventually link to the County's Pinelands Reserve and the Myakka River State Park.

2.0 Existing and Historical Site Conditions

Project Area

The Fox Creek site is approximately 140-acres in size, and is located directly southwest of I-75 and west of Cow Pen Slough (**Figure 2-1**). The parcel includes the lower reaches of Fox Creek, improved pasture, unimproved pasture, and a relatively undisturbed pine flatwood area. The site also includes a large borrow pit that was used by FDOT for fill material during the construction of I-75. Residential developments, including Caloosa Lakes and Mission Valley Estate, border the site to the west, and Kings Gate development lies to the east. However, these developments are not directly contiguous to the site as they are separated by Fox Creek and Cow Pen Slough, respectively. To varying degrees, the areas surrounding the site have been affected by hydrologic alterations such as the construction of drainage ditches, including Cow Pen Slough. A historical aerial (1948) for the project area is presented in **Figure 2-2**. A soils map is provided in **Figure 2-3**.

The eastern portion of the site includes disturbed areas along Shakett Creek, just downstream of the southernmost control structure on Cow Pen Slough. As a result of the disturbance, heavy encroachment of exotic vegetation such as Brazilian pepper (*Schinus terebinthifolius*) and carrotwood (*Cupaniopsis anacardiodes*) has occurred.

The western boundary of the parcel is bordered by Fox Creek, which has an intact mature mesic hammock buffer consisting of live oak (*Quercus virginiana*), cabbage palm (*Sabal palmetto*), and sand live oak (*Quercus geminata*). The banks of Fox Creek are deeply incised, which has precluded the establishment of riparian vegetation, though some leatherfern (*Acrostichum danaeifolium*) does exist near the toe of slope. The uplands adjacent to the northern portion of the creek consist of improved pasture from previous agricultural uses that is dominated by bahia grass (*Paspalum notatum*). Though few native groundcover species currently exist, native trees and shrubs are beginning emerge. Species include saw palmetto (*Serenoa repens*) and sand live oak (*Q. geminata*). The soils in this area are well drained and are densely occupied by both active and inactive gopher tortoise (*Gopherus polyphemus*) burrows.

The uplands located just north of this area are similar in that they are dominated by non-native groundcover; however several large live oaks (*Q. virginiana*) and pignut hickories (*Carya glabra*) exist, which are providing habitat and food to a population of Sherman's fox squirrels (*Sciurus niger shermani*).

A seepage slope exists near the southern reach of Fox Creek. This feature is relatively rare for this region considering the local topography. The seep discharges through a freshwater herbaceous wetland and a hydric hammock until it ultimately discharges into Fox Creek. The freshwater wetland may have ephemeral qualities, which is important to various life stages of many reptiles and amphibians.

A bald eagle nest (SA009) exists near the middle of the property that was last reported as active in 2002. Currently, the nest is occupied by great horned owls that have been observed in the nest during each site inspection. A second bald eagle nest (no assigned number) exists in the pine flatwoods located just south of this parcel. The nest appears to be active as two eagles and at least two chicks have been recently observed (February 2004).

2.0 Existing and Historical Site Conditions

The remaining uplands are composed of unimproved pasture and pine flatwoods. The pine flatwoods are dominated by longleaf pines (*Pinus palustris*) and wiregrass (*Aristida stricta*), and exhibits little encroachment by other hardwood species. Juvenile longleafs, slash pines (*Pinus ellotti*), small saw palmetto (*S. repens*), and pawpaw (*Asimina reticulata*) occupy the groundcover.

Figure 2-1. Aerial view (2001) of Fox Creek Regional Mitigation Project, Sarasota County, Florida.

2.0 Existing and Historical Site Conditions

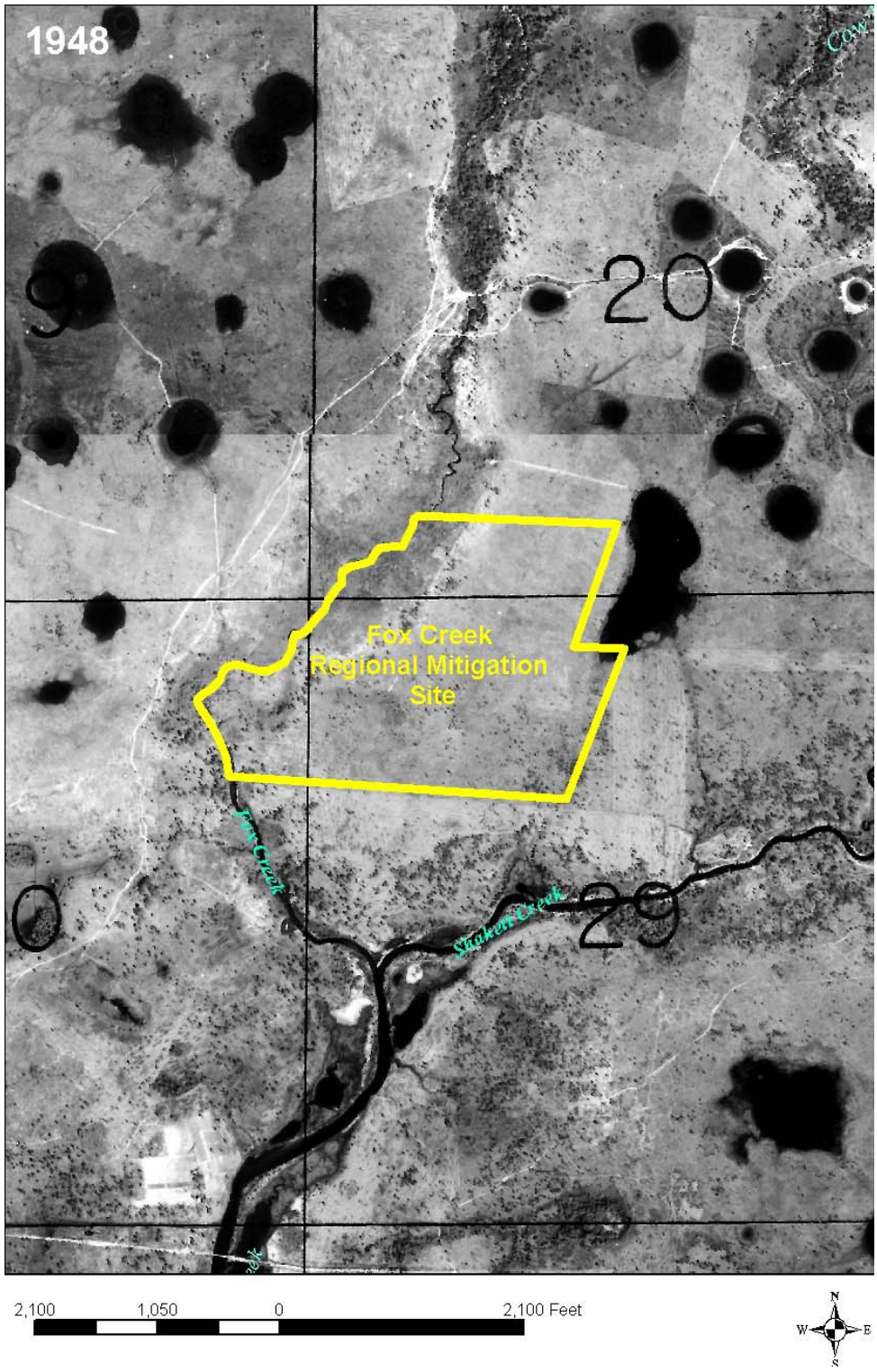

Figure 2-2. Aerial view (1948) of Fox Creek Regional Mitigation Project, Sarasota County, Florida.

2.0 Existing and Historical Site Conditions

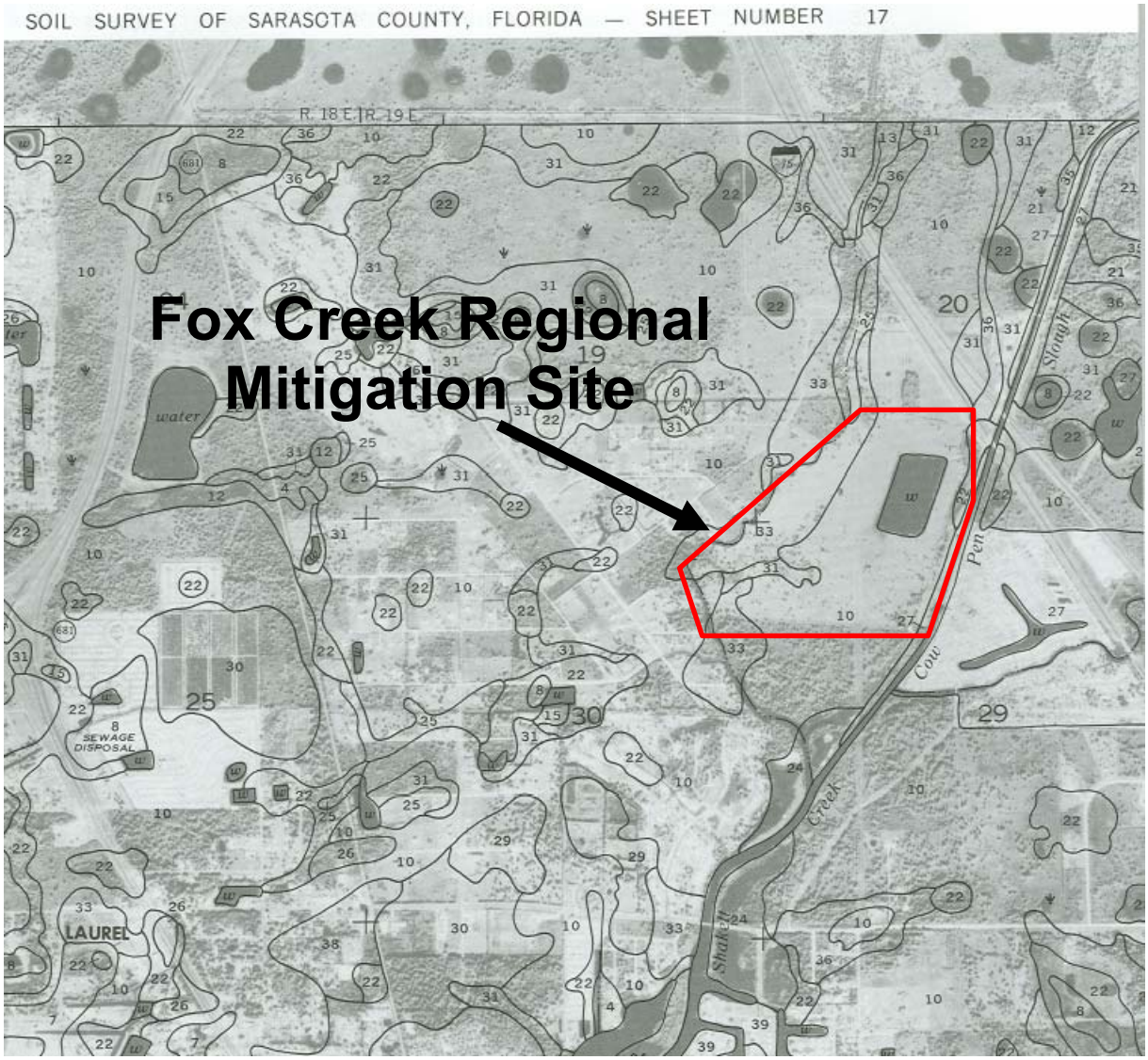

Figure 2-3. Soils map of depicting the Fox Creek Regional Mitigation Site area.

3.0 Mitigation Objectives

The mitigation objectives for the Fox Creek site are to create, enhance, and preserve wetlands and other native habitats to receive wetland credits during the ERP process for future infrastructure projects. A combination of mitigation types is proposed and includes the following: freshwater wetland creation (forested and herbaceous), freshwater wetland enhancement (forested), estuarine wetland creation, scrub creation/enhancement, mesic hammock (stream bank) restoration/enhancement, and upland enhancement and preservation.

Prior to County acquisition, SWFWMD staff verified the limits of all jurisdictional wetlands as part of a proposed site development plan. This line has been surveyed and is included on the plan view drawings. The jurisdictional determination was conducted on September 12, 2003 by Stacey Nigro. The limits of all wetlands occur along Fox Creek and within the hydric hammock/seepage area described in Area 5 (see below). Additionally, Sarasota County Resource Protection staff verified the limits of the mesic hammock as part of the same site development plan. This line has also been surveyed and is included on the plan view diagrams. Uniform Mitigation Assessment Methods (UMAM) were conducted in February and March 2004 for all of the 14 areas that will be used to generate credit. As a result, a relative functional gain score (RFG) has been calculated for each site. The functional loss (FL) scores will be assessed during the individual permitting processes of future infrastructure projects. Additionally, Wetland Rapid Assessment Procedures (WRAP) were conducted in February 2004 for the existing wetland sites. A table summarizing the UMAM scores is included in **Appendix C**. The raw UMAM and WRAP data sheets have also been included in **Appendix C**.

A table summarizing listed species and species ranked by the Florida Natural Inventory (FNAI) for Sarasota County has been included in **Appendix D**. The species listed in the table have either been directly observed, are believed to be present, or are expected to occur after successful completion of the restoration. The anticipated wildlife utilization and notes on occurrence and habitat were based upon scientific literature and input from Sarasota County staff. Additionally, wildlife species that are expected to benefit from specific mitigation areas are discussed within the following area descriptions.

A total of 16 mitigation areas are proposed for the site. Fifteen (15) of these areas are being requested for UMAM credit through this application. Area 4 is a scrub enhancement area that will become a component of the overall mitigation area habitat mosaic, however, this area will likely be utilized for potential upland scrub impacts regulated through the USACOE and USFWS. All 16 areas are presented in the accompanying site plans in **Appendix E**. Descriptions of each mitigation area (polygon) including existing and proposed habitat types, vegetation species, and construction activities (if relevant) are provided below:

3.0 Mitigation Objectives

Area 1

The construction of Area 1 involves the creation of a freshwater wetland system that includes both a herbaceous (groundcover) and shrub (mid story) component. The total acreage of the wetland will be **16.71 acres**. Currently, the project area consists of varying quality uplands and a small cattle pond. The entire site has been impacted by previous agricultural activities, which has resulted in the persistence of bahia grass (*Paspalum notatum*) throughout most of the northern portion. The southern portion of this area consists of herbaceous uplands with a few scattered pines. Tree impacts will be avoided wherever practicable throughout the site. The soil signature for most of the area is mapped as 10-Eau Gallie and Myakka fine sands, which has a seasonal high water table at a depth of 6-18 inches for 1 to 3 months and within a depth of 40 inches for 2 to 6 months, under natural conditions.

A bald eagle nest (SA009) exists just west of the this proposed wetland creation area, however, it is currently occupied by great horned owls, which have been seen during site visits conducted from January to April 2004. Although this nest has apparently been abandoned by the bald eagles (last reported active in 2002), the integrity of the nest and the surrounding trees will be maintained. An active bald eagle nest does exist to the south of the parcel boundary, on lands that are not currently owned by the County. Bald eagle adults and eaglets have been observed during January to April 2004 in this nest. The proposed project is expected to enhance the ecological quality of the area, consequently benefiting wildlife including the bald eagle. No construction work will occur within the secondary zones of either nest during the non-nesting season (May 16 through September 30).

The proposed wetland system will include an herbaceous marsh with three open water pools and a canopied rim. The northern portion will include an interior open water zone that will transition outward into a vegetated zone composed of arrowhead (*Sagittaria lancifolia*), golden canna (*Canna flaccida*), and spikerush (*Eleocharis cellulosa*). The transitional zone of the east side will be occupied by wax myrtle (*Myrica cerifera*).

The southern portion of the site will include an interior open water zone with scattered spatterdock (*Nuphar luteum*), which will transition outward into giant bulrush (*Scirpus californicus*). The eastern transitional zone will be planted with a mixture of dahoon holly (*Ilex cassine*) and red maple (*Acer rubrum*).

The middle open water zone will be planted with pickerel weed (*Pontedaria cordata*) and arrowhead (*S. lancifolia*) and will then transition outward into a combination of the above mentioned plant species.

3.0 Mitigation Objectives

Area 1 – Existing man-made pond, facing south.

Area 2

Area 2 consists of **3.81 acres** of upland restoration with the intent of restoring habitat for the Sherman's fox squirrel (see photos below). Currently, the area is dominated by bahia grass (*P. notatum*) with a few scattered cabbage palms (*S. palmetto*). Several mature live oaks (*Q. virginiana*) and pignut hickories (*Carya glabra*) exist within the site, which are providing habitat and food for the fox squirrels. The soils within this site have been mapped as 33-Pomello fine sand, which is commonly found on ridges within flatwoods. The Sherman's fox squirrel has been listed by the Florida Fish and Wildlife Commission (FFWCC) as a species of special concern due to habitat loss and alteration. The surrounding uplands, outside of the specific project areas, will be preserved and/or enhanced. These uplands include large areas of mature longleaf pines (*P. palustris*), which also provide habitat to this species. The restoration will include the removal of bahia grass (*P. notatum*), which will be replaced with native groundcover. Additionally, live oaks (*Q. virginiana*), pignut hickories (*C. glabra*), and cabbage palms (*S. palmetto*) will be planted within the project site.

Area 2 - Sherman's Fox squirrel observed within Area 2 in March 2004.

3.0 Mitigation Objectives

Area 3

Area 3 involves the enhancement/preservation of the mesic hammock buffer that exists along the east side of Fox Creek. The total project area is **6.12 acres**. Although this upland buffer is relatively narrow, it likely provides water quality benefits to the Creek, which has been impacted by development on the west side. Additionally, it provides cover for wildlife that utilize the watercourse. The buffer is composed of mature live oaks (*Q. virginiana*), laurel oaks (*Q. laurifolia*), sand live oak (*Q. geminata*), and cabbage palm (*S. palmetto*). The banks of Fox Creek are natural though they are too deeply incised to support much ground cover. However, leather fern (*A. danaeifolium*) and Brazilian pepper are common. The following epiphytic vegetation have also been observed within this buffer: shoestring fern (*Vittaria lineata*) and golden polypody (*Phlebodium aureum*). The enhancement of the creek buffer will include the removal of all exotic vegetation and the planting of a combination of the above-mentioned species to help preclude the reestablishment of exotics. A few species of waterfowl have been observed within the Creek including wood ducks and mottled ducks. Therefore, the installation of wood duck boxes is also proposed for this project.

Area 3 - Facing northeast.

Area 4 (no credit requested)

Area 4 involves **12.86 acres** of native scrub restoration to provide habitat for scrub jays and gopher tortoises, which are both state listed species. Mitigation credit from the SWFWMD is not being requested for this area at this time as it will likely be utilized to offset upland scrub habitat impacts regulated by the USACOE and USFWS. Although, this area is dominated by bahia grass (*P. notatum*) and has little to no canopy, it currently supports several gopher tortoises. Also, a well-documented urban scrub jay family occurs within the development west of the Creek. One of the goals of this restoration project is to expand the habitat of this scrub jay family. Prior to the impacts created by previous agricultural activities, this area appears to have supported a similar type of xeric habitat as demonstrated by the presence of remnant vegetation and soils. The soil signature has been mapped as 33-Pomello fine sand, which is a relatively well-drained, sandy soil occurring on ridges and knolls. Additionally, several young sand live oaks (*Q. geminata*) are beginning to re-emerge in this area. Restoration will be accomplished by step-wise removal of exotic vegetation and the replanting of native scrub vegetation, both overstory and understory. The restoration of this area, in conjunction with the on-site wetland creation, will likely benefit other species that use uplands during adult life stages and use wetlands for reproduction, such as the gopher frog. The gopher frog is also listed as a species of special concern by the FFWCC. Plants such as paw paw (*Deeringothamnus sp.*) and coontie palm (*Zamia pumila*) currently exist within other proposed project areas, therefore providing opportunity for transplanting within Project 4.

Area 4 - Gopher tortoise observed in March 2004.

Area 5

This area includes the enhancement of an existing wetland/mesic hammock system, which includes a seepage slope area that flows to Fox Creek. This feature is relatively rare in Sarasota County considering the regional topography. The existing system contains a small non-forested component near the head of the seep, which may possibly provide an ephemeral environment for amphibians. Wetland ground cover within this area is composed of soft rush (*Juncus effusus*), broom sedge (*Andropogon sp.*), and yellow-eyed grasses (*Xyris sp.*). The mesic hammock contains live oaks (*Quercus virginiana*), cabbage palms (*Sabal palmetto*), and a few slash pines (*Pinus ellioti*). The presence of hydric soils, hydrologic indicators, and standing water indicate that the entire area receives frequent hydration and inundation. The southern edge of the project boundary shows signs of disturbance and is occupied by weedy vegetation. The nuisance vegetation will be removed from this area and replanted with wetland tree species that are indicative of seepage slopes, such as loblolly bay (*Gordonia lasianthus*) and sweet bay (*Magnolia virginiana*). The Brazilian pepper (*Schinus terebinthifolius*) which exists along the eastern edge of the hammock and also along Fox Creek will be removed and maintained. The total project area is **5.18 acres**. The only hydric soil signature within the entire Fox Creek parcel exists within this site and is mapped as 31-Pineda fine sand.

Area 5- Seepage/herbaceous marsh.

Area 6

This area includes the creation of a sensitive herbaceous marsh that will be contiguous to the herbaceous wetland (near the seep head) of Area 5. The total acreage of the created wetland will be **1.78 acres**. Currently, this area is occupied by bahia grass (*P. notatum*), scattered cabbage palm (*S. palmetto*) and slash pine (*P. elliotti*), and Brazilian pepper (S. *terebinthifolius*). The soil signature within this project is 33-Pomello fine sand. The proposed wetland will consist of a shallow depression with no interior open water feature. This wetland will include a mixture of grassy plant species to resemble an herbaceous wet prairie with no canopy. The following plant species will be evenly distributed throughout: beakrush (*Rhyncosphora sp.*), cinnamon fern (*Osmunda cinnamomea*), hairgrass (*Eleocharis baldwinii*), marsh St. John's wort (*Hypericum fasciculatum*), maidencane (*Panicum hemitomon*), and softrush (*Juncus effusus*). Plantings may include either direct plantings from native stock material or through transplanting of seed stock from impacted wetland areas from nearby, permitted, County infrastructure projects. This system is intended to create ephemeral habitat that is important to early life history stages of native amphibian species.

Area 6- Existing bahia grass groundcover.

3.0 Mitigation Objectives

Area 7

Area 7 will involve the creation of a forested wetland system with a herbaceous component in the center. The total area of the proposed wetland will be **1.59 acres**. The existing area consists of former pasture comprised mainly of bahia grass (*P. notatum*). This project was designed to minimize impacts to most of the existing pine trees. The created wetland will have an interior zone composed of herbaceous plant species including maidencane (*P. hemitomon*) and soft rush (*J. effusus*). Extending outward from the interior zone will be a shallower forested zone composed of species that are commonly associated with hydric seepage slopes and mesic flatwoods including loblolly bays (*G. lasianthus*) and sweet bays (*M. virginiana*). This system will create habitat diversity and availability for wildlife that utilize the seepage slope and Creek buffer, thereby enhancing these unique features. The soil signature within this project area is 33-Pomello fine sand.

Areas 7 & 8 - Facing east along the southern property line.

Area 8

This area will involve the construction of a **5.02-acre** freshwater wetland system that will be located near the southern property line. This system will contain both a herbaceous and forested component. The size and shape of the project boundary was determined from maximizing the open land area while minimizing impacts to the scattered longleaf pines (*P. palustris*). The created wetland will have two interior zones, which will be composed of tree species that can sustain prolonged periods of inundation such as pop ash (*Fraxinus caroliniana*) and red maple (*Acer rubrum*). The surrounding transitional zone will be occupied by herbaceous, emergent vegetation such as saw grass (*Cladium jamaicense*) and maidencane (*Panicum hemitomon*). This type of wet depression is ecologically important to wildlife species that inhabit both wetlands and uplands during different life stages. One of the goals of this project is to create habitat diversity and availability for both wetland dependent and non-wetland dependent wildlife. The previously mentioned unmarked bald eagle nest occurs just south of this project, outside of the parcel boundaries.

Similar to the majority of the parcel, the soil signature within this project area is 10-Eau Gallie and Myakka fine sand, which has a seasonal high water table at a depth of 6 to 18 inches for 1 to 3 months and within a depth of 40 inches for 2 to 6 months, under natural conditions.

Area 9

The construction of Area 9 involves the creation of an estuarine marsh system by connecting excavated littoral and open water areas to the tidal waters of Shakett Creek. The northern boundary of Shakett Creek occurs at the southernmost control structure of Cow Pen Slough. This control structure also defines the saltwater/freshwater interface and is located just east of the proposed project area. The **5.71-acre** estuarine marsh will be connected to Shakett Creek approximately 50 feet south of the control structure through an open channel. The elevated FPL powerline easement and its associated ditches essentially separate this system from the proposed created wetlands to the west. Freshwater input to create oligohaline conditions will enter this area via a control structure that will be installed between Area 9 and Area 10 (created freshwater wetland to the north).

The vegetative community will be separated into a high and low marsh plant zonation with a narrow open water feature in the center, which will extend to Shakett Creek. The low marsh will contain emergent saltmarsh vegetation that will include needle rush (*Juncus roemerianus*) and saltmarsh cordgrass (*Spartina alterniflora*). The high marsh will be planted with a mixture of leatherfern (*Acrostichum danaeifolium*), saltbush (*Baccharis halimifolia*), buttonwood (*Conocarpus erectus*), and Atlantic white cedar (*Chamaecyparis thyoides*).

The creation of an estuarine marsh in addition to the creation of the varying types freshwater marshes will increase the habitat diversity of the site and enhance the ecological value of parcel.

Similar to the majority of the parcel, the soil signature within this project area is 10- Eau Gallie and Myakka fine sand, which has a seasonal high water table at a depth of 6-18 inches for 1 to 3 months and within a depth of 40 inches for 2 to 6 months, under natural conditions.

Area 9 - Cow Pen Slough control structure north of Area 9 channel.

Area 9 - Channel from Area 9 would connect to Shakett Creek immediately south of this location.

3.0 Mitigation Objectives

Area 10

Project Area 10 involves the construction of a **15.18-acre** herbaceous freshwater wetland. This wetland will be located immediately south of the existing borrow pit. Area 10 will also be contiguous to Area 9 to the south, and to Cow Pen slough to the north through the installation of an adjustable control structure. The control structure will be variable to compensate for the seasonally adjusted water levels within Cow Pen Slough.

As this area is relatively large in size, the wetland is divided into two different planting schemes to create diversity within the system. The northern portion will include an irregularly shaped open water feature in the center that will contain aquatic vegetation. This zone will transition outward into a narrow zone of wetland shrub composed of buttonbush (*C. occidentalis*) intermixed with arrowhead (*S. lancifolia*). Outward from this will be a shallower rim zone that will largely be comprised of sawgrass (*C. jamaicense*).

The smaller southern portion of this wetland will also include an open water feature that will be planted with pickerel weed (*P. cordata*) and arrowhead (*S. lancifolia*). This feature will extend outward into a small grassy herbaceous zone of maidencane (*P. hemitomon*). A mixture of native shrub and grass species will stabilize the exterior edges of the entire site.

Currently, this site consists of disturbed uplands that have been impacted by previous agricultural activities. Similar to the majority of the parcel, the soil signature within this project area is 10-Eau Gallie and Myakka fine sand, which has a seasonal high water table at a depth of 6-18 inches for 1 to 3 months and within a depth of 40 inches for 2 to 6 months, under natural conditions.

Area 10 – Existing condition, facing northwest.

3.0 Mitigation Objectives

Areas 11, 12, & 13

Areas 11, 12, and 13 involve the removal of exotic vegetation from three areas located near the eastern property boundary. The sizes of the projects are **1.10 acres, 0.97 acres, and 1.86 acres,** consecutively. A few long leaf pine trees (*P. palustris*) exist within these project areas, which will be preserved. The removal of these large areas of Brazilian pepper (*S. terebinthifolius*) will eliminate a major seed source of exotic vegetation for the entire parcel.

Area 11 – Brazilian pepper encroachment along pine flatwood areas.

Area 14

Area 14 involves the preservation of all remaining land that has not been incorporated into one of the previously described project areas. The total area is **34.7 acres** and does not include the power line easement or the existing road. Preservation will be achieved by the implementation of a Conservation Easement that would allow for land management opportunities. This mechanism will be implemented after final approval of the proposed project. Most of the land included in this area consists of high quality pine flatwoods with little encroachment of hardwood tree species. The vegetative community includes longleaf pines (*P. palustris*), wiregrass (*Aristida stricta*), paw paw (*Deeringothamnus sp*.), *Hypericum sp*., and other herbaceous grassy vegetation. Wildlife utilization of this site will be enhanced by the creation of the other projects surrounding these uplands.

Area 14 - Longleaf pine.

Area 15

This area consists of a borrow pit that was created to generate fill for the construction of I-75 over Cow Pen Slough. Currently, the borrow pit is approximately 15-acres in size and has little to no littoral features, which has precluded the growth of herbaceous vegetation. The lack of a defined littoral zone reduces the habitat value of the site for many species of birds, reptiles and amphibians. The proposed project would include the regrading of three sides of the borrow pit to create a shallow littoral area that will be planted with herbaceous plant species. An open water feature will still exist within the center, which will create habitat diversity for many wildlife species including waterfowl and fish. The littoral areas will be planted with a mixture of herbaceous species including pickerel weed (*P. cordata*) and arrowhead (*S. lancifolia*), golden canna (*C. flaccida*), coastal spikerush (*E. cellulosa*), and spatterdock (*Nuphar luteum*). All plants will be planted within the appropriate zones as dictated by water depth.

3.0 Mitigation Objectives

Similar to the majority of the parcel, the soil signature within this project area is 10-Eau Gallie and Myakka fine sand, which has a seasonal high water table at a depth of 6-18 inches for 1 to 3 months and within a depth of 40 inches for 2 to 6 months, under natural conditions.

A maintenance and monitoring plan will be finalized as part of the design phase, which will include methods to control nuisance/exotic vegetation.

Area 15 (borrow pit); **Area 16** shown at closest edge.

Area 16

This site currently consists of unimproved pasture that is dominated by bahia grass (*P. notatum*). This site will be converted into a freshwater herbaceous wetland that will be planted with a variety of species. This site will grade into the borrow pit, which will extend its littoral area into an extensive marsh system. Planted species will be similar to those listed in Area 15 (borrow pit). The exterior upland zones will be planted with graminaceous plant species, which will provide an extensive buffer or transitional zone for amphibians.

Similar to the majority of the parcel, the soil signature within this project area is 10-Eau Gallie and Myakka fine sand, which has a seasonal high water table at a depth of 6-18 inches for 1 to 3 months and within a depth of 40 inches for 2 to 6 months, under natural conditions.

A maintenance and monitoring plan will be finalized as part of the design phase, which will include methods to control nuisance/exotic vegetation.

4.0 Management/Monitoring

Due to the large size and complexity of this site, Sarasota County proposes to develop an adaptive management and monitoring program to ensure the success of this regional mitigation project. A management plan will be developed once the project has been permitted which will include a detailed habitat management plan (maintenance activities, schedules, etc.), maps of existing and proposed habitat types, access points, and allowable site uses (recreational). This management plan will incorporate data from the following proposed monitoring plans, to provide for an adaptive management approach for the entire site. This adaptive management approach will be used to regularly measure site criteria and adjust treatments, as necessary. The expected benefits of this approach will extend the values of multiple wetland functions, including wildlife use, hydroperiod, water quality, passive recreation, and aesthetics.

The monitoring program will involve both vegetation transect (semi-annually) and water level monitoring (monthly). Staff gages and piezometers will be installed in each wetland creation area. A description of the proposed monitoring program follows:

Herbaceous Wetland Monitoring Plan

1. A "time zero" monitoring report will be submitted, which will include the date the planting was completed, color photographs from fixed photo reference points and directions, and a table depicting the approximate numbers, spacing, and sizes of each species planted.

2. Mitigation monitoring reports shall be submitted annually for three years. Each monitoring report will include two monitoring events to occur once in the dry season and once in the wet season.

3. The mitigation monitoring reports will include color photographs from fixed photo stations, plant species compositions with estimates of the contributions of each species to percent cover, data documenting the hydrologic regime (seasonal high and normal pool), and a description of the pertinent climatological conditions preceding the monitoring event.

4. Planted herbaceous species will achieve an acceptable minimum percent cover and the total contribution of exotic species will be maintained below 10% of the total coverage.

Forested Wetland Monitoring Plan

1. A "time zero" monitoring report will be submitted, which will include the date the planting was completed, color photographs from fixed photo reference points and directions, and a table depicting the approximate numbers, spacing, and sizes of each species planted.

2. Mitigation monitoring reports shall be submitted annually for five years. Each monitoring report will include two monitoring events to occur once in the dry season and once in the wet season.

3. The mitigation monitoring reports will include color photographs from fixed photo stations, growth data including measurements of height, diameter at breast height (dbh), and

mean annual growth rate to date, data documenting the hydrologic regime (seasonal high and normal pool), and a description of the pertinent climatological conditions preceding the monitoring event.

4. The total contribution of exotic species will be maintained below 10% of the total coverage.

A combination of the above criteria will be used for sites that include both a herbaceous and forested component to demonstrate that the mitigation site meets the defined success criteria.

Upland Monitoring Plan (for enhanced sites)

1. A "time zero" monitoring report will be submitted, which will include the date the planting or exotic removal was completed, color photographs from fixed photo reference points and directions, and a table depicting the approximate numbers, spacing, and sizes of each species planted.

2. Mitigation monitoring reports shall be submitted annually for three years.

3. The mitigation monitoring reports will include color photographs from fixed photo stations, percent area cleared of exotic vegetation, growth data including measurements of height, diameter at breast height (dbh), and mean annual growth rate to date, and a description of the pertinent climatological conditions preceding the monitoring event.

The information gathered from the monthly water level and semi-annual vegetation monitoring will be used to manage and maintain adequate hydroperiods for each of the constructed wetland areas. Water levels are expected to vary seasonally due to natural and localized rainfall conditions and, particularly for Area 10, as a result of changes in water levels maintained within Cow Pen Slough. Currently, water levels are maintained at approximately 11 ft. NGVD during the months of November through June. At the end of June, the downstream structure is opened and water levels in the slough drop to 7 ft. NGVD. The littoral shelf and open water features within the mitigation areas have been designed to account for the potential changes in groundwater elevations caused by water level changes in the adjacent slough, however, minor modifications may be required to ensure adequate hydroperiod (timing, duration, depth) within wetland Area 10 and Area 1. Operable control structures are proposed for these areas to allow water level management between the 7 and 11 ft. range of elevations.

In addition, the data gathered during the annual monitoring reports will be used to re-evaluate each of the wetland mitigation areas in the context of UMAM. Since several areas within the Fox Creek Regional Mitigation site will be either enhanced or constructed and planted prior to future infrastructure wetland impacts, scores for time lag and risk will be re-evaluated and an updated UMAM credit table will be developed and submitted to the District for review through a permit modification letter.

5.0 References

Brown, M.T., J. M. Schaefer, and K. H. Brandt. 1990. Buffer zones for water, wetlands, and wildlife in east central Florida. Center for Wetlands, University of Florida, Gainesville, Florida.

Christman, S. 2000. Sarasota County Florida Scrub Jay Distribution and Habitat Analysis. Technical Report, Sarasota County, Florida.

Cox, J., R. Kautz, M. MacLaughlin and T. Gilbert. 1994. Closing the gaps in Florida's wildlife habitat conservation system. Florida Game and Fresh Water Fish Commission, Tallahassee, Florida.

Federal Interagency Stream Restoration Working Group. 1998. Stream Corridor Restoration: Principles, Processes, and Practices. By the Federal Interagency Stream Restoration Working Group (FISRWG) (15 Federal agencies of the US gov't). GPO Item No. 0120-A; SuDocs No. A 57.6/2:EN3/PT.653. ISBN-0-934213-59-3.

Fitzpatrick, J., G. Woolfenden, and M. Kopeny. 1991. Ecology and development-related habitat requirements of the Florida scrub jay (*Aphelocoma cooerulescens coerulescens*). Nongame Wildlife Program Technical Report No. 8. Florida Game and Fresh Water Fish Commission, Tallahassee, Florida.

Florida's Breeding Bird Atlas website; Audubon of Florida, the Florida Ornithological Society, and the Florida Fish & Wildlife Conservation Commission. http://www.wildflorida.org

Florida Department of Transportation. 1999. Florida Land Use, Cover and Forms Classification System. Third Edition. 91 pp.

Florida Natural Areas Inventory website; Florida State University. http://www.fnai.org/about.cfm

Sarasota County Comprehensive Plan (Apoxsee); Sarasota County, Florida; 1997.

Tobe, J. D., et al. 1998. Florida Wetland Plants: An Identification Manual. Florida Department of Environmental Protection. 598 pp.